

1916-1917

Grampus

Begin with station 10399

- Oct. 24 Tuesday. Left Washington for Gloucester
- " 25 Wed. Arrived Boston 7 AM. Went to Cambridge and went over plans etc with Dr. Bigelow. Went to Gloucester in P.M. Everything ready, but freight had not come.
- " 26 Thursday. At Gloucester, waiting for freight.
- " 27 Friday At Gloucester. Notified in AM that freight had arrived by rail. Tried all day to get it out of car.
- " 28 Saturday. Finally got freight down to wharf at 5 P.M.
- " 29 Sunday. No work.
- " 30 Monday. Thick fog + calm all day. Decided to wait till tomorrow.
- " 31 Tuesday. Came in calm with thick fog. Later it began to scale a little with light variable breeze, mostly N.E. At 11 AM. cast of lines + proceeded.
 2.45 P.M. made Sta. 10399
 3.30 P.M. fog came in again
 At this station the following birds came aboard.
 1 junco, tired out. 1 male purple finch, tired out.
 8 pine siskins, fresh and chirpy, keeping in a close flock, - these last soon left in spite of the fog.
 Fog + almost calm during the night. Several schools machuel seen, the water firing brilliantly

Nov. 1 Wednesday. Came in with thick fog + calm.
5.30 Am to 6.35 Am. making sta 10400, inside
Jeffrey's Sledge, in 142 m.
Birds aboard at this sta.
1 pinco (dying), 1 song sparrow, (fresh) 1 young (pin?) warbler, 1
Fog + light variable airs all day. Position uncertain.
Spent some time trying to find 155 fath. for Sta 10401,
and finally gave it up, making the station blind
in 120 fath, the position to be determined later. Made
Sta 10401 between 2 + 3.15 P.M.
Cleared off after dark, with westerly breezes increasing
in force.

Nov. 2 Thursday. 4⁰⁰ Am to 5.10 Am making Sta 10402.
Wind increasing from W.S.W. to a stiff breeze, +
sea rising. As the deck engine has been giving
trouble, and it is very doubtful if we could make
the next off shore station owing to weather, headed for
Boothbay Harbor, where the vessel came to an anchor
at 9.30 Am., to wait a shift of wind to return to
Gloucester.
Saw Capt Hahn, + inspected the new steamer
Halcyon.

Nov. 3. Friday. Left Boothbay Harbor 6.30 Am., and
arrived Gloucester 6.45 P.M., without incident.
Saturday.

4. At Gloucester. Went up to Boston to do some
errands. Sounding win arrived, and was put on
Lucas machine. Deck engine overhauled, and an
extra valve ordered for main engine.

Nov. 5 Sunday, no work.

Monday
Nov. 6. Taking stores, gasoline etc. Expect to start south
tomorrow morning.

Nov. 7. Tuesday, Election Day. All ready to start at
2 P.M., but engineer did not turn up. He did
not get aboard until after midnight.

Nov. 8. Wednesday. Left Gloucester 6 Am., in stiff
W.S.W. breeze + choppy sea.
10 Am - 10-40 Am making Sta 10403.
1.45 - 2.35 P.M. " " 10404
Proceeded over Nantucket Shoals.

Nov. 9 Thursday. 3 Am. Stiff SW blow. Came to an
anchor in Vineyard Haven. SW blow continued
all this day and most of the night.

Nov. 10. Friday. Wind veered to NW with rain in the early
morning, later moderating and backing to W.
12.30 P.M. Hove up anchor + proceeded.
6.15 P.M. to 7.00 P.M. making Sta. 10405.
Wind increased from WNW during the night.

Nov. 11 Saturday. 5.15 Am to 6.15 Am. making Sta 10406
Wind increasing from WNW + rising sea.
8 Am reefed mainsail + furled jib
12. m to 1.15 P.M. making Sta 10407
3 P.M. to 4.15 P.M. " " 10408
Wind dying down and sea flattening out.
6 P.M. shook reef out of mainsail.

Nov. 12 Sunday. Light E breeze. Smooth sea.
 7.25 Am to 8.45 Am. making Sta 10409
 numerous phalaropes + several whales seen during
 the morning.
 12.20 P.M. to 1.45 P.M. making Sta 10410
 3.30 P.M. Wind died out, started engine. 4.30 P.M.
 clouding up, gentle showers. 5 P.M. wind freshening,
 stopped engine.
 7⁰⁰ P.M. wind freshening with rain squalls. Upon
 Capt's suggestion decided to make no further stations
 until weather improved or a land-fall had been
 made.

Nov. 13. 8 Am arrived at Cape May & tied up at Fish Pier.
 Went to Phila. 4.15 P.M.

Nov. 14 Tuesday. In Phila. met Mr. Vande Bogert
 on P.M. train for Cape May.

Nov. 15 Wednesday. Stormy weather with snow. As it
 would have been useless to try to work, stayed in
 harbor.

Nov. 16 Thursday. Day came in with high NW winds
 By 11 Am wind had shifted to N + moderate
 Cast off & proceeded to Norfolk;
 12.50 P.M. to 1.20 P.M. making sta 10411
 6.55 P.M. to 7.35 P.M. " " 10412

Nov. 17 Friday. Midnight to 12.45 Am. making Sta 10413
 7.30 Am to 9.15 Am " " 10414
 10.40 " " 12 m. " " 10415
 2.15 P.M. " 3.20 P.M. " " 10416
 8.45 " " 9.10 P.M. " " 10417

Nov. 18 Saturday 2 Am Came to an anchor in Hampton Road.
 8 Am. Hove up + proceeded to Portsmouth Va.
 Mr. Welsh + I went to Norfolk for mail in a.m. visited
 Fish Hawk after dinner. Mr. Welsh left for Washington
 on evening boat.

Nov 19 Sunday. In port.

Nov 20 Monday. In port. Capt Mahoney brought bottom
 fueler aboard in a.m. Day spent in getting
 water + stores aboard, Repairing engine and making
 ready for sea. Weather fine.

Nov 21 Tuesday. Day came in with brisk NNE winds.
 Left Buoy wharf and proceeded to Sewalls Point
 at 9:00 A.M. Anchored at 10:00 A.M.

Nov 22 Day came in with light airs from N. Got under
 way at 6:30 A Wind died out at 8:30 A. Very pleasant
 weather clear and warm.

11:15 AM to 11:45 making Station 10418

2:00 PM sky overcast. Light South breeze

4:30 PM to 5:00 PM making station 10419

Have had engine runny all day.

Nov 23 Thursday. Day came in with sky overcast and breeze
 freshening from South.

3:57 AM to 4:30 making Station 10420

6:10 AM to 7:15 AM " " 10421

8:00 AM to 9 " " 10422

By 9 o'clock sea was too rough to continue stations
 after taking temperatures and samples, Capt. Carlson
 thought it best to stop work. Ittered SW x W for
 42 miles then ran before wind (N x W) Barometer falling
 fast at 4 P.M. Ran before wind to mid night

Nov 24 Friday. Ran before wind until 1:30 AM. near whistle buoy at Cape Henry. Wind shifted to SWXW. Stressed S out under riding sail. foresail and fore stay sail. Current light ahead at 7:00 AM. sky clear sea moderate. wind stiff. Too rough to attempt stations off Hatteras. Weather pleasant. Fresh breeze.

At 9:30 P.M. wind shifted to N.W. and blew a strong breeze. Mainsail taken in and riding sail set.

Nov 25 Saturday. 1 to 1:30 AM making station 10423.

Wind force 5.

Sea too rough to make series of stations off Cape Lookout. Weather cold & clear.

8:30 P.M. Tying Pan Lh. ship ahead.

Nov 26 Sunday. Arrived Southport N.C. at 8:30 A.M.

Wired Capt. H. Freeman of arrival. He came aboard with Capt. Asa Burroughs about noon.

I talked with Pilots and fishermen regarding "rocks" and got a lot of information.

Nov 27 Monday. In port waiting for Capt. Burroughs to come back from Wilmington with bait, lines and hooks. Weather pleasant.

Nov 28 Tuesday. Got under way at 8 o'clock and after crossing bar, steered SW $\frac{1}{2}$ S a distance of 9 miles. hove too on coral bottom in $8\frac{3}{4}$ fms and after putting dory over as buoy, fished 20 min. with 8 lines catching 95 blackfish. Towed drag $1\frac{1}{2}$ miles to edge of coral. Buoy bearing NW X $\frac{1}{2}$ N. Tried hand lines. No success. Started back for buoy and stopped half way. Fished 15 min. catching 12 blackfish. Went $\frac{1}{8}$ mile toward buoy and tried hand lines 15 min. catching 105 blackfish. This seemed to be best spot on line as it was

10424

a common thing to pull up two fish at once. Fish average from $\frac{1}{4}$ lb to $1\frac{1}{4}$ lbs.

Indications of S.E. wind made us discontinue work. Took up dory and left small barrel to mark spot. Arrived in Southport at 4 o'clock P.M.

Nov 29 Wednesday. In port all day. Rain + SE wind

Nov 30 Thursday. In port.

