

Sheet C

1915 Grampus

Tin-tag numbers.

- 10501 } Herring from Sample 10,  
to } weir, Provincetown Mass.,  
10503 } May 25, 1915.  
10504 } Herring from Sample 18.  
to } Seine, int. Desert Rock,  
10515 } June 11, 1915.
- 10542 - 10549 Sample 42, Bunker's  
Sedge, Schoodic, Me. Sept 12, 1915. Gill net  
entire catch, & herring.
- 10550 *Raja stelliferous*, juvs.  
140 cm. long. Marshalls Id. Me. Sept 16,  
1915. Gill net.
- 
- 10516 } Herring Sample 20, from 10601 - 10605. Sample 43, 2 sp. fish  
10527 } Sockport N.S. weir, June 21, 1915 from. Marshalls Id., Me. Sept 15, 1915  
10528 Sebastodes, Gill net, Cutler Hbr, <sup>me.</sup> gill net (2 1/2 in) (6 nets). 3 to 5 fath.  
July 13<sup>th</sup> 1915. This fish was red on belly & extremities only, the rest brownish faintly banded with darker.
10529. Herring from "Sample 23":  
Bliss Harbor, N.B. July 14<sup>th</sup> 1915 - weir.
- 10530 Alewives, 2 sp., from weir in Pigeon Hill Bay, Me., July 16 1915 - see small ones in jar.
- 10531 Herring + small flounders from weirs in Fox Id. Thorofare. July 20, 1915. Part of, and extras of Sample 24.
- 10532 *Pomolobus aestivalis*, seined with herring (sample 25) Monhegan Aug 2, 1915.
- 10533 Herring from Sample 25
- 10534 } seined Monhegan Aug 2, 1915
- 10535 } Herring from Sample 26.
- 10536 } Netted just off Yarmouth St.
- 10537 } N.S. August 9, 1915.
- 10538 } (25 fish)
- 10539 } II Herring from Sample 27.
- 10540 } Traps, Seal Cove, Grand Manan
- 10541 } Aug 11, 1915
- 10606 10 "blink" mackerel, Potts Hbr, Casco Bay, Sept 18, 1915. <sup>gill net, 1 1/2 in. stretched</sup> A fair sample of the size that now swarms along the coast.
- 10607 8 *Pomolobus aestivalis*, juv. Potts Hbr, Casco Bay, Sept. 18, 1915. Gill net.
- 10608 - 10614, 20 fish (herring) from Sample 45, Provincetown, Mass., Sept 30, 1914. Trap.
- 10615 Young bluefish, trap, Provincetown Sept 30, 1915.
- 10702, 2 herring Nittery Pt. Oct. 14, net
- 10616 2 small shad + 1 small bluefish. Gloucester, Oct 15, N. Trap.
- 10617 - 10622 Herring from Great Point, Nantucket, Gill net, Oct. 26, 1915.

Herring samples.

			Sept 4.
1. (A)	Boothbay, Apr. 21	small	38. Shelburne N.S. medium
2 (B)	Eastport " 23	"	39. Sockport N.S. Aug. 30 " + large.
3 (C)	Provincetown " 19.	large	40. St Andrews Bay. Sept 9. small
4. (D)	Isle of Shoals " 23	"	41. Pt. Supreme, N.B. " "
5 (E)	Blue Hill Bay May 10	small	42. Bunkers Hbr. Schoodic Sept 12 medium
6 (F)	Sheepscot R. " 13	"	43. Marshall's Id. Me. " 15 " + large
7	Boone Id. " 15	large	44. Sheepscot R. " 16 small
8	Threshers " 21	"	45. Provincetown Mass. " 30 large.
9	Ipswich Bay " 20	"	46. Gloucester, Mass. Oct 1 "
10	Provincetown " 25	"	47. Grand Manan. " 7 small
11	Sheepscot R. " 28	small	48. St. John N.B. " 7 "
12	Pumpkin ledge B. Bay " 30	large	49. St Andrews Bay " 8 "
13	Fox Id. Thorofare June 1	small	50. Goose Rocks, Casco Bay " 12 "
14	Cutter " 4	mixed	51. Ipswich R. (tore) " 15 "
15	St Andrews Bay. " 7	small	52. Gloucester, Mass. " " large mixed
16	Grand Manan (Seal Cove) " "	mixed	53. Provincetown " 19 " medium.
17	Campbell's (Mill Cove) " 8	"	54. Nantucket (St. Pt) " 26 large.
18	Mt Desert Rock. " 11	large	
19	Sheepscot R. " 17	Brit	
20	Sackport N.S. " 22	mixed	
21	St Marys Bay N.S. " "		
22	Cutter July 13	"	
23	Bliss Hbr. N.B. " 14	"	
24	Fox Id. Thorofare July 20	Small mixed	
25	Monhegan, Aug 2.	large.	
26	Yarmouth N.S. Aug 9.	Medium + mixed	
27.	2 islands, Seal Cove, Grand Manan Aug 11	large	
28	Dur. Id. Eastport, Aug 12	small	
29	Pt. Supreme, N.B. " "	"	
30	Cutter, Me. " 13	medium.	
31	" " " 14	"	
32	Bunkers Harbor, Schoodic. 17	"	
33	Mt Desert Rock Aug 8	large.	
34	Marshall's Id. Aug 19	medium	
35.	Fox Id. Thorofare " 20	Med. + small	
36	Southern Head, Gr. Manan July 22	large	
37	Port Clyde, Me. Aug 21	medium	

*Pomolobus pseudoharengus* Sp. 80

- A. Boothbay, May 27
- B. Fox Id. Thorofare June 1
- C. Pigeon Hill Bay, July 16 ✓
- D. Fox Id. Thorofare July 20
- E. " " " Aug 20

*Osmerus mordax* Sp. 100.

- A. Sheepscot R. May 28
- B. Cutter June 4.

*P. aestivalis* Sp. 81

- A. Provincetown July 8
- B. Pigeon Hill Bay " 16
- C. Off Boothbay (scim. July 21)
- D. Monhegan Aug 2.

*Muluccinus* Sp. 315

- A. Provincetown May 25
- B. Boothbay " 27
- C. Fox Id. Thorofare June 1

*Alosa sapidissima* Sp. 82

- A. Provincetown July 8
- B. Pigeon Hill Bay " 16
- C. Fox Id. Thorofare " 20

*Pollachius virens* Sp. 316

- A. Cutter June 4
- B. " July 15

*Pseudopleuronectes* Sp. 334.

- A. Cutter, June 4.
- B. Fox Id. Thorofare July 20

1915

- Ap. 10 Left Washington  
 11 Sunday.  
 12 In Phila. on leave.  
 13  
 14 Left for Boston via N.Y.  
 15 Arrived Boston. Saw Bigelow in A.M. Went Gloucester in P.M.  
 16 At Gloucester, getting things started on Grampus  
 17. " Moored aboard Grampus. Consulted Capt. Carlos Young re herring. Got some valuable information. Capt. Young is in touch with the herring question through baiting his vessels. He states:

Herring exceedingly scarce at present, even to the eastward, where only a few small herring have been taken. Vessels using frozen alewives for bait, which is a poor substitute.

A short run of large herring is now expected at Provincetown, where they are taken in traps. The run usually lasts five days or a week. They are called shore herring, & Capt. Young believes they are spawners. None of these are taken on the north shore of Mass., or anywhere on the cape except at Provincetown. Sea-herring (large, fat) are reported now in numbers 8 to 20 miles off Cape Ann. The gill netters get them occasionally (a few), and have been doing so for some time. They seem to be off here in the neighborhood of Jeffery's ledge more or less all winter. None now on the market, although 5 lbs have been brought in. Capt. Young thinks this school a different one from the school at Provincetown. They appear off shore (off Gloucester in the latter part of April), and work east, keeping off shore, past Squin (May & June) to Mt. Desert Rock. Described also as nearly ripe (off Gloucester) and supposed to spawn off-shore. These fish are taken in purse-seine

In summer very small herring are found in the canal at Squam River, and thoroughfares about Ipswich Bay + Essex River.

Wm F. Stickney, 10 Chapel St. Gloucester, confirms Capt. Young's statements, except that he thinks the sea herring referred to are fat, but not approaching spawning.

Purse seining has not yet begun, but many of the little fellows are now fitting out. Gill netters still operating, but claim to have had a poor season. The "big run" of haddock has not arrived so far.

Capt. Young attributes this to the "Beam Trawlers," who, in his opinion have broken up the schools of both cod & haddock that used to come to the inshore spawning grounds.

Referred to Capt. George Nelson, Boothbay freezer  
Stanley S.W. Hr. "  
" Bass "

Portland Cold Storage & Freezer Co.

- Apr. 18<sup>th</sup> Sunday. No herring came into Gloucester, + no new information.  
 " 19<sup>th</sup> (Legal holiday) Left Gloucester 8.20 A.M., arriving Boothbay Hr. 5:30 P.M.  
 Called up Capt. Hahn, but he was out, + all fish places were closed.  
 " 20<sup>th</sup> Called on Capt. Hahn in morning, + spent several hours talking things over. He thinks that the most important places to stop are Millbridge, Jonesport, Prospect, S.W. Hr. Rockland, Port Clyde, + Boothbay. Tinney's Wharf is a good place to get news. David Greenlaw for trap fish. The canning factories have not yet started up here, - the run of small sardine herring is just beginning.

Says alewife run about May 1<sup>st</sup> (but later in day found that it was just starting.) There is an alewife pond just across the hr. from the hatchery. The run at Damariscotta Mills is said to be worth seeing + photographing; privilege vested to Nickerson.

In P.M. had a long talk with Capt. George Nelson. He is soft of the freezer here, a successful fisherman, and well posted. States that the Sea Herring have only been a factor here since about 6 or 7 years ago, when the fall spawn herring run stopped. The Sea herring arrive about May 12<sup>th</sup>, and are abundant for not much over a month. The Casco Bay catch is mostly small herring, and is taken to Portland. Very few of the large herring run inside the islands here, although at times a few are taken. He thinks that overfishing (traps) for small herring inside has ruined the industry. Also makes the common complaint of old traps + garry raining the ground + frightening the fish. Saw that motor-boats drove them away with noise + oil.

A few ground-fish are being brought in by small line-trawlers, but do not amount to much.

Boothbay.

Eastport.

Not many shad last season (off shore). None to speak of in the rivers. Sea shad-fishing is best off sandy beaches.

A few salmon are taken in traps off Small-Point, but none to amount to anything.

At Finney's Wharf the fishermen confirm the above. Few traps are operating yet, and a very few small herring are being taken. Large sea herring not yet reported, but arrived last year May 14. Opinion differs as to whether they are spawn herring or not. All agree that they only get as far as Mt. Desert Rock. At Boothbay they are reported as coming right up to the rocks of the outer islands, but are not reported inside.

April 21 Got a sample of small herring from E. Boothbay (iced). These are now being used solely for bait, as the factories are not yet open. This sample (A) contained a very few copepods. They may have been in the weirs some time before taking. Scales were taken from all that had any, & in addition the following were measured.

13 cm.	1	17 cm.	17
14 "	5	18 cm.	14
15 "	11	19 "	2
16 "	14		

Scales from 59 examples, total 123  
Impossible to weigh them, as no scales were fine enough.

Apr. 22 Left Boothbay A.M. for Eastport, arriving there the following day at noon. Called on Mr. W. S. Hume - he was most courteous & obliging, & his son took me around to meet everybody in my line.

Saw Capt. Mitchell, who buys for the Seacost Co. He says - No large herring now anywhere. In May try Griffins Cove etc St. Mary's Bay. - also Margarettville N.S. Also be sure to see P.C. + A.C. Gillis, E end of Fox Isd. Thoroughfare, st N.W. of Goose Rock light. They have a weir after May 1<sup>st</sup>, & are good men. Also Mr. Stanley, who is Sup't. of freezer at Bass Harbor. No herring here until tomorrow, as the canneries (which started Apr. 15<sup>th</sup>) have all today's catch.

114  
5  
6  
4

There has been an unusually large run of small herring here for this time of year. Capt. Mitchell is afraid of "too many" sending herring this season. No gill-netting here, & no large herring expected until June or July.

Saw Mr. Raye, of Raye Bros. (mustard & smoked herring). Confirms the above. Says St. Mary's Bay is the only source of medium to large herring at this time of year that he knows of, and that these do not come to Eastport. Has heard that spawn herring were netted there in the spring, but knows little authentic. He gets fall herring (Oct & Nov) from Cape Sable district, & mixed sizes in Sept. from Pubnico. (trap). The first large herring into Eastport are netted by poachers on the spawning grounds of Grand Manan in June & July.

Went over the Seacost Cos. largest plant.

Apr. 23 Capt. Mitchell obtained for me a sample of small herring, en route from Weir on Head of Deer Isd. to Cannery. These were lightly salted, having been caught about 2 hours. They contained almost no food, (a few copepods & schizopods) having presumably digested everything while in the weirs, much to the cannery's delight. A small bucket contained 375 fish (lot B) of which 101 were examined & scales preserved, and 274 merely measured. The measurements of the latter follow.

8 cm.	8
9 "	14
10 "	10
11 "	22
12 "	49
13 "	54
14 "	62
15 "	47
16 "	5
17 "	3

This was a fair sample, running perhaps a trifle smaller than the average.

- April 24 Left Eastport 6 A.M., taking steamer via Lubec & St. John.  
Had an hour at Lubec, but could learn nothing new. Got to St. John 2 P.M. Saturday afternoon, everything closed up, & the whole town absorbed in the new troops. Could not find anyone about the fish-pier but a few loafers, & they knew nothing.  
Left St. John 7 P.M.
- " 25 Sunday. Arrived Boston 3 P.M. & went down to Gloucester.
- " 26 Found Capt Young at Gloucester, who told me that there were a few Provincetown herring in Boston, frozen. The run had come as expected. Telephoned Nagle & Co Boston to keep 200 for me, & went to Boston Grampus repairing engine etc at South Boston. Confirmed purchase of herring, got a few necessities & joined Grampus that night.
- " 27 Grampus got away from yard about 10 A.M. & anchored off Boston. Sent launch for herring, & started in on data. Grampus left Boston 4 P.M. Fogbound off Beverly for the night, reaching Gloucester early next morning.
- " 28 Finished work on Provincetown herring (Sample C)  
These fish were taken in traps at Provincetown between Apr 19<sup>th</sup> & 24<sup>th</sup>, & were purchased frozen. Weights were taken in ounces on an unreliable spring balance. The stomachs of this lot contained a considerable quantity of Calanus & schizopods. They were rather fat, and as yet all in stage II.  
Lengths as follows.
- |       |     |
|-------|-----|
| 24 cm | 1   |
| 25 "  | 2   |
| 26 "  | 2   |
| 27 "  | 5   |
| 28 "  | 3   |
| 29 "  | 6   |
| 30 "  | 5.5 |
| 31 "  | 7.6 |
| 32 "  | 3.1 |
| 33 "  | 6   |
| 34 "  | 3   |
- 190
- May 3. Secured from Gloucester Freezer  
200 large herring caught off Isle of Shoals  
in Purse Seine Apr. 23<sup>rd</sup>. This is  
Sample D. As 95% of the caudals  
were badly broken these fish were measured  
only to last scale on caudal. A  
few showed considerable red-feed &  
schizopods, but the majority contained  
very little. 193 fish.

- Apr. 29 Rest of day unpacking & stowing outfit.  
" 30 Same.  
" Went up to Boston to see Dr. Bigelow & do necessary errands. Returned to Gloucester in P.M.
- May 1. Unpacking, stowing & arranging outfit.  
" 2. Sunday. Went in launch to look over floating traps in harbor in the A.M. There are 3 on the Cape Ann side. P.M. no work.  
" 3. Grampus came off railway, Bigelow joined. Bad weather, & as no headway could be made, postponed start till tomorrow. It was decided to make for Yarmouth H.S., as a central point from which to go in search of the alleged spring spawners in St Mary's Bay. (See preceding page for Sample D.)
- May 4 Left Gloucester in Grampus, Bigelow in charge. Made station 10266  
" 5. Made stations 10267 + 10268  
" 6 " " 10269 + 10270  
" 7 " " 10271 & arrived in Yarmouth 11 A.M.  
Went ashore in P.M. to make inquiries. Nothing known here about spring spawning herring. Telephoned to John Thorburn at Sand Point, Sheldene. He said no herring were to be expected there until middle of June or 1<sup>st</sup> July. Saw Mr. Frank Kinney, of Parker Eakins & Co, Yarmouth, who was very helpful. A Mr. Peag in his store came from the herring country on W side St Mary's bay. Said he knew ~~nothing~~ nothing of spawning herring in spring. They were now setting medium herring (very poor & thin) in 2½ inch nets, and were putting a weir into commission at Little River. Did not expect large herring until midsummer. Referred to the following as good men to see  
Mink Cove Samuel Gidley  
Little River Capt Bayard Powell (Str. to Weymouth)  
Margaretville J. A. Balcom.

Called up Capt Powell. Home in Little River about 7 P.M.) He has an interest in the weir there & runs a daily steamer to Sandy Cove, Mink Cove & Weymouth. He promised to get me a

sample if possible, & I would get them at Weymouth tomorrow.

May 8 Went to Weymouth by train. Met Capt. Powell, who seems to be an exceptionally good man. It had been too stormy this morning to fish the wires, but he engaged to send me a sample dry-salted, to Gloucester as soon as he could get the fish. Says very few fish have been taken as yet, and knows nothing of spring spawners. Says that if they exist, they must have spawned some time ago, as the fish now are very poor, and are used mostly for local consumption.

At Weymouth they are getting haddock (spawners) on trawl-lines, and a few cod, with a stray halibut once in a while. Only a few small boats fishing.

The smelt are now swarming in the rivers & streams. They catch them with funnel-nets thru the ~~ice~~ in winter.

Eels were running in the small streams May 2<sup>nd</sup>.

In 1913 & 1914 large catches of mackerel were made in St. Mary's Bay in August.

A very few & very small herring are seen occasionally in the local wires.

Got back to Yarmouth 5 P.M. & went aboard. Too stormy & thick to go out.

May 9. Sunday. Very thick & blowing hard S.E. Decided to wait for better chance. 4 P.M. Cleared & moderated, but Dr. Bigelow decided to wait until morning, as he feared it would be too rough to use instruments & make stations. In the evening a Portsmouth U.H. lobster buyer came in. Had had a bad time anchored off Sander Shoal since Sat. P.M. in a 55 ft. power-boat. He states that large herring are now coming into Portsmouth from off Isles of Shoals & Boon Isd.

10 Clear, N.W. stiff breeze. Left Yarmouth 4 A.M. for S.W. Hr. Arr. Made oceanographic stations 10272, 73 & 74. At midnight, while making the last station, a severe N.W. squall struck the vessel, knocking her over a bit & slipping a sea which carried off a chest with 16 gal. aleo, which had been lashed on deck.

May 11

Arrived S.W. Harbor Me., 7 A.M. A stiff N.W. blow, very puffy, continued the greater part of the day. In the A.M. went ashore & saw Mr. Stanley, Capt. of the freezer. He states that sea herring have just been reported off Mt. Desert Rock, & expected some in from there as soon as the weather moderated enough to permit of fishing. Sea Herring are now being taken at Matinicus (reported to be very thin & poor) but he has none yet, nor has the Bass Hr. freezer. The cannery at S.W. Hr. has been doing well on small herring. Obtained sample of these (Sample E) taken in a wire in Blue Hill Bay May 10<sup>th</sup>. Scale samples taken from 76 examples. Additional measurements as follows:

Meas.	Scales	Total	
13 cm.	3	0 = 3	
14 "	21	9 = 30	average wt. 18 grammes.
15 "	67	16 = 83	" " 22.5 "
16 "	40	21 = 61	" " 27 "
17 "	14	13 = 27	" " 31 "
18 "	1	4 = 5	
19 "	146	2 = 2	40
20 "	6	6 = 6	47
21 "	3	3 = 3	47
22 "	1	1 = 1	60
23 "	1	1 = 1	85
		232	

In P.M. went ashore again, but no sea herring reported either here or at Bass Harbor.

