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EXPLORATORY SHRIMP FISHING IN THE GULF OF MEXICO, SUMMARY REPORT FOR 1952-54

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SUMMARY

New shrimp resources have been found in the Gulf of Mexico by explorations for commercially-valuable grounds made by the Branch of Commercial Fisheries of the

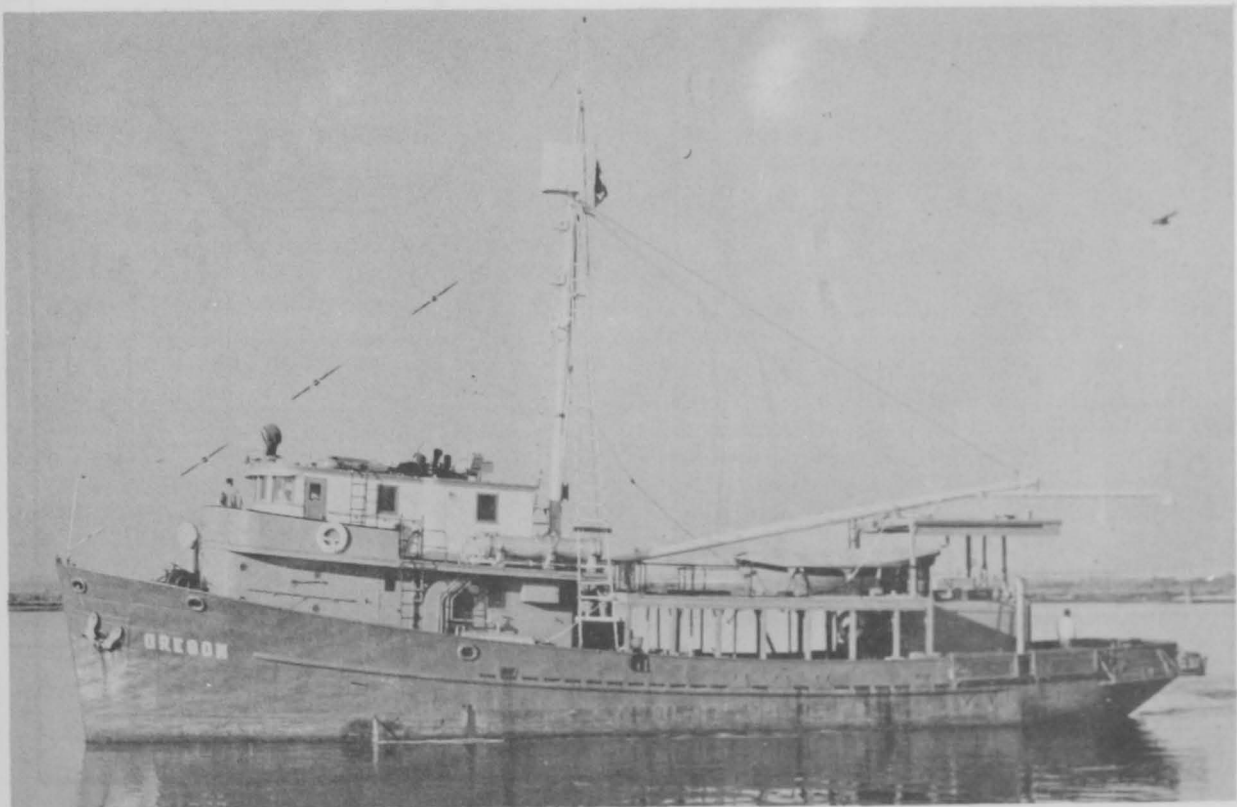


Fig. 1 - The exploratory fishing vessel Oregon operated by the U. S. Fish and Wildlife Service in the Gulf of Mexico since 1950.

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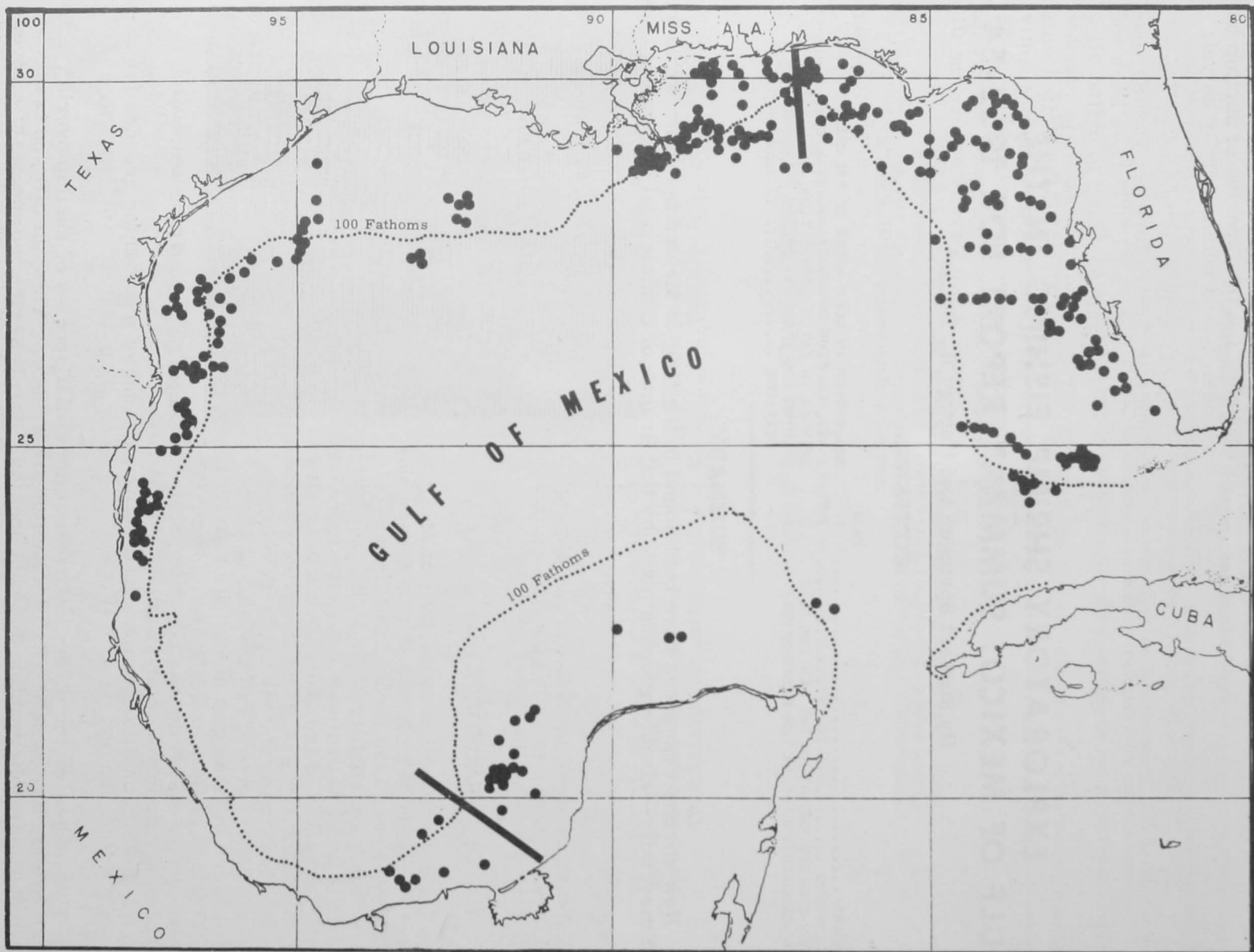


Fig. 2 - Distribution of exploratory shrimp trawl drags in the Gulf of Mexico by the Oregon, 1952 to June 1954. Dots show position of one or more drags. Black lines extending offshore at Pensacola and in the Gulf of Campeche show approximate dividing lines between east and west Gulf continental shelf bottom lines.

U. S. Fish and Wildlife Service. An extensive new fishing area for brown-grooved shrimp revealed by these explorations was immediately utilized by the shrimp fishing fleet. An extensive fishing area for deep-water red shrimp has also been discovered, but this species of shrimp has not been fished commercially as yet.

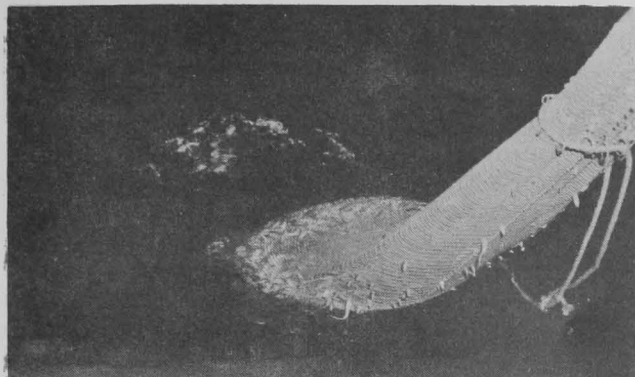


Fig. 3 - Shrimp trawl reaching the surface after nighttime drag.