Dec 1 Friday. Day came in clear with light air from North. Left wharf at 9:40 A.M. bound for fishing ground 9 miles SW $\frac{1}{2}$ S from bell buoy. Ran under power to buoy then shut down engine. Ran on E/NE course towing drag $1\frac{1}{4}$ miles to edge of coral rock. Buoy bearing W.SW. Fished 10 min, no results. Ran $\frac{1}{3}$ distance back. Fished 15 min with 8 lines caught 65 blackfish. Ran another $\frac{1}{3}$ back and fished with 8 lines for 15 min. Catch 139 blackfish 1 C. nebulosus (38 cms.) finished station 12:30

10425

10426 Ran a NNW course 2 miles from buoy, to edge of coral rock. Buoy bearing SSE. Hand lines tried 10 min. no success. Ran $\frac{1}{3}$ distance back. Tried lines 15 min. no success. Ran back $\frac{1}{3}$ distance tried lines 15 min. no success. Bottoms seem to be good on this leg but no fish caught.

10427

Ran a line with 200 yds to edge of coral rock, finishing this rock which is called "Middle Ground" Hove to and waited for daylight before going in.

Dec 2 Saturday. Arrived in harbor at 9:15 A.M. and lay at anchor all day.

Dec 3 Sunday. At anchor in stream. Went ashore for mail and to talk with fishermen and pilots. Capt. Karris and Mr. Montgomery (Dep. Fish warden) came aboard in evening.

- Dec 4 Monday. After taking on 350 gal. gas and 300 lb ice left wharf at 10:30 and run to Lightship making station 10428 from 2:23 to 3:11 P.M. Weather fine. Sea smooth. Air warm.
6:09 PM to 6:42 making station 10429. Light Southerly breeze sea calm.
9:00 PM. Showers and squall. Took in mainsail and hoisted riding sail.
10:00 PM to 10:45 making station 10430. Sea rough. Too rough for making hauls. Ran for lee of Fryer's Pass shoal.
- Dec 5 Tuesday. Day came in with fresh SW breeze. Vessel jogging nearly all day. Tried to fish on "Snapper Bank". Too much wind. vessel wouldn't let lines reach bottom. Home too at midnight.
- Dec 6 Wednesday. Day came in with fresh NW to N winds. Decided to go to harbor. Under reefed mainsail, foresail + fore-stay sail.
- Dec 7 Day came in with light NE air. very pleasant. Under way at 6:30. for Lightship grounds. Put drag over at 11:00 AM on courses and ranges indicated by pilots and fishermen. Towed drag until 7:30 P.M. without locating more than very scattering single stones. Vessel jogged around all night.
- Dec 8 Day came in with light southerly air. very pleasant. Made stations 10431, 10432, 10433, and 10434 completing small ground 1 1/4 miles WSW of off-shore light buoy. Barometer falling all day. In port and along side wharf at 7:30 P.M.
- Dec 9 Saturday. Wind and rain. In port. Capt. Freeman came on board at noon. left at 2:30 P.M.

- Dec 10 Sunday. In port. Fresh N.W. breeze. Cold. Capt. Freeman came aboard in place of Capt. Burriss. Wind freshened in evening.
- Dec 11 Monday. Day came in with high SSE winds and rain. Wind shifted to WSW and continued to blow hard. Absolutely no chance to work.
- Dec 12 Tuesday. Day came in with high WNW winds and rain. Wind hauling to north. Too rough to go out.
- Dec 13 Wednesday. Day came in with cold brisk west winds. Got under way at 6:30 for clam ground. Went to river mouth, but sea was too rough to do outside work. Menhaden steamer all at anchor inside Bald Head. Started to Wilmington, passing Southport at 7:25 A.M. Arrived Wilmington 9:45 and tied to wharf. Started repairs. Brisk wind all day.
- Dec 14 Thursday. Day came in clear and cold. Light NW breeze. Discovered 4 planks on port quarter badly dry-rotted. Must be replaced before going to sea.
- Dec 15 Friday. Day came in with southerly winds and rain. Cleared with N.W. wind in P.M.
- Dec 16 Saturday. Day came in with cold N.W. winds. Made ice in sun until 10 A.M. Work of removing bad planks continued. 5 planks so far removed. Timbers in bad condition. Went across river to ship yard. Railway busy; couldn't haul out.
- Dec 17 Sunday

Dec. 18 Monday. Arrived Wilmington 10 AM + met Mr. Van de Bogert + Mr. Freeman. Had a short talk with the latter, who promised to come on board in the P.M. to discuss matters, as he had to be out of town for a few days. (He did not turn up).
Went on board with Van de B. Found five planks removed from port quarter, rotten, and the timbers beneath them partly rotten. Men from yard working on job in very hasty fashion. Mr. Van de B. left on 3.15 P.M. train. Weather very cold with high winds + showers.

Dec. 19 Tuesday. Still repairing. Very cold. Getting things in shape on board. Recd 2 cases water bottles + 2 boxes by express from Washington.

Dec. 20 Wednesday. Clear + warmer. Still working on planking - very slowly. No mail from Washington since Monday. Corrected temp. readings, etc, etc, + installed micro lamp in laboratory.
8.30 P.M. S.E. rain + wind.

Dec. 21 Thursday. Cold. Still "working" on planking.

Dec. 22 Friday. Still "working" on planking.

Dec. 23 Saturday. Carpenters "worked" 1/2 day.

Dec. 24 Sunday. No work.

Dec. 25 Xmas. No work, took walk up swamp road + saw 3 small frogs out. Warmer today.

Dec 26 Tuesday. Yacht *Navised* came off railway, and they attempted to haul us out, but failed on the falling tide.

Dec 27 Wednesday. Vessel hauled out at last, + men at work on stem and port quarter.
In the A.M. went up swamp road with a dipnet, and got the following fishes from the ditch alongside the road. Temperature about 65 (air)

<i>Ameiurus</i>	1
<i>Schilbeodes</i>	5
<i>Fundulus</i>	2
<i>Gambusia</i>	swarming
<i>Heterandria</i>	4
<i>Umbra</i>	2
<i>Aplinedoderus</i>	3
<i>Elassoma</i>	2
<i>Eumecanthus</i>	7

Saw one snake out, (like garter-snake, but longer and thinner) 1 *Hyla pickeringii*, and one small frog.

About 9 P.M. the *Hyla pickeringii* began to whistle in the swamp back of the railway, and were still at it whenever I woke up during the night (3 or 4 times).

Dec 28 Still on railway, men at "work." In A.M. went by trolley to have a look at Wrightsville, the thorofares, and Wilmington Beach. Men fishing on pier (outside) says nothing doing since Thanksgiving day. Plenty red drum Sept 1st to Oct 30th, many small, 5 to 10 lbs.
In P.M. tried to get some *Heterandria* alive to send to Washington, only got 2, 1 ♂ + 1 ♀. Put in a 1 qt jar to test hardiness. *Hylas* whistling at intervals in afternoon + evening.

Dec 29 Friday In A.M. fished the ditch up road on Eagle's Id. with a dipnet. Took 11 ~~species~~ species as follows.

Gambusia	swarming
Fundulus	25
Chologaster	1
Umbra	1
Anguilla	3
Ameiurus	3
Schilbeodes	19
Classoma	1
Eumecanthus	2
Dartus	9
Abramis	1

Also 2 salamanders, 2 crayfish + 2 turtles (small)

Dec. 30 Saturday. Carpenters still "working" on planks. Only 1/2 day today. Shifted vessel from yard over to Wilmington side of river.

Dec. 31 Sunday. No work. Went down to Wrightsville beach in P.M.

Jan 1st 1917 New Year's Day. No work.

Jan 2 Tuesday. Carpenters finished work of repairs late today. A rough job.

Jan 3 Wednesday. Crew at work smoothing up + painting over repairs. Would have gotten away today, but tide served too early.
In P.M. went to pond on the S. city limit of Wilmington, with a dip-net, & fished around the edges. Took 10 species, + saw 2 more, as follows:

Gambusia	swarming
Fundulus nottii	6
Heterandria	21
Umbra	1
Dartus	3
Classoma	1
Chaetodon ^{mesogonistius}	7
Eumecanthus	29
Chaenobryttus ?	3
Muciopterus	1

A man fishing had 1 yellow perch + 1 crappie. (he called the crappie "goggle-eye", and the perch "red-finned trout".)

Also took 1 newt, 2 salamanders 4 tadpoles + some fresh water shrimp.

Jan 4 Thursday. At 8.20 A.M. left Wilmington and proceeded down the river. 11.45 A.M. passed out by bell buoy off Cape Fear R. entrance.
1.45 P.M. tried to make a trial for clams (Sta 10435) in 6 1/2 fath off Shallotte Inlet, but could find nothing but rough hard bottom. Surface temp 52.5.
Proceeded for Brunswick. SW head winds all night.

Jan 5 S W head winds. 2 P.M. had Charleston Lightship abeam. Several small boats out fishing for sea-bass. At 3 P.M. head winds increasing + barometer falling. Capt decided to put into Charleston Hr. where we came to an anchor at 4.45 P.M. 5 P.M. heavy squall with rain.

Jan 6 Saturday. Cleared up during night with stiff N.W. breeze. 8 A.M. hoisted up + started for Brunswick, Ga. Wind steadily falling all day, + about 2 P.M. had

to start motor. Smooth sea all day, no sign of fish except a few gannets diving.

The muddy fresh water off Charleston extends a long way off shore (to the S.W.). Water all day pale green.

Jan 7th Sunday. Arrived at Brunswick about 9 A.M. Met a Mr. Toomey, of the Post Office who introduced me to several shrimp men, and gave me the directions of all of them. Mr. Abrams, of the Glyn Canning Co. was out of town. Looked over a number of the shrimp boats. The otter trawls used are from 30 (25 sometimes) to 50 ft spread, with a mesh of $1\frac{1}{2}$ to $1\frac{3}{4}$ inch stretch. They are ~~are~~ of various shapes, and proportions, each man making up his favorite shape. Some are tared, and some are not, mostly not. The nets are hauled by hand, even in the larger boats, by a crew of 4 to 5 men. When the boards are in, the cod-end is lifted by a tackle slung from a pair of shears-poles extending over the stern. All the boats have wide, square stems, some with overhanging "porches" and rollers. They seldom fish in water over 20 ft deep. Fishing proceeds in every month except May, June & July, when the shrimp are supposed to be spawning.