Left S.W. Hr. 6 P.M. & made station 10275. Made Sta 10276 off Matinicus, & arrived Boothbay at 2 P.M. Went ashore to see Capt. Nelson. Missed him, but the freezer is just starting up, and has no large herring. Sea herring reported off Monhegan. Two vessels in looking for bait. Went to the canneries, one of which has been running 2 weeks, the 2<sup>nd</sup> just starting up, and the third still idle.

May 12

## Sample 6.

May 13 Sent engineer to Boston to take examination. Went ashore, saw Capt Nelson, & arranged for him to keep a sample of large herring for me in the freezer, as they may now be in at any time. Went to cannery 7 A.M. & got a sample ( $\frac{1}{2}$  bushel) sardin herring from the boat that had just brought them in from Sheepscot River (weir fish). There were 953 in the  $\frac{1}{2}$  bushel. Among the herring were several small winter flounders & large sculpins. The only foreign fish in my sample were 3 one-year branch herring,  $1\frac{1}{4}$ , 10 & 9 cm. in length. Many of the larger herring had in their stomachs very small herring — some of these were preserved with the alcoholic sample of this lot — no other feed, & these small fish were probably swallowed in the weir.

Sample F = #6 (Changed system to numbers.  
Weir, Sheepscot River, Me. May 13<sup>th</sup>. fresh.

	5 cm scales.	meas.	total	2)
5 "	2		2	this is deceptive, as the small
6 "	9		9	fish found in stomachs must have
7 "	68		68	gone through the weir.
8 "	57		57	
9 "	9		9	
10 "				
11 "		1	1	
12 "	2	6	8	
13 "	1	28	29	
14 "	9	138	147	
15 "	12	171	183	
16 "	16	205	221	
17 "	20	124	144	
18 "	23	19	42	
19 "	14	2	16	
20 "	3		3	
21 "	2		2	
22 "	2		2	
23 "		1		
	105	838	953	

Weights of these fish are only approximate, as the motion of the vessel forbade accuracy. Only averages could be taken with the scales at hand.

Average Weight	14 cm.	20 grams.	(63 fish)
" "	15 "	22 "	(76 fish)
" "	16 "	26 "	(100 fish)
" "	17 "	34 "	(77 fish)
" "	18 "	40 "	(27 fish)
" "	19 "	48 "	(11 fish)
" "	20 "	60 "	(3 fish)
" "	21 "	70 "	2 "
" "	22 "	80 "	1 "
" "	23 "	95 "	1 "

available

Left Boothbay 9 A.M. Made station 10277. Worked on fish all day. Weather threatening, so went to an it at Portland 5 P.M. Water brown with diatoms.

May 14 Left Portland 5 A.M. Made station 10278. Saw a large finback whale at this station, also herring-gulls & gannets, but no fish. Water brown with diatoms. Arrived Gloucester 10 P.M.

At Gloucester. The vessel will require a week for painting, fitting new sails, bright-work etc., & overhauling launch. Went to Boston to do some errands in P.M., returning to Gloucester for dinner. Bigelow went home

16 Sunday. At Gloucester. Rowed up Squam R. in A.M., high tide, but saw no trace of young herring.

Raining hard, painting impossible. Crew at work on wharf on refitting 8 ft net & ships work. Bigelow came down for the day. Overhauled laboratory & re-stored everything. Scales & microscope slides arrived. Rigged up water supply for laboratory.

## Sample 7.

- May 18 Crew trying on new sails. Working on scales in laboratory.
- " 19 Crew scraping & painting. Working on scales. Operators of trap nets (floating) in Gloucester Harbor Breakwater trap. Thomas Douglass 245 E Main St. Phone Gibson Garage, 345-W. Miles Pier trap. Henry Nelson Hawthorne Inn trap Joseph Douglass 58 Eastern Pt. Road.
- " 20 Saw Joseph Douglass. Trap business poor this year so far gets very few herring, some blue backs. Mostly hake & pollock. At times gets butter-fish, an occasional blue fish etc. This morning got 8 or 9 large mackerel, the first this year. It is very early for them. Saw them dressed - full of spawn, with many ripe eggs showing. Got Sample 7. frozen, from Cooney's refrigerator, taken in a seine off ~~Rock~~ <sup>Boone</sup> Id either May 14 or 15. Had a good deal of red-feed in them, & some schizopods, & were very fairly fat.

length	number
30 cm.	1
31	6
32	21
33	14
34	4
35	7
36	10
37	5
38	1
39	0
40	1
<hr/>	
	70

## Sample 8.

Herring are reported in Ipswich Bay today, large. About 20 lbs were brought in to the Gloucester fisher. Will try to get some fresh tomorrow. Capt John Stream, just in from Emerald Bank, reports that herring are thick all the way from there to about Jeffries ledge. Also that herring (large, fat,) were abundant on Emerald & Western Banks during Feb. & March. He says that red-feed was abundant and the herring were full of it.

He also says that dogfish were abundant on Emerald Bank this trip, and drove him off. His previous trip to Georges (April) he found dogfish bad there, which was the reason he went East. Vessels that went to Georges in May, however, have not been troubled by dogfish.

- May 21 Went to Boston to see Bigelow, get thermometers, and see about snatch-block for davit.

- May 22 Purchased samples 8 + 9 (frozen) and spent whole day taking scales & data.  
Sample 8. May 21<sup>st</sup>, 10 miles off Thatches Id., seine Stomachs full of pure red-feed.

length	number
26 cm.	1
27 "	2
28 "	0
29 "	1
30 "	9
31	25
32	16
33	2
34	2
35	0
36	1
	59

## Sample 9.

Sample 9. May 20. Ipswich Bay. seine. Stomachs full of pure red-feed.

Length	number.
30 cm.	8
31 "	23
32 "	24
33 "	7
34 "	9
35 "	4
36 "	4
37 "	3
38 "	0
39 "	<u>2</u>
	<u>84</u>

May 23 Sunday. Working on scales in A.M. Board of trade reports "a large body of mackerel moving along the Nova Scotia coast, 20 bbls caught yesterday in shore traps at Yarmouth."

May 24 Getting vessel ready for sea. Left Gloucester 2.30 P.M. for Provincetown. Light airs. At Provincetown 10.30 P.M.

May 25 4.30 A.M., went to trap in a dory, while it was being fished. Practically all Merluccius, a few squirrel-hake, pollack, shate, and one or two herring. Owner of trap says the herring run lasted about six weeks. No herring inside now.—outside ~~trap~~ traps getting scarce. Obtained sample, (1 bushel,) of Merluccius, & took data + scale samples as follows.

## Merluccius, Sample A.

Merluccius (species 315) Province town Mass. May 25<sup>th</sup> — trap. Sample A.

Length.	no.	♂	♀	
30 cm.	1		1	No ♂ over 39 cm.
31 "	2	2		
32 "	4	4		
33 "	3	3		Stomachs full of young herring (preserved).
34 "	5	3	2	
35 "	8	5	3	
36 "	7	6	1	
37 "	7	4	3	
38 "	2	1	1	
39 "	7	1	6	
40 "	4	0	4	
41 "	0	0	0	
42 "	2	0	2	
43 "	4	0	4	
44 "	1	0	1	
45 "	3	0	3	
46 "	2	0	2	
47 "	0	0	2	
53 "	1	0	1	
54 "	2	0	2	
55 "	1	0	1	
56 "	<u>1</u>	<u>0</u>	<u>1</u>	
	<u>67</u>	<u>0</u>	<u>18</u>	
	<u>29</u>	<u>3</u>	<u>18</u>	

Went ashore 10 A.M. + got 50 lbs frozen (week before last, outside traps) and the same amt. fresh, taken this A.M. (Sample 10) in outside traps here. They were only a scattering few in the mass of Merluccius. Nothing in their stomachs.

Merluccius is here in such abundance, that the catch is being frozen, for sale next winter.

Sample 10.

In P.M. (3-4) made surface + bottom tows from the launch. The water contains practically nothing. Surface temp.  $56^{\circ}$ .

This has been a very remarkable season for herring here. Usually there is a run of large herring for 5 or 6 days, followed by mixed schools, + then by spratling. But this year the large herring arrived about Apr. 15<sup>th</sup>, + ran in abundance until last week. Now they still are getting a few, but only in the outside traps.

The inside traps, excepting up in the cove, have had a very good season on herring. The cove traps seldom get any, but are a famous source of squid.

One shad was seen among the catch from which lot 10 was taken.

Tried out the new "bottom net" with the launch; it works splendidly.

Sample 10. Provincetown, outside traps, May 25. Herring.

19	cm	1	♂	♀
31	"	1	1	1
32	"	2	1	1
33	"	1	1	1
34	"	3	2	1
35	"	9	8	1
36	"	12	7	5
37	"	18	12	6
38	"	12	4	8
39	"	7	2	5
		66	37	29

Stomachs empty (probably from stay in trap.) It is noticeable that there are practically no small or medium herring in this lot. The fact that they were taken in a trap with a large & voracious majority of *Merluccius* may account for this.

Counted over 40 traps from the Monument. Day very hazy, or would have seen many more.

May 26 Left Provincetown 5:30 A.M. S.W. + smoky. 10 to 11 A.M. made station 10279. Proceeded towards Boothbay, with light, fair wind. 6 P.M. Made trial of 8 ft net, which had been reinforced with 4 parts of bacy line. Wind so light that we could only tow it about 2 miles an hour, and at that speed it pulled very hard. Used a heavy line from stern to take strain from the wire, and this arrangement handled very readily.

Rain most of the day, + too dark to work on scales.

7 P.M. Wind went round to N with heavy rain squalls.

Blew hard all night, with high sea. Impossible to make stations. Off Boon Id. at daybreak, wind high, N.W. Proceeded to Boothbay in record time, coming to an anchor at 11:15 A.M.

Went to freezer, + saw Capt. Nelson. He says the sea herring run only really started last week. Has a lot frozen, but expects fresh in when the wind moderates. Better to wait for fresh, as the frozen ones are badly broken.

Went to see Capt. Hahn. After a talk with him decided to stay here over Sunday, + try out gill-nets tonight + trawl on Saturday. Monday is a holiday, too, so not much can be done until Tuesday.

Still blowing hard. Worked on scales.

Set 3 gill nets, large, medium + small, at 6 P.M. in Campbell's Creek Cove, Boothbay harbor, in  $3\frac{1}{2}$  fathoms. A small alewife brook comes in here, but the flow of fresh water is negligible. ~~The~~ The alewives, *P. pseudoharengus*, first appeared this year Apr. 20. A few are still going up.

The catch was 18 *Merluccius* (jiglum hake) 51 alewives, and one herring. Scales + data from all of these.

Bought a lot of sardine herring, among which were many smelts - from a trap in Sheepscot River. Scales + data from both.

Set 4 gill nets, 1 large, 2 medium, 1 small, at 4 P.M. in Pig Cove, Boothbay Hr. in 3 to 10 fath.

Merluccius, sample B.

Alewives, Sample A.

May 28 cont'd.

Sample of Merluccius (315 B.) Campbells Cr. Cove Boothbay

Hr. gill-net. May 27-28, 1915 Scales + data from all.

26 cm.	♂ 1	♀ 0	total 1	Stomachs nearly empty, with well digested fish remains.
35 "	2		2	
36 "	1	1	1	
38 "	1		1	
39 "	1	1	2	
44 "	3		3	
45 "	3		3	
46 "	2		2	
47 "	1		1	
49 "	1		1	
50 "	1		1	
52 "				
5 14	14		14	

Sample of *Pomolobus pseudoharengus* (80 A) data as above.

18 cm.	♂ 1	♀ 1	total 1	
19 "		1	1	Stomachs empty.
25 "	1	1	2	
26 "	1	1	2	
27 "	4	1	5	
28 "	1		1	
29 "	3	3		
30 "	10	10		
31 "	3	10	13	
32 "				
33 "	7	7		
11 5	39	5	50	

Sample 11.

Smelt, sample A.

Herring, sample 11. From trap, Sheepscot R. May 28.

7 cm.	Scales	meas.
13 "	2	1
14 "	9	19
15 "	14	58
16 "	17	68
17 "	17	40
18 "	14	18
19	9	4
20	1	
	83	209

Mixed with these were the following *Osmerus mordax* Sample 100 A.

14 cm.	Scales	meas.
15 "	3	6
16 "	7	16
17 "	3	5
18 "	3	1
20 "	1	
	17	31 = 48

May 29. Nothing in gill nets but a very few Merluccius + 1 small herring. Wind moderating somewhat. Several seines went out. Temperature of surface in harbor still very low, ( $40\frac{1}{2}$ ) probably due to the strong off shore winds. Very few herring taken to canneries.

Working on scales all day. About 200 lbs large herring brought into freezer by two boats.

Sent otter-trawl + boards to Capt. Hahn.

May 30 Sunday. Moderate variable winds. Worked on scales in A.M. Also photographed the alewife pond at Campbell's Creek. P.M., went to freezer wharf & bought 2 bushels large herring (Sample 12), which had just come in. These had been seined close to Pumpkin ledge. Spent P.M. until too dark taking scales, & data. Called on Capt. Hahn in the evening.

Today at least nine seiners came in, "loaded to the gills" with herring. After the first two had discharged, the freezer flakes were full, & the rest had to seek Port Clyde or Portland, or let their fish rot.

May 31 Memorial Day. Started on scales & data of Sample 12 at daylight, & finished 11 A.M. Made Sta. 10280 at 7 A.M. on the grounds off Pumpkin ledge. Several seiners in company, but very few schools of fish on surface. The red-feed was 5 or 6 meters down. Saw 2 large fin-backs.

(Kents Cove)  
3.30 P.M. Came to it at Goose Rock light Fox Id. Thorofare. Water green & soupy. No brush weirs in sight.

Went ashore & saw Mr. Gillis. Getting nothing but sardine herring here now, with an occasional larger fish. Run boats from Prospect & Bass Harbor take his catch. Gets larger fish in August. Has not done very well this year. Surface temp. at  $\pm 47^{\circ}$ .

6 P.M. Set 4 gill nets W. from vessel, in 7 to 14 fath., 2 medium, 1 large, + 1 small mesh.

## Sample 12.

Sample 12, Herring seined off Pumpkin ledge, about 7 miles SE of Boothbay Harbor, May 30<sup>th</sup>. Purchased fresh from vessel same day. 1 Bushel counted 124 fish. Very little feed in stomachs. A little red-feed, & fish remains in a few (preserved)

Scales	no scales but all other data.	total
27 cm.	1 ✓	1
28 "	1 ✓	1
29 "	1 ✓	1
30 "	1 ✓	1
31	4 ✓	3
32	13 ✓	6
33	24 ✓	11
34	34 ✓	9
35	22 ✓	1
36	14 ✓	14
37	18 ✓	27
38	19 ✓	10
39	8 ✓	8
40	3 ✓	3
	—	—
<del>165</del>	30	193
150		

June 1 Gill nets drifted & fouled, & contained only 3 herring, 8 alewives & 1 window-pane.

Went to nearest weir, (belongs to a man named Stone), & got ~~to~~ sample of herring (4.30 A.M.). A fairly clean lot of about 40 bushels in this weir, the only "scalch" being a number of smelt, a few alewives, winter-flounders, very small hake, & squid.

The run-boat alongside came from Belfast, & pays 60-70 cents a bushel at the weir. The smelts are all waste, as it is illegal to sell them & they are no good for bait in salt water. This last seems to be a fact.

A killer whale was reported about 2 weeks ago in Penobscot

## Sample 13.

Bay. The run-boat man saw it, as did several others. It was accompanied by two pups. From the description given by this man there can be no doubt that it was a killer.

Run boats from Bess Harbor, Prospect Harbor and even more distant points visit this region.

Mr. Gillis tells me that he had about 250 bushels herring in his weirs this morning, & so far has done fairly well. Expects larger fish in August. Came aboard & was much interested in our work. Showed him scales etc.

Went to North Haven for a few minutes in the launch. Left at about 9:30 A.M. bound east.

Herring sample 13 was taken mainly to get a line on size & weight of sardine herring. A few scale samples were taken of the larger fish. Practically no feed in these fish  
Fox Id. Thorofare.

11 cm.	6 fish weighed	54 grams =
12	216 "	2430 "
13	222 "	2915 "
14	50 "	885 "
15	45 "	980 "
16	32 "	877 "
17	18 "	593 "
18	6 "	238 "
19	2 "	104 "
20	0	
21	3 "	211 "
22	3 "	209 "
23	2 "	170 "
24	1 "	104 "

These herring just filled 1 paper bucket =  
~~In Yacht I took 1000 lbs. herring 2 to 4~~

In this lot of fish were also 26 smelt, 1 flounder, 3 silver hake, (small), + 2 alewives.

## Alewives, sample B. Merluccius, sample C.

In addition, scales + data of the larger herring as follows -						
16 cm.	339.	♀	1	1	22 cm.	729. ♂ + 1
"	27	"	"	"	"	66 ♀ 1 1
17 "	34	"	"	"	"	71 " + 1
18	42	♂	1	1	"	63 ♀ + 1
18	43	♀	1	1	"	71 " + 1
18	45	"	"	"	23	78 " 1 1
18	39	"	"	"	"	84 " 1 1
19	49	♀	+ 1	"	"	86 " + 1
19	46	♀	+ 1	24	104 ♂ 1 1	
21	67	♂	+ 1	"	102 ♀ 0 1 1/2	
"	74	♂	+ 1	"	"	
"	68	"	+ 1	"	"	
"	69	"	+ 1	"	"	
"	72	"	+ 1	"	"	
"	70	♀	+ 1	"	"	
"	67	♀	31 1	"	"	

Pomolobus pseudoharengus, Sample B. 80, from gill net same time & place as above, scales + data. Most exceedingly fat. "Kyaels"

22 cm	1
24	2
25	4
26	1
27	2

Merluccius 315 ♂ C., from wire as above, scales + data.

13 cm.	1
15 "	2

Came to anchor at Winter Harbor 6 P.M. Hope to find 1st year herring here. Went ashore & saw Capt. Geo. Tracy & several others. Not much information, but "minnie size" herring have been seen.  
1st mosquito on board this year.

About midnight the wind came out strong from East, and continued so until noon of June 2<sup>nd</sup>.

June 2. Wind-bound at Winter Harbor. Worked on scales all morning and at 1 P.M. took launch & 1 dory with 40 ft seine, to the "Mill Stream". Made five hauls, but the water was very barren, the total result being about 65 sticklebacks (heavy with eggs), 2 *Fundulus*, 2 *Syngnathus*, 1 elver and a few shrimp. Not a sign of copepods, although the place looked ideal for small alewives & herring. On the return to the vessel, towed the meter silk net in the harbor about  $\frac{1}{2}$  mile, taking a good haul of small copepods, fish eggs & larval fishes. In the evening, went ashore & talked with Capt. Summer & Capt. Jesse Smallidge, without learning anything noteworthy. There are no seiners operating in this neighborhood now, & consequently no large herring being taken. No weirs at Winter Harbor, although there are many from Schoodic Point through the islands eastward. One on the island at Schoodic Point.