Explorations for pink-grooved shrimp by the exploratory fishing vessel Oregon through 1953 have been sufficiently comprehensive to define all of the major areas of possible production along the Gulf Coast of the United States and to point out that the only presently unworked area of importance is the 35- to 50-fathom depth range on the coasts of Louisiana and Texas between the 91st and 95th meridians.

Explorations for pink-grooved shrimp have produced good catches on, or quite near, the major pink-shrimp fishing grounds off Dry Tortugas, Florida, and Campeche, Mexico, but in no other areas. The eastern Campeche Bank and most of the grounds off Florida west coast, believed to offer possibilities for production of pink-grooved shrimp, have had trawling-bottom areas and extensive trawling operations require development of new gear or methods.

Red shrimp, a type of shrimp not yet fished commercially, was found in 150 to 375 fathoms between Dry Tortugas and Aransas Pass. Catches show production possibilities if improvements in the methods of handling shrimp trawls in deep water can be worked out.

No evidence of stocks of white shrimp other than those now known to the shrimp fishery were found by the Oregon.

BACKGROUND

Shrimp production in the Gulf of Mexico reached nearly 152 million pounds (heads on) in 1950. From 1950 through 1953 landings were steady or slightly higher, but there were some substantial declines and sharp increases in certain parts of the Gulf. In 1950 the Dry Tortugas fishery was being intensively worked for the first time, and the newly-developed shrimp fishing grounds of the Gulf of Campeche were beginning to contribute heavily to the landings at Gulf fishing ports. Also, the brown-grooved shrimp was becoming an increasingly important component of the total catch. These conditions emphasized the importance of new fishing grounds for expansion of the fishery.



Fig. 4 - The bag full of fish is hoisted aboard.

The ranges of the three important commercial species of shrimp overlap to some extent, but each has its own habitat preference. This, in turn, presents a distinct exploratory problem for each species. Rarely are the two species of grooved shrimp taken in large numbers at the same time and place. The deep-water red

shrimp does not, as far as is known, ever appear within the range of those species landed in the Gulf at present.

The interdependence of exploratory fishing information, marketing conditions, and the availability of fishermen, vessels, and gear, is clearly illustrated in the expansion of the shrimp fishery. Exploratory information roughly outlining the fishing grounds for pink shrimp in the Gulf of Campeche was obtained by Japanese exploratory fishing vessels in 1936 and 1937 working under the auspices of the Mexican Government. However, at that time the market for pink shrimp did not exist and there were no fishing fleets capable of fishing these grounds. On the other hand, the conveniently accessible Dry Tortugas grounds, discovered by fishermen at a time when a strong market prevailed for shrimp, were heavily exploited at once.

The exploratory fishing vessel Oregon began explorations in the Gulf of Mexico in April 1950 on a recommendation by the Gulf States Marine Fisheries Commission. The Commission had requested that emphasis be placed on shrimp, with tuna and red snapper explorations as secondary objectives. Preliminary discussions of the exploratory methods to be followed brought out that priority should be given to the location of accessible unused fishing areas offering good catches to shrimp fishing vessels with standard equipment. This approach was carried out during 1950 and 1951 and a resume of the results (Springer and Bullis 1952) included a description of exploratory shrimp fishing methods and types of gear used. Construction details on the three basic trawl designs employed are described by Bullis (1951).

During 1952 and 1953 increased emphasis was placed on tuna explorations in the Gulf. Shrimp trawling was continued through this period to complete preliminary coverage whenever it was practical (fig. 2).

This report covers the Gulf-wide shrimp explorations made by the Oregon through June 1954. Exploratory shrimp trawling in deep water is continuing at the present time.

BROWN-GROOVED SHRIMP IN THE WESTERN GULF

The continental shelf area of the Gulf of Mexico is divided into two major bottom-type zones, each fairly uniform in composition throughout its range. Zone boundaries are somewhat arbitrary since there is a narrow transition area at each end.



Fig. 5 - Mixed shrimp and scrap fish are dumped on deck.

The western Gulf continental shelf zone extends from Pensacola westward and down the Mexican coast to a point between Carmen and Campeche, Mexico. Beyond the 10-fathom curve the bottom is primarily terrigenous mud or silt, but with mixtures of sand extending out to 30 or more fathoms in some areas. Mud lumps and large coral-rock structures are common beyond the 50-fathom curve out to the edge of the shelf.

The brown-grooved shrimp (Penaeus aztecus) is the principal species found in catches from the extensive mud bottoms of the continental shelf of Alabama, Mississippi, Louisiana, and Texas. White shrimp (P. setiferus) are also present in the same region, but fishable concentrations are generally restricted to the shallower water inside the 20-fathom curve. The brown-grooved shrimp (white shrimp are

not grooved) have a wider depth range. Although there are many instances, particularly at dawn and at dusk or in muddy water, when both species may be taken in a single drag, brown-grooved shrimp are usually caught in night drags while white shrimp are taken in the daytime. A few pink-grooved shrimp are found in the western Gulf of Mexico, and the range of the brown-grooved shrimp may extend into the eastern Gulf, but the commercial importance of these out-of-range shrimp is not known, perhaps because of the limited observations of fluctuating availability.

Brown-grooved shrimp have been taken in 85 percent of all exploratory drags made by the Oregon in depths of 10 to 70 fathoms between Cape San Blas, Florida, westward and southward on the continental shelf to Carmen, Mexico. During 1950-51 the Oregon trawled all major unfished potential brown-grooved shrimp areas in the Gulf. In 1952-53 repeat coverage was carried out in the same areas at different seasons. Coverage of many areas during the December-February period is incomplete due to severely curtailed fishing operations caused by unfavorable weather, although most of the good trawling bottom has been worked in several seasons.

The area that has repeatedly yielded the highest catch rate of brown-grooved shrimp lies in the 30- to 45-fathom depth range between 88° and 90° west longitude on both sides of the Mississippi Delta.

These grounds were reported by Springer (1951) after initial explorations in the fall of 1950 produced heavy catches at rates up to 315 pounds per hour. These high catch rates were obtained on grounds not previously fished. Radiotelephone reports to the nearby shrimp fleet on September 15 announcing that the Oregon had taken 2,700 pounds of 12- to 16-count shrimp (heads on) the preceding night resulted in immediate exploitation of the grounds. By the end of 1951 the commercial fleets were regularly fishing portions of the grounds in 30 to 45 fathoms on both sides of the Mississippi Delta. However, some sections were only partly fished through 1951 because the soft mud bottom bogged trawling gear. In 1952, after the introduction of the "mud rope," the entire area was being fished.

Eastward from 88° west longitude (east of Mobile) catch rates diminish rapidly. No catches of brown-grooved shrimp were made east of Cape San Blas, Florida. One area, in 45 to 65 fathoms off Pensacola, produced very large shrimp (3 to 6 per pound heads on) but exploratory drags did not indicate commercial concentrations. In the winter of 1952/53 a small fleet worked in this area but moved back to more productive grounds in the spring.

Westward from the Delta, all grounds that seasonally have commercially valuable stocks are being worked by the Texas and Louisiana fleets. Beyond the present depth range of this fishery, in 35 to 50 fathoms, there are extensive areas of good trawling bottom. Catches of 20 to 50 pounds per hour were made by the Oregon throughout this range, an average that is below the present minimum catch rate for offshore shrimp vessels. The highest exploratory catch in this range off the Texas coast was 150 pounds per hour. This area, due south of Galveston in 35 fathoms, is now included seasonally in the fishery.



Fig. 6 - Sorting the catch.

Off the Alabama, Mississippi, Louisiana, and Texas coasts, the steep slope of the continental shelf between 70 and 100 fathoms makes trawling difficult and impractical. The few drags successfully completed by the Oregon in this depth range brought up no brown-grooved shrimp.

Beyond 50 fathoms out to the edge of the continental shelf, poor trawling bottom was characteristic (see fig. 10). Of 29 exploratory drags made in the 50- to 60-fathom depth range along the Texas-to-Alabama coasts, 11 resulted in complete loss of trawling gear. Fifteen of the remaining 18 drags caught brown-grooved shrimp at rates of 1 to 60 pounds per hour. Of 50 drags made inside of 10 fathoms for comparative purposes, only 14 caught brown-grooved shrimp.

Most exploratory dragging was carried out with 40-foot flat shrimp trawls (construction details are given in Fishery Leaflet 394, Bullis 1951). When good fishing grounds were indicated by the 40-foot trawl catches, larger commercial-type gear was used. These included 55-, 65-, and 100-foot flat trawls, and 74- and 125-foot balloon trawls. Most production-type trawling was carried out with either the 74-foot balloon trawl or the 100-foot flat trawl, depending upon bottom conditions.

Despite efforts to select good trawling bottom for exploratory work, gear loss was severe. Twenty trawls were lost, including one or both trawl doors on nine occasions. Twenty-nine other trawls were so severely damaged that they required almost complete refabrication. The reason for many of these losses could not be determined; however, the following breakdown based on estimated causes indicates the types of hazards encountered.