Jan 8 Monday. Visited every packer in the place in the effort to buy two shrimp-trawls, but none were to be had. If we had been here on Saturday it would have been easy to get them. It would take probably 2 days to get them made. All said the same thing. All said they could be had in Fernandina, without trouble.
Saw C. P. Goodyear
Brunswick Canning Co., (Mr. Gorenflo)

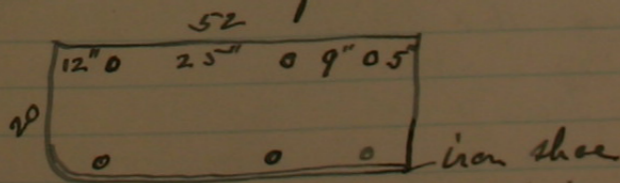
Brunswick Sea-food Co. (Mr. McCallum)
Glyn Canning Co.
Mr. Culver (a cabinet maker who sometimes makes nets)
A number of fishermen.

Crew busy today stopping leak in bow at waterline, and taking stores, gasoline, water etc.

Jan 9 Tuesday. Left Brunswick ^{Ca} 6.30 A.M. for Fernandina. Arrived Fernandina 2 P.M. Called on several shrimp-packer, in the effort to get nets. Finally arranged with Mr. F. H. Gorenflo, of the Fernandina Packing Co., to have his net-maker make up 2 30 ft shrimp trawls, to be finished and delivered tomorrow, the price not to exceed \$30 each. This is the usual cost of such nets, and the maker, A. Fisher, has a reputation for doing excellent work. There was no other way to get these nets without considerable delay.

There are about 150 boats engaged in the shrimp fishery here, mostly small, manned by 2 or 3 men each, chiefly Portuguese & Norwegians. Arranged with one of the Portuguese fishermen to go out with him tomorrow.

Jan 10 Wednesday. Left vessel in shrimp-boat at 5 A.M. This boat, about 30 ft, 15 h.p. fishes a 40 or 50 ft net with boards as follows



iron shoe
Bridles 16" x 24", the upper pair 1" longer than the lower
Holes 3" from top & bottom. 30 to 35 fath. warp

We made 5 hauls of 1 hour each, the 1st two south of the jetties on sand, 5 1/2 to 2 fath., and the last 3 north of the jetties on mud bottom, using a 40 ft net, 2 in stretch, with 1 1/2 in stretch in cod-end.

Haul #1 1 Bushel shrimp

a few small fish, cutlass-fish, flounder, tongue fish, whiting, ball-heads, squeteague, Stelliferus, harvest fish etc etc
Also small squid, sea-urchins, stars, jelly fish, 2 blue crabs.

Haul #2. 1 1/2 Bushel shrimp. 1 sand shark, prickly-fish.

1 sting ray, 1 cow-nard ray, 1 small bonnet-head shark, 1/4 bushel of small fish (as before) 9 blue crabs.

Haul #3. 3 Bushel shrimp

2 bushels small fish (as before) many stars, 6 blue crabs.

Haul #4. 5 1/2 Bushel shrimp.

1 bushel small fish (as before) 1/2 bushel stars, jellies etc.
3 blue crabs

Haul #5 3 1/2 Bushel shrimp.

1 1/2 bushel small fish (as before) 2 bushel stars, jellies etc.

The fish taken in the shrimp trawl ran as follows.

Carcharias taurus. Sand shark ♀ 111 cm, wt. 6 1/2 Kg.
teeth + skin sample saved T.T. 10738

Cetracion tiburo Bonnet head. 41 cm. teeth + skin saved

Rhinoptera quadriloba 29 x 51 cm. Tail 55 cm. Tail round.

Dasyatis sp. 34 cm.

Pteroplatea micrura 16 x 28 cm.

Cynoscion

10 cm 6 15 cm 4

11 " 30 16 " 3

12 " 30 17 " 2

13 " 13 19 " 1

14 " 9 20 " 1

} Sample taken at random from catch.

Stelliferus

6 cm. 1 11 cm 20

8 " 2 12 " 7

9 " 13 13 " 2

10 " 26 15 " 1

} Sample taken at random.

Larimus fasciatus

Ball-head

8 cm 2 12 cm 5

9 " 3 13 " 2

10 " 4 14 " 1

11 " 8

} Sample taken at random.

Menticirhus

Whiting

12 cm 1 18 cm 4

13 " 1 19 " 2

16 " 3 20 " 2

17 " 6 21 " 2

} Sample taken at random.

Microgogon undulatus Croaker

13 cm 1, 14, cm 1, 16, cm 1 17 cm 1 19 cm 1 (about all seen)

Leiostomus xanthurus Spot.

14 cm 2 17 cm 1 (about all seen)

Pepilus alepidotus

9 cm 1, 10 cm 1 11 cm 2. (many more preserved)

Poronotus triacanthus

11 cm 1. 12 cm 1. 13 cm 5. 16 cm 1. 17 cm 1. (more preserved)

Trichiurus lepturus Silver eel

33 cm 1. 35 cm 2. 36 cm 2. 42 cm 1. 43 cm 1.

Chilomycterus spinosus. Several, about 13 cm.

Ethopus. 1, 11 cm. (many preserved)

Ancyclopetta.

18 cm 1. 21 cm 1. 28 cm 2. 30 cm 1.

Symphurus. 15 cm 3. 14 cm 1.

Also a few Anchovies, Carangids, squid etc,
Many of ^{all} these preserved.

The largest shrimp seen was $8\frac{1}{8}$ inches from tip of rostrum to tip of tail, and its overall length was 26 inches.

The nets were delivered on board at 4.30 P.M., and a voucher given to A. Fisher for \$59.18.

Jan 11. Came in with high N.W. winds. Waited until 10 A.M. and then decided to start for Key West, making station if possible. Too much wind against the stream to go off shore. Passed Ferdinandina buoy 11 A.M., + bore away on course

3 P.M. St Augustine abeam.

9 P.M. Mosquito Inlet "

Jan 12 2 A.M. Hitzel Shoal abeam.

4 P.M. Jupiter Light "

10 P.M. Hillsboro Inlet "

Flying fish abundant in the P.M. One turtle seen, but water too rough to see much. Saw some large Carangids after flying-fish. Trolled all day without result

Jan 13 Saturday.
6 A.M. Fowey Rocks abeam.
9.20 A.M. Carysfort Light "
1.30 P.M. Alligator Reef "

Jan 14 Sunday. Arrived Key West 7 A.M. Called on Mr. Porter. No work.

" 15 Monday. Vessel repairing engine. Saw Mr. Brown, Supt. of the new K.W. Station, + visited the site. 6 ft channel claimed to basin. Concrete wall finished and grounds brought up to grade. It ought to make a very good-looking and comfortable place, - but lots of attention should be given to planting palms etc to break the cruel glare. A little much soil should be spread over the marl, and worked in.

" 16 Tuesday. Still repairing engine, and taking stores. Very little now in the fish-market. No turtles.

" 17 Met Lieut. C. M. Elder, (Capt. of Yard) Naval Sta, Key West, yesterday. He has a small concrete basin, + wants fish. Promised to try to send him some sword-tails + Paradise fish.

At 1 P.M. left Key West on first oceanographic line. 2 P.M. made Sta. 10437 in 70 fath, Sand Key bearing N.W. about $\frac{1}{2}$ miles.

11 P.M. made Sta 10438, Loggerhead Key bearing N.W. 15 miles, in 15 fath.

" 18 Thursday, arrived at Garden Key, Tortugas, at 7 A.M. Trolled with pork rind in channel off wharves for a little while in morning, taking

seven
~~six~~ banacutas (*S. picuda*, Bloch + Schunder) as follows

119	cm.	wt.	9 Kg.
102	"	"	5.5 "
100	"	"	4.5 "
98	"	"	4.5 "
85	"	"	2.75 "
79	"	"	2.25 "
77	"	"	2. "

Not much fish life about moat. In P.M. visited Loggerhead Key + Carnegie laboratory, catching 2 more banacuda en route.

Jan 19 Caught shark, *Carcharinus milberti*, from vessel at dock late yesterday. Measurements as follows
 ♂ Length 245 cm. gape 25 cm.
 Snout to D. 73 cm.
 Caudal 63 cm. Saved jaws + skin
 Pectoral 46 cm. sample TT 10740.

Seined on the beach in the morning with little result, and vessel was getting ready to leave Tortugas, when about 10.30 A.M. the two asst. lightkeepers from Loggerhead Key came in their launch, and informed us that the head keeper had been severely injured the night before, and asked us to come over and look at him. The Capt. accordingly went over, and found the old head-keeper, Russel, in such a bad way with a hole in the back of his head that he brought him back to Grampus at once, and at noon we started for Key West under sail and power. Arrived Key West 11 P.M. & took the man home for medical treatment.

Caught 1 Spanish mackerel trolling en route

Jan 20 Saturday. We are so late and behind in our work now, that I decided to omit the first line of stations planned, and give full time and attention to the second. Took ice early, and left Key West for Boca Grande at 10 A.M. Went out N.W. Chan., and 20 miles from outer buoy on our course made Sta 10439 at 2.15 P.M., in 10.5 fath. Used otter trawl, getting only two fish T.T. 10741 + 10742.