June 3 Moderate N. to NE breeze. Under way at 5.30 A.M. A number of small pods of pollock on surface along Schoodic Point. Off Schoodic about  $\frac{1}{2}$  mile, the water was very soupy. Made a 5-minute tow with 20 net at 6 A.M., and it was immediately clogged with diatoms. No. 5 net ditto, practically all *Thalassiosira* (?) brown in life, changing to green in formalin. Off Petit Manan made a haul with 1 meter net, 6-0 m. This brought in an abundance of fish eggs, of at least 4 species (mostly haddock or cod), a few larval fish, & nothing else except diatoms.

Arrived at Cutler 4.30 P.M. & came to an anchor. There are two weirs here, one at the harbor mouth & one at its head. A very poor season so far was reported. No large herring yet - they are effecting spawners about July 1<sup>st</sup>.

## Sample 14.

## 25

	June 4.	Went ashore 7 A.M. & took photos of the outer weir (U.S. 86) at 8 A.M. this weir, a large single heart with no pound, was fished with a purse-seine. The result was practically nothing - 1½ bushels herring (larger than usually taken here at this time), about 2 bushels squid, 10 flounders, 2 skates ½ bushel smelt, ditto small pollack, 2 or 3 cod, 6 scallops, 1 sea-raven, 1 large alewife and 1 very large lumpfish.		
		There were several fishermen about anxious for bait, so I could only secure a small lot of herring for sample 14.		
		Sample 14, Cutler, Me. Weir, June 4. Examined very fresh.		
		Scales	meas. weighed	Total
	12	cm.	1	,
	13			
	14		1	3
	15		1	2
	16		2	2
	17		1	5
	18	10 2 2	4 weighed 1379.	15
	19	3	5 " 205 q.	3
	20	3	2 " 124 q.	5
	21	17	16 " 1050 q.	33
	22	30	13 " 990 q.	43
	23	12	1 " 85 q.	13
	24	5		5
	25	2		2
	26			
	27			
	28			
	29	3		3
	30	1		1
	31		2	2
	32		93	138
			45	

No feed in stomachs - too long in weir.  
There were a number of large herring in the weir, but they got away.

Smelt, sample B. Pollock, sample A. Winter flounder.

Scales + data also taken from the following, from the same catch.

Osmerus mordax Sp. 100 Sample B.

16 cm.	22 grams.	♂ spent
17 "	26 "	♀ "
18 "	30 "	♀ "
20 "	40 "	♀ " Copepods in stomach
22 "	71 "	♂ " fish debris ..
22 "	67 "	♂ "
23 "	67 "	♀ "
23 "	67 "	♀ " Shrimp ..
24 "	73 "	♂ "
26 "	91 "	♀ "

Pollachius virens. Sp 316 A.

18 cm.	50 grams
18 "	52 "
20 "	75 "
21 "	88 "
26 "	182 "

Pseudopleuronectes americanus. Sp. 334 A.

22 cm. 128 grams.

Left Cutty 9.30 AM, and proceeded to Eastport, making Sta 10281 2 1/4 miles SE from W. Duddy Head. Arrived Eastport 3.20 P.M. Went ashore, saw Mr. Hume, got mail + was busy with mail + laboratory rest of this day.

June 5.

Went ashore + had long talk with Mr. Joseph E. Wickerson, a general fish man, who seems to be a progressive. He owns a good-sized otter trawler, the "Starling", converted yacht. This vessel has only made two trips, both to the Wolves bank, and is only trying out as yet. Last trip, (in yesterday), struck dog-fish heavy. Previous trip did well on large cod, but tore up tackle on rough bottom. A 10 ft scallop dredge is being rigged for this vessel. Mr. Wickerson has built up the giant scallop fishery here, and last winter (the first that the fishery has been really going) this fishery developed to large proportions. One week he shipped \$1700 worth, and one of his boats, with 3 men, stocked \$300 in one week. At present the scallops are fished outside Campobello Id. in 10 to 40 fathoms. A large bed is reported on the Nova Scotia shore, and the possibilities, largely unexplored, seem unlimited.

Shad are now being gilled in the St. Croix River in considerable numbers, more than 400 being brought here yesterday. Just too late to get scale samples. None brought in today. <sup>mostly spent fish,</sup> <sup>a few with roe,</sup>

Large numbers of smelt are being taken in the weirs, and may not be disposed of in any way.

A considerable industry ~~to~~ which is new here, is gilling salmon in the ~~St. Croix~~ <sup>to Bay of Fundy, above Pt. Lepine, June to August</sup>. ~~This is now gone on.~~

The sardin herring here fallen off badly, and few are being brought in. Many reports of large and spear herring on the Nova Scotia shore, but all rather vague. Vague reports also of herring (large) being seen on the rips off White Head, Grand Manan, but no large herring of any kind being brought in here. A few sardin herring, up to mustards, coming in from Grand Manan.

The classification of herring sizes is as follows

Brit, under 5 inches (about).

Oils, small, 5 + 6 inches

" large 7 inches

Mustards, 7-9 inches.

Sample 15

June 6 Sunday. Worked on scales all morning; in P.M. Capt Mitchell & Mr. Wickeson came on board & talked things over. W. says Merluccius arrived here this year, June 1<sup>st</sup>, in considerable numbers. This is early for them. Showed the visitors the scale method, and their experience agrees entirely with the system.

Mitchell says he saw the engineer of the Biological station at St. Andrews the other day. This man says that Hjort's investigators could not get any spawn herring on the N. Coast, until they went into St. Mary's Bay last week (about) when they got a few.

A few halibut + many cod + pollock were hand-lined yesterday in the "eddy" near the boundary buoy in Eastport H.

June 7 Thick fog all day. 5:30 A.M. Obtained sample of sardin herring from St. Andrews bay from run-boat Sample 15, June 7, 1911, lightly salted. These fish were badly scaled.

8 cm. Scales. Length at length. Total were badly scaled I smelt.

9	"		4	"
10	"	2	2	4
11	"	1	9	10
12	"	7	14	22
13	"	11	23	35
14	"	12	35	57
15	:	12	43	62
16	:	13	38	55
17	:	5	18	29
18	:	2	9	15
19	:	3		3
20	:	2		2
21	:	3		3
22	:	2		
<u>156</u>			<u>2</u>	<u>298</u>
Grand total				

Sample 15

Extra weights as follows.

10 cm. 7.7 grams  
11 cm. 9 grams.

12 " 12, 11, 10, 12, 11, 12, 12 grams.  
 13 " 15, 13, 12, 14, 13, 14, 13, 14, 14, 13, 14 grams.  
 14 " 17, 17, 16, 19, 17, 16, 16, 18, 18, 16, 14, 16.  
 15 " 23, 22, 20, 20, 24, 21, 20, 21, 23, 24, 23, 21  
 16 " 26, 28, 24, 29, 28, 25, 27, 25, 30, 29, 25, 28, 25  
 17 " 29, 30, 35, 35, 33.  
 18 " 45, 36.

No feed in these fish.

1 P.M. Obtained a sample of sardine herring from Grand Manan, from run-boat. Sample 16, June 7<sup>th</sup> war,  
Seal Cove, S.W. Side. Sample 16, June 7<sup>th</sup> war,  
lightly salted. These fish were much bluer on back than  
the local fish. Feed mostly digested, shrimp - 2 examples  
with full stomachs, shrimp. <sup>Scales - length</sup> length

	Scales + data.	length + wt.	length only.	Total.	No small.
11 cm		1		1	
12		1	2	3	
13	1	5	13	19	
14	3	8	34	45	
15	4	11	34	49	
16	8	7	20	35	
17	10	9	13	32	
18	3	1		4	
19	2			2	
20	3			3	
21	8	1		9	
22	3			<u>3</u>	

Grand total 205

Extra weights, 11 cm 10 grams. 12 cm 14. 13 cm. N, 11, 17, 19, 20  
14 cm, 22, 18, 19, 23, 19, 21, 20, 21 15 cm. 25, 27, 25, 22, 24, 21,  
27, 29, 22, 25, 27. 16 cm. 31, 27, 30, 29, 27, 25, 27.  
17 cm. 37, 31, 36, 32, 36, 35, 39, 36, 34.

These two samples & scale examinations filled this day.

June 8<sup>th</sup> Thick fog. Impossible for Grampus to go anywhere in these tides.

Worked on scales all day. At 5 P.M. Capt Mitchell sent me a bucket of mustards from Weir in Mill Cove, outside E. Soddy light, E. side of Campobello. This is sample 17. Rec'd from run-boat, lightly salted.

Examined in laboratory by acetylene light. Worked very well. This sample very badly scaled.

	Scales + data	length & weight	Total
16 cm.	1		1
17		3	3
18	3	4	7
19	3	3	6
20	4	7	11
21	12	40	52
22	10	33	43
23	6	7	13
24	1	1	2
	40		
Total		138	

filled one paper bucket.

Extra weights

17 cm., 30, 30, 34.

18 cm. 41, 50, 47, 44.

19 cm. 43, 47, 42

20 cm. 58, 66, 53, 55, 66, 56, 65

21 cm. 72, 61, 72, 68-70-67-77-61-68-65-64-70-70-65-65-68-68  
65-68-73-63-70-69-73-63-65-64-70-60-67-68-67-75  
67-60-66-72-71-67-63.

22 cm. 82-68-77-70-83-76-71-75-81-75-73-74-70-74-71-86-71  
69-75-79-77-79-76-76-82-77-70-76-72-72-75-75-69

23 cm. 83-89-86-83-85-92-79

24 cm. 97

June 9. Still thick fog, with showers added. Working on scales all day. About 3 P.M. the fog lifted somewhat, and by 5 P.M. it was fairly clear, but still very cloudy & unsettled-looking. At 6 P.M. hove up anchor and left Eastport, glad of any chance. <sup>Surf temp 42°</sup>, water sample. Weather permitting, it is intended to be off Petit Passage at daylight. It is reported that netters are doing well there on large herring.

7 P.M. Passed out E. Soddy Head. Very smoky and wind dying out. Thick most of the night.

June 10 At 6 A.M. the fog lifted a little, & we ran in close to Petit Passage. Many fishermen in small-boats in the eddy of the gut, presumably taking bait, as they at once started off shore to set trap. Wanted to go inside in dory, but fog shutting in made that inadvisable. Spoke one fisherman, - he said no herring today, as no sets were made last night - might get some tomorrow if we went inside. The weather decided things by shutting in thick fog, and in that tide-hole there was nothing to do but get away as quickly as possible.

Took surface temp <sup>43°</sup> & sample, also surface tows with <sup>45°</sup> #20 nets. Diatoms thick, and Calanus few, 1 shrimp.

At 8 AM made Sta 10282, 13 miles W. from Petit Passage. Here the surface water was absolutely barren. Thick fog, followed by showers & light variable winds.

3 P.M., on the edge of Grand Manan bank. Surface sample & temp. 46°. Clearing off, sun out, wind very light. Worked on scales all day between observations.

7.40 P.M. - to 9.30 P.M. Made Station 10283

June 11 Day came in calm + thick haze. 5:15 Am made station 10284.

Came to S.W. Harbor 9:30 Am. Rain, followed by variable weather + haze + fog. Went ashore 10 Am + saw Mr. Stanley. He said the first seine hauls of big herring at Mt Desert Rock were brought in two weeks ago. This was followed by bad weather, + more came in huts about the 8th of June. Since then coming in every day. Plenty in freezer, but decided to wait for fresh ones in P.M. Worked on scales in A.M. In P.M. Went up Somes Sound + took taws + water sample + temp. Minnows pods, *Aurelia* abundant, few fish eggs of 1 species, 2 medium *Spiraea*.

At 7:30 P.M. the first vessel came in with herring from Mt Desert rock. Bought 2 bushels fresh, and started taking scales + data at once. Continued until 11:30 P.M., when 1 bushel was finished.

June 12. Foggy + variable, clearing later with sunnells. Worked on scales 7:30 Am, finishing at noon. P.M. overhauling taws + general cleaning up of odds + ends.

June 13 Sunday. Decided to forget herring for one day. Went in launch to N.E. Harbor, and walked thence by Hadlock Pond + Sargent Ridge, to top of Sargent Mountain, Sargent <sup>Pond</sup>~~Lake~~, Jordan Mt., Jordan Pond, Cuticor + back by same route. A fine day, + magnificent views. Pair of eagles at Jordans Pond. Cliff swallows nesting at N.E. Harbor. Many frogs up in Sargent Pond - how did they get there?

June 14 Left S.W. Harbor 4:30 Am. Cloudy + no wind.

Sample 18. June 11. Seine. Mt Desert Rock. Examined fresh:

	Scales	Extras, scaled 25 cm.	Total
30 cm.	3 ✓	1	4
31 "	7 ✓	5	12
32 "	12 ✓	9	21
33 "	29 ✓	14	43
34 "	42 ✓	17	59
35 "	37 ✓	4	41
36 "	24 ✓	2	26
37 "	19 ✓		19
38 "	18 ✓		18
39 "	9 ✓		9
	200	55	255

Additional data on badly scaled fish.

33 cm.	315 grams	♀	+	3
34	325	♂	+	2½
32	285	♀	+	2
32	275	♂	m	2
35	375	♂	+	2
34	345	♂	+	2
34	320	♂	1	3½
34	340	♀	+	2
33	305	♀	1	2
33	320	♂	m	2½
34	300	♂	+	2
33	305	♀	m	2
31	270	♂	+	3
33	290	♂	+	2½
34	335	♂	+	2
36	380	♀	+	2

31	<del>cm.</del>	290	grams.	♂	+	4
33		305		♀	m	2
34		340		♂	+	4
32		250		♀	m	2
35		340		♀	+	3
33		275		♀	+	2
30		230		♂	+	2
31		250		♀	+	2
34		350		♂	m	2½
33		290		♀	1	2
32		260		♀	m	3
31		270		♂	+	2
34		320		♀	+	2½
31		275		♀	m	2
25		145		♂	m	1
29		215		♂	+	4
36		345		♀	1	3
35		370		♂	+	3
34		335		♀	+	2
32		255		♂	+	1
33		280		♀	1	2
33		315		♀	+	3
33		325		♀	+	3
34		340		♀	+	2
34		305		♀	+	2
29		195		♂	+	3
34		335		♀	+	3
32		275		♀	+	2
33		305		♀	1	3
35		340		♀	1	3
34		325		♂	+	2
32		270		♀	+	3
32		285		♀	m	2
34		325		♂	+	3

34	cm.	315	grams.	♂	+	3
33	"	300	"	♂	m	2½
33	"	305		♂	m	3
34		340		♂	+	4
32		290		♂	+	3½

The foregoing 285 fish filled 2 bushel baskets.

6.30 Am. Made Sta 10285 off Duck Island.

9.30 " " 10286 5 miles W. from Mt Desert Rock  
5.00 P.M. " " 10287 2 " S. - Matinicus Rock

Thick fog most of the day and all night.

June 15 Arrived Boothbay Harbor 9.30 Am. Fog, rain, + easterty blow. Too dark to work on scales in laboratory. Went ashore + saw Capt. Nelson. He states that no ~~herring~~ herring have come in here since June 5<sup>th</sup>; that the school is now between Wood Id. + Cape Porpoise. He does not expect herring here ~~till~~ until July, when they ought to arrive at Monhegan. Already has 1300 barrels in the freezer.

Worked on scale data + correspondence in P.M. and wired Bigelow to join us to sail the 17<sup>th</sup>.

June 16 Clear + warm. Saw Capt. Hahn in Am. States the alewives are still running down out of Campbell's Creek. Has fish in aquaria in salt water. Tried to feed them with lobster fry - too sick to bother with them at first but after a while one fish made half-hearted bites at them, sometimes swallowing and sometimes rejecting them.

Telephoned E. A. Granlaw, who has traps in Sheepscot R. Says very few sardine herring now, but small but very abundant.

at his Isle of Springs weir. Too small for his mesh, they swarm at low water. Says possible to dip them with hands at times.

On the fish wharf are a few mackerel, full of hard spawn, taken in traps today in Damisore River. First few taken there June 13<sup>th</sup>.

Sent Capt Hahn the 100 ft seine to fish for his aquarium with.

At 4.20 P.M., bright, sunny, warm, water 58° in West Harbor, a great swarm of aurelia, almost solid, alongside. Went under the vessel & came up the other side. Average diameter about 4 to 5 inches.

At 6 P.M. took launch up Sheepscot River in search of brit in the weirs, without success.

June 17 Fog & heavy showers. 7<sup>15</sup> AM took launch up Sheepscot River. Examined several weirs for brit, without success. Took temperature (57°) & water sample. Finally in weir on west side Isle of Springs (Sweet Id.) found a weir full of brit. Two or three dips of a shrimp net gave a large sample Sample 19. (Took some alive to hatchery)

In P.M. took 100 ft seine, with some of our men & some of Capt Hahn's, into Campbell's Creek pond to get stuff for the aquarium at the hatchery. Made 2 hauls with difficulty - resulting in about 60 alewives, 3 1.m. black bass, about a dozen white suckers, and three eels. Took some eggs from 2 or 3 ripe alewives, & fertilized them for the hatchery. Practically all of these fish were spent. In addition to what we caught, the pond is stated on good authority to contain salmon & white perch, & some trout.

At the fish wharf at Boothbay saw a few very large mackerel from traps in Damisore, also a few shad from traps at Small Point. The mackerel were still hard, shad all spent.

Some small pollack were brought in by a seiner today.

but many small seines are tied up. The herring which were between Wood Id & Cape Porpoise seem to have disappeared.

Hardly any sardine herring being taken here, and nearly all the weirs are idle.

At 5.30 P.M. Dr. Bigelow arrived. Thick fog outside, & decided to wait till morning.

June 18. Clear & warm, light shifting airs. Fog lifting somewhat. Sent Capt Hahn out 100 ft seine. Under way for Shelburne at 8.30 A.M. Wind headed us & fog came in again - put back - went out again about 10 A.M.

Sample 19. Brit herring dipped in weir in Sheepscot R. west side Sweet Id. These fish are all 1914 fish.

June 17. Time.	Length 1 <sup>st</sup> winter (approx.)	Number.	Length 1 <sup>st</sup> winter	Number
49		1	67	27
50			68	18
51			69	20
52			70	38
53		1	71	41
54		1	72	43
55		2	73	34
56		1	74	34
57		3	75	38
58		3	76	43
59		5	77	37
60		7	78	20
61		10	79	9
62	3.2 to 4.5	13	80	16
63		12	81	14
64		18	82	11
65		24	83	14
66		24	84	7
		115		579 (con't)

june 17	579	June 17	611
85	8	92	611
86	6	93	0
87	4	94	0
88	4	95	2
89	3	96	1
90	4	97	1
91	3		
	611		
	4		

Worked on scales in laboratory, on herring samples #6 + 19  
Fog mostly, during the day + night.

June 19. Made stations 10288, 2.30 A.M., 10289, 11 A.M., + 10290, 6 P.M. Fog mostly during the day. Several large sharks seen on surface. Blake reports seeing several Physalia. Worked on scales in laboratory, between stations.

### Sunday

June 20 Thick fog, vessel groping for Shelburne Harbor. Worked on scales all morning.

At 2 P.M. picked up Cape Negro whistling buoy, and at 4 P.M. came to an anchor at Sand Point.

Went ashore after supper + saw Mr. Thorburn + Mr. Swim, the latter having two traps at Lockport. Thorburn says nothing here now but a very few medium to small herring, fat. None being taken in this place. Expect a run of large herring in latter part of July + in August. Swim corroborates this.

Arranged with Swim to ship 2 bushels of herring from his traps to Shelburne for us tomorrow. No spring-spawners are known of in this region. Swim stated that some large sea-herring are netted by vessels off-shore in May + June + used by them as bait - but these fish never come in shore. They are netted mostly in the gullies, between the banks, never in large numbers.