Total loss of trawling gear (reason unknown)	5
Hit obstruction (i. e., wreck, lump, etc.)	6
Bogging in soft mud	6
Torn up on coral bottom	5
Overload of bottom trash (i. e., sponge, urchins, etc.) ...	3
Netting badly ripped or lost, lines cut (reason unknown) ...	24
Total ..	49

Gear damage occurred in spite of the fact that exploratory trawls are generally made of heavier twine than normally used and that depth-recorder tracings have been closely watched during the course of trawling.

At irregular intervals the fleets working on brown-grooved shrimp lose contact with the concentrations, forcing a temporary suspension of fishing operations. On three occasions along the Texas and Louisiana coasts, the Oregon has covered areas under these conditions with a series of trawling transects from shallow water out to the edge of the continental shelf, attempting to determine if this resulted from a mass movement or a dispersal of the shrimp concentrations. Each time a similar pattern of bottom temperatures was noted. This was characterized by little variation over wide depth ranges, usually less than 2° F., between 10 fathoms and the edge of the shelf. The nature of the catches on the shelf indicated a general dispersal of the stock rather than any mass movement. Thinly scattered brown shrimp of mixed sizes were found to be more or less evenly distributed over a wide depth range, making commercial trawling unprofitable.

PINK-GROOVED SHRIMP IN THE EASTERN GULF

The eastern Gulf continental shelf zone extends from Pensacola south along the Florida coast and includes the Campeche Bank down to Carmen, Mexico. These two sections are characterized by sand, shell, and coral gravel; and by live coral overlying white, gritty, calcareous mud.

Extensive areas along the west coast of Florida and on the Campeche Bank within the depth range of pink-grooved shrimp (*Penaeus duorarum*) received scanty exploratory trawling prior to 1954. The possible development of confined limited production areas was indicated by the occasional good catches by vessels in small isolated gulleys of clear mud bottom; the presence of young pink-grooved shrimp in



Fig. 7 - After sorting, weights and counts are recorded for each species in the catch.

Boca Grande Harbor, Tampa Bay, Cedar Keys, and off Apalachicola; and scattered pink-grooved shrimp caught in exploratory drags throughout the 10- to 25-fathom depth range on bad bottom. However, either clear bottom should be located or gear developed to overcome the natural trawling hazards.

Commercial concentrations of pink-grooved shrimp were found to extend beyond the heavily worked areas on both the Dry Tortugas and Gulf of Campeche grounds. In August 1951 the Oregon ran a series of drags away from the relatively confined 14-fathom fish-

ing area off Campeche and demonstrated that equally high catches could be maintained out to 25 fathoms at distances of 20 to 25 miles away from the area of intensive fishing.

In June 1950, January and February 1951, July and December 1952, and in June 1953, exploratory soundings were made in 10 to 25 fathoms between Apalachee Bay and the Dry Tortugas grounds in search of level bottom sufficiently clear of coral and loggerhead sponge to permit trawling with conventional type trawling gear. The few drags made in less hazardous-appearing areas off Cedar Keys, Tampa, and Boca Grande generally resulted in severe gear damage.

Owing to the time-consuming nature of developing trawling gear suited to this type of bottom, experiments were limited in favor of explorations in areas suitable to existing gear. However, some progress has been made in combating certain trawling hazards. Several types of bottomless trawls were used successfully in loggerhead-sponge areas. They were designed to break the sponge away from the bottom and permit it to pass between stringers running from the tickler chain back to the unweighted lead line. Subsequent comparison drags with standard commercial trawls showed an average reduction of 75 percent of trash and scrap fish and a reduction of the shrimp catch by about 30 percent.



Fig. 8 - The 40-foot bottomless trawl developed for exploratory dragging on loggerhead-sponge bottom.

In 1953 an "Echograph" depth sounder was installed on the Oregon. The fine delineation of bottom conditions obtained with this recorder (fig. 10)

was put to use for two cruises in 1954 to make a comprehensive trawling survey of the bad bottom areas along the west coast of Florida between Cape San Blas and Dry Tortugas with the primary objective of locating trawlable bottom in the pink-shrimp depth range.

Two types of heavy-duty trawls were rigged for working this area. The first was a 40-foot flat trawl of $2\frac{1}{2}$ -inch mesh body, 42-thread cotton twine. The other style used was a 40-foot 1-seam New England-style flat trawl of 42-thread cotton, $2\frac{1}{2}$ -inch mesh body. Both nets were hung on $\frac{3}{8}$ -inch wire rope wrapped with manila, and had $1\frac{3}{4}$ -inch mesh, 42-thread cotton cod ends protected with bullhide chafing gear.



Fig. 9 - Overloading with loggerhead sponges is a major hazard to trawling in wide areas off southwest Florida. Catches of sponge are so heavy in some areas that nets cannot be hauled aboard.

inside the 15-fathom curve. Drags in deeper water failed to catch a single pink-grooved shrimp. Several recorder transects were made over the "Middle Grounds;" however, no bottom suitable for even a test drag was located. Drags on the periphery of the "Middle Grounds" failed to bring up a single specimen of commercially valuable shrimp.

In general, catches were exceedingly small throughout this area and the amount of scrap fish was the lowest for any Gulf area covered by the Oregon to date.

On cruise 22 (March 31-April 23, 1954), 62 drags were made from Tampa Bay to the southern end of the Florida shelf between 3- and 375-fathom depths (fig. 11). Most of these hauls were made inside the 25-fathom curve between Tampa Bay and Cape Sable. Bottom conditions for most of this area were similar to those found on the preceding cruise. Moderate-to-heavy concentrations of loggerhead sponges were found to be generally distributed inside of the 35-fathom curve and four trawls were severely damaged due to overloading. One catch of 6,000 pounds of loggerheads was made in a half-hour drag. Drags between 5 and 15 fathoms generally showed pink-grooved shrimp present, but catches all ran under 15 pounds per hour.

RED SHRIMP IN DEEP WATER OF THE GULF (1,000 FEET OR MORE)

Beyond the edges of the continental shelf there has been no commercial fishing in the Gulf of Mexico. Snapper fishermen have extended the range of their fishing from about 80 fathoms to about 150 fathoms within the past few years. This has been possible because of new developments in fishing gear, such as power reels, stainless steel wire lines, and electronic aids for finding position, depth, and good fishing places. Deep-water fishing for snappers has not been better than fishing in

shallower water, but it has made it possible for snapper fishermen to move offshore during periods of temporary poor fishing on the shallow banks. The net results has not been larger daily catches but better trips and greater seasonal earnings for well-equipped and well-managed vessels.

The discovery of red shrimp (*Hymenopenaeus robustus*) concentrations, through explorations by the Oregon, appears now to be significant as a possible supplement to inshore fishing.