Jan 21 Sunday. 2.15 A.M. made Sta 10440 in 11 fath., Sanibel Light bearing NNE about 20 miles.
 11 A.M. arrived at Boca Grande + anchored. Spent the afternoon ashore inquiring about the fish-mortality in November. All agree that there has been no trouble since then. Four boats tarpon-fishing, but none seen to be caught.
 Went up beach about 3 miles, - saw no trace of the late plague.

Length + wt. of young banacudas seined Jan 19th

	35 cm.	220 g.	29 cm	125 g.
(<i>S. picuda</i> , Bl-Sch.)	33 "	205 "	28 "	100 g.
	31 "	165 "	26 "	80 g.

Jan 22 Monday. Left Boca Grande 6 A.M. for Tampa. Took water sample at anchorage, Surf temp 68°. During the morning took on trolling spoon
 1 *Myctoperca felcata* ~~phenax~~ 55 cm. 2 Kilos. ^{catch in stomach}
 1 *Scombrormorus maculatus* 69 " 2 "

Arrived in bay below Port Tampa after dark, + anchored until daylight.

Jan 23 Tuesday. Went alongside wharf at Port Tampa
9 Am. Got acetylene, gasoline & stores.

" 24 Wednesday. Left Port Tampa 9 Am. &
proceeded. While going down the bay took on
specimen 1 *Myxostoma microlepis*, 72 cm, 3 1/2 Kg.

4⁰⁰ Pm. made Sta 10441 5 miles W. from Tampa
to W Chan. outer buoy.
10 Pm. made Sta 10442

Jan 25 Thursday. 4 Am made Sta 10443
11 Am. Heavy rain & NW squalls.
12.30 Pm made sta 10444.
6.30 Pm " " 10445

Jan 26 A moderate "norther" all day. One of the men
suffering from a bad bruise at base of spine.
Beating northward for Cape San Blas, met
puzzling current & magnetic disturbances which
set us back considerably.

Jan 27 12.30 Am. made Sta 10446, C. San Blas bearing
NE by E 1/2 E dist 5 miles.

8.30 Am arrived at Port St. Joe, for medical aid
for injured man.

9 Am to 12 m. towed shrimp-trawl in St Joseph's
Bay with launch. Got many small fish, as follows.
Many were preserved, including all that there was no
time to identify at the moment.

Sizard fish 15, 17, 18, 18 cm.

Pomolobus 10, 10 + 11 cm

Mujanus 9, 12 + 13 cm

Gaff-toprail cats 15, 15 cm

Diplecton formosa, 17 cm = 43 gr.

Cheilomycterus 8 cm 4
9 " 3
10 " 1
15 " 1
20 " 1 } 10.

Bat-fish, 22, 24 cm,
Ancyclosetta 27 cm = ~~305~~²⁴⁵ gr.
29 " = 305 "

Orthopristis chrysopterus

9 cm.	7	68 gr	av =	9.7
10 "	2	29 "	"	14.5
11 "	10	152 "	"	15.2
12 "	8	154 "	"	19.25
13 "	9	227		25.2
14 "	6	190		31.7
15 "	5	210		42
16 "	4	198		49.5
17 "	1	60		60
	<u>52</u>			

Spot.	13 cm.	6	152 gr.	av.	25.3
	14 "	6	190 "		31.7
	15 "	3	120		40.0
	16 "	15	735		49.0
	17 "	22	1210		55
	18 "	37	2385		64.2
	19 "	28	2030		72.3
	20 "	10	795		79.5
		<u>127</u>			

Stelliferus 11 cm. 3

12 " 3

13 " 1

14 " 1

17 " 2

Pin-fish	8 cm.	4	29.91.	7.25
	9 "	6	52	8.66
	10 "	8	98	12.25
	11 "	12	185	15.42
	12 "	11	220	20
	13 "	5	124	24.8
	14 "	1	37	37
		47		

Trunk-fish 1, 17 cm. TT 10743
 Skates 2. [much other small
 Sea-robins 3. [stuff preserved.]

Jan. 28. Sunday. 7.30 Am to noon, worked over ditches, small streams & cypress swamp with dip net, & secured a good collection of local ditch stuff: - found young mullet in the ditches of the town of Port St. Joe, entirely cut off from salt water, and apparently in good health. *Gambusia* in ditches connecting with cypress swamp. Also many *Mollies* in both salt & fresh water. All the catch preserved in 1 2 qt. jar.

Fishermen here say the mullet spawn in the bay in Sept, Oct. & Nov.

In P.M. Blake harpooned a large *Galeorhinus tigrinus* from the wharf. There were three in company, the 2 smaller (about 7 or 8 ft.) spotted, and the largest, which was harpooned, plain in color. Jaws & sample of skin preserved, also a small remora attached.

Jaws, TT 10744

Skin TT 10745

Remora TT 10746

This shark was logy & very easy to land on the beach. It was a female, and the stomach contained 1 Herring gull, 3 blue crabs & 35 mullet. This would seem to indicate the presence of mullet in the bay, although the fishermen say there are none now.

Measurements as follows.

Total length,	358 cm.
Snout to D.	111 "
Length base of D.	31
Height D, front	39, Back 23
Interdorsal space	94
Length base 2nd D.	14
Height 2 nd D, front	14, back 17
2nd D to caudal notch	29
Upper lobe caudal (from notch)	85
Lower " " "	" " 43
Snout to Pect.	85
Base Pect.	23
Length " anal	53
Pect to ventral	102
Base ventral	16
Height " front	18, back, 14
Anal to caudal notch	22
Interorbital	43.
Snout to eye	19 (in plane)
Eye	3.3
" to 1 st gill	44
Extreme breadth head	58
Space between nostrils	17.5

Jan 29 Monday. Left Port St. Joe 10 AM. (delay caused by getting fresh meat) + just outside the channel buoys towed shrimp net 1/2 hr on smooth white sand - no result except 1 sea-robin. Proceeded to take up line of stations into Pensacola.

Mem. Send photos of shark to
Dr. T. C. Kelley, Port St. Joe, Fla.

Jan. 30 Midnight to 2.30 AM. made Sta 10447 in 120 fath.

7 AM to 8.45 AM made Sta 10448 in 72 fath

10.30 AM to 11.30 AM " " 10449 " 14 "

2 PM to 2.15 PM " " 10450 " 6 "

4⁰⁰ P.M. came to an anchor in Pensacola Harbor, just before a heavy fog closed in.

Jan 31 Wednesday. Saw Mr. Willes of the E. F. Saunders Co. No shrimp coming in here now. The catch here is made on mud in the deeper waters of the bay. Has not been tried outside (which here is all white sand). Flounder trawling here a failure. Left at 10.25 P.M. by rail for New Orleans.

Jan Feb. 1st + 2nd Arrived New Orleans 8 AM. Looked over the markets, and saw Mr. Tullian of the Conservation Commission, + had a long talk with him. Left New Orleans the night of the 2nd. Had hoped to stop off at Biloxi etc, but trains did not serve.

A norther, during these two days brought the thermometer down to 23.

Feb 3 Saturday. Arrived Pensacola 8 AM. Vessel has finished repairs + is taking stores etc.

Feb 4 Sunday. No work. Heavy S.W. winds.

Feb. 5 Monday. Heavy N.W. winds during the night. Everything frozen up during the night - thermometer at 7.30 AM 21°F. Vessel took water + final stores. It had been the intention to get away in the afternoon and reach Mobile entrance at daylight, but the engineer failed to turn up and could not be found.

Feb. 6. Tuesday. Engineer turned up early in the morning, and vessel got away 8.30 AM.

9 AM took Sta 10451 in Pensacola Bay in 5 fathoms, to ascertain conditions after a week of freezing weather. Practically calm all day. Used engine a good deal.

Feb. 7 Wednesday. 6.30 AM. made Sta 10452 about 3 miles E of Sand Id. light, off Mobile entrance. Surface temp 55 to 56. This sta. consisted of three trials with shrimp trawl as follows, net fishing only 15 ft. wide. Stiff choppy sea with stiff SE wind prevented going into shoal water, + made trials difficult.

Haul #1, 6.45 - 7.15 AM. 9 fath. mud bottom.

No shrimp.

138 croakers weighed ~~10.5~~ 10.5 Kilos av

28 trout 1.5 "

3 spot

2 Larimus

1 anchovy

1 Stellifer

1 Spade-fish

4 sea-cats

1 Shark, ♂ 63 cm. (Scoliodon?) ^{teeth +} jaws kept

1 lizard-fish

2 puffers

8 robins

3 tongue-fish

Total 193 fish. 160 or 83% small food-fish.

Haul #2 7.40 Am. 40 min. } 5 fath mud bottom.
 " #3 8.50 " 15 " }
 Haul #2 1 bushel large shrimp
 1 3/4 " small fish.
 Haul #3 3/4 bushel shrimp
 1/4 " small fish.
 Trash as follows, (for both hauls).

461	croakers	weighed	32.5	Kilos.	av.
124	spot		7.5	"	
130	trout		7.25	"	
771	Stellifer		22.25	"	
83	Sarimus		2.75	"	
49	Bairdiella		2	"	
12	sea-cats				
3	robins				
1	hizard				
17	cutlass				
6	Opisthonema				
3	Selen				
2	pin-fish				
4	small flounders				2 squid.