June 21 Fog + showers. Worked on scales. At 9 P.M. received barrel of herring from Swin Bros., Lockport, taken them in a weir this morning. These fish were very badly scaled, but managed to get a sample of 125 fish - Sample 20. Finished taking scales 11 P.M.

June 22. Blowing a gale from the North. Could make no stations if we did go out, so stayed at Shelburne.

Sample 20. Herring from weir, Lockport U.S. June 21<sup>st</sup> purchased iced. About 2 bushels, most of the fish with no scales at all. The <sup>great</sup> majority were between 21 + 25 cm. Scales taken from all that had any, so sample represents mostly the larger fish.

cm.	number	Nothing in stomachs - most the fish <u>very</u> fat. Many <u>advanced males</u> very few advanced females.
20	1	
21	4	
22	6	
23	4	
24	7	
25	8	
26	14	
27	16	
28	13	
29	16	
30	18	
31	10	
32	7	
34	1	
	Total 125	

Worked on scales in P.M. In A.M. went ashore, + watched men dipping for salmon in Shelburne River where it flows into the harbor. Very few fish taken this way, as there are 20 or more gill-nets in the head of the harbor + the fish have no chance. Alewife season just over. Blue-backs expected soon

- June 23. Left Shilburne 7 A.M., clear with W. wind, to make stations on line SE to drift water. Made stations 10291, 10292, 10293, 10294.  
At dusk sighted an English cruiser.
- June 24. Made stations 10295, 10296, the first in 1000 fathoms at 3 A.M., the second on Browns Bank at 6 P.M.
- June 25. Made stations 10291 (Eastern Channel) 12.15 A.M., and 10298 at 3 P.M. Clear, warm & fine, with light SW breeze. Saw 5 finback whales today. They were evidently feeding - would blow five to ten times 15 to 20 seconds apart, & then go below for about three minutes. At Sta 10298, the conditions being perfect, went out in dory & took 12 photographs of the vessel at several distances & from several angles.
- June 26. Made Sta. 10299 at 6 A.M. Saw many finback whales in the general neighborhood of Jeffries Sedge. One school of about 20, and many scattering individuals. Arrived at Gloucester 5 P.M. Dr. Bigelow went home.
- June 27. Sunday. At Gloucester. The Gloucester station has secured a small number of mackerel eggs (one hatching box) from the trap at Straitsmouth June 24<sup>th</sup>. Large bodies of herring are reported on Georges Bank by incoming fishermen. The catch of mackerel on the Cape Shore, (N.S.) is unprecedented, some of the vessels making three successive trips, and several two trips, whereas one trip is the rule.
- June 28. Secured a number of eggs and just-hatched mackerel from the station. Eggs about 1 mm in diameter, and newly hatched fish about 3 mm., and very delicate. Pigment of young all black, excepting a patch on rear of eyeball and back of eye, which is chrome yellow. Oil-globule colorless, with few star-like pigment spots. Made sketches. Had several visitors from Bass Rocks in the morning, all of whom appeared much interested.  
Went up to Boston in the P.M. for a day's leave.
- June 29. On leave. Returned to Gloucester 7 P.M. The station has been unable to obtain any more mackerel eggs, tho' visits have been made daily to the traps.
- June 30. At Gloucester. Packing up plankton & water-samples for Dr. Bigelow. Also mounted a series of scales for him to show Dr. Hjort.
- A few mackerel eggs were obtained today from Rockport traps. The catch of fish in these traps fluctuates considerably, large quantities of mackerel and silver-hake being taken at times, and on other days very few. A few blue fish have been taken recently, the males ripe, but females still hard. One spawntaker (John Benkstetius) visits them daily, while the hatchery launch goes to the trap at Magnolia.
- July 1. At Gloucester - pouring rain all day, the record rainfall for this region. Impossible to work in laboratory, and practically impossible to work outside. Got some mackerel eggs and sketched them under difficulties. Impossible to work on scales.
- July 2. Got some mackerel eggs, & made measurements and sketches, under difficulties, as it was almost dark in the laboratory. Still pouring rain. Dr. Bigelow came down for the day to look things over. Impossible to work on scales. Took water sample at Hatchery intake, to find out effect of the

unprecedented rainfall.

Rec'd letter from Radcliffe regretting that he could not come this trip. In the afternoon Mr. Oliver Perry of N.Y. turned up and made inquiries about the scientific work of the Bureau. It seems he has a leaning in that direction and is much interested. As we will have a spare bunk this trip, I asked him to come along for awhile and see for himself, an offer which he accepted.

July 3<sup>rd</sup> Received sample of Herring (salted) from St. Mary's Bay U.S. This lot, No 21 was in pretty fair condition as to scales, but partly decayed inside. As they had been salted dry and squeezed a good deal they were not in condition to weigh, but all other data were obtained.

July 4<sup>th</sup> Sunday - the first really clear day, took a day off.

July 5<sup>th</sup> Legal Holiday. Worked on Mackerel eggs and herring scales in the morning. Mr. Perry arrived in the afternoon.

July 6<sup>th</sup> Getting ready for sea. As the men's (temporary) pay had not arrived, decided to wait for last mail. In consultation with the Captain, it was then decided to sail next morning at daylight.

July 7<sup>th</sup> Sailed for Provincetown at 4 A.M., arriving there 12.30 P.M. Station 10300 was ~~sit~~ made 1 mile off Race Point. At this station large numbers of lawal fishes - cod, merluccius, *Glyptocephalus* and two other flounders, with a few sculpins, were taken in the bottom net mounted on trawl-runners.

The squid are now abundant in the west corner of Provincetown harbor, and numerous boats were clustered there in a close bunch, jigging them. Large numbers are also taken in the traps at this point.

Went ashore and called on the manager of the Fishermen's freezer. He states, as does everyone about the wharves, that no herring, not even a scattering few, are being taken in the traps here. The blue-backs have been running sparsely for about two weeks, - these are caught by the purse-seiners, who are also bringing in some mackerel. The blue-backs are stated to be poor both in size and condition, and many barrels are daily dumped for lack of a market. Later, when larger fish are expected, they will be frozen for bait.

*Merluccius* is still running abundantly, but the freezers have all they want now, and all these fish, amounting to hundreds of barrels daily, are dumped at the traps.

A good many butterfish are being taken in the traps.

The shad run appeared at Provincetown this year on June 14<sup>th</sup> (one day later than last year) and lasted for 4 days. They were poor in size. The catch was frozen, and is shipped largely to Philadelphia for smoking.

There appears to be no doubt that this annual large body of shad moves north around Cape Cod in a very few days, then appears at Gloucester, and thence along the coast to the Desert Rock. These fish ~~must~~ be from the Western rivers. At Provincetown they are taken in the outside traps, - further up they are mostly seined. This shad fishing has only been carried on for about 7 years.

The time of appearance at Provincetown is extremely regular.

Purchased a bushel of blue-backs, and arranged for other fish in the morning.

Hundreds of *Carey* hens are feeding on oil which rises from fish dumped in the harbor.

At least eight seiners made a harbor here tonight, and several vessels are baiting up.

July

8. Received fish and left Provincetown 8 A.M.

Sample of Blue-back. (*P. aestivalis*) Seine, Provincetown  
July 7<sup>th</sup>. This sample was very badly scaled, so  
only a few were preserved. There are small blue backs,  
and are in separate schools from the large blue backs, which  
come later in the season. They are very fat, full of  
red-flesh, and the organs are either recovered spent or  
advanced immature fish. Recorded as stage 2.

22 cm.	2
23	1
24	10
25	44
26	66
27	54
28	13
29	4
30	0
31	1

195 fish about filled 1 bushel basket.

Weights - 22 cm. 115 grams.

(Extra) ~~20~~ 20-cm., 180-180-160-160 grams26 " 220-210-200-190-190-180-180-190  
180-210-190-190

27 cm. 210-190-190-220-200-210-200-

28 " 230-230-

29 " 245-

The season for blue backs here begins about June 20 &  
lasts until September, the ~~s~~ schools being composed of  
larger fish later in the season.

21 scale sampler  
Tatian -

2 Bushels fish were obtained from one of the outside traps, through  
the kindness of the manager of the Fishermen's Freezer.  
These comprised 137 *Merluccius*, 133 ♀ and 4 ♂  
1 shad (scales saved,) (82) A.  
1 squirrel-hake ♀ not ripe  
15 hakes (*P. pseudoharengus*) a few recently spent, the others fat.

The *Merluccius* ran as follows:-

♀

32 cm.	5
33	5
34	17
35-	14
36	12
37	19
38	21
39	10
40	9
41	8
42	4
43	4
44	1
45-	2
46	1
47	0
48	1

♂ mature  
30 cm 1, 20-cm, 1  
♂ immature (?) 30 cm 1, 27 cm 1.

The majority of these females were  
spent, or partly spent, but a number  
were still ripe, — some with many  
~~ripe~~ ripe eggs appearing scattered through  
the ripe mass.

Most of the stomachs of these fish  
were gorged with Ammodytes, and  
two, 46 and 43 cm. long respectively,  
had swallowed whole squids.

Twenty-seven fish contained approximately  
400 Ammodytes, an average of about  
15 to a fish.

We left Provincetown with a good fair breeze, which increased  
to a gale in the night, with tremendous down-pour of  
rain. After supper the mainsail was furled + riding  
sail set, but even this was too much, and most of  
the night the vessel was hove to under the foresail.  
Barometer went down to 29.12

July 9. Came in clear with N.W. wind, still blowing hard. At 9 A.M. sighted Sequin Id. Too rough to work in laboratory.

The only gear lost in the blow was the boat-boom, but the laboratory and engine-room were drenched through leaky hatches. Nothing of consequence smashed in the laboratory, but every-thing pretty wet and sloppy. It was decided to make as good a run to the eastward today as possible, and put in for a dry-out and rest over Sunday. After a very good days run, averaging 10.3 knots for 9 hours, arrived at Winter Harbor at 8 P.M.

July 10 This day was spent in drying out, a process that was badly needed. Overhauled and oiled up laboratory gear, instruments etc.

July 11 Sunday. No work.

July 12 Left Winter Harbor 6 A.M. for Cutts. Working on scales. Arrived Cutts 1 P.M., fog closing up outside. Went ashore in P.M. and talked with the fishermen. They report many schools of large herring on Grand Manan Bank during the latter half of ~~late~~ June, that these fish were full of spawn and milt, and that they believe them to have worked to the eastward, to spawn on Grand Manan etc.

The handliners from here always try to locate the herring spawning grounds, for there they get cod and mixed fish eating the spawn. Spawning herring are found in this region in scattered spots and times in July and August, but mostly in September, when most of the hook-caught fish are full of their eggs when taken. These spawning spots are sand bottom, as far off shore at times as Mackerel Seal Id - Bull Rock, and are found by examination of fish stomachs for herring-spawn.

Cod + haddock have two runs in Grand Manan

Channel, one in Spring & early Summer, and one in the fall. In midsummer few fish are taken.

The herring weirs here have done very little - mostly large mustards (2 1/2 year fish). Hardly enough have been taken to supply the demand for bait, locally. A few large herring occasionally stray into the traps.

A few large spawn-mackerel have been taken in the weirs recently, but no body of fish has appeared, the mackerel, when they do come, usually appearing in late summer.

Gill nets — good places to set nets anywhere between the heads in this region.

July 13<sup>th</sup> Went to weir 4.30 A.M., but no fish in it + owner decided not to haul. Rowed to western head of lab. + found a little hand-line hauling gill net. Very few fish, and though he wanted them for bait, I managed to persuade him to part with them for 50 cents (no voucher). This is lot 22, Cutts Hh. gill net, entire catch, examined fresh. The <sup>some of</sup> organs of these fish puzzled me, + some entered as stage 3 may be spent fish. 2 1/8 inch gill net.

27 cm.	4
28 "	1
29 "	7
30 "	11
31 "	11
32 "	7
33 "	1
	42 Total.

This is a small sample, but a very good one (according to the fishermen) of the herring that spawn inshore here.

Bait was so scarce at Cutler today that several boats left for Davis Beach, Spragues Neck, Machias Bay, where a good body of fairly large (like lot 22) herring have been "hanging" for some weeks. Then they are taken in weirs. Waited an hour after these boats should have returned, but as there was no use waiting longer, sailed for Eastport at 7.30 AM. Clear along shore, but thick fog outside. N.W. air, very light.

A Sebastodes taken in the herring-net was so peculiarly colored that it was preserved - see tin-tags.

Arrived Eastport 11 AM, went ashore and got mail. In P.M. saw Messrs. Hume, Capt. Mitchell, + Mr. Stanley, Mr. Wickerson's partner. Things are very dull.

Capt. Mitchell says only 59 hogsheads of sardine herring today, as compared with 500 hogsheads received when the Seacoast is doing full time. It is the regular July slump.

Talked to several run-boat captains, who all say that they have recently (last week) seen large shoals of herring "not over 2 inches" in the weirs.

A few large herring "ripe" being taken at Grand Manan, + large schools of Sardine herring on Eastern shore of Bay Fundy, (Digby etc). These last are not in very good shape when brought here in warm weather, so the canners are not buying them.

Arranged for sample of sardines tomorrow morning.

No large herring being brought here.

The crew fished at the anchorage, and caught enough small cod + haddock for supper.

July 14 Went ashore 7.30 AM + obtained Sample 23 from a run-boat of the Seacoast Co. These fish, 2 buckets full, came from weirs in Bliss Harbor N.B. (W. side Bay + Fundy E of Campobello). Slightly salted, but plumped out again by soaking. Nearly all mustards. These were very blue fish, which are supposed here to be recent arrivals from open water. Badly scaled. Taken July 14.

Scales data:	Length (from data)	Data - included in "length" count
	21 cm. 70 g. ♀	sex fat sex org.
12 cm.	2	
13 "	1	
14 "	5	
15 "	1	
16 "	6	
17 "	5	
18 "	5	
19 "	1	
20 "	1	
21 "	8	
22 "	12	
23 "	10	
24 "	8	
25 "	6	
26 "	3	
27 "		16 2
28 "		
29 "	2	
30 "		
31 "		
32 "		
Totals	$\frac{1}{52} + \frac{1}{62} = 214$	

After again consulting Capt Mitchell & Mr. Stickney (of Wickerson's firm) I ordered  $\frac{1}{2}$  barrel of spawning herring, salted, with data, from Grand Manan, which Mr. Stickney kindly promised to try to get for me. Mr. S. having inquired about scallops W. from Soddy Head, we made three trials with the dredge on the way from Eastport to Cutler, finding an abundance of old shells, but only a very few small live scallops.

Left Eastport 11 Am. Came out through Sabine Narrows, and arrived at Cutler 4 P.M. after dredging for scallops off Jim's Head with little success. Working all day on Sample 23.

At 7 P.M. set four nets,  $3 - 2\frac{1}{2}$  inch + 1-3 inch, in a little cove in the W. side of W. entrance to Cutler Hr., anchoring them in a single string from the rocks to a ledge, & marking them with 2 flags & a keg.

Many small pollock jumping in the harbor at dusk. Looked into weir, but nothing appeared to be there but a small lot of small herring.

at Cutler.

July 15 Took up gill-nets 4.30 Am. A few small harbor pollock and one herring were the total catch. Weir not fished today, nothing of any account in it. Every body here says no herring. 5.30 Am hove up anchor & proceeded to Davis' Beach, Spragues Neck, Machias Bay, where are three weirs that have done unusually well until very recently. Anchored off Spragues Neck & went to weirs in launch, - nobody about. Spoke run-boat from Machiasport - Capt. says no herring here now - he was going for a load of wood. Says the weir at head of Little Kennebeck Bay is getting sardine herring now, fishing both tides. Does not know about Pigeon Hill Bay.

Decided to take advantage of the only slightly foggy weather, and go to Pigeon Hill, where many weirs are reported, and where there will be an opportunity to set nets for large herring. Left Spragues Neck 8.30 Am.

Pollock (Sp. 316,) Sample B. Gill net. Cutter line. July 15. fresh. Scales + data.

22	cm	1
23		0
24		3
25		5
26		4
27		1
28		3
29		2
		19

Most of these fish had their stomachs packed with shrimp, and a few showed traces of gurny.

10 Am. Made Sta 10301 three miles SW by W from Libby Id. light. Practically no feed in water, although there were many minute copepods, probably young Calanus.

3.45 P.M. arrived in Pigeon Hill Bay & came to an anchor. Took launch & went up bay. 4 or 5 weirs in working order. Saw the owner of two of them, who said that they were taking some mixed herring in the head of the bay, and some large herring further down. The large herring have some spawners among them. Will fish in the morning. Says also that the spawning grounds of Bois Bubet, where millions of herring used to spawn, are a thing of the past.

5.30 P.M. set four nets,  $3 - 2\frac{1}{2}$  in. + 1-3 in, inside the S.W. point of Bois Bubet in 3 to 5 fathoms, low water.

July

16<sup>th</sup> Thick fog. 5.30 AM took up gill-nets - only 1 herring, 3 alewives (*pseudoharengus*) and a few harbor pollock. 7 AM. Went up to Weir, - this had just been fished, and the net had hung, causing the loss of the few herring in the wire ... The total catch was about a bushel of smelt + a bucket of small herring + flounders. Went on up towards the next weir, and met its owner coming down. He had fished, and all he had was a couple of bushels of alewives (both species), 2 small shad, and about two buckets of small fry (alewives, hake, whiting + herring). Bought a fair sample of this stuff from him, and returned to the vessel.

9 AM. set 1 - 2½ inch net across channel on bottom near vessel in 4 fathoms (low water).

Worked on scales etc all day. After lunch caught 3 large skates (hook + line from vessel) as follows:-

- 1 Raja stelliferous ♂ 143 cm total length, 94 cm across disk. answered well to description. jaws kept.
- 1 Raja diaphanes ♂ 87 cm total length. 61 cm across disk. answered well to description. One ocellus on each pectoral each side of abdomen. jaws kept
- 1 Raja diaphanes (?) ♂ 88 cm total length, 66 cm across disk. like the other, except in color. 3 ocelli on forward portion of pectoral, 1 in advance of eye, one behind eye and one a slightly greater distance, near anterior angle of pectoral, (all arranged in a row near margin) One ocellus opposite abdomen, with 2 small ocelli behind it. One ocellus on ventrals at side of root of tail jaws kept.

The small clupeoids taken from Weir were placed unsorted in a 2 qt jar; the small gadoids ditto in 1 qt jar. A few of the alewives were preserved (T.T. 10530)

Samples as follows.

*Alosa sapidissima* B Scales + data 30 cm., 29 cm.

Pomolobus australis Sample B.

	Scales + data	length.
20 cm.	1	$\equiv$ 18 cm, 1.
21 "	4	
22 "	4	
23 "	2	
24 "	1	
		$\underline{12} \quad (11 + 1)$

Pomolobus pseudoharengus. C.

	Scales + data	length only.
17 cm	1	0
18 "	1	5
19 "	3	15
20 "	9	18
21 "	8	11
22 "	6	7
23 "	5	6
24 "	3	2
25 "	5	
26 "	0	
27 "	0	
28 "	0	
29 "	$\frac{2}{43}$	$\frac{64}{= 107 \text{ total.}}$

These fish had amphipods + isopods in stomach.

July 17 Thick fog. Still at Pigeon Hill Bay. ~~7:50~~  
6 Am. took in gill net - nothing whatever

6 Am. took in gill net - nothing whatever in it.  
7.30 Am. Went up bay in launch, visiting all of the eight weirs. Only one was fished today, and it contained nothing but a few alewives and small fry of various species.