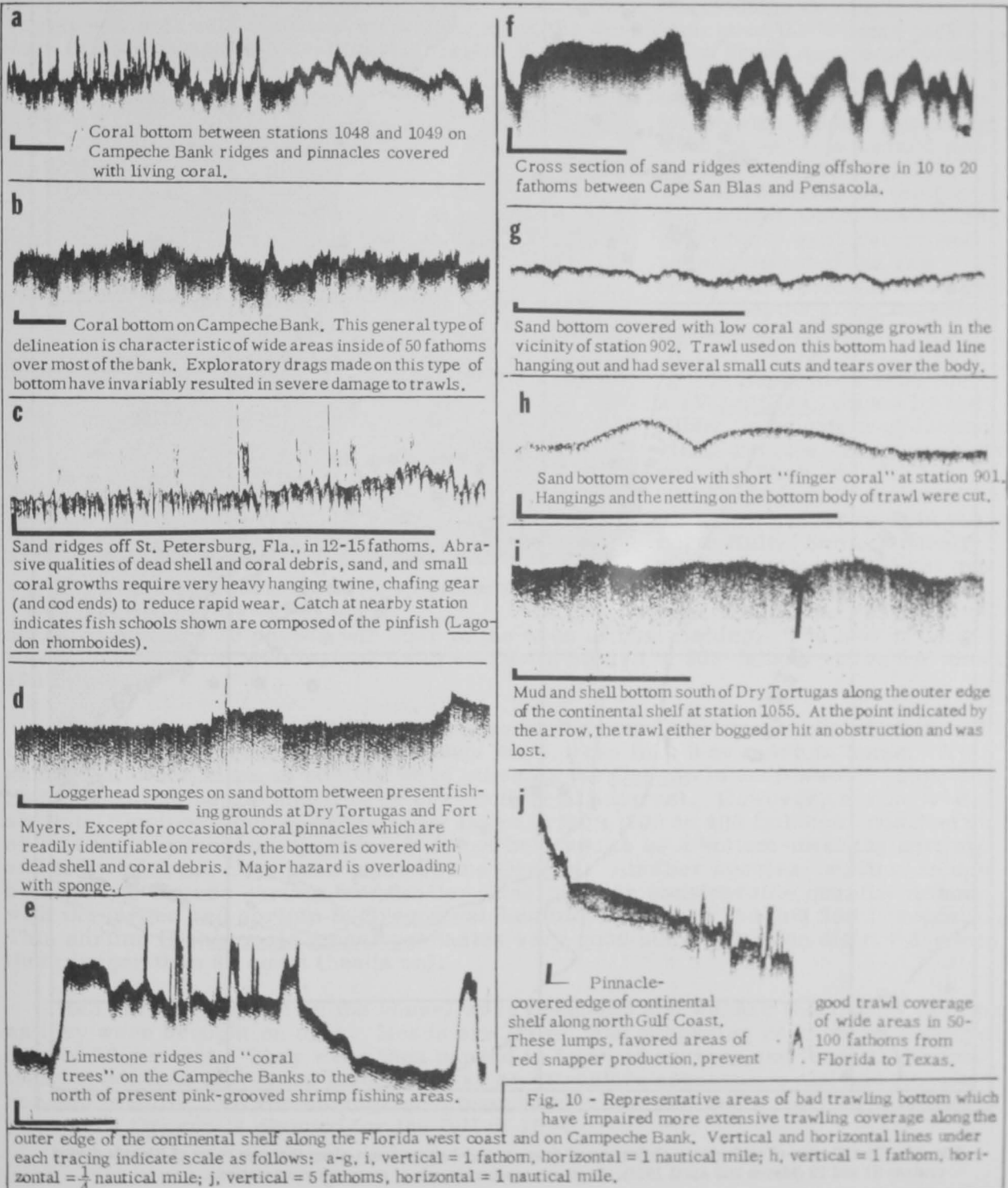


Fig. 10 - Representative areas of bad trawling bottom which have impaired more extensive trawling coverage along the

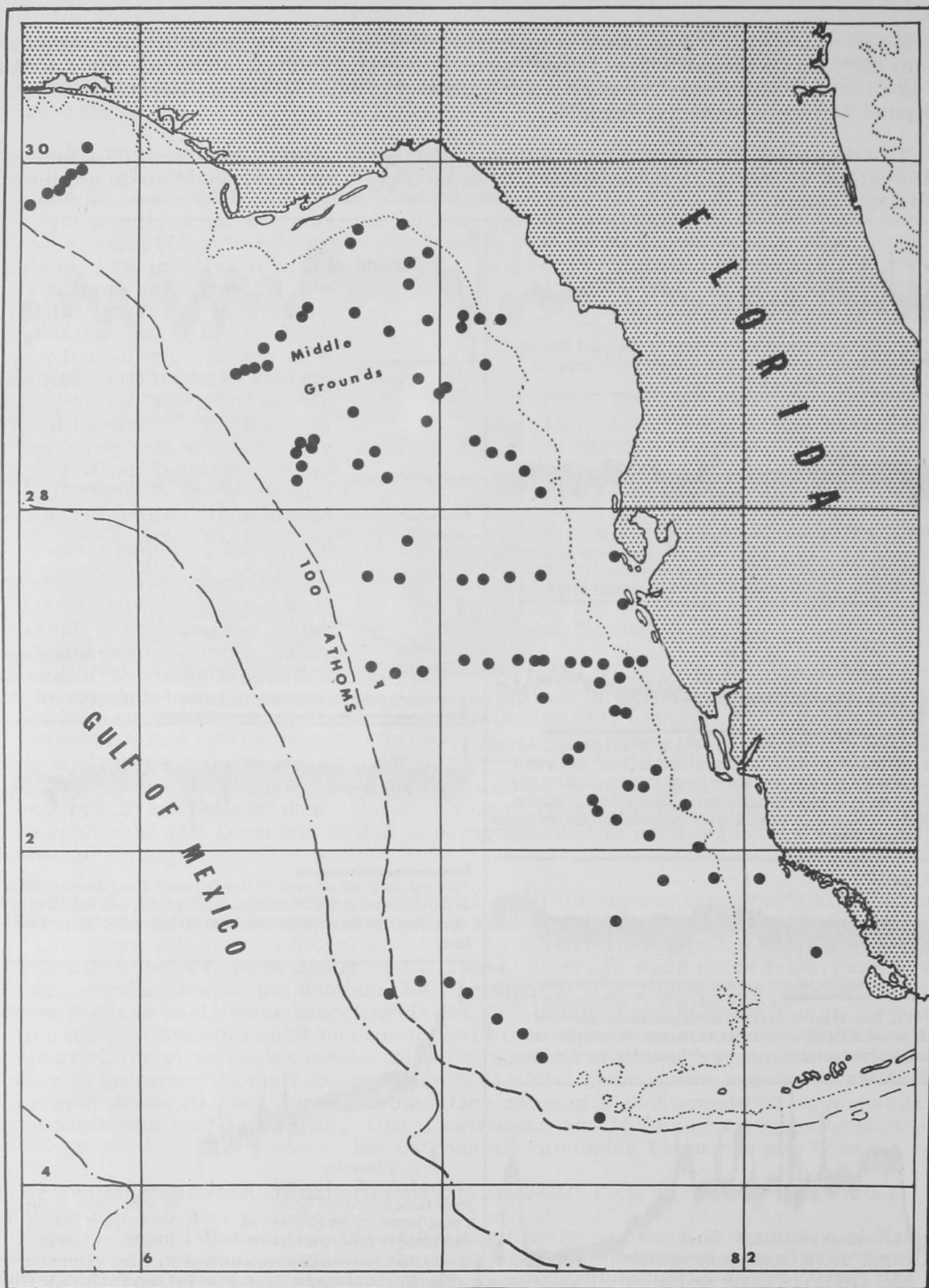


Fig. 11 - Distribution of exploratory shrimp trawl drags in bad-bottom areas along the west coast of Florida during cruises 21 and 22 (March and April 1954). Each dot represents one or more trawling stations.

In 1951 drags by the Oregon in depths between 190 and 240 fathoms brought to light a stock of red shrimp which differed from other common large shrimp in that it was confined to relatively deep water. These shrimp, although apparently marketable, have not yet been fished by the shrimp fleet.

Subsequent exploratory drags by the Oregon produced red shrimp from depths of 150 fathoms to 375 fathoms, but the best catches were made eastward from the Mississippi River Delta to the Pensacola meridian in 185 to 275 fathoms and southwest of Dry Tortugas. One of the major trawling hazards in these depths is the bogging in soft mud bottom. However, after the development of the Weems trawl door (a door combining certain features of the standard Gulf trawl door and rocking



Fig. 12 - Catches of loggerhead sponge like this are common in 5 to 35 fathoms in the offing between Tampa and Cape Sable.

chair doors often employed in the mud lump area off the Mississippi Delta) and using mud ropes, this hazard was greatly reduced (fig. 13). The drags made by the Oregon in deep water have been essentially exploratory and have shown that the red shrimp are present at appropriate depths along the entire continental shelf.

In September 1952 the M/V Antillas, owned by the Gibbs Corporation of Jacksonville, Florida, in cooperation with the Fish and Wildlife Service, made a series of drags for red shrimp in the north Gulf. Some difficulty was encountered at first due to bogging, but after a mud rope was put on, drags produced an average 70 pounds per hour in the area of best fishing. The best fishing was found from the Mississippi Delta eastward along the 200-fathom curve for about 100 miles.

Red shrimp reach about the same size as the common commercial shrimp and in catches by the Oregon the larger ones were taken in 190 or more fathoms. A number of other kinds of shrimp were taken by the Oregon in deep water. Most of these appear to be too small to be of commercial interest. However, a wine-red shrimp (Plesiopenaeus edwardsianus) taken in from 300 to 400 fathoms, reaches the size of the commercial species. It is not believed to be a bottom-dwelling shrimp, and a few of these have been taken by the Oregon. Another species, similar in appearance to the red shrimp but smaller, was taken in considerable quantity mixed with the larger red shrimp in Oregon catches made between 150 and 200 fathoms. This shrimp (Penaeopsis megalops) tastes very good but the Oregon did not produce them larger than 40 count (heads on).

Red shrimp handled on the vessel were beheaded and washed thoroughly as soon as they were brought on deck. Heads are large, and beheading resulted in a weight loss of 50 percent. They were then packed in 5-pound cartons and frozen. Under these conditions they were found to make an attractive appearance and had fine flavor and texture. No red shrimp have been handled on ice, but a trial of icing methods on the Oregon is planned for the fall of 1954.

CHANGES IN CATCH COMPOSITION

It is common knowledge that changes occur in the fishing grounds from year to year and that these changes may bring either more valuable or less valuable catches. Not only does the volume change, but the kinds of shrimp and fish caught on some Gulf grounds appear to change from time to time. There are many examples in the records of Oregon catches indicating that change in catch composition is a normal condition.

We have previously reported (Springer and Bullis 1952) the presence of pink-grooved shrimp off the Alabama and Mississippi coasts making up as much as 30 percent of the grooved-shrimp catch of some vessels in the late spring and summer of 1950. Very few pinks, not more than one percent of the catch of grooved shrimp, were noted in the following three spring and summer seasons. Furthermore, there was substantial agreement among commercial fishermen that few pink-grooved shrimp had been present in catches prior to 1950. In January 1951 the Oregon made a series of 5 exploratory drags between Fort Myers and Tampa Bay in depths of 6 to 18 fathoms. Three of these drags (of 15 to 30 minutes duration) resulted in such heavy catches of loggerhead sponges that the nets were badly ripped while hoisting them aboard and most of the catch was lost. Although pink-grooved shrimp were taken, there was no indication of commercial concentration from any of these catches. However, in the summer of 1953 commercial fishing by a few vessels was carried on near Fort Myers in 7-8 fathoms with moderate success.