300 shrimp filled one paper bucket, and weighed 6185 grams, averaging 20 1/4 grams each.

Fish preserved as follows.

TT 10747	5 fish	} also some in bottles.
10748	5 "	
10749	6 "	
10750	6 "	

For the 3 hauls a total of 1859 fish were taken, of which 884 or 47% were young croakers, spot + trout.

Wind increasing after this station + being fair for Gulfport, proceeded for that port, hoping to get Messrs Talian + Jullian for further trials.

Off Ship Id. struck a severe squall, which luckily did no damage. Arrived Gulfport 6.30 P.M. after sticking in the mud for awhile outside the harbor.

Wired Messrs Talian + Herndon of our arrival, but Mr. Jullian had no phone nor telegraph connections.

Feb. 8 Thursday. Went on early train to Lakeshore, + saw Mr. Jullian. He was so pleased with our find off Mobile that he ordered his largest boat out to make shrimp trials outside.

Rec'd wire that Mr. Talian was out of town until next week. Accordingly decided to make trials off here on the 9th + 10th, returning to Gulfport on Sunday the 11th to fit out for the run to Port Arthur, Tex. Weather bad all day.

Feb. 9 Friday. Left Gulfport 8 AM for trials outside. Fresh northerly breeze, + cold. Saw Mr. G. F. Dumbas of this place who has cannery on the wharf. He claims that the shrimp inside are small except in March.

10.05 AM made Sta 10453, starting 1 mile S from Ship Id. Bar outer buoy + towing shrimp net W in 4 1/2 to 3 1/2 fath, fishing 15 ft wide. Surf temp 52°. Hauled 1/2 hour + got only a few small anchovies. Used townets on surface also. This is a barren mud bottom.

12.50 AM made Sta 10454 inside the light of Chandleur Ids. 3 1/2 fath. Surface temp 54°. Towed 1/2 half hour, net fishing 15 ft., mud + sand + mud bottom.

Catch as follows.

- 10 shrimp of various sizes.
 3 trunk-fish 21, 18, + 17 cm.
 2 sting-rays (kept). TT 10752 + 10753
USNM 127283 - 127285
 1 cutlass fish
 6 pin-fish
 6 trout
 1 robin
 2 small flounders
 a few anchovies + 2 squid
 5 spot, 17 to 14 cm.
 28 croakers, 21 to 12 cm.

} kept, in 1 qt jar.

2.15 P.M. Made Sta 10455 in 6 to 7 1/2 fath mud,
 outside Chandeur St. Surface temp 54°, bottom 12°48' C @ 11.
 Hauled shrimp net 1/2 hour, fishing 15 ft

Catch as follows.

- 1 trunk-fish
 1 small croaker
 2 " spade-fish T.T. 10754
 1 " Larinus
 2 " flounders
 1 " hogchoker 3 shrimp } kept.
 1 " anchovy
 a few squid.
 1 small Menticulus T.T. 10751

4.25 P.M. Made Sta 10456 in 4 1/2 to 5 fath, mud
 bottom, along SE face of Ship Id. Hauled shrimp
 net 1 hour, fishing 15 ft wide.
 Got 2 bushels fine large shrimp weighing 56 Kilos.
 a very clean haul.

Catch as follows.

2 bushels shrimp -
 Trout, 8 cm. 3

2 qt sample kept

9 "	3
10 "	1
11 "	1
12 "	4
13 "	8
14 "	6
15 "	14
16 "	6
17 "	6
18 "	1
23 "	1
<u>Total</u>	<u>54</u>

Croakers	12 cm	1
	13 "	3
	16 "	2
	17 "	2
	18 "	2
	19 "	2
	20 "	3
	21 "	1
<u>Total</u>		<u>16</u>

Spot	14 cm	3
	15 "	2
	16 "	1
	20 "	1
		<u>7</u>

Bairdella 2 13 + 11 cm.

Stellifer 2 11 + 11 cm.

Menticirrhus, 12 as follows:

27 cm,	weight	188 grams
26 "	"	190 "
25 "	"	162 "
25 "	"	152 "
24 "	"	140 "
24 "	"	135 "
24 "	"	124 "
23 "	"	119 "
23 "	"	108 "
21 "	"	94 "
20 "	"	73 "
21 "	"	97 "

1582 " av. 132 grams.

3 kept, T.J. 10755

Anchovies	13
Sea cats	3, 23, 24, + 25 cm.
Mrophycis	3 12, 13 + 14 cm (kept)
Sijards	6 19, 19, 20, 22, 22 + 24 cm.
Cuttass	3 25, 26 + 28 cm.
Puffers	4 7 to 8 cm.
Cheilomycterus	1 15 cm.
Spade-fish	7 6 to 9.5 cm. kept.
Hog-choker	1 11 cm. "
Small flounders	8, 10 to 11 cm "
Sting-ray	1 (same as Sta 10454)

Vessel anchored for the night at end of this station.

Feb. 10

8 Am. made Sta 10457 south of the W. end of Horn Id. in 5 fath mud + sand. Surface temp 52°.5
1st haul shrimp net as follows 1/2 hour, 15 ft. wide.

1 Menticirrhus
1 small croaker
4 small trout
1 Opisthonema
many anchovies
1 Sea cat
1 Cuttass
2 Etopus
1 Achiurus
A few squid.

2nd haul, 45 min. (8:45 Am). further E + further in ^{the shrimp}

39 croakers as follows

13 cm. wt.	18 gm.		
15 "	"	17	18 cm wt 48 gm. 20 cm. wt 77 gm.
13 "	"	17	18 " " 50 " 20 " " 79 "
15 "	"	28	18 " " 52 " 21 " " 85 "
15 "	"	30	18 " " 54 " 22 " " 96 "
15 "	"	30	18 " " 53 "
16 "	"	36	18 " " 58 "
16 "	"	40	18 " " 52 "
16 "	"	40	19 " " 62 "
16 "	"	39	19 " " 63 "
16 "	"	37	19 " " 66 "
16 "	"	42	19 " " 59 "
17 "	"	43	19 " " 63 "
17 "	"	42	19 " " 58 "
18 "	"	53	19 " " 67 "
18 "	"	48	19 " " 73 "
18 "	"	48	19 " " 68 "
18 "	"	50	20 " " 72 "

Carded.

- 1 Menticinhus
- 3 small spot
- 7 " trout
- 1 sea cat
- 2 cutlass fish
- 11 anchovies
- 1 Mrophycus
- 2 Etopus
- 3 or 4 squid.

Sta 10458, 11.15 Am. S.E. of Ship Id., 3 1/2 fath mud,
1/2 hour, fishing 15 ft wide.

Catch as follows, first haul.

- 5 bushels shrimp "large mediums", a very clean haul.
- 1 Bonnet head shark, 38 cm.
- 1 Sting-ray
- 2 Spot
- 1 Menticinhus
- 17 small trout
- 1 Stellifer
- 2 Cutlass fish
- 1 butter fish
- 1 trunk-fish
- 2 Chilomycterus

2nd haul, 12.40 P.M. 35 min. 5 1/4 fath mud,
fishing 15 ft wide.

Catch 10 bushels shrimp, "large medium"
Practically no fish, so they were not picked out

The vessel then returned to Gulfport, arriving there
4.30 P.M. Two bushels shrimp were kept as a
sample for exhibition, and the rest given away.

There are a few small shrimp trawlers at Gulfport,
and many in Biloxi, but they fish almost altogether
inside, and are not doing much at present.

Mr. Jullian's 60 ft boat was outside Ship Id yesterday,
but fished too far in and to the west, not doing much.
Today he did not fish, claiming it "too rough", although
it would have been a fine day for a Portuguese trawler
in a 25 ft skiff.

Feb 11th Sunday. Mr. F. F. Dunbar, who has a factory on
the wharf, inspected the shrimp & pronounced them
excellent, especially their cleanness from mud. Jullian's
skiffer looked them over, & had not much to say,
except that they were uniform & of good size for
canning. Mr. Mc Intosh, a dealer, also saw them.

At 11.30 I went by trolley to Biloxi, & lunched
with Mr. J. E. Herndon, inspector for the Louisiana
Commission, who took me all over the place.

During my absence Mr. Jullian came and looked
over the shrimp, and was much pleased. His one
wish was for "some Gloucester fishermen who were not
afraid to go out and get them." It disgusted him
to learn that boats much smaller and less seaworthy
than his went 20 miles out of Gloucester gill-netting
all winter.

Feb 12th Monday.
Most of this day was spent in getting gasoline, stores,
etc.

At 4⁰⁰ P.M. the vessel left Gulfport for Port Arthur
Tex. Outside the harbor the surface of Miss. Sound
was 50.5°. Water sample taken.

11.15 P.M. to 12.05 Am making Sta 10459 in 11 fath, E of Isle au Breton. A rich catch of young fish and leptocephali resulted.

Feb. 13, ^{Tuesday} 3 Am. Struck the muddy surface water off the Mississippi, the surface temperature dropping suddenly from 64° to 50°

4.45 Am to 6.05 Am making Sta 10460 in 70 fath off South Pass. Very rich hauls of young fish + leptocephali, also young macroinvertebrates etc. The cold surface water does not extend to 12 fathoms.

9.15 Am to 11 Am. making Sta 10461 in 36 fath off S.W. Pass. Rich hauls of young fish + leptocephali water very muddy on surface. The shrimp trawl was tried, but the bottom proved to be practically barren mud, only 1 small Stellerfish + two small clams being taken in a 15 min. haul.