The weirs here are small, old-fashioned affairs, made of stakes at least eight inches apart, and with little brush on them. It is wonderful that they serve to hold the fish at all.

Worked on scales all morning, and at 1 P.M. the fog lifted a little and we tried to get out. Had not gone a mile when it settled in thick again - turned back to previous anchorage.

At 2 P.M. started in the launch for Millbridge, to get papers, potatoes, and medicine for the engineer. Millbridge has two old canneries, falling in ruins, one 3-masted schooner on the ways, and little else. Returned to vessel 6 P.M. No use to set nets. Fog lifting a little.

Two seals and a few porpoises seen at head of bay,  
also a flock of coots, 2 fish-hawks & a blue heron.

Sunday  
Electrical storm at night, day broke clear N. W.  
Left Pigeon Hill Bay 4.30 A.M., arriving at S. W. Harbor  
7.30 A.M. Say here for Sunday. Took a day ashore myself.

July 19. 7.30 AM. Went ashore + saw Mr. Stanley at the freezer. He states that no large herring have been seen or seized in this region, or around Mt Desert Rock, since the first of July. No large herring being taken anywhere on the coast. A few sardine herring now coming to the cannery here from Blue Hill Bay, with occasionally a few medium herring among them.

Shad are expected around Mt Desert Rock about August 1<sup>st</sup>. The run of shad here is usually at its height for two or three weeks, but shad are occasionally taken for two months — this refers to school shad that can be seined. These fish are frozen at SW. Harbor & go to Philadelphia buyers. (3 car-loads asked for already), at prices in the neighborhood of 5 cents per lb. Every thing very dull in the fish line here.

8.30 Am Left S.W. Harbor.

10.30 A.M. Made Sta 10302 1 mile off Duck Id (swat).  
No feed in water, but swarms of diatoms + minute copepods,  
with many fish-eggs.

3.30 P.M. Arrived at Kent Cove, Fox Id. Thorofare, & anchored. Went in launch to North Haven, to inquire about herring. Talked to H. P. Stone (weir owner) on the phone. He has been getting some sardine herring right along. Says now mostly fish 6 inches, with many very small ones. Will fish weir in morning. Arranged to get fish at weir.

6 P.M. set 3 - 2½ inch nets, in Kent Cove, on bottom.

6.30 " rowed over to Stone's Win. It appeared to be full of trout, with some larger fish.

July 20 6 AM. Raised the gill nets - total catch 10 keyacks (*pseudoharengus*) and 6 *Mesoclinus*, and 1 shad.

8 Am. Went to Stones weirs - the eastern one had 60 bushels fine oil sardine herring, very uniform in size, with a scattering of medium fish - no bit. Also 3 or 4 tinker mackerel, 15 or 20 small pollack, a few muluccius, and a few flounders, also about 10 squid.  
The western weir had only about 5 bushels, mostly bit

With a few medium fish, I had a few tinker & a few merluccius & flounders. Took samples from both weirs, which is Sample 24. Examined fresh

Scales	Length.	Total
8	5	5
9	70	70
10	78	78
11	14	15
12	1	1
13	1	1
14	87	94
15	72	82
16	35	42
17	15	18
18	8	8
19	5	5
20	3	3
21	1	1
22	1	1
23	1	1
24		
25	2	2
26	2	2
27	2	2
28	3	3
	56	378
		434

Mr. Stone has been doing very well since he started in April, but is now handicapped by low price (40 cents per bush) and is holding about 150 bushels in his pound for a rise. This looks like a combination of packers on prices, as fish are very scarce now.

The following with same data as lot 24.

Sample 334 B. Pseudoflomocetus americanus.

21 cm.	1
22	1
23	2
30	2
35	2
	8.

Also 2 small ones in alcohol.

82 C. Alosa sapidissima

42 cm.	1	gill net (jammed full of red-fish, which shows
44 cm	1	wire. / that there is some fed up the bays in spots)

80 D. Panolobus pseudoharengus

22 cm	1	Taken in gill net, & contained some
25 "	1	red-fish.
26 "	3	
27 "	2	
28 "	1	
29 "	2	
	10.	

9.30 AM proceeded to Boothbay, where we arrived 3:30 PM. About the small islands off Boothbay 14th. were passed a number of small seiners, most of them busy catching "blue backs" (according to Capt. Nelson of the freezer).

Went ashore to get mail & make inquiries. Capt. Nelson says that there was a small run of shad here, of inferior size & quality, beginning June 20<sup>th</sup> & lasting a few days. No shad being seen now. "Blue backs" now coming to the freezer. The expected school of herring at Monhegan has not yet appeared.

July

21 Went to Hatchery 8 Am + saw Capt Hahn + his aquarium.

8.30 Am. Went to foot of dam of alewife pond in Campbell's Creek, + secured a large sample of the young alewives (*P. pseudoharengus*) that have been washed out of pond by the recent freshets, and are trying vainly to get back again, - keeping in the fresh water at foot of outlet, on the surface. Capt Hahn has kept many of these fry for 4 days in salt water, without apparent harm to them, but in nature they are trying hard to get back to fresh water.

Went ashore to freezer, at 10 Am, + bought a basket of frozen bluebacks, Sample C, Species 81. seized off Boothbay Harbor July 20<sup>th</sup>, frozen. Badly scaled.

	Scales	Length + wt.
22	cm	1 110g.
23		
24	1	
25	1	5 145, 175, 165, 170, 175
26	3	11 175, 185, 180, 195, 205, 205, 200, 200, 200, 195, 185
27	7	9, 175, 205, 205, 190, 215, 220, 215, 190, 210.
28	2	3 255, 240, 245
29	5	
30	3	1 280
31	6	
32	5	
33	5	
34	2.	
40		30 = 70 total.

At 1 P.M. went up Sheepscot R. in launch. Suspected several weirs, and saw nothing but this year's drift in them; very few weirs now being fished, as the herring are too small for sardines.

3 P.M. went ashore to see if any fish had come in - nothing today as yet. Capt. Nelson says the blue-backs struck here July 18<sup>th</sup>, + the butterfish today. The bluebacks are now mixed sizes - later they will be mostly large.

6 P.M. went ashore again - no fish today. Arranged with Capt. Nelson to keep me a barrel of Monhegan herring should they appear.

The west harbor is full of small pollack jumping. Received polarizer for microscope.

July 22 Day broke with thick fog. 4 Am. Went out in dory with fly-rod to try the small pollack - jumping all around, but would not notice a fly.

6 Am, fog lifting, up to + left for Kittery Point. Worked on scales all morning - the polarizer is a great improvement.

4.30 P.M. reached Kittery + came to J. Went ashore + made inquiries. No traps in operation. Probably 2 or 3 in September.

July 23 Left Kittery 8 Am. Off Rye Beach towed 8 ft. net, getting numerous small fishes, mostly cunner. In Ipswich Bay made a short surface tow with ½ meter net - many fish-eggs, probably butterfish. 4 P.M. arrived at Gloucester + tied up at wharf.

A new cylinder head + carburetor must be obtained, also new boat-boom + deck steps.

July 24. Perry left for Ogunquit Me. Obtained samples of Butter-fish eggs + just-hatched young from the hatchery. The eggs are very similar to Mackerel, but average 1 mm smaller, and lack the yellow pigment in head of embryo. The embryo + newly hatched young is also much shorter and deeper than the mackerel.

Traps at Sockport, N.S. report large catches large herring.

- July 25 Sunday Took a day off.
- " 26 Went up to Boston to see Dr. Bigelow about future plans. He had just returned from a visit to Dr. Hjort at Souris P.E.I., and brought with him some mounted Norway herring scales for comparison with the Maine scales. They are much easier of interpretation. Also brought a number of young fish for identification. Decided to make next trip, as soon as possible, to Boothbay, Shelburne, Eastport & back along the coast, trying to arrive in Gloucester early in the last week of August, in order to see Dr. Hjort before his departure for Norway.
- July 27 Remained in Boston, taking one day's leave, and returning to Gloucester in the P.M.
- July 28 Worked on Dr. Hjort's young fish. Had little material or data to go by, so made only provisional identification.
- July 29 Overhauled instruments + laboratory stuff. Sent 4 f. to Dr. Hjort. Worked on scales. Crew getting ready for sea. Cylinder head being fitted.
- July 30 Calm + thick fog all day. No use going out. Worked on scales. Ready to start the moment possible.
- July 31 Saturday Fog lifting somewhat, left Gloucester 8 AM. Light head winds, heavy showers + thunder squalls. Too dark to work in lab. Arrived Kittery Point 2 PM, fog closing in.
- Aug 1 Sunday. Thick fog + calm, with occasional light easterly airs. No use to go out.

- Aug 2. Thick fog + light easterly airs. About 2 P.M., fog lifting somewhat, ~~#~~ left Kittery Point for Boothbay. Heavy rains in P.M. Off Cape Elizabeth things cleared up, with gentle N.E. Breeze. Several sunfish seen.
- Aug 3. Arrived Boothbay Morn. 7 AM. Clear + bright, with fresh N.E. breeze, shifting to E + S.E. 8 AM. Went ashore + saw Capt Nelson. The first herring (large) brought in since the stamp, were seized at Monhegan yesterday. They were mixed with about an equal number of large blue-backs (*P. aestivalis*). Bought a bushel of herring and a few of the blue-backs, fresh.
- Sample 25. Monhegan, Aug 2. seine. fresh. (about <sup>60 bbls</sup> ~~half + half~~).
- |       |             |
|-------|-------------|
| 30 cm | 2           |
| 31 "  | 12          |
| 32 "  | 20          |
| 33 "  | 26          |
| 34 "  | 12          |
| 35 "  | 10          |
| 36 "  | 6           |
| 37 "  | 8           |
| 38 "  | 6           |
|       | <u>102.</u> |
- This sample contained a little red-fish, and was in very good condition. Organs approaching maturity. A number of the fish preserved in alcohol.
- Pomolobus aestivalis Sp. & 1 Sample D. Same data as above. These fish had all recovered from spawning, and were very fat. Contained a little red-fish. Several preserved.
- |       |            |
|-------|------------|
| 26 cm | 1          |
| 27 "  | 0          |
| 28 "  | 2          |
| 29 "  | 4          |
| 30 "  | 2          |
| 31 "  | 11         |
| 32 "  | 7          |
| 33 "  | 1          |
|       | <u>28.</u> |

Taking scales till 3 P.M. Then went to hatchery & looked over aquarium. Collection very good indeed, and in good condition. Following species represented:

<i>Clupea harengus</i>	Young	many
<i>Pomolobus pseudoharengus</i>	young + adult	"
<i>Anguilla</i>	adult	3
<i>Fundulus heteroclitus</i>	#	many. Adult
<i>Syngnathus</i>	#	2. Adult
<i>Osmurus mordax</i>	"	a few. Adult
Stickleback	"	many, young + adult
<i>Tautogolabrus adspersus</i>	"	young + adult
<i>Prionotus</i>	2	adult.
<i>Myoxocephalus</i> .	several	"
		3 "
		2 adult. (splendid specimens)
<i>Hemitripterus americanus</i>	several	" " "
Zoarces	3	"
<i>Pholis gunnelles</i>	many, young + adult	
<i>Cylopterus lumpus</i>	"	young
<i>Pollachius virens</i>	few	"
<i>Gadus callarias</i>	few	adult + young
<i>Microgadus tomcod</i>	young. many.	
<i>Urophycis</i> (2 sp?)	Young + adult	many.
<i>Pseudoflenuroides</i>	2 adult (one very large)	
<i>Sophopsetta</i>	a few young	
<i>Glyptocephalus</i>	1 small.	

There have been a few dog-fish, but they do not live well.

Also a representative series of sea-archins, sand dollars, sea cucumbers, starfish, gorgonians, & sea anemones, scallops, clams, quahogs, mussels, lobsters & crabs.

Many people come, and show great interest, the attendance sometimes reaching several hundred a day. The local ferry-boats all stop at the hatchery, and advertise it.

Altogether Capt Hahn has worked out the scheme excellently with the few tanks at his disposal, and the exhibit forms an excellent publicity scheme at ridiculously low cost.

4 P.M. Went to foot of dam at Campbell's Cr. and got sample of young alewives (*P. pseudoharengus*) where they were trying to get back to fresh water after being flooded out.

Capt Nelson says the shad are almost a complete failure this year. The herring have so far, since the slump, only turned up at Monhegan, and as yet only one catch from there. Traps at Rockport, Shelburne & Phippsburg are doing well on large herring.

Aug 4<sup>th</sup> Sight airs dead ahead. Went ashore & saw Capt. Nelson - no receipts yesterday - one lot of large mackerel this morning. Went to dam & got a few more young alewives. At 10 AM. decided to take a chance and get out for Shelburne.

12.30 P.M. made Sta 10303 off Monhegan gas buoy in 44 fathoms. Plenty of Calanus, and myriads of fish eggs (Hake?). Also abundant dictors, though not a swarm.

In the P.M. the weather began to look very squally, and as we had made no headway to speak of, decided to go to Port Clyde, where we arrived 5.30 P.M. Heavy rain & calm.

Five seiners came in without a fish, although all had made sets, and some had made several. They all report herring, but so wild that they cannot catch them. No herring brought in to this fisher for weeks.

This indicates that the herring have returned with the feed, but that the feed is not yet abundant enough to make them logy, or else that the approach of the

spawning period has an effect upon the schooling.

During the night N.E. gale with heavy rain.

Aug 5<sup>th</sup> N.E. blow + rain continued most of the day.  
At 6 P.M. wind backed to North. Not a boat went out from Cutty. Too dark to work in laboratory.  
Waiting for a chance to get to Shelburne.

Aug 6 Wind still E.N.E., but clear. Left <sup>Port Clyde</sup> ~~Cutter~~ 4.30 A.M.  
A dead boat, wind shifting to E.

8 AM made surface tow, 1/2 m. net, 1/2 miles NE from Wooden Ball Id., 10 minutes skittering at 5 miles per hr. Abundant fish eggs, 5 species. Sketched them, but light + movement of vessel very bad.

Noon, well off shore. Surface tow contained nothing  
4 P.M. 30 miles S. from Mt. Desert <sup>Id.</sup>, surface tow contained only 7 green copepods. Not kept. (skittering, 5 miles per hr, 1 ft net).  
Sorted tow in P.M.

7 P.M. Surface tow (Skittering, 5 mph, 1 ft net) 21 miles SE by S of Mt. Desert Rock. Contained 2 young hake (quite large) and numerous Calanus.

11.15 P.M. to

Aug 7 At 1.45 AM made Sta 10304 in 120 fath = 219 m.  
Rich Calanus hauls at surface.

After this the weather broke up with rain, wind heading us all the time. Kept on beating, hoping for a chance to get around the cape. About noon made landfall which proved to be about 10 miles N. of Yarmouth. Nothing to do but go in there, where we anchored at 4 P.M. Went ashore immediately and telephoned to John Thorburn at Sand Point, for a barrel of herring salted, to be shipped to Yarmouth by rail. Thorburn said nothing doing until Monday or perhaps Tuesday, as all the traps were tied up on account of the weather. No train on Sunday.

Decided to go to Shelburne by rail on Monday morning, find out about herring situation, and, if possible get back Monday night with the herring sample. All the luck seems to be against us this trip.

8 P.M. Wind + rain subsiding, fog closing up outside.

Aug 8 Sunday. Thick fog all day. Made inquiries among the fishermen here. The herring (medium to large, almost ready to spawn) struck the vicinity of Yarmouth the first of August. So far, this has been a poor season. Fishing is done at a trap on "the bar", and by gill-net both anchored + drifting, in the eddies along the coast, and around the rocky points.

At Shelburne the run of large herring has been very good up to the last few days. There is now a decided slump, but fish are expected until the end of September. There are 3 Gloucester vessels here for bait.

Aug 9. Thick fog + rain. At 6 AM. hailed a gill-netter coming in, and bought his entire catch, 1 barrel medium herring. Taken last night off Yarmouth Light with anchored nets. This is Sample 26, as follows.

22	cm	1
23		0
24		6
25		14
26		13
27		25
28		23
29		45
30		27
31		21
32		8
		T83

This is an exceptionally fine sample, and many were preserved in alcohol. Stomachs empty, a showing trace of red-fod. A very few spawning, most almost ready. Many fat immature.

Taking scales most of the day.

The run here is expected to last through August, spawning throughout the month.

At 4 P.M. called up Thorburn at Shelburne. He says no herring taken today, and doubtful about tomorrow. As the weather showed signs of clearing off, and we cannot afford to lose a day from the work in Maine, and waiting for Shelburne herring meant not being able to get away before Wednesday or Thursday, I cancelled the order for them. Thorburn says that he expects plenty of fish throughout September. Will try then.

5 P.M. saw the sun for about 15 minutes - then the fog closed in again.

Aug 10. Day broke with thick fog & no wind. Only a few bushels herring brought in this morning.

9 A.M. the fog sealed up a little in the harbor, and we went out, bound for Eastport. As soon as we cleared the harbor, fog shut in thick again. No wind. Proceeded under power.

Fog lifted a little at intervals in the morning.

Noon. Made surface tow 4 miles S. from Surcher Shoal. Nothing in the water, at least on the surface.

Afternoon. Fog very thick. Inadvisable to make stations, as our land-fall will be difficult enough anyhow. Going up west of Grand Manan to escape the worst tides & rocks.

4 P.M. 25 miles NNW from Surcher Shoal made surface tow. Nothing in the water. Fog lifting a little at times.

8 P.M. 8 miles SSW from Libby Id. 10 min surface tow with 1 ft net showed abundant Calanus, green copepods, pleopods & young Euthemisto. Preserved.

Midnight - becalmed in same place - no tow made

Aug 11

Day came in with thick fog & light N. breeze - and this right up under Libby Id. - it is unenvy. The fog must be made ashore, as a result of the great amount of rain recently.

4 AM, 6 miles S. from Libby Id. 10 min surface tow with 1 ft net showed some young Calanus, a few green copepods & young Euthemisto, many pteropods & a few fish eggs. 1 lumpfish. Preserved.

8 AM. Surface tow - nothing in net.

About 10.30 AM. made W. Quoddy head & came in out of a thick fog to clear weather inside. Came through Sabie Narrows & anchored at Eastport 11.15 AM.

Went ashore at once, & through the courtesy of Capt. Guilford Mitchell obtained a small but very good sample of Grand Manan breeding herring, from Weirs at Two Islands, Seal Cove, Grand Manan. These were large fish picked out at random from a run-boat load of mixed herring, mostly "mustards". Sample 27.

21	cm	1
22		
23		
24		
25		
26		
27		
28		1
29		
30		3
31		4
32		13
33		14
34		3
35		5
36		1
37		8
38		1

These fish were all about to spawn or actually spawners, in excellent condition. There were about 20 bushels of large fish in the lot. The rest were mustards & a very few oils.

Would have taken more, but no time to handle them. They ran about 100 to the bushel, fresh.

3 P.M. finished taking scales, and went ashore. Saw Wickerson, Stickney & Mitchell. Stickney & Co. had obtained from Southern Head, Grand Manan (nets) a splendid looking sample of large herring, salted (1/2 bbl). Taken July 22.

A New York party has contracted with Stickney for a large lot of Scotch (packed) herring, and sent a Scotch expert to show them how to pack. These fish are not split - only the gills & ventrals are removed. They are then kneaded about in a tub with dry salt, and packed dry in kegs, where they make their own brine. Both roe & milt fish are used entire. After a time the brine is drained off, two more tiers of fish added to replace the shrinkage, and the fish are ready for market. They are graded large medium & small. Mr. Stickney says that this is an experiment, but that he is afraid that too much & too skilled labor is necessary to make it a success.