In August 1953 a few landings of shrimp in Louisiana for canning received special attention because, although the shrimp were quite fresh, they were reddish. A sample of the catches was examined and found to be made up of Trachypenaeus constrictus, about 30 count (heads on). This kind of shrimp is not ordinarily taken in sufficient quantity to be of any commercial importance and those taken would normally pass unnoticed or be culled out of shrimp catches as too small.

Many of the changes are relatively obscure and affect shrimp or fish of little commercial importance. Some of the changes occur over such a long period of time that they pass unnoticed. For example, there are two species of white trout (Cynoscion arenarius and C. nothus) found along the north Gulf coast so similar in appearance that fishermen do not recognize them as different kinds. But the two can be very easily distinguished once the differences are known. C. nothus was so rare in Oregon catches from 1950 through 1952 that only three fish were recorded, but in 1953 this white trout was present in substantial numbers in all drags made inshore in the north-central Gulf.

It is necessary to take the probability of some change in the fishing situation into consideration in the evaluation of exploratory data.

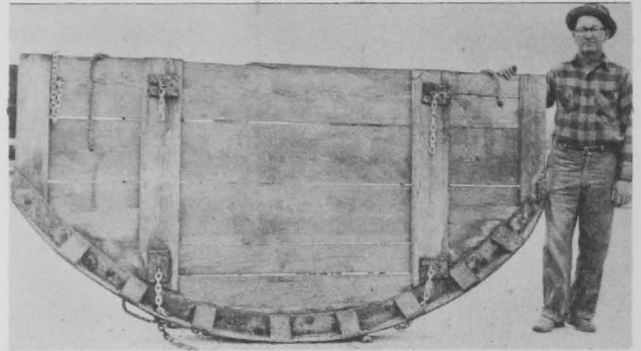


Fig. 13 - The Weems trawl door, designed to be used with large shrimp trawls on soft mud bottom.

Fishing Log--1952-54 Trawling Stations, M/V Oregon

Table with columns: STATION NUMBER, DATE 1952, NORTH LATITUDE, WEST LONGITUDE, DEPTH IN FATHOMS, GEAR USED, DRAGGING TIME (START, FINISH), BOTTOM TYPE, GEAR DAMAGE, BOTTOM TEMP., TOTAL CATCH IN LBS., SHRIMP CATCH IN LBS. (HEADS-ON COUNT) [BROWN, PINK, WHITE, RED], and SCRAP.

Note: Table continued on following page.

Fishing Log--1952-54 Trawling Stations, M/V Oregon (Continued)

STATION NUMBER	DATE 1952	NORTH LATITUDE	WEST LONGITUDE	DEPTH IN FATHOMS	GEAR USED	DRAGGING TIME		BOTTOM TYPE	GEAR DAMAGE	BOTTOM TEMP.	TOTAL CATCH IN LBS.	SHRIMP CATCH IN LBS. (HEADS-IN COUNT)				SCRAP
						START	FINISH					BROWN	PINK	WHITE	RED	
656	10/12	23-35	97-28	35	40°F	2355	0025	stk.bu.M.	-	72.9	2	3 only	-	-	-	-
657	10/12	23-42	97-34	20	40°F	2350	0020	stk.bu.M.	-	79.2	7	4 (16)	-	-	-	3
658	10/13	23-49	97-32	20-27	100°F	0045	0345	stk.bk.M.	-	79.5	255	131 (17)	-	-	-	123
659	10/13	23-56	97-33	22-27	100°F	0420	0720	stk.bk.M.	-	78.4	520	170 (17)	-	1	-	350
660	10/13	24-01	97-27.5	30	40°F	0900	0930	M.	-	75.6	2	.5 (16)	-	-	-	-
661	10/13	24-09	97-22	35	40°F	1020	1050	bu.bk.M.	-	73.2	4.5	2 (17)	-	-	-	2.5
662	10/13	24-12	97-17	40	40°F	1230	1300	bu.bk.M.	-	73.4	5	2 (17)	-	-	-	3
663	10/13	24-17	97-15	40	100°F	1830	2030	sft.bk.M.	-	72.7	186	20 (9)	-	-	-	150
664	10/13	24-16	97-26	20-25	100°F	2220	0050	M.	-	81	0	-	-	-	-	-
665	10/14	24-22	97-29	18-20	100°F	0100	0400	sft.bk.M.	-	80.2	496	196 (23)	-	-	-	300
666	10/14	24-28	97-27	18	100°F	0415	0715	bu.bk.M.	-	80.6	488	141 (23)	-	-	-	347
667	10/14	24-57	97-09	30-35	40°F	1025	1125	sft.gy.M.	-	79.3	3	1 only	-	-	-	-
668	10/14	24-57	96-58	40	40°F	1200	1230	gy.M.	-	65.8	5	.5 (16)	-	-	-	4.5
669	10/14	25-06	96-53	36-33	40°F	1830	1930	M.	-	71.8	21	8 (11)	-	-	-	-
670	10/14	25-12	96-48.5	39-52	40°F	2025	2300	M.	-	65.5	65	5 (10)	-	-	-	-
671	10/15	25-23	96-43	43	80°B	0020	0220	M.	-	76.6	23.5	2 (11)	-	-	-	-
672	10/15	25-29	96-45	37	80°B	0240	0540	M.	-	80.6	470	140 (13)	-	-	-	230
673	10/15	25-35	96-47	31	80°B	0600	0625	M.(obstr.)	7	80.6	11	11 (13)	-	-	-	-
674	10/15	25-32	96-49	31-29	40°F	0705	0835	M.	-	81	9	8 (14)	-	-	-	-
675	11/6	30-08	88-32	7	40°F	1530	1630	gy.S.M.	-	68.6	17	-	-	-	-	17
676	11/6	30-04.6	88-32.6	10	40°F	1655	1735	gy.M.S.	-	70.9	63	-	-	-	-	63
677	11/6	30-00.3	88-28.8	15	40°F	1820	1850	bu.M.S.	-	70.9	7	5 only	-	-	-	-
678	11/7	28-57.6	89-12	14	40°F	1435	1505	M.	-	71.1	0	-	-	-	-	-
679	11/7	28-57.6	89-12	14	40°F	1515	1545	sft.M.	2	71.1	0	-	-	-	-	-
680	11/7	28-58.5	89-15	14	40°F	1640	1710	M.	-	70.9	0	-	-	-	-	-
681	11/7	28-52.6	89-31	30	100°F	1845	1945	M.	-	68.4	608	59 (25)	-	-	-	549
682	11/8	28-56	87-27.6	17	100°F	0710	0910	M.	-	74.1	304	27 (17)	-	11 (17)	-	261
683	11/8	29-03	89-28	5	100°F	1000	1200	M.	-	70.2	204	-	-	34 (14)	-	167
684	11/8	28-27.7	89-22	50	100°F	1445	1545	M.	-	64.4	280	20 (12)	-	-	-	239