2.15 Pm to ~~3.45~~ ^{5:45} Pm. making Sta 10462 with shrimp trials.

Station in 9 fath mud bottom, south of Barataria Pass not much in nets, but a swarm of dark green diatoms. Many fish breaking water (prob. *Opisthonema*) and many pelicans fishing.

Shrimp trawl, 1st haul, 9 fath, 15 min, 15 ft wide, towed very slowly.

3 bushels fine large prawns

1 bucket fish as follows

103 small trout weighed 5.5 Kilos.

2 croakers 4 robins 2 moonfish

1 spot 1 Bairdiella 1 spade-fish

1 hal-fish 7 Stellerfish 14 cats

2 lizards 29 Cuttars 11 small flounders (kept)

The prawns in this haul weighed as follows: (2gt sample kept, then running 30 to the 2gt jar, as against the Slip Id shrimp running 50 to the 2gt jar.

50 prawns weighed	1570	grams
51 " "	1500	"
50 " "	1650	"
50 " "	1610	"
201 " "	6330	" av. 31.5 grams each

2nd haul, 4 Pm. 4 1/2 fath ^{mud} 20 min., 15 ft wide, (4 miles SE from Barataria St.)

3 prawns

2/3 bucket of fish as follows.

38 *Menticirrhus* weighed 2.75 Kilos.

9 small trout

1 " Bairdiella

42 " Stellerfish

4 cuttars

1 puffer

5 cats

2 *Urophycis*

22 small flounders, (kept)

6 squid

1 sting-ray.

3rd haul, 5.30 Pm. 5 fath mud. SW from 2nd haul 15 min, 15 ft wide. (5 to 6 miles SW from Barataria St.)

10 shrimp

2 *Menticirrhus* 6 squid.

28 cuttars

9 small trout

3 " Bairdiella

3 " Stellerfish

1 hog-choker

11 anchovies

Feb. 14 8 Am to 10 Am., made Sta 10463, in 12 fath, stiff blue mud bottom. Many small schools of menhaden about. Tried the little purse seine on them, but it was no use. Shrimp trawl produced only 5 robins & six squid. Barren bottom.

~~Feb. 15~~ Thursday 3.15 Pm to 4.15 P.M. made Sta 10464, off Trinity Shoal in 11 1/2 fath, blue mud. Barren bottom, nothing taken in trawl.

Feb 15 Thursday. 7.45 Am to 9.20 Am. made Sta 10465, Calcasieu Pass bearing NW by N in 4 1/2 fath, mud bottom. Surface water muddy.

Shrimp trawl, 1st haul, 1/2 hr.

27 shrimp
3 menhaden (small)
9 trout
1 croaker
1 Sarimus
8 Stellerfish
1 liparid
5 cutlass fish
1 robin
2 anchovies
4 small flounders
10 hog chokers
Several immense & solid jellyfish,

Shrimp trawl, 2nd haul, 1/2 hr.

16 shrimp	5 menhaden	1 tongue fish
6 trout	1 spade fish	1 huge jelly-fish
1 croaker	3 robins	2 blue crabs.
15 Stellerfish	10 anchovies	
3 fish left T.T. 10756		

11.45 Am to 12.45 Pm. made Sta 10466, SE from Sabine Pass in 5 fath, mud bottom.

Shrimp trawl, 1/2 hour.

3 shrimp
3 cutlass-fish
2 butter fish
1 hog-choker
many anchovies
1 squid.

The vessel then put in to Sabine Pass. As there was no good place to tie up or anchor, went up to Port Arthur. Going up the canal a large Dutch steamer coming down took a sudden shear, and forced *Trampus* against the bank, striking a glancing blow, and doing no damage, except the loss of a little paint.

There is a thick layer of asphaltic oil on the water at Port Arthur, which kills all fish which come in contact with it. It is stated that it sometimes kills even the big gars, and that in summer often whole schools of menhaden are destroyed.

Saw the oil killing numerous small anchovies.

Feb 16 Friday. Left Port Arthur 11 Am & proceeded out.

3.15 P.M. to 4.05 P.M. made Sta 10467, 7 miles S.W. from Sabine Pass outer buoy, in 7 fath grey mud & sand.

Shrimp trawl, 30 min, slow.

25 large shrimp (and a few small).
1 menteinhas
9 small trout
1 Stellerfish
1 small spade-fish
17 " flounders
5 Anchovies
1 hog-choker
a few hermit crabs

10469

Haul A. $1\frac{1}{2}$ miles S.W. from S. jetty, 25 ft., eastward 2 miles to 40 ft. brown mud & sand bottom, 45 minutes.

60 medium to large shrimp 5 small shrimp
 134 small Stellifer.
 47 " trout
 4 whiting, (2 large & 2 small)
 4 butterfish
 4 tongue-fish
 2 Achirus
 1 cutlass
 1 Urophycis
 7 small squid.

Haul B 4.30 P.M. $2\frac{1}{4}$ miles SE from S. jetty, 40 ft. southeastward 2 miles to 40 ft., sticky bottom. 1 hour.

$\frac{1}{2}$ bushel large shrimp.
 1 bucket fish, as follows:-

219 Stellifer
 189 small trout
 13 " croakers
 12 " whiting
 6 " Diplectron
 4 Cutlass
 1 Bairdiella
 2 Butterfish
 1 cat
 1 robin
 1 batfish
 1 achirus
 2 tongue-fish
 4 small flatfish.

Haul C. ^{5.50 P.M.} $4\frac{1}{2}$ miles SE from South jetty, 40 ft., E by S. $\frac{1}{2}$ S. $2\frac{1}{4}$ miles to 48 ft. sticky bottom. 1 hour.

42 very large, 4 small shrimp.
 $\frac{1}{3}$ bushel fish as follows
 1 black drum, 77 cm long, wt. $6\frac{1}{2}$ kg.
 188 small trout.
 13 " whiting
 3 large spot.
 47 small croakers
 4 cats
 2 Larimus
 40 Stellifer
 8 Diplectron
 1 small pinfish
 11 " spade-fish
 2 robins
 1 lizard-fish
 34 small menhaden (left)
 1 batfish
 1 tongue fish
 5 small flatfish
 1 sting-ray.

Haul D. 7 P.M. 7 miles SE by E from S. jetty, 48 ft. East, $2\frac{1}{2}$ miles to 54 ft. hard mud bottom, 1 hour.

2 large & many small shrimp
 55 small trout 1 Stellifer
 4 cats 1 Pinfish
 9 whiting 1 Diplectron
 4 croakers 5 Urophycis
 4 spadefish 8 small flatfish
 1 batfish 1 " stingray
 2 large spot 1 couch.

Haul E 8:05 P.M. 8 $\frac{3}{4}$ miles ESE from South jetty, 50 ft.

ESE 2 miles to 52 ft., hard mud. 1 hour.

- 2 large + many small shrimp.
- 7 good sized whiting
- 29 small trout
- 2 large spot
- 2 sm. croakers
- 3 - spadefish
- 2 lizard fish
- 1 robin
- 5 batfish
- 5 moflycis
- 1 Protulid(?)
- 1 Skate
- 1 Stingray
- 33 small flatfish
- 8 tongue fish
- 1 Anacyclopsella
- a few small crabs etc

Haul F Feb. 27th 12:45 Am. 15 miles SW by S from South jetty
42 ft. mud + sand, ESE 2 $\frac{2}{3}$ miles to 51 ft. 1 hour.

- 5 large + many small shrimp
- 110 small trout
- 5 " croakers
- 3 spot
- 59 Stellifer
- 12 good whiting
- 1 Sarimus
- 4 Spade fish
- 1 Orthopristis
- 1 Robin
- 1 Diplectra
- 2 Moflycis
- 8 small flatfish
- 6 tongue fish
- 2 batfish
- 5 menhaden
- 1 Sting-ray
- 1 Butterfly ray.

Haul G 6 Am. 16 miles S by W from S. jetty, 60 ft, northward
2 $\frac{1}{2}$ miles to 55 ft. mud. 50 minutes

- 8 small shrimp
- 1 shark (Scoliodon ♂ 63 cm.).
- 20 small trout
- 2 whiting
- 4 cutlass
- 3 lizard
- 1 Diplectra
- 2 Spades
- 1 Porichthys
- 2 small flatfish
- a few squid.

Length + weight of trout C. noturus

18 cm.	43 grams
19 "	55
19	58
19	68
19	68
20	75
22	100
23	103
24	154
25	144
25	150
27	212

The great variation in the
same sized fish caused by stomach
contents.

Length + Wt. of Whiting

23 cm.	135 grams
24	170 "

Haul H. 8.20 Am. $8\frac{1}{2}$ miles SW by S. from South jetty. 35 ft. NNE 2 miles to 24 ft thence NE $\frac{1}{2}$ E $2\frac{1}{2}$ miles to 24 ft. 1 hour. sticky bottom.

31 large shrimp.
7 Whiting
3 menhaden
1 Orthopristis
4 cutlass
6 small trout
14 butterflyfish
1 small flatfish
2. Stellerfish
1 robin
1 pipefish
Many large jelly-fish.

Haul I 9.35 Am. $3\frac{1}{2}$ miles SW by S. $\frac{1}{2}$ S. from South jetty. 25 ft E $2\frac{2}{3}$ miles to 42 ft sticky bottom. 1 hour.

54 medium to large shrimp.
1 Stingray
1 Cheilomyxterus
170 small Stellerfish
65 " trout
1 menhaden
1 Orthopristis
2 cutlass
1 butterflyfish
2 pipe-fish
4 Whiting
3 robins
1 very small Anacyclopsella
4 squid.
many large jellies.