Had a long talk with Capt. Mitchell. Results as follows: The summer slump ended about Aug. 9<sup>th</sup> when the sardines began to come in again. Today was the best day so far, Eastport & Sabec receiving about 775 hogsheads, against 500 yesterday. Price \$2.50 to \$3, sometimes \$4 per bhd. The best receipts are usually at the end of the "August Darks" which come ~~next week~~ this week. 1/2 of the receipts today came from Machias & Grand Manan. They were nearly all mustards, although some loads had as much as 4/5 ots.

Capt. Mitchell went out scouting on the nights of Aug. 4<sup>th</sup> + 5<sup>th</sup> + found, between the Wobes + Campobello + as far as W. Soddy Head, small herring solid in a body 10 miles long + 3 miles wide. These fish have been reported in the channel from time to time for a month. Is not sure just what size they are, but believes that they are brit-oils and mustards - probably mostly the former (last fall's hatch). They are also reported as thick from Sibby Id. to W. Soddy, along

the shore. Swarming now in Little Machias.

Among the sardine herring from Grand Manan (S. & E.) are many large & medium spawning fish - these are put up in round cans as fresh herring, but do not sell well.

There is trouble now getting enough oils, + a glut of mustards. Some packers are putting up mustards as oils, 4 or 5 to the can, + cut in half at that. The waste goes into fertilizer.

Today the "pure food man" ordered the dumping of 30 bhd sardines which, while fresh caught, were full of feed and insufficiently salted. This was not a seacoast factory, but an independent who tried to buy cheap and get away with it.

Quantities of the large herring are being strung & smoked in Grand Manan - there is little of this done here.

Davis Beach (Machias Bay) getting good catches sardines now, about 1/2 each oils + mustards.

August seems to be the main spawning month at the E + S shores of Grand Manan. The run at Southern Head started about July 22<sup>nd</sup> this year.

8 P.M. Several factors still at work, and the run-boats still unloaded in sight. These fish were taken at 5 to 6 A.M., but with plenty of salt they will still be good.

Aug 12. Clear, W. wind. Went ashore + got 2 samples sardine herring, through the courtesy of Capt. Mitchell. The fish brought in today, owing to warnings from the factories to the run-boat men, were smaller than yesterday's fish. No scales were taken from these samples, but all were measured, and samples of each preserved entire in alcohol. These samples were taken to get a line on the first year's growth.

Sample 28. Deer Id. Passamaquoddy Bay, Weir, Aug. 12, from run-boat, lightly salted. 2 jars preserved in alcohol. Fat, and with a little red-feed in them. This lot just filled 1 paper bucket. No scales taken.

8 cm	1
9	6
10	17
11	0
12	2
13	13
14	24
15	58
16	64
17	48
18	32
19	8
20	5
21	2
22	0
23	0
24	1
	281

This is a representative sample, just as they ran.

Sample 29. Point Sepeague, N.B. (Bay of Fundy) Weir, Aug 12. from run-boat, lightly salted. 1 jar preserved in alcohol. Fat, no feed. About 3/4 bucket. No scales taken.

8 cm	1	16 cm	19	24 cm	0
9	0	17	32	25	1
10	0	18	33	Total	148.
11	0	19	26		
12	2	20	16		
13	0	21	3		
14	5	22	0		
15	10	23	0		

A fair sample, just as they ran.

At noon, hove up anchor & went out through Lubec Narrows to Cutler, anchoring there at 3.15 P.M. Went ashore at once to make inquiries. This place has had a poor season until 3 days ago, when the sardine & mixed herring struck in heavily. Fishing both tides for the past 3 days. 7 hhd. in the outside weir this morning. Reported to be many medium & large herring among them.

6 P.M. set 3 nets near mouth of harbor, (2 3 in & 1 2 1/4 in), in from 2 to 9 fathoms (low tide) on the bottom.

The owners of the outside weir decided not to fish it tonight:

Aug 13. Came in thick fog with W. breeze & showers. Went to weir, but it was not fished, (no market) although there were plenty of herring in it, oils, mustards & some medium to large. Owner says 7 bbls spawn herring in weir yesterday. After it was decided not to fish the weir, two run-boats came in, but the tide was rising, & they soon went out.

6 AM. Went to nets & took them up. The 2 1/4 in net contained about 45 medium to large herring, - the 2 3 in nets only 7 together. The 3 in mesh is too large for these fish. Most of the fish were in the top of the net, so evidently the catch was not representative of the number of fish about.

This is Sample 30, Cutler Weir Aug 13, 2 1/4 in net. A few contained shrimp examined immediately upon being taken. A few contained shrimp, a small sample.

26 cm	1	31 cm.	18
27	2	32	10
28	2	33	7
29	3	34	1
30	7	Total	51
	15		

1 P.M. A Subee run-boat, from Bonney Pt. Chandler Bay (Jonesport) came in out of the tide with a full load. Looked them over. These fish appear to be the same, & in the same condition as to organs, as the fish here. They would run about  $1\frac{1}{2}$  to 2 bushels to the bhd of large to medium spawn fish, the rest about half & half oils & mustards.

Taking scales all evening. Too dark to work with microscope.

Went ashore in the evening and talked herring with several fishermen, including the owner of the whar. The consensus of opinion was that the herring now here, are the fish that spawn in this region, and the only ones. No large fish spawn here. This season seems to be a little later than usual, no spawning having yet been seen, but it is surely expected before Sept 1<sup>st</sup>. Occasionally seen in July.

Shore-spawning here is very irregular as to location - there seems to be no one place that is a regular spawning ground. Large runs of fish <sup>that</sup> have occasionally spawned in a certain spot, are very seldom known to spawn there again. Some years none are known to spawn alongside in this vicinity.

But off shore the case is different - spawning schools are to be found every year about the shoals & rocks inside of Machias Seal Id. - about North Rock etc - in from 20 to 22 fathoms of water. The line trawlers & hand-liners seek out these places, & always get good cod & hake fishing on them. But the areas are small, and have to be sought for every year.

A theory: - the large herring at Mt. Desert in June moved to Grand Manan Bank when the shore feed disappeared, and are the spawners that struck Southern Head, Grand Manan, about July 22. The size of the fish, and the order in which they were reported, seems to confirm this

Thickest kind of fog, with variable winds, all day, interspersed with heavy showers.

5:30 P.M. Set 5 nets in 2 strings near mouth of harbor, one in outside cove ( $2 \frac{1}{2}$ - $2\frac{1}{4}$  inch nets) on bottom in from 2 to 8 fathoms low tide, and one in inner cove ( $2 \frac{1}{4}$ - $2\frac{1}{2}$  in, and one  $1\frac{1}{2}$  in nets) on surface in same place as last night's set.

Aug 14. Thick fog. 5:30 A.M. went to nets, & got about 160 fish all told (herring). Some small pollack, jinglins, and a few Sebastodes. The  $1\frac{1}{2}$  inch net fished very well.

Sample 31 (Can be consolidated with sample 30) Cutter, wh., Aug 14. Gill net. Examined fresh. Some shrimp, & small fish fat.

17	cm	1
18	"	11
19	"	24
20	"	22
21	"	18
22	"	7
23	"	6
24	"	2
25	"	2
26	"	4
27	"	7
28	"	5
29	"	5
30	"	3
31	"	10
32	"	4
33	"	1
34	"	1
		133

In addition secured from whar. the following - (dip net) preserved in alcohol.  
16 cm 4  
17 " 4  
18 " 2  
19 " 2  
20 " 4.

The whar. here had about 10 bhd., all very uniform (16 to 20 cm). Probably some larger fish in bottom, but this was the character of the bulk. They were being held in purse-seine for run-boat.

8 Am. Went ashore & telephoned Winter Harbor to find out about weather to the westward, and was informed that the wind there was N.W. & fog clearing away.

Fog lightened a little at 9 Am, & we hove up & started west, but fog shut in again with light SW breeze dead ahead. Proceeded under power.

Working in lab. all day, taking scales etc etc.

6 P.M. Arrived Winter Harbor. It is reported that large numbers of shad are being seized in this harbor, also that there is a herring spawning ground at Bunker Harbor, on the E. side of Schoodic. Decided to spend Sunday here, and set nets on Monday.

Aug 15 Sunday. No work.

Aug 16. Foggy with N.W. breeze. A small seiner was looking for shad in the harbor all morning, without success. Ordered a bushel of shad from him, should be strike them while we are here. Found a man from Bunker Harbor, who reports large spawning herring there, - just starting the past few days. He has nets set, and says that his mesh, (2 1/2 in) is a little too small for these fish. Says the herring usually spawn there from Aug 15 to the latter part of September. Supplied all necessary information about when & how to set nets.

Sixty bbls of shad were seized in Winter Harbor last week. From all accounts they were "medium to small" fish. 2 P.M., took launch & went to Bunker Hr. with 4 nets (2 2 1/2 in + 2 3 in) and set them 2 fathoms from bottom in 8 fathoms water.

6 P.M. No shad taken today, although they are known to be in the harbor.

Midnight: A large school of shad came by the vessel, mostly well below the surface, but a few flitting.

Aug 17 5 AM went to nets and raised them. No herring in the 3 inch nets - all large mediums, and mostly in stage 5. Nearly a bushel of herring, and two bushels of Merluccius. The latter were stuffed with herring, from mustards to mediums.

Herring sample 32, Aug 17, 1915, 2 1/2 in gill nets, Bunker Harbor (Schoodic Peninsula) Me. Entire catch. Stomachs empty. Examined fresh.

25 cm	1
26	1
27	8
28	6
29	18
30	16
31	16
32	11
33	5
34	0
35	0
36	1
Total	83.

This is an excellent sample, quite similar to 30 & 31 from Cutler Me. Only 1 large fish in it. It is possible that the large fish may come later on, but the uniformity of these fish may also indicate a separate race.

Temp 53 1/2. Water sample taken.

10 AM. Arrived at Southwest Harbor; squally & ~~shaws~~ from N.W. Went ashore & saw Mr. Stanley, who states as follows: - No herring & shad coming in. Believes there are plenty of both, but the extremely bad weather, and the wildness of the shad, has prevented capture. 50 bbls shad from Winter Harbor last week - medium fish.

Plenty of large herring with well developed roe are usually taken about this time (last half August) at Mt. Desert Rock. Believes that these fish come in to spawn along the shores of Swans Id, Isle au Haut, and neighboring small islands. Has taken quantities there in 3 inch mackerel nets, and says the fish ought to be there now.

2 P.M. Squally N.W. wind increasing. Decided to lie here tonight, and go to Burnt Coat Harbor, Swan Id., tomorrow, to set nets. Sat in the day the wind moderated, and weather cleared up fine and cool from North.

Aug 18 Day came in cold, with strong NW breeze. Went ashore at Mauget & saw both Stanley brothers. Both say that the medium spawn herring are working up Blue Hill Bay to its head, mixed with the sardines.

Got details about setting nets at Marshall Id.

Purchased 2 bushels large spawn herring, frozen, which were brought in Aug 8<sup>th</sup> in a large catch. None have come in since, on account of the weather. These fish are Sample 33 and are believed to spawn at Mt. Desert Rock, and in the waters about the rock. Some red-feed in all the fish, but mostly in those whose organs are least developed.

Sample 33.

22	cm 1
23	1
24	9
25	13
26	12
27	11
28	14
29	14
30	15
31	1
	91

Note these fish practically all lacked the caudal fin, and were measured from snout to last anal ray. In a few cases where the caudal was present both measurements are given. This is a pretty fair sample, although there was probably a larger percentage of smaller fish in the total catch. These sample fish were obtained with difficulty, from the freezer pens.

9 AM., left S.W. Harbor, and at 10.30 AM made station 10305 off Great Duck Id. Red feed & fish eggs abundant — little micro.

2.30 P.M. arrived at Burnt Coat Harbor, Swan Id., and anchored. Went ashore to interview fishermen, who say herring have not yet arrived at Marshall Id. in any numbers, but ought to be there now. Nets here at Harbor Id. have done practically nothing. Little herring-fishing here now — the great schools do not seem to come to the shore to spawn as they did in former years.

This is a great Hake fishing place — the grounds are between Mt. Desert Rock & Isle au Haut. Many of the hake now being brought in contain large herring full of spawn, and it is the belief of the fishermen here that the great body of herring spawn off-shore. Those taken from the hake are pickled & used here <sup>White hake just beginning to form spawn — squirrel</sup> — <sup>hake with spawn all the year round. (Alburnus)</sup>

3.30 P.M. took launch & went to Marshall Id. with nets. Set 2 2½ in and 2 3 in nets in 4 fathoms in the sand cove, and ~~1~~ 1 2½ + 1 3 in nets in 8 fathoms a little farther out. In setting the latter the engine got out of order, & backed into the net, fouling the propeller. Had to go overboard to clear it, which was accomplished with difficulty, and much damage to the net. After drifting about for an hour, got engine started & returned to vessel, at 6.35 P.M.

Aug 19 Took up nets 5:30 AM. No large fish, all too small to gill in 3 in net. Sample 34, entire catch. The body of fish have not yet meroed in — mostly stages 4 & 5.

24	cm 1	31	cm 15
25	2	32	8
26	5	33	1
27	9	34	1
28	10		78.
29	15		
30	11		

A small sample, but an excellent one. No feed in stomachs. Examined fresh.

Sand cove, & outside of same, Marshall's Id. the,

8 Am. Left Burnt Coat Harbor, and proceeded to Kent Cove, Fox Id. Thorofare, & anchored 11.30 Am.

2 P.M. Went to North Haven in launch, & phoned Mr. Stone. Says the sardine herring have not been so plenty lately, - did not fish today & doubtful tomorrow. Has about 100 bushels in one weir. Many medium spawn herring among them.

As he was doubtful about fishing the weirs, at 5.30 P.M. set two strings of nets 2 2 1/2 + 1 1/2 in each string, one at Indian Point & 1 at S.W. end ~~is~~ Stinson's Id., in 25 to 50 feet of water, close to and parallel with the rocks.

Aug. 20. 5.30 Am, took up nets, 29 medium herring & 13 medium sprats, 1 smelt & 4 tinker mackerel.

Sample 35, Fox Id. Thorofare, Aug. 20, gill net (2 1/2 in), entire catch, examined fresh.

22 cm 1

23 1

24 2

25 0 This sample is very small, & mainly useful in showing that medium spawn herring are mixed with the sardines.

26 2 Mostly in stage 4.

27 3 With this sample go 5 2 qt jars of  
28 2 sardine herring, dipped from a lot of  
29 4 500 bushels in a neighboring weir,  
30 7 & preserved in alcohol.

31 5 Shrimp in stomachs.

32 1

33 1

$\frac{1}{29}$

Surface temp 13.1 C W.S.

5 fath " 12.9 " W.S.

*Panolobus pseudoharrangus*, Sample E. Same data as above.

24 cm	3
25 "	1
26 "	2
27 "	6
28 "	1
	13.

8 Am. several of the weir men came aboard & expressed interest in the work. Showed them scales etc.

10 Am. Went to one of Gillis' weirs (lower) in launch. He had about 500 bushels, & took out 100 bush. This weir is much troubled by seals, 40 or 50 of which live on a reef 500 yds. away. The seals enter the pound (a twin pound with chain footing) by digging under the chain. They drive the sardines into the meshes, gilling hundreds, and often forcing thousand & fish out.

This morning the seals were very noisy & quarrelsome, contending for the first bits of reef uncovered by the tide. Got a good sample of sardine here (included in sample 35).

The weirs here are just recovering from the midsummer slump, but the market is very low & uncertain.

Noon - returned to vessel & proceeded to Port Clyde, where we anchored 5:30 P.M. Taking scales from Grand Manan salt sample all P.M.

6 P.M. set 2 strings of 2 2 1/2 in. nets each. One along shore just east of the lighthouse, and one between two of the outer islands, both on bottom in about 4 to 6 fath.

Aug 21 5.30 Am. Took up nets. Entire catch, 22 medium herring. Contained a little red-fish.

Sample 37. Port Clyde, Me. Aug. 21. gill nets, Entire catch, examined fresh.

21 cm	1	
22	1	This very small sample merely
23	0	shows that the same kind of
24	2	fish are here as all along the
25	0	coast to the eastward. The body
26	0	of fish, including all the large
27	3	herring, seems to be off shore.
28	3	Most of these fish were in stage
29	5	4 or 5.
30	2	
31	5	
	22	

8.30 Am. left Port Clyde.

7.30 Am., went ashore to the freezer. The manager was away, and nobody in authority about. No herring have been received recently, and very few shad. A couple of bushels of shad came in yesterday, but I could not obtain them in the absence of the manager.

8.30 Am. left Port Clyde for Boothbay. Just East of Penaguid Pt. saw a large school of what the cook called Albacore. They appeared to be about 3 ft long. Also a large school of bluebacks, which were rather well down, - only an occasional flip. They were driving the feed, probably shrimp to the surface, and a flock of terns were scooping them up.

Arrived Boothbay Hr. 11 AM & anchored off the hatchery, to spend Sunday.

Went ashore & saw Capt. Nelson. No herring since we were last here, and practically no shad. The herring we got last time were the only ones taken at Macleagan

this season. No netting at Macleagan, and it is claimed that no fish are there. Sardine factory here opened again last week, & is working on small oils - last fall's hatch. "Acres" of large blue-backs about, and a good many coming in on the seines.

Finished taking scales from Sample 36, Southern Head, Grand Manan, 3 in gill nets, salted,  $\frac{1}{2}$  bbl. July 22.

34 cm	6
35 "	10
36 "	23
37 "	14
38 "	14
39 "	5
	72

The development of sexual organs is recorded as nearly as possible, but some of the ♂ were in bad shape. Most appeared to be in stage 5, but some in stage 6.

Aug 22 Sunday. Nothing came in today except a few butterfish & tinker mackerel. S.E. blew, with heavy showers. Too dark to work in laboratory.

Aug 23 S.W., fog, & heavy showers. Went alongside wharf to take water. Looked over aquarium at the hatchery - about the same collection as when we were last here, with the addition of a small tiger shark (?).

Too dark to work in lab. No fish coming in.

2 P.M. Went to Campbell Cr. Pond & got a sample of young alewives (*Pseudoharengus*). While so doing, met the new lessor of the pond, ~~E.~~ E. M. Boardley V.S., Boothbay Hr. Me. He is about to put in a new fishway, and exploit the pond for alewives, eels, suckers, & white perch. Had a long talk with him. His fishing activities are a side line, but he goes all over this region and buys eels & suckers for the N.Y. market.

Aug 24. Came in calm with thick fog. Capt. Greenleaf of the Gannet came aboard. Talked herring. Spawning places in Casco Bay at Goose Ids. (abreast Potts Hbr.) and Big Clabore Id. The Wood Id. season ~~is~~ is usually at its height during the latter part of Sept.

Fog lifted a little with a N.W. puff, + anchor was hoisted + proceeded for Gloucester 8.30 AM.

Noon, abreast Portland lightship, thick fog. Made surface tow - nothing in the water.

4 P.M. 15 miles E.S.E from Boone Id., made surface tow, a few green copepods + 2 small 4 band rocklings, also quite a few very minute Calanus (not kept).

Cleared off in P.M., light S. airs. Nothing seen this day but one small shark.

8 PM. Surface tow. Abundant Calanus + some fish eggs. (Off Thatetus light)

Aug. 25 Drifted all night waiting for daylight + Came into Gloucester Hbr. + tied up at Dodd's Wharf 6 A.M. Crew overhauling ship + getting ready for painting etc.