685	11/8	28-51.2	89-18.8	40	100°F	1627	1727	M.	-	67.1	298	61 (16)	-	-	-	224.5
687	11/9	29-06.5	88-48.5	50	40°F	1612	1732	M.	-	66.9	125	11 (12)	-	-	-	114
688	11/9	29-07.3	88-53	40	40°F	1750	1820	M.wh.G.	-	68	25	5 (12)	-	-	-	20
689	11/9	29-11	88-53.6	30	40°F	1900	1930	M.	-	69.8	18	3 (15)	-	4 (15)	-	11
690	11/9	29-13	88-55	25	40°F	1958	2028	sft.stk.M.	6	69.8	11	-	-	1	-	10
691	11/9	29-19	88-50.5	24	40°F	2145	2215	M.	-	72.0	44	-	-	-	-	33
692	11/13	30-09.5	88-29	7	40°F	1755	1825	S.	-	55.4	550	11 (18)	-	-	-	550
693	11/13	30-05	88-23.5	10	40°F	1922	1955	S.	-	68.5	231	-	1 only	-	-	231
695	11/14	29-45	87-12	100	40°F	1545	1615	G.gy.M.	-	-	100	-	-	-	-	100
696	11/14	29-44.2	87-08	120	40°F	1718	1748	bu.M.	-	-	52	-	-	-	-	52
697	11/14	30-04.3	86-57.5	50	40°F	2130	2200	M.	-	63.5	74	1 (12)	-	-	-	69
698	11/15	30-03.6	86-55.6	55	40°F	1510	1540	gy.gn.M.	-	63	80	2 only	-	-	-	29
699	11/15	30-05	86-51.5	52	40°F	1645	1715	M.	-	64	19	2 only	-	-	-	12
700	11/15	30-07.4	86-50	40	40°F	1807	1837	M.	-	65.1	28	-	-	-	-	24
701	11/15	30-02	86-45	56	40°F	1930	2000	M.	-	61.7	61	3,5 (6)	-	-	-	52
702	11/15	30-02	86-45	56	110°B	2050	2120	M.	6	61.7	17.5	1,5 (4)	-	-	-	8
703	11/15	30-00	86-45.5	60	40°F	2204	2209	M.	1	62.6	0	-	-	-	-	-
704	11/16	29-22.4	85-21	15	40°F	0915	0945	S.G.	-	71.6	6	-	-	-	-	3
705	11/16	29-34	85-51	20	40°F	1330	1400	S.Sh.G.	-	71.6	15	-	-	-	-	15
706	11/16	29-37.3	86-03	30	40°F	1505	1535	wh.S.	-	70.2	397	5 only	-	-	-	-
707	11/16	30-40.7	86-16.6	40	40°F	1627	1657	S.G.	-	69.8	41	-	-	-	-	-
708	11/16	29-46	86-52.8	70	40°F	1857	1927	M.S.	-	59.9	16	-	-	-	-	15
709	12/2	28-44.6	89-00	300-30	40°F	2345	0045	-	-	-	-	-	-	-	-	-
710	12/7	28-18	91-48	20	110°B	1820	2050	gy.M.S.	-	78	725	-	162 (15)	-	-	383
711	12/7	20-21	91-45	20	110°B	2110	2310	gy.M.	-	78	691	-	130 (17)	-	-	561
712	12/8	20-21	91-45	20	110°B	0010	0240	gy.M.	-	77	-	-	-	-	-	-
713	12/8	20-05.6	91-13	12	100°F	1810	2040	G.	-	76.6	672	-	180 (14)	-	-	492
714	12/8	20-05.6	91-13	12	100°F	2055	2325	gy.M.wh.S.	-	76.6	928	-	214 (14)	-	-	714
715	12/8	20-05.6	91-13	12	100°F	2340	0210	gy.M.wh.S.	-	76.4	835	-	223 (13)	-	-	612
716	12/9	20-05.6	91-13	12	100°F	0240	0510	gy.S.	-	76.6	749	-	137 (14)	-	-	612
717	12/9	20-05.6	91-14	12	100°F	1745	2015	wh.S.G.	-	76.6	581	-	173 (15)	-	-	408
718	12/9	20-05.6	91-14	12	100°F	2030	2300	wh.S.G.	6	77	560	-	152 (13,5)	-	-	408
719	12/10	19-54.1	91-43	23	40°F	0315	0345	gy.S.	-	75	30	5	-	-	-	20
720	12/11	20-12	91-40	20	40°F	1855	1955	G.M.	-	76.6	97	-	25 (19)	-	-	72
721	12/11	20-20	91-28	17	40°F	2120	2220	gy.S.	-	76.6	165	-	57 (14)	-	-	108
722	12/12	20-34	91-36	20	40°F	0010	0110	gy.M.	-	77	62	-	26 (13)	-	-	36
723	12/12	20-48.2	91-45.7	25	40°F	0305	0405	gy.M.	-	76.4	51	-	14.5 (10)	-	-	36
724	12/13	22-16	89-03	26	40°F	0005	0105	M.	-	76	7	-	-	-	-	-
725	12/13	22-15	88-55	25	40°F	0148	0248	S.	-	76	25	-	3 only	-	-	25
726	12/13	22-41.9	86-41.2	225	40°F	1725	1755	wh.S.Co.	-	47.7	26	-	-	-	-	26
727	12/16	28-44	85-01	30	40°F	1352	1422	wh.S.G.	-	69.4	10	-	-	-	-	-
728	12/16	28-44	85-01	25	40°F	1550	1620	wh.S.G.	-	68	27	-	-	-	-	27
729	12/16	29-00	85-01	20	40°F	1614	1644	S.Sh.	-	67.6	82	-	-	-	-	82
730	12/16	29-10	85-01	16	40°F	1853	1923	gy.S.M.	-	66	8	-	-	-	-	-
731	12/16	28-56.5	85-18	40	40°F	2135	2205	S.G.Sh.	-	66	4	-	-	-	-	-
732	12/17	28-50.8	85-28	57	40°F	0752	0822	G.S.Sh.	-	63	43	-	-	-	-	43
733	12/17	28-50.2	85-43	88	40°F	0955	1025	wh.M.S.	-	59	4	-	-	-	-	-
734	12/17	29-15	86-38.9	215	40°F	1630	1730	-	3	52.5	0	-	-	-	-	-
1953																
795	6/12	29-15	87-49	230-300	40°F	1200	1235	-	-	-	64.5	-	-	-	23 (17,5)	25.5
796	6/12	29-15	87-55	490-600	40°F	1320	1520	-	-	-	-	-	-	-	-	-
841	10/6	28-58	88-00	830-930	40°F	0630	1045	-	-	-	1.5	-	-	-	-	1.5
842	10/22	30-05	88-40	9-10	40°F	1500	1530	bu.M.S.	-	67	28	-	-	-	-	28
843	10/22	29-22	88-40	28	40°F	2030	2100	sft.M.	-	80.6	123	22 (16)	-	-	-	97
844	10/23	29-18	88-45	33	40°F	0915	0945	sft.M.	-	82	128	2 (17)	-	-	-	126
845	10/23	28-55	89-15	53	40°F	1442	1573	bu.M.	-	80.2	113	34 (19)	-	-	-	79
847	10/24	28-44	89-33	33	40°F	0955	1035	bu.M.sft.	-	60.8	93	4 (10)	-	-	-	89
848	10/24	28-53	89-33	36	40°F	1310	1340	bu.M.	-	79.8	270	29 (18)	-	-	-	-
849	10/24	29-03	89-36	10	40°F	1535	1605	bu.M.	-	80.2	60	1 (20)	-	-	-	59
850	10/25	28-56	89-09	32	40°F	1350	1405	sft.bu.M.	-	68	12	2 (20)	-			