Haul J. 10.40 Am. $3\frac{1}{2}$ miles SE by S. from South jetty ^{40 ft.} ~~40 ft.~~ E $\frac{1}{2}$ N. $2\frac{1}{2}$ miles to 45 ft. mud + sand. 1 hour.

2 buckets shrimp = 399 shrimp, wt 12.25 kg.
A few small fish, practically the same as haul I

Haul K. 11.45 Am. $5\frac{1}{2}$ miles SE by E $\frac{1}{2}$ E from S. jetty. 45 ft. E $\frac{1}{2}$ N $2\frac{1}{2}$ miles to 46 ft. mud + sand.

$1\frac{1}{3}$ bushels fine large shrimp
1 bucket fish, same as before.

Haul L. 12.50 Pm. 8 miles E by S. $\frac{1}{2}$ S. from S. jetty. 46 ft. E $\frac{1}{2}$ N. $1\frac{3}{4}$ miles to 48 ft. mud. 30 min.

31 large shrimp + a few small.

3 Whiting
46 trout
5 Wrophyeis
1 Diplectra
13 small croakers
18 Stellerfish
1 Larimus
2 Spade fish
1 small flatfish
1 lizardfish
a few squid.

Haul M 310 Pm. $\frac{1}{2}$ miles N.W. of N jetty, 20 ft, NE $2\frac{1}{4}$ miles to 30 ft, mud + sand. 45 min.

Cod-end came loose in landing catch, and all was lost except 2 black drum. A few shrimp were seen in net.

Black Drum, hard ♀ 82 cm. wt. $7\frac{3}{4}$ kilos.

Ripe ♂ 88 " " $9\frac{1}{4}$ "

The flesh of these fish was full of large worms.

Haul N. 4.25 P.M. 3 1/2 miles N of N. jetty, 21 ft. ENE 3 1/2 miles to 28 ft. hard mud. Surface temp 65°. 1 hour.
89 medium to large shrimp, largest 20 to 21 cm.
1/2 bucket small fish as follows.

- 173 small hout
- 20 Steller
- 1 Croaker
- 4 Whiting
- 1 Spade
- 3 Harvest
- 3 Tongue
- 1 Achirus
- 3 small flatfish
- 7 Cutlass
- 1 Robin
- 1 Mroflycis
- 1 small bonnet-head.

Haul O 6.20 P.M. 2 miles E of N. jetty 35 ft. E 2 3/4 miles to 40 ft. mud.
1 bucket large to medium shrimp (234 shrimp wt 6 Kg.)
1/2 bucket fish, as follows.

17 butterflyfish	14 tongue-fish
1 batfish	1 robin
9 small flatfish	3 Achirus
14 Whiting	2 Mroflycis
83 Steller	2 Dipteron
9 Anchovy	
12 Menhaden	Several large jellyfish.
5 croakers	
70 trout	
1 lizard	
3 cutlass	

Tin tag numbers for Sta 10469.

10757	12 Menhaden
8	1 Skate
9	1 ray.
60	Cynoscion nothus
1	"
2	"
3	12 menhaden
4	12 "
5	Cynoscion nothus
6	2 Whiting
7	10 miscel.
8	flatfish
9	12 menhaden
70	9 Cynoscion nothus
1	6 miscel.

At the conclusion of this station it was decided, as we had not enough shrimp to take to Galveston, to start the off-shore ~~work~~ work with the otter trawl.

Feb. 28 9.30 to 10.50 A.M. Started Sta 10470. made Sta.
Haul A. 10.20 A.M. 8 1/2 fath. sand & broken shells
Otter trawl 1/2 hr. 29°03' 94°26'
Many small cutlass fish
16 small Otrynter caprinus TT 10772 + 10773.

Haul B. noon 1/2 hr. 9 fath yellow sand.
Lat 29°10' long 94°24'
Otter trawl 2 bat-fish
2 small trout
2 Steller

March 1 Haul C. Mch 1st 5:50 AM. 29°07' 94°13' Sand & broken shells, 7 fath. 45 min.
1 small Orthopristis.

Haul D 8 AM. 29°10' 94°05' Sand + gy mud. 1/2 hr in 9 fath.

1 large squid. T.T. 10775
A few small cutlass fish & shells.

Haul E. 29°07' 94°04' 10 fath Sand. 1/2 hr.
2 cutlass fish.

Haul F. 29°02' 94°05' 10 fath gy mud to shells + sand 1/2 hr.
1 red-fish
1 crab. } at this haul a cloud of large mosquitoes arrived on board. Fog & rain.

Haul G. 2.25 P.M. 28°52' 94°18' 14 fath mud & sand. 1/2 hr.
20 Otrynter (nothing else) T.T. 10776 + 10777.
Blue water, surface temp 66°.

As there was no sign of fish about Heald Bank, the line of stations off to deep water was started.

9.45 P.M. to 10.40 P.M. making Sta 10471 in 19 fath.
Too squally for trawl.

March 2 Friday 7.30 AM to 9 AM. making Sta 10472, 35 fath
Othe trawl, 4 Otrynter
3 Robins } TT 10774.
2 Squid
a few hermits

11.15 AM to 1.15 P.M. making Sta 10473, 77 fath.
Othe trawl brought up nothing but mud.

4.35 P.M. & P.M. making Sta 10474 (overboard.)
Fresh NNW wind + rising sea.

March 3 Saturday. 8.15 AM to 9.40 AM, making Sta 10475
Stiff N wind, choppy sea.
Bryed up at close of this station - reefed mainsail at 10 AM.
Furled mainsail + set storm sail 12.30 PM.
All the rest of day a Norther, hove to.

March 4. Sunday.
A Norther, hove to. Moderated in P.M. + set course for Aransas Pass.

March 5. Monday. 9.30 AM. Started Sta 10476 off Aransas Pass.
Haul A. from Whistle buoy N. 2 miles, 7 to 6 fath. sand & mud. 45 minutes.

Shrimp trawl, fishing 15 ft wide.
1/3 bushel medium to large shrimp.
1/3 " fish as follows.

105 small trout.	2 Mophycis
634 Stillifer	1 Cheilomycterus
42 Sarimus	1 batfish
3 Bairdiella	1 spadefish
7 Whiting	2 small flatfish
1 Croaker	2 " menhaden
2 Orthopristis	3 Harvestfish
2 small bonnet-heads	1 puffer
2 sting-rays	1 Deflection
2 cutlass fish	1 Robin
1 tongue-fish	1 blue crab.

Haul B. N.A.M., from whistle ENE 40 minutes 7 to 7½ fath.

- 120 shrimp
- 24 Sardinus
- 7 Croakers
- 1 Brotulid
- 2 Harvest fish
- 2 Gaff-toprail cats
- 1 Spot
- 2 sea cats
- 24 small trout
- 9 Steller
- 1 Batfish
- 2 cutlass fish
- 2 Whiting
- 1 Achirus
- 1 tongue-fish.

Haul C. Continuation of Haul B., 35 minutes to 9 fath.

- 1 shrimp
- 1 batfish
- 6 trout
- 1 Orthopristis
- 1 cutlass fish
- 2 Moplycis
- 2 Anchovies
- A few naked molluscs.
- 1 large & several small squid.

Haul D. 3.35 P.M. 15 miles NE from Aransas light, eastward, 1 hour, 5½ to 7 fath., sand & broken shells.

- 27 large shrimp
- 21 medium "
- A very few fish & squid, all kept.

Haul E. 7.10 P.M. Cavallo Pass. St. NNE 5 fath., eastward to 8½ fath. gray sand & mud. 1 hour.

- 1 bushel fine large shrimp
- 1 " Steller
- 1 bucket other fish, including 1 Asteropeus, 3 small bount-heads, and several good whiting, but very few small food-fish in this haul. 1 Orthopristis with eggs ripe & running.

Haul F. Cavallo light NN.W. 8.40 P.M. 55 minutes eastward, 5 to 9¼ fath gray sand & mud.

- nearly 1 bushel fine large shrimp.
- ½ bushel Steller
- Very few food-fish, mostly whiting. Little else.

At the end of this station a stiff SE blow made it too rough to fish, and there was nothing to do but start for Galveston and shelter.

Tin tags for Sta 10476, # 10778 - 10789 inclusive

March 6 Tuesday. 2.30 P.M. arrived at Galveston.

" 7 Wednesday. At Galveston, taking stores etc. Went to Texas City & saw Mr. H.H. Moore & Mr. Byrum. The former was very enthusiastic about the Bureau's work.

" 8 Thursday. Left Galveston 2.30 P.M. 5.20 to 6.20 P.M. made Sta 10477 6½ miles SE from south jetty, towing N.E. 1 hour. Shrimp trawl, ½ bushel large shrimp, ½ " Steller Other fish, see over.

- a few small trout.
 1 menhaden
 1 Brotulid
 2 Spot
 15 small flatfish
 8 Whiting
 3 croakers
 4 Sting-rays.
 1 Skate
 5 Spadefish
 2 batfish
 1 Hermitfish
 3 Urophycis
 2 lizard-fish
 3 tongue-fish
 2 cutlass-fish
 a few small squid.

March 9. 1.15 Am. Started Sta 10478, Brayer St. bearing N.W.
 10 fath soft mud, towing SSW. 1 hour to 10 fath soft mud.