Aug. 26 Overhauling vessel. No herring here now, but ~~is~~ mackerel (mostly small) exceedingly abundant.

Aug. 27 Went to Boston, met Dr. Bigelow, and had a talk with Dr. Hjert. Vessel painting + varnishing.

Aug. 28 Saturday. Sent all collections to Ten Pound Id. for storage. Overhauled laboratory, + got everything ready for sea.

Aug. 29 Sunday. No work. Capt. Iverson + Dr. Bjerken (Dr. Hjert's assistants) came to look over Gloucester. Took them around harbor in launch, and gave them dinner in the evening.

Aug. 30 Took Dr. Bjerken to see the hatchery. Capt. Iverson inspecting fish packing plants etc. Radcliffe and Dr. Bigelow joined the vessel. Have to wait for fresh meat until tomorrow.

Aug. 31 Thick fog during the night, clearing at daylight with light N.W. airs. 8 AM. Provisions arrived.

Left Gloucester for Shallowater 8.30 AM. 11 AM. made Sta. 10306. Saw several whales + sharks + 1 swordfish during the morning.

6 P.M. made Sta 10307.

Wind came out strong from N.W. during the night.

Sept 1 2 AM. Made Sta. 10308. High NE. wind + choppy sea made station with difficulty. Weather moderated somewhat in the afternoon.

3 PM. Made Sta 10309.

Sept 2 Day came in with moderate NE breeze + high ground-swell. 6 AM made Sta 10310.

6 PM. " " 10311 on German Bank. (a few larval herring in meter net).

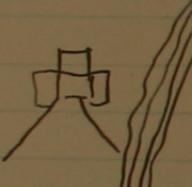
11.30 PM. made Sta 10312 off Cape Sable.

Sept 3. 10 AM came to an anchor in Shallowater Harbor. 9 AM. Went ashore at Sand Point to inquire about herring. The very heavy sea now on this coast has been running since Aug. 31<sup>st</sup>, and has driven off the herring from Cape Roseway, where they were in abundance until Aug. 30<sup>th</sup>, on which date at least 50 bbls were dumped for want of a market. Telephoned to Swan Brothers Sockfport who said the same thing - freezer there glutted on 30<sup>th</sup> + all fish disappeared on 31<sup>st</sup> account high sea. Herring reported as medium to large, about  $\frac{1}{2}$  spawned out. Ordered a barrel of frozen herring from Sockfport, as prospect of getting fresh

sample seemed very poor.

Many large tuna being taken at Sackport, and some here (in traps). Some are shipped to Boston, but the low price ( $1\frac{1}{2}$  to  $2\frac{1}{2}$  cents per lb) makes this hardly worth while. They are considered a nuisance.

Thorborn has a large floating trap on McHab's Id, just inside the light-house, on the E. side. All around + outside of this trap are gill nets. This is apparently the edge of the spawning ground here.



In addition to these nets, there are gill-nets set all around the bay + harbor (mostly by poor fishermen for bait purposes) but these are doing very little at present. All nets here are set on, or less than a foot from, the bottom.

Sept 4. Saturday. Left ship at 3 AM + went in launch to trap + nets at Cape Roseway, (Radcliffe, Blake + myself). Saw trap + nets hauled — not one herring. Trap badly torn, + was taken up + replaced by a new trap. A few nets underway without result. Ground-swell + surf still very high. No herring expected until sea goes down.

On returning to vessel, found the Dept. of the Poor House hauling three nets at head of harbor in front of institution.  $2\frac{3}{8}$ ,  $2\frac{1}{2}$  +  $2\frac{7}{8}$  in nets, dyed black, set on mud bottom in  $4\frac{1}{2}$  - 5 fath. Purchased his entire catch, which was less than  $\frac{1}{2}$  bushel. The majority were medium, spent fish, very poor. No food in stomach. This is Sample 38.

Sample 38. Shelburne, N.S. head of harbor, gill nets (3). 5 fath, mud bottom, entire catch, Sept. 4, 1915, examined fresh.

24 cm.	1
25 "	2
26 "	8
27 "	17
28 "	25
29 "	18
30 "	9
31 "	3
32 "	2
Total.	85

3 P.M. received Sample 39, Sackport, N.S. outside reefs, trap + nets, frozen. Taken Aug. 30. As most caudals were broken, this lot is measured to last anal ray.

21 cm.	= 27, 28	6
22 "	= 29	26
23 "	= 30	47
24 "	= 31	49
25 "	= 32	22
26 "	= 33	6
27 "	= 34-35	2
28 "	= 36-37	1
29 "		
30 "	= 38	1
Total		160

Sept 5. Sunday. Went to Sand Point + saw John Thorborn, who confirmed all previous information, and stated that he expects the present season to last until Nov. 1<sup>st</sup> at least. Much trouble with high sea tearing up trap. Plenty of herring now at Yarmouth, N.S.

Sept 6. 6 Am. Hoist anchor & left Shelburne Hr. No activity seen at herring trap or nets - probably the fish have not yet come in again.

Said up with a very bad cold.

Made Sta 10313 & 10314 in line off shore, then headed for Eastport. Slight westerly breeze, little progress - gasoline running low.

Sept 7. Made Sta 10315 off Sucker St ship. Slight SW breeze. Very slow progress. Many fin-back whales, and many puffing-pigs seen. Fine, clear and hot.

In P.M., many fin-back whales near Grand Manan Bank, - more active than usual, many of them sticking up their tails when diving.

Fog shut in thick at dark, & continued all night.

Sept 8. Thick fog. 7.30 Am made Cutter whistle buoy, & attempted to go in, but Capt decided it was too thick, so proceeded towards W. Quoddy Head under power. No wind, & gasoline very low. Anchored in Quoddy Roads. Fog too thick to go up to Eastport.

P.M., went to Eastport in launch. Saw Hume, Mitchell, Stickney & Wickerson. Sardines now in great abundance - about 1000 hhd received today.

Last week Stickney received about 50 hhd of herring netted on S. end Grand Manan. These were all roe and milt herring in stage 5. None this week, but expects more - all large medium to large. These he is packing as Scotch Herring, except the largest, which are split. The ♂ & ♀ Scotch are packed together, both roe + milt being preserved in situ. About 10 days is required for the process, the herring being re-brined on the 3<sup>rd</sup> day. The pickle - made from the fish without water, is used over + over again, - the older the better. It naturally becomes very oily, which aids

the penetration, and produces a delicious flavor in the product. Ate some of the roe raw - it was excellent. The milt from the split fish is packed in brine in barrels; it is used in the spice & dressing in which herring are repacked for the fancy trade. These Scotch herring are passed down in the barrel until both back and belly are flat, giving the fish a round, plump appearance, - ○(section).

The Scotch expert <sup>in charge of the work</sup> says that these herring are in every way equal to the Scotch fish, except, that their skin is thicker, and they require more time for the salt to strike. To aid in this process, he places the barrels of curing fish in the sun.

Capt Mitchell says no spawn herring now among the sardines, and examination of several cargoes confirms this. The fish are mostly mustards and large oil, but those from about Pt. Lepreau contain many that are hardly larger than brit. Most fish now coming from St Andrews Bay & Grand Manan.

Sept 9. Thick fog - vessel unable to move from Quoddy Roads. Went to Eastport in launch in A.M. Radcliffe & I inspected Seacoast factory No 4. Secured Sample 40 from St. Andrews Bay, Sept 9. Live, from run-boat, lightly salted, no feed in stomach. All in Stage 1. Some badly scaled, only measured

meas.	Scales.	18 cm.	14	8	22
11 cm.	1 = 1	19	19	1	= 20
12	20	18	10		= 28
13	21	6	7		= 13
14	1 = 2	22	6		= 6
15	23	1	6		= 7
16	1 = 2	24	2		= 2
17	1 = 4	20	2		= 2
					109
				Total	

In P.M. went to Eastport again, taking a dory to get gasoline, ice, & provisions. Still thick fog. Dr. Bigelow leaving on night train.

Secured Sample 41 from New River, near Pt. Sepean, N.B., Weir, Sept 9. lightly salted, from run boat. Most of the smaller fish which had any scales were preserved in alcohol. A most interesting sample, consisting of very small fish. Scales were taken from the larger fish which had any. No feed in stomachs.

	measured.	Scales.	
9 cm	4	4	
10 :	2.8	28	
11	4.5	45	
12	3.0	30	
13	5.0	50	
14	5.2	52	
15	2.1	21	
16	2.2	1	23
17	1.7	2	19
18	9	7	16
19	1	6	7
20		4	4
21	1		1
22			
	<u>280</u>	<u>1</u>	<u>301</u>

Reported that no herring nor sardines being taken to the westward as far as Eastport. Over 1000 hhd brought in to Eastport & Lubec today.

Sept 10. Thick fog, lifting a little towards noon, have up 11.30 A.M. & proceeded for Cutter. Thickest kind of fog outside, & made Cutter entrance with difficulty, anchoring there about 2.30 P.M. Went ashore & saw the fishermen & weir owners. Have not fished the weir for a week, nothing in it. Getting bait from Grand Manan.

Trawlers & hand-lines report that no herring are spawning in shore this year - have not been many for several years. The only places they know where herring are now spawning are on the ridges just inside Machias Seal Id. Cod from there now have their stomachs full of herring roe.

All say no herring in shore between W. Laddie Head & Jonesport, although occasional small catches of spawn herring have been made in nets just inside Little River Head here.

5.30 P.M. Set two strings of nets ( $2 \frac{1}{2} \times 1\text{-}3$  in each) on bottom just inside Little River Head.

Sept 11

Fog clearing away, faint N.W. breeze. 5 AM took up nets. Nothing in them but a few Muluccus, Sebastodes, & 2 or 3 small Pollachius.

Weirmen saw no herring in weir & decided not to fish.

6 AM. Left Cutter for Schoodic.

8.30 AM. Made Sta 10316 2 miles off Libby Id. No feed in water - completely barren except for a few very minute copepods.

Preserved scales & data of the few Muluccus, Sebastodes & Pollachius taken this morning. The latter two contained shrimp, which they probably got right among the rockweed.

5 P.M. arrived off Bunker's Hr., Schoodic, and set 2 strings of nets ( $2 \frac{1}{2} \times 1\text{-}3$  in. each) along shore inside of Bunker's ledge.

5.30 P.M. anchored in Prospect Harbor. The sardine cannery here is working part time on herring from Somes & Sullivan. Practically no large or medium herring among the sardines.

The waters between Petit Manan & Schoodic are so thickly strewn with lobster pots, that it seems ~~too~~ unbelievable that they can all do well.

Sept 12 Sunday. Left Prospect Harbor 4:30 A.M., took up nets & proceeded to S.W. Harbor, arriving there 8 A.M. The entire contents of the ~~the~~ six sets set at Bunker's Harbor was 8 herring, 7 Merluccios, and three small pollock.

Herring sample 42, as above, examined fresh. All fish preserved in alcohol. Scales & data taken.

27 cm	1
29 "	1
30 "	2
32 "	2
33 "	1
34 "	1
	8

Stages 5 & 6.

Scales & data also taken from the Merluccios.

Sept 13 N.E. breeze & cloudy. Radcliffe went out with a little trawler 4 A.M.

9 A.M., went ashore & saw Stanley. He reports an abundance of shad last week, none since (at Desert Rock). Paying the fishermen \$5.00 per bbl, selling frozen at 6c per lb. No herring brought in since we were last here in August.

The sardine factory here getting fish from Sullivan & Blue Hill Bay. Very few medium or large fish now among the sardines, but a great abundance of bril in Blue Hill Bay. Stanley ~~thinks~~ thinks these bril were hatched last spring "somewhere", but remembers no instance of ever having seen a spring-spawning herring on this coast.

No ~~sardines~~ sardines brought in to the factory today, and the seiners brought in nothing. Radcliffe got back from his trawling trip too late for us to start to Burnt Coat Hr. It is reported that 1000 bushels herring were taken at ~~the~~

Sewan's Id. on Saturday Sept 11<sup>th</sup>. (See next day)  
Breezing up from the east, cold & damp at sunset.

Sept 14 Day came in with thick fog. Scaled up a little at 8:30 A.M., & at 9 hove up anchor & left for Burnt Coat Harbor, intending to make a station outside Duck Id. en route. Fog began to close in, however, and we were compelled to take a short cut through the islands, arriving at Burnt Coat Hr. 1 P.M. Went ashore and learned that the report of abundant herring was without foundation, except that some small herring had been seized last week for lobster bait. The herring have not been on the shore <sup>now</sup> in any numbers this summer, and what few were here were driven off by the heavy sea of last week. (or possibly by lack of food?)

2 P.M. Went in launch to Marshall's Id, with 2 strings of nets (all 2 1/2 in, 3 in each string), intending to set one string in the sand cove and one at Black ledge, 1 1/2 miles outside. While setting the first in the sand cove, the thickest kind of fog shut in, so both strings were set in the cove.

While setting the nets, Radcliffe made tows in harbor, getting a number of fish eggs.

Sept 15. Came in with thick fog. 7:30 A.M. Went to Marshall's Id in launch & took up nets. Contained 67 herring, about 100 silver hake, 6 small pollock, 3 canners, & 1 mackerel. Also 1 large Raja stelliferous.

11 A.M. fog lifted somewhat, and we started for Boothbay. Hated to give up Fox Islands, but time pressing, decided to leave them until next trip. Fog off & on all day.

Sample 43, Marshall Id., Me. Sept 15, 1915. 3 to 5 fath. Gill net (2½ in, 6 nets). Entire catch examined fresh. Nothing in stomachs. Stages 5-16 - no 7's.

Length	wt.	sex	organs	stomach
24 cm				
25	0			
26	0			
27	4			
28	3			
29	5			
30	5			
31	10			
32	16			
33	15			
34	6			
35	2			
36	1			
67				

27 of these fish, as they ran,  
preserved in alcohol, (T.T. 10601-5)

30 Merluccius, data as above, scales not taken.

length.	wt	sex	organs.	stomach
35	340	♀	2	0
36	320	♀	2	0
37	310	♂	7	fish
37	320	♂	6	0
37	360	♂	2	0
38	350	♀	2	0
38	340	♂	6	0
38	380	♀	2	fish
38	310	♀	2	0
38	350	♂	2	0
39	320	♂	2	herring
39	420	♀	7	fish
40	450	♂	6	herring
40	400	♀	2	

length	wt.	sex	organs	stomach
40	390	♀	2	0
40	410	♀	2	0
40	420	♀	2	0
40	390	♀	2	0
40	420	♀	2	0
40	430	♀	2	fish
41	430	♀	7	0
41	500	♀	7	0
41	450	♀	6	0
41	390	♀	7	0
42	480	♀	6	0
43	570	♀	7	herring 16 cm. long.
43	520	♀	6	0
43	500	♀	6	0
46	610	♀	7	0
48	570	♀	2	0

Noon - made Sta 10317, at Swan's Id. (Barret Coat) Whistle buoy. Practically no feed in water.  
Fog off & on during the P.M. & night.

Sept 16 12.15 AM made Sta 10318, 3 miles S. from Monhegan Id. Feed more abundant than last station, but still sparse. Abundant red micro-water firing brilliantly. 7 AM. Arrived Boothbay Hh & anchored off hatchery. 8.30 AM. Went up Sheepscot R. in launch & secured Sample 44 - oil sardines, wet, fresh, no salt. This sample was preserved in alcohol entire. These fish run very uniform, and are probably the same as the last taken last spring, with a scattering fish a year older. Went ashore & saw Capt Nelson. He has not heard of any herring being netted to the westward.

Radcliffe left for Washington on 12.45 boat.

Vessel taking gasoline & water.

3 P.M. went to alewife pond in search of sample of young, but water has been lowered 3 ft. & none were visible.

Large numbers of blink mackerel being seized & netted in the harbor. These are mostly used for lobster bait.

Sept 17 Hazy & hot, with thunder squalls about. 9 A.M. left Boothbay for Potts Harbor, arriving there 2 P.M. Went ashore & talked with some lobstermen. They say that spawning herring are about due here now, arriving first at Jacquis & Jewell's Ids. & later at Clapboard & Goose Ids. Nobody has tried for them yet. Some herring in the harbor, & many now (mostly sardine herring) around Goose Ids. Many medium herring all the way up to mouth of Yarmouth River all summer.

3 P.M. set string of 3 2½ in nets in 10 fath. off Jacquis Id., S.W.

4 P.M. set string of 3 2½ in nets, & string of 2 1½ in nets in Potts Harbor near Old Point, in 5 fath.

Sept 18 Saturday. No herring in any of the nets. Outside nets contained a few squirrel hake & Merluccius. Harbor nets about 30 blink mackerel (1½ in mesh) and a few small bluebacks & adult kyacks.

8 A.M. proceeded to Portland, anchoring there at 10 A.M. Went ashore & saw many fish men, also the manager of the Portland freezer. All say no herring yet at Wood Id., nor anywhere else in this region except about Goose Ids, Casco Bay. Telegraphed the Fishermen's Freezer, Provincetown, & received a wire from them stating that no herring were being taken there. Went to Old Orchard by trolley in P.M., but no

word of herring in that direction.

The small seiners here are taking a few blue-backs in the neighborhood of the lightship.

Sept 19 Sunday. At Portland. No work.

Sept 20 6 A.M. left Portland for Goose Ids, arriving there 8.30 A.M. There are 5 weirs here. Went ashore and saw the weir owners. No herring of any account here for 4 weeks past. The seiners are getting a few mixed with blink mackerel. None larger than oils. Medium & large herring to get up here about Oct. 15<sup>th</sup> as a rule. No large or spawn herring up the bay yet this fall. On way to Goose Id. stopped at ~~████████~~ worth end Gt. Chebeague Id. & saw man seining smelt. Very few, & all small. A few oil herring among them.

A floating trap is reported at Half-way Rock. 9.30 A.M. left Goose Ids. for Half-way Rock.

10.30 A.M. saw the light-keeper on Halfway Rock. Says no herring about the rock this summer. The trap, which belongs to W. Johnson, Baileys Id., was put out in June. Nothing being taken now but a few butterfish. "No herring spawn in the fall here, as they used to," meaning in the region between Wood Id. & Small Point.

11 A.M. started for Gloucester.

1 P.M. made Sta 10319, Wood Id. bearing W 3 miles. Fair hauls Cetimus & Sagittae in vertical net.

4 P.M., headed off by thick fog, went into Cape Porpoise harbor & tied up to wharf.

Inquiry at Cape Porpoise confirmed the reports that no herring have been taken in this region as yet. Rumors of herring at Monhegan - wrote Capt Nelson to save me some if possible.

- Sept 21 S. + S.W. blow. Left Cape Porpoise 8 A.M. Too rough + squally to make stations. Arrived Gloucester 5 P.M.  
Heavy rain.
- Sept 22 Drying out at Gloucester.
- Sept 23 Went to Boston to see Dr. Bigelow. Vessel changing to new suit of ~~sails~~ sails + overhauling generally.
- Sept 24 Intended to haul out for much-needed cleaning, but could not get on railway. Crew overhauling.
- Sept 25 Saturday. Hauled out on railway + scrubbed - vessel very foul. ~~■~~
- Sept 26 Sunday. No work. Heavy S.W. gale.
- Sept 27 Heavy N.W. gale, vessel painted + went off railway.
- Sept. 28 Heavy N.W. wind, too rough to work outside.
- Sept. 29 Left Gloucester for Provincetown 8.15 A.M. Water only 49° on surface in harbor, 50.5° at whistle buoy, water sample taken.  
10.30 A.M. made Sta 10320.  
2 P.M. " " 10321  
6 P.M. arrived Provincetown. Went ashore, + found that herring had not yet arrived. About 40 seines, (15 schooners) strombound in port. The heavy N.W. gales have torn up most of the traps.
- Sept 30 Clear N. wind. 7.30 A.M. saw boat coming in loaded from one of the harbor traps. Turned out to be spawning herring, the first arrivals. Bought 2 bushels. These fish ran 136 to the bushel, fresh.