Fishing Log--1952-54 Trawling Stations, M/V Oregon (Continued)																
STATION NUMBER	DATE 1953	NORTH LATITUDE	WEST LONGITUDE	DEPTH IN FATHOMS	GEAR USED	DRAGGING TIME		BOTTOM TYPE	GEAR DAMAGE	BOTTOM TEMP.	TOTAL CATCH IN LBS.	SHRIMP CATCH IN LBS. (HEADS-ON COUNT)				SCRAP
						START	FINISH					BROWN	PINK	WHITE	RED	
853	10/26	29-11	88-55	20	40°F	0845	0900	sft. bu. M.	-	78	8	4 (24)	-	4 (24)	-	-
854	10/28	30-08	88-25	9	40°F	1200	1230	sft. M.S.	-	75.9	185	-	-	-	-	-
855	10/28	30-10	88-10	10	40°F	1335	1405	S.	-	76	24	.5 (20)	-	-	-	24
856	10/29	30-10	87-37	8	40°F	1005	1020	S.	-	73.7	4	-	-	-	-	4
857	10/29	30-10	87-37	12	40°F	1045	1100	S. Sh.	-	75	2	-	-	-	-	-
858	10/29	30-05	86-55	52	40°F	1430	1500	bu. M.	-	59	17	-	-	-	-	17
859	10/30	29-22	85-30	16	40°F	1238	1253	G. S. Sh.	-	60	420	-	-	-	-	-
860	10/30	29-22	85-30	16	40°F	1334	1349	G. S. Sh.	-	65	210	-	1 (25)	-	-	-
861	10/30	29-22	85-28	15	40°F	1447	1447	G. S. Sh.	-	75.5	60	-	-	-	-	60
862	10/30	29-30	85-22	10	40°F	1555	1610	Sh.	-	72	25	-	-	-	-	25
863	10/31	29-35	85-13	6	40°F	0900	0915	G. M. S.	-	72	24	-	3 (50)	.5 (15)	-	-
864	10/31	29-19	86-04	82	40°F	1540	1610	G. M. Sh.	-	55	38	-	-	-	-	-
866	11/1	29-21	88-22	33	40°F	1500	1524	gy. M.	-	72.5	60	7 (15)	-	-	-	38
869	12/8	30-06	88-00	11	40°F	0900	0915	S.	-	66	40	-	-	-	-	53
870	12/8	29-55	87-50	15	40°F	1817	1837	S.	-	68.7	56	1 only	-	-	-	39
871	12/8	30-00	87-30	15	40°F	2040	2055	S.	-	67.5	86.5	-	-	-	-	56
872	12/8	30-00	87-15	15	40°F	2230	2245	S.	-	67.6	46	-	-	-	-	-
873	12/9	30-00	87-08	23	40°F	0745	0800	S. Sh.	-	68	35	-	-	-	-	-
874	12/9	30-00	87-03	28	40°F	0828	0913	S. G.	-	69.4	61	-	-	-	-	61
875	12/9	30-00	86-57	60	40°F	-	-	gn. M. S.	-	59	-	-	-	-	-	-
1954																
876	2/16	29-44	87-47	21	40°F	1125	1150	gy. S.	-	65.3	45	-	-	-	-	-
877	2/16	29-33	87-47	24	40°F	1310	1335	gy. S.	-	65.3	7	-	-	-	-	-
878	2/16	29-30	87-46	30	40°F	1355	1430	gy. S.	-	67	27	-	-	-	-	-
879	2/16	29-25	87-45	30	40°F	1455	1535	gy. S.	-	65.3	40	-	-	-	-	-
880	2/16	29-23	87-44	30	40°F	1550	1640	-	2	65.3	0	-	-	-	-	-
881	2/17	30-10	87-50	5.5	40°F	0735	0815	-	-	62	70	-	-	-	-	-
882	2/17	30-10	87-50	5.5	40°F	0820	0855	-	-	61.7	50	-	-	.5 (30)	-	-
885	3/3	30-12	88-38	7.5	75°B	1435	1900	sft. M.	-	67.6	120	1 only	-	1 only	-	120
886	3/3	30-12	88-38	7.5	75°B	1910	1940	-	-	59.5	940	-	-	-	-	-
887	3/4	29-35	88-33	19-20	75°B	1125	1325	gy. M.	-	62.6	693	13 (11)	-	-	-	-
888	3/4	29-35	88-33	19	80°B	1835	2100	-	-	63.1	119.5	-	-	-	-	-
889	3/7	29-07	84-54	19	40°F	1013	1035	Sh. G.	-	60.8	8.5	-	-	-	-	8.5
890	3/7	29-07	84-54	19	40°F	1040	1100	Sh. G.	-	60.8	0	-	-	-	-	-
891	3/7	29-00	85-02	21	40°F	1236	1300	-	-	61.7	20	-	-	-	-	-
892	3/7	28-55	85-07	29	40°F	1352	1415	-	-	61.3	39	-	-	-	-	-
893	3/7	28-49	85-12.5	48	40°F	1513	1536	-	-	60.8	10	-	-	-	-	-
894	3/7	28-49	85-12	48	40°F	1541	1648	-	-	61.3	38	-	-	-	-	-
895	3/7	28-47	85-19	64	40°F	1800	1845	-	-	62.6	41	-	-	-	-	-
896	3/7	28-50	85-06	35	40°F	2020	2045	-	-	61.7	84	-	-	-	-	84
897	3/7	28-50	85-00	28	40°F	-	-	Sh.	-	62.6	124	-	-	-	-	124
898	3/8	29-12	84-33	17	40°F	0140	0217	-	-	60.8	241	-	-	-	-	-
899	3/8	29-32	84-34	16	40°F	0512	0549	-	-	60.4	14	-	-	-	-	-
900	3/8	29-36	84-31	9	40°F	0700	0730	Sh.	-	59	12	-	-	-	-	-
901	3/9	29-38	84-15	11	40°F	1300	1310	bu. gy. S. Co.	6	71.6	114	-	-	-	-	114
902	3/9	29-28	84-03	11-12	40°F	1535	1557	Co. Sp. S.	6	65.3	37	-	-	-	-	37
903	3/9	29-25	84-12	13	40°F	1700	1715	Co. Sp. S.	6	59.9	21.5	-	-	-	-	21.5
904	3/9	29-17	84-12	14	40°F	1825	1855	Co. Sp.	6	60.8	337.5	-	2 ea. (20)	-	-	337.5
905	3/9	29-02	84-18	15	40°F	2040	2110	-	-	61.3	12	-	2 (20)	-	-	-
906	3/9	29-05	84-03	14	40°F	2330	2355	Co. G.	-	62.2	167	-	1 ea.	-	-	167
907	3/10	29-04	83-51	12	40°F	0122	0142	-	-	61.3	6	-	8 ea. (15)	-	-	6
908	3/10	29-06	83-50	12	40°F	0222	0233	-	-	61.3	3	-	2 (12)	-	-	3
909	3/10	29-06	83-42	11	40°F	0330	0351	-	-	59	100	-	13 ea. (15)	-	-	100
910	3/10	29-05	83-36	8	40°F	0427	0505	-	-	60.4	-	-	11 ea. (15)	-	-	-
911	3/10	28-52	83-42	13	40°F	0700	0720	Sh. Co.	-	61.7	16	-	-	-	-	-
912	3/10	28-42	83-56	17	40°F	1100	1130	S. Sh. Co. M. G.	-	62.6	6	-	-	-	-	6
913	3/10	28-42	84-00	17	40°F	1127	1205	Co. S. Sh.	-	63.7	16	-	-	-	-	16
914	3/10	28-45	84-07	16	40°F	1250	1329	Co. Sp.	6	63.7	0	-	-	-	-	-
915	3/10	28-33	84-34	28	40°F	1635	1655	Sp. Co.	-	63.1	4	-	-	-	-	4
916	3/10	28-23	84-49	37	40°F	1900	1930	Co.	-	64.4	20	-	-	-	-	20
917	3/10	28-22	84-53	48	40°F	2100	2130	Co. S. G.	-	62.6	10	-	-	-	-	10
918	3/10	28-20	84-54	54	40°F	2300	2345	Co. M.	-	63.7	4.5	-	-	-	-	4.5
919	3/11	28-15	84-53	60	40°F	0020	0120	Co. Sp.	-	65.3	65	-	-	-	-	65
920	3/11	28-09	84-54	80	40°F	0205	0330	Co. It.	-	62.6	50	-	-	-	-	50
921	3/11	28-11	84-19	34	40°F	0740	0823	Co. S. G.	-	66.2	16	-	-	-	-	16
922	3/11	28-17	84-30	34	40°F	0937	1020	Co. It.	-	63.7	16	-	-	-	-	16
923	3/11	28-21	84-24	28	40°F	1118	1152	Co. M. S.	-	64.4	13	-	-	-	-	13
924	3/11	28-31	84-03	21	40°F	1432	1514	Co. S.	7	62.6	7	-	-	-	-	7
925	3/11	28-31	83-51	18	40°F	1645	1720	S. Co.	-	63.1	102	-	-	-	-	102
926	3/11	28-24	83-46	17	40°F	1900	1930	S. Co.	-	61.9	151	-	-	-	-	151
927	3/11	28-21	83-38	15	40°F	2100	2130	S. Co. Sp.	6	61.9	1315	-	2 ea.	-	-	1315
928	3/11	28-19	83-30	14	40°F	2200	2215	S. Co. M.	-	62.6	43	-	5 ea.	-	-	43
929	3/11	28-13	83-24	12-14	40°F	2330	2400	Co. Sp. S.	-	61.9	35	-	-	-	-	35
930	3/12	28-06	83-19	14	40°F	0047	0108	S. Co. Rk.	-	62.6	6	-	1 only	-	-	6
931	3/16	27-44	82-47	4	40°F	1125	1152	S. Sh. Co.	-	57.2	34	-	1 (20)	-	-	33
932	3/16	27-30	82-45	4	40°F	1528	1553	S. Sh.	-	62.2	4	-	4 ea. (25)	-	-	4
933	3/18	27-36	83-18	20	40°F	1000	1030	gy. M.	-	63	5	-	-	-	-	-
934	3/18	27-36	83-30	23	40°F	1155	1225	Co. S. Sp.	-	63.7	12	-	-	-	-	12
935	3/18	27-36	83-40	27	40°F	1320	1400	Co. S. Sp.	-	65.8	2015	-	-	-	-	2015
936	3/18	27-36	83-50	32	40°F	1515	1542	S. Co. M.	-	65.1	13	-	-	-	-	13
937	3/18	27-30	84-14	38	40°F	1755	1815	Co.	-	64.9	26	-	-	-	-	26
938	3/18	27-36	84-26	58	40°F	2000	2035	Sp.	-	67.3	15	-	-	-	-	15
939	3/18	27-49	84-12	35	40°F	2300	2330	Sh. G. Sp.	-	64.4	17	-	-	-	-	17
940	3/21	30-04	86-18	21	40°F	1235	1315	S.	-	63.3	5	-	-	-	-	5
941	3/21	29-57	86-22	35	40°F	1420	1445	gy. M. S.	-	63.5	5	-	-	-	-	5
942	3/21	29-54	86-25	39	40°F	1532	1620	S.	-	62.6	4	-	-	-	-	4
943	3/21	29-53	86-27	40	40°F	1655	1738	S.	-	62.6	43	-	-	-	-	43
944	3/21	29-50	86-30	50	40°F	2000	2100	gn. M. S.	-	53	60	5 ea. (10)	-	-	-	58
945	3/21	29-48	86-37	67	40°F	2100	2200	gn. M.	-	62.2	70	1 ec. (5)	-	-	-	68
946	3/22	29-41	86-44	100	40°F	2230	0000 M.	-	-	59	276	-	-	-	-	270
947	3/22	29-30	86-56	190	40°F	0100	0400	gy. gn. H. S.	-	51.8	212	-	-	-	2 (15)	210