- Haul A. 1 bucket large, and many small shrimp
 31 small flatfish
 6 large trout
 74 small "
 13 large whiting
 4 small "
 2 tongue-fish
 8 small croakers
 2 Sarinus
 156 Stellerfish
 2 batfish
 4 Spadefish
 5 Urophycis
 1 hermit-fish
 1 skate
 2 (?)
 1 Squid.

Haul B. Brayer St NW by W. $\frac{1}{2}$ W. $8\frac{1}{2}$ fath soft mud
 towing N to $6\frac{1}{2}$ fath soft mud. 1 hour. 3.45 Am.
 1 bucket large shrimp. (185 shrimp to the bucket
 $1\frac{1}{2}$ bushels fish, same character as Haul A. with
 the addition of a few menhaden.

Haul C. Brayer St NW by N 6 fath, SW to 5 fath
 soft mud. 5 Am. 1 hour.
 49 medium to large shrimp
 $\frac{1}{2}$ bucket fish, same character as haul A.
 2 bushels large jelly-fish.

Haul D. 6.15 Am, continuous from Haul C., S by W to
 $7\frac{1}{4}$ fath mud, 1 hour.
 1 bucket medium to large shrimp (200 shrimp, bucket
 not quite full).
 $\frac{1}{4}$ bushel fish, same character as Haul A, except
 no flatfish. 18 menhaden

Haul E 8.40 Am. From Brayer whistle buoy NNE
 to 5 fath soft mud. 45 min.
 6 medium shrimp
 a few small whiting and trout
 a few Stellerfish.
 2 bushels large jellies

Haul F. 11.05 Am. South from San Luis Pass, 8 fath
 blue mud and fine sand, towing NE 40 minutes
 to $7\frac{1}{4}$ fath.
 $1\frac{1}{2}$ buckets fine large shrimp.
 1 bushel Stellerfish
 Very few other fish, including a few menhaden.
 Fresh E breeze, + rising sea. Clouding up.

Haul G., continuous with F, North to $6\frac{3}{4}$ fath
mud & sand. 1 hour.

44 medium shrimp
1 bucket stellifer
1 bushel large jellies.
Practically no other fish.

Weather threatening, returned to Galveston, arriving
at 6 P.M.

Tin tags for Sta 10478 * 10790 - 10798 inclusive

March 10 Saturday. Cleaning ship, drying out, and
minor repairs to engine.

March 11 Sunday. no work.

March 12. Repairing rigging, taking stores etc.

March 13 Repairing rigging and overhauling deck engine.

March 14 Ready for work, but stiff NE wind prevented.

March 15 Thursday. Ready for work, but thick fog and
calm prevented.

March 16 Friday. Left Galveston 7.30 A.M. Light SE ans
and a small choppy sea. Went to lightskip under
power, and delivered to the captain of same
2 tight barrels and 400 lbs salt, to be used in
the curing of shark skins.

Speed of vessel from wharf to lightskip exactly
4 miles per hour. Reached lightskip 4.15 P.M.

6.55 P.M. arrived at Sta. 10479, 11 miles SSW
from Heald lightskip. Surface temp. 66°.

Towed shrimp trawl ENE, 9 fath sand gravel & mud
to $10\frac{1}{2}$ fath. 1 hour.

Net contained 3 buckets of fish. A second haul
had just been started, when a small norther hit us
and stopped operations. Took all night under sail
and power to work back under the land.

Fish as follows.

108 Orthopristis, ripe, nearly all ♂.

Trout, nothus 3 ripe ♂ 1 ripe ♀ 2 small.

13 large spot.

1 small croaker

3 Otrynter

7 Pinfish

4 Whiting

11 Diplectron

9 Robins (2 sp.)

11 Surnards (2 sp.)

2 puffers

25 Anchovy.

39 small flatfish

3 Brotulids

3 Siards (2 sp.)

2 Sea cats

3 Urophycis

Many small shrimp, crabs & shells.

Saturday.

March 17 th. Reached wharf at Galveston 8 A.M. Weather very
threatening, all day. In the early evening there
was a repetition of the norther.

" 18 Sunday. At Galveston. Learned that a tug was
lost off Aransas in the storm which hit us Friday
night.

March 19 Monday. Taking stores, gasoline etc for the run east to Boca Grande. Vouchers delayed us, & then being little wind & that adverse, postponed start until tomorrow.

March 20 Got away from Galveston 11.30 A.M. Stiff SSE breeze and choppy sea.
12.35 P.M. made Sta 10480, 1 1/2 miles E from Galveston outer buoy, towing ESE 45 minutes with shrimp trawl.

80 large shrimp

94 Sticklefish

32 Trout (small)

7 croakers "

6 whiting

2 cropleys

1 harvest-fish

1 small flatfish

2 robins

1 anchovy

3 small squid.

Too rough for tannets - so proceeded on our course, E. by S.

March 21 Wednesday. Proceeding on course for S.W. Pass. choppy sea & light ~~S~~ S air. Started engine 6.30 A.M. Much gulf weed. Engine running all day.

March 22 Thursday. Light SSE breeze, smooth sea, clear. Large school of porpoises at noon. At 3 P.M. many pelicans about, but no signs of fish. Trolling line over all day yesterday and today without result.

3 P.M. Surface 70°

4 P.M. " 63°

5 P.M. " 52.5° Approaching S.W. pass. muddy.

6 P.M. " 55° SW pass lightship.

1 mile E from lightship surface 66°.

9.45 P.M. to 11 P.M. making Sta. 10481

March 23 4.30 A.M. to 7 A.M. made Sta 10482, & proceeded to Pensacola, for repairs to engine.

The dredging wire being played out, and badly frayed, condemned it and hove it overboard.

Replaced it with the Seneca wire, which was in rather poor shape, but better than the old one.

E.S.E. breeze, fine & clear. Trolled all day without result.

2 P.M. passed a tremendous school of porpoises, estimated to be more than 500, and perhaps twice that number.

11.30 P.M. Entered Pensacola Bay & came to an anchor at Pensacola at midnight.

March 24 Saturday. Took engine parts to shop. Saw Mr. Welles of E.E. Saunders & Co. and had a long talk with Mr. Taylor & Mr. Warren. The latter was much interested, and very reminiscent of the early days of the Fish Commission.

March 25 Sunday. No work.

- March 26 Monday. Working on engine repairs.
- " 27 Tuesday " " " "
- " 28 Wed. Engine repairs completed at 1 P.M.
Left Pensacola 1.30 P.M. Wind fell light
and engine balked again going down the bay.
Did not get outside until 4 P.M.
4 to 4.30 P.M. made Sta 10483. in 6 fath sand
eastward from Pensacola outer buoy. Hauled shrimp
trawl 1 1/4 hours. Barren sand bottom, taking only
3 robins, 2 lizard fish, 1 skate + a few squid, a large
bunch of squid eggs + a few sand dollars + stars.
T.T. 10808 - 10810 inclusive
- " 29 Thursday. 5.30 P.M. to 7.30 P.M. made Sta. 10484
Barren bottom, shrimp trawl getting only 1 small flatfish
+ 4 stars. TT 10811
- " 30 Friday. 8 P.M. to 9.15 P.M. made Sta. 10485
- " 31 Saturday. 9 AM caught trolling 1 *Gymnosarda alleuterata*
♂, testes undeveloped, 57 cm. wt 2130 grams, bled.
TT 10812. Stomach contained a few small fish (left)
Noon, saw a large school of flying fish.
3.30 P.M. off Egmont Key about 10 miles.
4 P.M. caught trolling 1 Spanish mackerel ♂, testes
undeveloped, Stomach empty, 91 cm long.
- April 1. Sunday.
6.30 A.M. anchored at Boca Grande. Went up
to town + saw several fishermen. All fish scarce
since the big mortality last fall. 3 tarpon taken
yesterday still-fishing on the flats. None being

taken in the pass. Mullet very scarce. Quite a few
shrimp being taken with lights and dipnets under
the phosphate wharf. This is very unusual, as shrimp
are seldom taken here.

In evening fished the Pass for tarpon without result.

- April 2 Monday. Made several hauls with shrimp trawl
about the harbor, with negative results. Bottom very
barren, + hardly any fish.
Made 3 seim hauls on the beach outside Phosphate
wharf. Young ~~penaeus~~ *Penaeolobus* very abundant.
Preserved several hundred. Saw Dr. Atwood who
expressed interest in our work, and hoped we could
come back soon with a better outfit.

- April 3. Tuesday. Left Boca Grande 6 AM. Passed 14 boats
tarpon fishing in the Pass.
7 AM to 7.45 A.M. made Sta 10486 at Boca
Grande outer buoy. Shrimp trawl, 45 minutes,
yielded as follows.

188 small grunts
291 " red mullet (=mullus).
4 Butter-fish
4 Carangids
2 Gurnards
2 Puffers
3 Diplectron
8 file-fish
2 Mojanes
4 Orthopristis (1 ripe ♂)
2 Sea cats
3 squid.
2 medium sized shrimp.

TT 10813 - 10815

The grunts measured as follows: the larger ones had ripening sexual organs.

9 cm.	7
10 "	22
11 "	30
12 "	34
13 "	63
14 "	28
15 "	<u>5</u>
	189

2 to 3 P.M. many schools of fish in sight. They looked like menhaden, but seemed a little too silvery and moved too rapidly.

6 P.M., trolling, caught 1 *Caranx crysos*, 53 cm long.

Apr. 4. 4 AM to 5.10 AM made Sta. 10487, 20 miles N x W from Key West NW. Passage, in 11 fath. Shrimp trawl tow on obstruction, taking only 1 tongue fish and 3 small flatfish, TT 10816