Taking scales all day.

Sample 45, Provincetown, Mass. Left 30, trap, examined fresh, all fish in spawning condition, (stage 6). The weights run a little light, as pressure in the boat and in the baskets had expelled a large part of both spawn + milt.

29 cm.	1	In P.M. another haul of the
30 "	1	same fish was made — about
31 "	14	50 lbs in each haul. No small
32 "	75	stuff mixed. A few mackerel,
33 "	91	small dog-fish + occasional <i>Therulusius</i> .
34 "	35	Owner of trap says 1½ inch bar
35 "	15	in pound.
36 "	12	
37 "	9	A number of fish from this sample
38 "	2	preserved in alcohol.
		255 total

Inquiry among seiners + fishermen revealed the fact that these large herring have been seen in numbers in the South Channel for three weeks past. Traders would get them foul on their hooks, and several seiners passed them, thinking they were mackerel, but dumped them on discovering what they were.

During the day saw several schools of what seemed to be oil sardines, overside. 5.30 P.M. set 2 1½ inch nets on surface on W. side of harbor.

This run of large spawners <sup>here</sup> occurred last year Oct 4<sup>th</sup>. It usually only lasts a few days, seldom a week. It is followed by mixed herring off + on throughout the fall. Sometimes taken in January.

Oct

1 5.30 Am. Took up nets. Nothing in them but 1 small Merluccius & 1 large tautog. Many pipe-fish & young cluners came in tangled in the meshes.

6 Am. Went to Avell's trap in the harbor (E. side) whence the fish of sample 45 came. His pound is  $1\frac{1}{4}$  inch bar. Saw him haul the net. Had about 50 bbls of the same herring as yesterday, no small stuff among them. Nothing else in trap but a few dog-fish, Merluccius, sea-robin, & squid. These herring had not spawned out any in the trap, but "shot" milt & eggs immediately upon being hauled into the boat. Temp at trap,  $55.5^{\circ}$ .

2 flounder trawlers dragging in harbor,  
Many gill nets - containing a fair number of herring, but not a heavy catch.

Most other traps tied up for repairs. One of the outer traps took \$2000 worth of mackerel yesterday.

8.30 Am. left Provincetown.

9 Am. made Sta. 10322

1.30 P.M. " " 10323, close to where the mackerel fleet of about 33 vessels were fishing.

4.30 P.M. Made Sta 10324 in the "deep hole".

8 P.M. Arrived Gloucester. Passed a boat drifting for mackerel.

Oct. 2. N.E. storm with rain. 7.30 Am telephoned Bigelow. Saturday 9 Am went to Cooney's Refrigerator & saw both Cooneys, father & son. We got here just in time, as the herring struck here the same day they struck Provincetown, Sept 30. This run usually lasts about a week, but sometimes three weeks. Herring being taken in traps at Milk Id., Magnolia, and one school seen off Milk Id. yesterday P.M. Arranged to get 2 bushels of the latter frozen. Not many herring expected today on account of the storm.

ct

3 Sunday. No work.

ct

4. Left Gloucester 8 A.M. Got Sample 46, frozen. Seined at Milk Id., Gloucester, Mass, Oct 1<sup>st</sup>. Stomachs empty. Mostly in stage 6, but also some in stages 5 & 7. Badly scaled.

30 cm.	4
31 "	14
32 "	35
33 "	14
34 "	7
35 "	8
36 "	3
37 "	5
38 "	0
39 "	1
40 "	1
	92

Herring of the same size also being taken at Kettle Id & Milk Id. A few scattering fish taken in traps a few days earlier.

2 P.M. Made Sta. 10325.

9.30 P.M. " " 10326.

Oct

5. 6 Am. Arrived Boothbay Harbor. Went ashore & saw Capt. Nelson. No herring have been brought in here since our last visit. No run this year at Musquagan or Metinic. Nothing at S.W. Harbor — the Stanleys have just bought 100,000 bait from here. Nothing heard from Wood Id. or vicinity, and probably nothing doing there.

Stanleys' Blue Hill Bay traps destroyed by the blow last week.

Sardines still being taken in Sheepscott wns.  
Rain & S.W. blow.

Oct 6<sup>th</sup> 8 Am., took on board 12 aquarium tanks for Eastport.

9.15 Am. Left Boothbay for Eastport. Made a straight run for it and ~~saw~~ at

Oct 7<sup>th</sup> 8 Am. arrived at Eastport. Went along side wharf & turned over the aquariums to Mr. Alexander.

Saw Capt. Mitchell - as follows.

The storm took away all the weirs up Pt. Separan way (where small bit were being taken with the sardines) and many of the weirs in St Andrews Bay also.

Many "stringing" herring mixed with the sardines from Grand Manan.

Very few bit mixed with any of the sardines (See next day)  
Obtained Sample 47, (2 buckets) fresh, Grand Manan, weir, Oct. 7<sup>th</sup>. These fish are smaller than have been lately coming in from Grand Manan.

	Measured,	Scales.	Total
11 cm	2		2
12	6		6
13	10	1	10
14	6		6
15	2		2
16	3		3
17	13	6	19
18	46	9	55
19	68	15	83
20	41	11	52
21	5	16	21
22		4	4
24		3	3
25		2	2
28		1	1

Traces of red feed in the stomachs.  
A lot of the smaller fish preserved in alcohol (these from the measured list)

10

68

270

Saw Stickney, who says no spawn herring brought in since our last trip here. Reported that about 60 Bbls of large fat herring were taken at Grand Manan about 3 weeks ago.

Oct. 8. Rain + thick.

6.30 AM. obtained Sample 48, weir, St. John's, N.B. harbor. Taken Oct. 7<sup>th</sup>; from run-boat, lightly salted. About  $\frac{1}{3}$  bucket full, preserved entire.

9 cm.	1	
10 "	8	
11 "	16	
12 "	19	Apparently Spring bit?
13 "	7	
14 "	18	
15 "	13	
16 "	14	
17 "	11	
18 "	5	
19 "	3	
20 "	3	
		118

Taken in connection with the last and the next sample, there is apparently a mixture of Spring-hatched (?) bit among the sardines from St John, St Andrews + Grand Manan. This sample

8.30 Am. obtained Sample 49. St Andrews Bay,  
Oct. 8<sup>th</sup>, weir, lightly salted, from run-boat. 1 Bucket full.

# Preserved entire. Meas. Total. Scales kept

9 cm.	1	1
10	8	8
11	42	42
12	30	30
13	11	11
14	5	3 8 1
15	13	13 6
16	11	11 8
17	19	19 5
18	20	20 8
19	19	19 8
20	20	20 7
21	16	16 8
22	7	7 5
23	1	1 1
24	1	1 1
25	2	2 2 60
Total no. of fish	229	
Preserved entire	97	
Scales taken	60	
No body scaled	72	
	229	229

9 Am. Left Eastport. Thick & rainy - Capt. decided to put into Cutter. Noon. arrived at Cutter & anchored. Went ashore. Natives say practically no herring here, but plenty small ones in Little Machias. They are bringing all their stringing herring from Grand Manan. Set 2, 2½ in nets at mouth of harbor.

Oct 9. Nothing in nets but 5 or 6 small pollack, 1 *Merluccius* & 2 squid. Weir not fished. Weir swarming with shrimp, which the pollack were after, but saw no herring. Left Cutter 6 AM.

7.45 AM made Sta 10327 off Libby Id.

3 P.M. " " 10328 " St. Duck Id.

8.45 P.M. " " 10329 " Matinicus Rock.

At all three stations a few herring larvae were taken.

Oct 10 Sunday. 7 AM. arrived & anchored in Boothbay Harbor. No work this day.

In the P.M. while walking about the country back of Boothbay, passed the head of Campbell's Pond. The stream, small & sluggish, enters the pond through the crevices of a stone causeway which carries the road. Above the road saw a school of ten *Pemolobus pseudoharengus*, about 6 or 7 inches long. These probably got through the wall as small fry, & grew up landlocked. The water was not more than 3 ft deep, 10 ft. wide, 100 yds long, and largely choked with weeds & grasses. Saw here also a black bass about 1 ft long. Put up 9 grouse.

Oct 11. 7.30 AM went ashore, got mail & men's pay. Saw 300 lbs mixed sardines, seized near Popham, going into freezer. No extra small ones among them. Sheepscot R. fish all going to Rockland. Nothing new in the situation here.

10 AM. left Boothbay for Goose Ids.

3 P.M. arrived at Goose Ids, went ashore & talked with the Indians there. They are, & have been for a month, doing practically nothing. Very few small meadow left, no herring. Know only that there is some small stuff in the Sheepscott, and also that some small herring have been seized at Cape Porpoise above the foot-bridge.

3.30 P.M. left Goose Ids & proceeded to Portland, arriving there at 5.30 P.M.

Oct

12. 7.30 A.M. Went ashore & talked to Mr. Willard at the fishery. Practically no herring received for over a month. Some little small stuff has been brought in. No spawners. Nothing heard from at Wood Id. 10,000 bbls large herring frozen here in the early summer, \$1,500 last year — this doesn't include the fresh baiting & herring used for other purposes. Heavy seining for 5 years blamed for present scarcity.

No large herring reported this side of Gloucester, & few as yet at Provincetown.

9.30 A.M. obtained Sample 50. from seiner discharging at cannery. 1 Bushel from a catch of about 50 bbls, seized at Goose Rocks, Casco Bay, Oct 12<sup>th</sup>. Examined fresh in excellent condition. Some red-fish in stomachs.

10 cm.	2	
11	2 6	No scales taken, but a large number preserved in alcohol.
12	1 8 6	
13	5 2 5	
14	4 9 1	
15	3 8 8	
16	2 3 0	
17	7 6	
<u>18</u>	<u>6</u>	
21	2	
22	1	

1 Bushel = 1933 fish

10.30 AM left Portland for Wood Id., arriving there 2.30 P.M. Inquiring at Wood Id revealed that there has been no large run of spawning herring for several years. Some small stuff being seized, and a few odd small herring taken in tinker mackerel nets. But nobody here has really tried for herring. Inquired the best place to set nets, and at 4.30 PM set 2 strings of 3 1/2 in. nets each, in about

4 fathoms, to the westward of Ram Id. On a reef inside Ram Id. there were many seals, rather tame. The channel between the reef & Ram Id is rather shallow & about 50 fathoms wide, — it would be a fine place to catch seals alive with nets. There were at least 25 seals, and probably many more.

Oct 13

5 A.M. took up nets — nothing but a half-bushel of jinglums. All the water inside Wood Id. alive with dense shoals of Ammodytes, being pursued by jinglums and gulls & terns, the jinglums in turn being chased by scores of seals. Quite a lively sight at sunrise.

Left Wood Id. at 15 AM for Kittery Point, arriving there at 2 P.M.

No spawn herring have struck here this year. Some small stuff reported. Practically no fishing here.

Set a string of 3 2 1/2 in. nets at Kittery in front of the fort, and a similar string just outside the lighthouse at Newcastle.

Oct

14 5.30 A.M. took up nets. Only 2 herring in inside string and none in outside. About a bushel of jinglums.

The herring were 1. ♀ 31 cm. stage 6 } both preserved entire.  
1 ♂ 32 " " 7 }

6.30 AM. left Kittery Pt. for Gloucester. Surface temp. at Kittery, 48°. Arrived Gloucester 2 P.M. Saw Pooley. The big run only lasted about a week, very few large herring coming in now. Trollers getting lots of small stuff. Ipswich Bay swarming with mackerel - 2-3 lb fish, which are being seized & netted by thousands. Arranged for herring samples tomorrow.

Rec'd letter from Mrs Bigelow saying Bigelow operated on for appendicitis last Sunday. Phoned the house.

Oct 15. 7.30 Am secured Sample 51, torched last night in Ipswich River. 2 buckets full, examined fresh. Some of the small stuff preserved in alcohol. Red feed in stomachs.

Meas.	Scales	Total
12 cm	16	16
13	52	53
14	184	189
15	244	249
16	147	153
17	29	36
18	4	9
19	1	1
20	2	2
21	2	2
22	2	2
23	2	2
	38	714

11 Am. secured Sample 52, from trap at Magnolia, Oct 15<sup>th</sup> entire catch, examined fresh. Nothing in stomachs

Meas.	Scales.	Total
21	1	1
22	10	13
23	12	19
24	43	49
25	22	34
26	5	10
27	4	12
28	3	14
29	9	9
30	4	4
	B6	166

meas.	scales	Total
31	66	166
32	13	13
33	25	25
34	21	21
35	4	4
36	5	5
37	5	5
38	4	4
39	2	2
	3	3
	148	258

Taking scales all day. Also got scales from a few large *Pomolobus pseudoharengus* & some small shad.

Oct 16 Saturday. The mackerel are still being taken in Ipswich Bay in immense numbers, both by seines & drifters. The traps are not doing much, - large alewives, small shad, a few herring and large butterfish. Torches getting an abundance of small & "half-size" herring (24-25 cm). A few gill-nets have started in.

Practically all the drifting is done by the Italian boats. Decided to leave Monday for Provincetown & Wood Hole.

Oct 17 Sunday. No work.

Oct 18 Left Gloucester 8.30 Am. for Provincetown. 9 Am made Station 10330 off Gloucester Bell Buoy. Small herring lawar abundant in tow 25-0 m. Arrived Provincetown 4.15 P.M., too late to see fishermen tonight.

Oct 19 5.30 Am. went in launch & visited 5 or 6 traps. Herring in only one, and only a bushel at that, which was secured.

None of these traps had much fish - mainly *Muraenesus*, with squirrel-hake, butterfish (large), a few alewives (*P. pseudoharengus*, *aestivalis* & *maderensis*) sea-robin, skates etc. Saw one electric ray & got a slight shock from it.

The outside traps have been built up again since the storm, but are taking no herring. All the fishermen say that the only run so far this fall was the little pod that we struck Sept 30<sup>th</sup>. It only lasted a few days, and only struck two or three traps on the east side of the harbor.

Left Provincetown for Woods Hole 8.30 A.M. Temp 54° + water sample off Wood End. Decided to make all stations on return trip, which will give a better section.

Sample 53, Provincetown. Oct 19<sup>th</sup>, trap, entire catch, 1 bushel, examined fresh. Stomachs empty.

23	cm.	1
24		1
25		1
26	0	
27	6	
28	7	
29	28	
30	21	
31	31	
32	33	
33	22	
34	9	
38		1
<hr/>		
Total. 161		

Eight mackerel seiners working in a bunch between Wood-End + Race Point.

Head wind + tide. Arrived Vinal Haven + anchored

Oct 20

at 12.30 A.M. Left Vinal Haven in the morning + went to Woods Hole. S.W. weather with heavy showers. Went ashore at Woods Hole, + saw Mr. Thomas + Vinal Edwards. The latter says most of the traps destroyed in last month's blow, and few rebuilt. No small herring here yet. No large herring yet taken. The old herring net fishery between Nauset Land + Vineyard Haven has been an utter failure the last two years. Thinks the best place to try would be in the light of Great Point, Nantucket, but it is a little early even for there.

Traps here taking very little now, - a few butterfish, alewives + carolly. Edwards got a lot of tunaconta yesterday.

Decided to start tomorrow + run a line of stations off to the Gulf Stream, - then return + try for herring.

Oct 21

Thick fog all day, with S.S.W. wind. Impossible to leave Woods Hole or do anything with vessel.

Oct 22

Fresh N.W. winds + clear; left Woods Hole 6 A.M. Visited Menemsha Bright, but saw no signs of traps in working order.

9.45 AM made Sta 10331  
1 P.M. " " 10332  
5 PM " " 10333

10 P.M. attempted to make Sta 10334 on the 100 fathom curve, but wind came out strong N.W. with high choppy sea, + it was considered inadvisable to risk instruments. Nothing to do but try to beat back to Woods Hole. By

midnight wind had increased to a fluffy gale, vessel under reefed mainsail, fore sail + jumbo.

Oct 23 This entire day spent in beating towards Woods Hole against a strong N to NW wind + high choppy sea. Most uncomfortable. 6 P.M. got under the lee of Martha's Vineyard + anchored off Squibnocket. Still blowing hard, + equally, with falling glass.

Oct 24 Sunday  
4:45 AM, wind still N.W. but moderating somewhat, hove up anchor + proceeded to Woods Hole, arriving 8 AM.  
Surface temp. Woods Hole 55°, a drop of 3 degrees in 2 days.  
Saw Mr. Thomas, and arranged to leave 4, 2½ + 1, 3 in net with him. He wants herring to feed the brood cod, and will try to get me a sample.

Oct 25 Monday, Sent ashore four 2½ in + 1 3 in. nets to Mr. Thomas. Left Woods Hole 8.30 AM. 11.30 AM made Station 10335 in Nantucket Sound. 1.30 PM. arrived + anchored off Coast Guard Station inside Great Point, Nantucket. Went ashore + got advice as to the best place to set nets.

3.00 PM. set two strings of nets inside Great Point as follows; 1 string 4 2½ in + 1 3 in nets in 7 fath (floating) and 1 string 4 2½ in + 1 3 in nets in 4 fath, (floating).

Oct 26 5.30 AM took up nets. Contained 40 herring, 2 medium mackerel, 1 silver hake<sup>haddock</sup>, and hundreds of small spiny dogfish, 1 ft to 18 in long. The herring mostly in stage 6. Temperature 54.5 at nets. 2 herring badly eaten by dogfish.

6.30 AM left Great Point for Provincetown.

Sample 54, Great Point, Nantucket, Oct 26<sup>th</sup>, gill net, entire catch examined fresh. Mostly in stage 6. Nothing in stomachs.

28	cm	1	19 fish, (envelopes marked 'A') preserved in alcohol.
29	"	3	
30	"	8	
31	"	11	
32	"	4	
33	"	4	
34	"	5	
35	"	1	
36	"	1	
			38 total.

Temperature (Surface) at Sme Lightship, 51°.

10.30 AM made Sta 10336

4.15 PM .. " 10337

6.45 PM. arrived Provincetown + anchored.

Oct 27 S.W. with rain. 7 AM went ashore + saw the manager of the Fishermen's Freezer. He says about 60 bbls of mixed herring taken last week, - now now. One trap (outside, on the Race) took 20 bbls large spawners yesterday, the first since the little run of Sept 30<sup>th</sup>. Many Albacore taken in the traps here last week. The silver hake have come in again, and the traps are making large catches. There has been a tremendously heavy run of mackerel in the neighborhood of Race Point last week.

As there seemed to be no chance of getting scales here for artificial pearl experiments (for what herring are coming in are all spawners and the scales would be all slimmed up with milt + eggs), at 8 AM started for Gloucester.

Stations 10338 + 10339 were made en route. Finishing at Gloucester, the Grampus will have travelled this summer upwards of 4700 miles, - with beating, upwards of 5000.

Arrived Gloucester 5.30 P.M. The great mackerel run still continues in Ipswich Bay & off the Race, record trips being brought in from the latter place.

- Oct 28. Secured a sample of scales from bilge of herring - torcher, but they appear to be too dirty for pearl experiments.  
Spent day packing up.
- Oct 29. Packing up all day.
- Oct 30 Saturday, left Gloucester for Washington, after arranging with Capt Carlson to get scales for pearl experiments.

Total scale samples in envelopes	4110
measured fish, extra	6568
" alcoholics estimated	<u>2000</u>
	12678