Note: Table continued on following page.

Fishing Log--1952-54 Trawling Stations, M/V Oregon (Continued)

STATION NUMBER	DATE 1954	NORTH LATITUDE	WEST LONGITUDE	DEPTH IN FATHOMS	GEAR USED	DRAGGING TIME		BOTTOM TYPE	GEAR DAMAGE	BOTTOM TEMP.	TOTAL CATCH IN LBS.	SHRIMP CATCH IN LBS. (HEADS-ON COUNT)				SCRAP	
						START	FINISH					BROWN	PINK	WHITE	RED		
948	3/22	29-30	87-12	210	40' F	0700	0800	M.	6	52.7	12	-	-	-	4 ea. (15)	12	
1004	4/23	24-24	82-55	37	40' F	1150	1240	Sp. Sh.	-	76.1	135	-	7 ea. (25)	-	-	-	135
1005	4/23	24-20	83-20	190	40' F	1545	1655	gn. Cl. M.	-	50	295	-	-	-	120 (20)	175	
1006	4/23	24-20	83-20	190	74' B	1815	2110	Co. M.	-	51.4	240	-	-	-	40 (20)	200	
1007	4/23	24-26	83-24	180	74' B	2235	0035	gn. Cl. M.	-	50.9	320	-	-	-	180 (20)	140	
1008	4/24	24-30	83-30	180-200	74' B	0150	0350	M. Rk. Co.	3	49.1	11	-	-	-	10 (15)	1	
1009	4/24	24-34	83-34	200	40' B	0450	0730	Wh. Co. M.	-	52.7	50	-	-	-	-	35	
1010	4/24	24-35	83-40	225	40' F	0815	1105	Co. M.	-	49.1	60	-	-	-	11 (20)	49	
1011	4/24	24-28	83-25	200	40' F	1520	1800	Co. M.	-	49.1	460	-	-	-	180 (20)	250	
1012	4/24	24-19	83-20	180	40' F	1910	2200	Co. M.	-	49.3	75	-	-	-	20 (20)	45	
1013	4/25	24-22	83-05	100	40' F	2305	0055	gn. M.	1	49.5	0	-	-	-	-	0	
1015	4/26	24-20	83-20	150-350	40' F	0825	1105	Co. M.	-	67.5	204	-	-	-	20 (20)	181	
1016	4/26	24-22	83-18	200	40' F	1135	1330	Cl. M.	-	50	135	-	-	-	75 (20)	25	
1017	4/26	24-22	83-18	200	40' F	1430	1630	M.	-	50	0	-	-	-	-	0	
1018	4/26	24-16	83-22	375	40' F	1755	2115	Co. M.	-	-	0	-	-	-	-	0	
1019	4/26	24-16	83-22	375	40' F	2235	0035	M.	-	-	22	-	-	-	-	22	
1020	4/29	24-47	83-18	35	40' B	0710	0740	Co. M. Sh.	-	66.2	85.5	-	-	-	-	85.5	
1021	4/29	24-54	83-25	38	40' B	0910	0950	Co. M. Sh.	-	66.2	366.5	-	-	-	-	366.5	
1022	4/29	24-59	83-35	39	40' B	1045	1130	Co. M. Sh.	-	66.6	1015	-	-	-	-	1015	
1023	4/29	25-09	83-48	52	40' B	1340	1350	S. G. Sp.	-	67.1	2.5	-	-	-	-	2.5	
1024	4/29	25-13	83-55	65	40' B	1515	1545	S. G.	-	68.4	19	-	-	-	-	19	
1025	4/29	25-12	84-05	75	40' B	1650	1810	S. G. Co.	-	64.9	6.5	-	-	-	-	6.5	
1026	4/29	25-08	84-19	163	40' F	2115	2300	S. G.	-	50	212	-	-	-	-	212	
1028	4/21	28-28	87-18	780	40' F	2103	0315	-	-	-	0	-	-	-	-	0	
1048	5/13	21-17	93-18	20	40' F	1905	1930	M. Co.	-	78.4	40	-	5.5 (10)	-	-	36.5	
1049	5/13	21-14	93-28	25	40' F	2045	2115	M. Co.	-	76.1	24	-	.5 (12)	-	-	23.5	
1050	5/13	21-09	91-41	28	40' F	2255	2340	M. Co.	-	75.7	35	-	11.5 (10)	-	-	23.5	
1054	5/25	19-37	92-40	200	40' F	1650	1825	stk. M.	-	52.5	34.5	-	-	-	.5 (14)	27	
1055	5/25	19-14	93-00	225	40' F	2125	2325	gr. M. Cl. M.	-	50	7.5	-	-	-	2 ea. (10)	7	
1056	5/26	18-50	93-05	20	40' F	1328	1435	gr. M.	-	76.3	0	-	-	-	-	0	
1057	5/26	18-45	93-15	19	40' F	1512	1620	gr. M.	-	76.5	20.5	1 (12)	-	-	-	19.5	
1058	5/26	18-45	93-20	22	40' F	1642	1750	gr. M.	-	76.1	19.5	1.5 (10)	-	-	-	18	
1059	5/26	18-43	93-29	25	40' F	1855	1910	gr. M.	-	72.7	7	1 ea. (8)	-	-	-	7	
1060	5/26	18-43	93-30	35	40' F	2015	2060	gr. M.	-	70.2	18.5	8 (10)	-	-	-	10.5	
1061	5/26	18-44	93-33	45	40' F	2120	2200	gr. M.	-	-	0	-	-	-	-	0	
1080	6/2	26-09	97-05	11	40' F	0815	0845	gr. M.	-	78.6	8	-	-	-	-	8	
1081	6/2	26-10	96-59	15	40' F	0925	1005	gr. M.	-	75.6	13.5	4 ea. (35)	.5 (24)	-	-	13	
1082	6/2	26-11	96-52	21	40' F	1038	1120	gr. M.	-	73.4	14	-	1 (12)	-	-	13	
1083	6/2	26-13	96-45	23	40' F	1155	1235	gr. M.	-	72.5	9.5	.5 (12)	-	-	-	9	
1084	6/2	26-15	96-38	26	40' F	1320	1350	gr. M.	-	72.5	14.5	.5 (10)	-	-	-	14	
1085	6/3	26-10	97-00	11	40' F	0600	0710	gr. M.	-	75.3	41.5	-	1 (18)	-	-	40.5	
1086	6/3	26-10	96-54	18	40' F	0840	0954	gr. M.	-	75.2	77	2 (12)	-	-	-	75	
1087	6/3	26-10	96-40	29	40' F	1405	1515	gr. M.	-	71.1	45.5	1.5 (12)	-	-	-	44	
1088	6/3	26-10	96-25	40	40' F	1705	1750	gr. M.	-	71.6	25	1 (12)	-	-	-	24	
1090	6/4	26-10	96-20	50-60	40' F	0805	0825	br. M.	2	68.7	0	-	-	-	-	0	
1091	6/4	26-46	96-20	200-210	40' F	1410	1545	br. M.	-	-	60	-	-	-	2 (16)	50	
1092	6/4	26-53	96-20	210	40' F	1725	2000	M.	6	-	0	-	-	-	-	0	
1093	6/4	27-03	96-16	210	40' F	2115	2400	br. M.	-	-	42	-	-	-	2 ea. (16)	42	
1094	6/5	27-10	96-20	150	40' F	0615	0715	br. M.	-	53.6	16	-	-	-	-	16	
1095	6/5	27-10	96-17	175	40' F	0853	0900	gr. br. M.	1	-	0	-	-	-	-	0	
1096	6/5	27-20	96-12	100-125	40' F	1000	1055	gr. M.	6	59.4	18	-	-	-	-	18	
1097	6/5	27-20	96-40	85	40' F	1200	1350	gr. M.	6	-	0	-	-	-	-	0	
1106	6/25	29-02	88-35	225	70' B	0833	0933	gn. M.	-	50.4	35	-	-	-	6.5 (12)	22	
1107	6/25	29-03	88-25	210-235	74' B	1045	1235	gn. M.	-	48.7	184	-	-	-	15 (14)	169	
1108	6/25	29-18	88-45	34	74' B	1525	1740	gn. M.	-	71.2	134	.5 (10)	-	-	-	133.5	
1109	6/25	29-22	88-48	18	74' B	1945	2205	gn. M.	-	71.1	78.5	9 (15)	2 (15)	-	-	66.5	

Gear Used -- Abbreviations:	Bottom Type -- Abbreviations:	Gear Damage -- Symbols:
40' F - 40' flat shrimp trawl.	Cl. - Clay	1 - Complete loss of gear.
40' B - 40' balloon	Sh. - Shells	2 - Complete loss of net only.
70' B - 70' balloon	Co. - Coral	3 - Complete loss of webbing.
74' B - 74' balloon shrimp trawl.	G. - Gravel	4 - Tail only saved.
80' B - 80' balloon	M. - Mud	5 - Partial loss of webbing, tail saved.
100' F - 100' flat shrimp trawl.	Rk. - Rock	6 - Netting ripped.
110' B - 110' balloon shrimp trawl.	Bu. - Blue	7 - Net saved by lazy-line.
	S. - Sand	
	Gn. - Green	
	Stk. - Sticky	
	Sp. - Sponge	
	Wh. - White	
	Bk. - Black	
	Hrd. - Hard	
	Br. - Brown	
	Rky. - Rocky	
	Sft. - Soft	

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