

COMMERCIAL FISHERIES REVIEW

September 1951

Washington 25, D.C.

Vol. 13, No. 9

EXPANSION OF GULF OF MEXICO SHRIMP FISHERY, 1945-50

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INTRODUCTION

The shrimp fishery in the Gulf of Mexico has been subject to many changes during the past sixty years, with the quantity of shrimp landed at Gulf fishing ports increasing gradually, although at an uneven rate, until 1945. In that year, the

shrimp landed at Gulf fishing ports reached a peak of approximately 145,000,000 pounds (Anderson and Power 1945).

One kind of shrimp, the white shrimp or green-tailed shrimp (*Penaeus setiferus*), was by far the most important part of the catch, and in 1945 accounted for at least 95 percent (Anderson, Lindner, and King 1950) of the total production.



FIGURE 1 - ICING OFFSHORE SHRIMP TRAWLERS AT PASCAGOULA.

For the entire Gulf of Mexico and for each of the major producing areas in the South Atlantic States, white shrimp production reached its peak in 1945. In comparison

with later years, it is important to note that except for some production of dried shrimp on the central Louisiana coast, some bait shrimp, and some incidental catches, landings consisted mainly of white shrimp.

Comprehensive Gulf area production statistics for 1946 through 1950 are not available, and, with the exception of 1948 when a statistical fishery survey of the Gulf States was made, production can only be estimated from incomplete surveys or from production reports of selected principal areas. It is apparent, however, that following 1945, the production of shrimp received a severe setback, and landings of white shrimp have not since returned to the high level of 1945.

GROOVED SHRIMP RESOURCES EXPLOITED

In the summer of 1947, the first large catches of brown-grooved shrimp (*Penaeus aztecus*) were reported from the Texas coast. At that time, there was considerable difficulty in marketing the brown shrimp, but landings continued and increasing numbers of brown shrimp were sold during the following years.

The strong demand for shrimp along with increasing production through 1945 encouraged the expansion of the fishing fleet. After World War II, a fishery for white shrimp was developed off Carmen, Mexico, and a number of the larger Texas and Louisiana shrimp boats worked in that area. There has been some continued participation by United States boats operating in the deeper waters outside the Mexican

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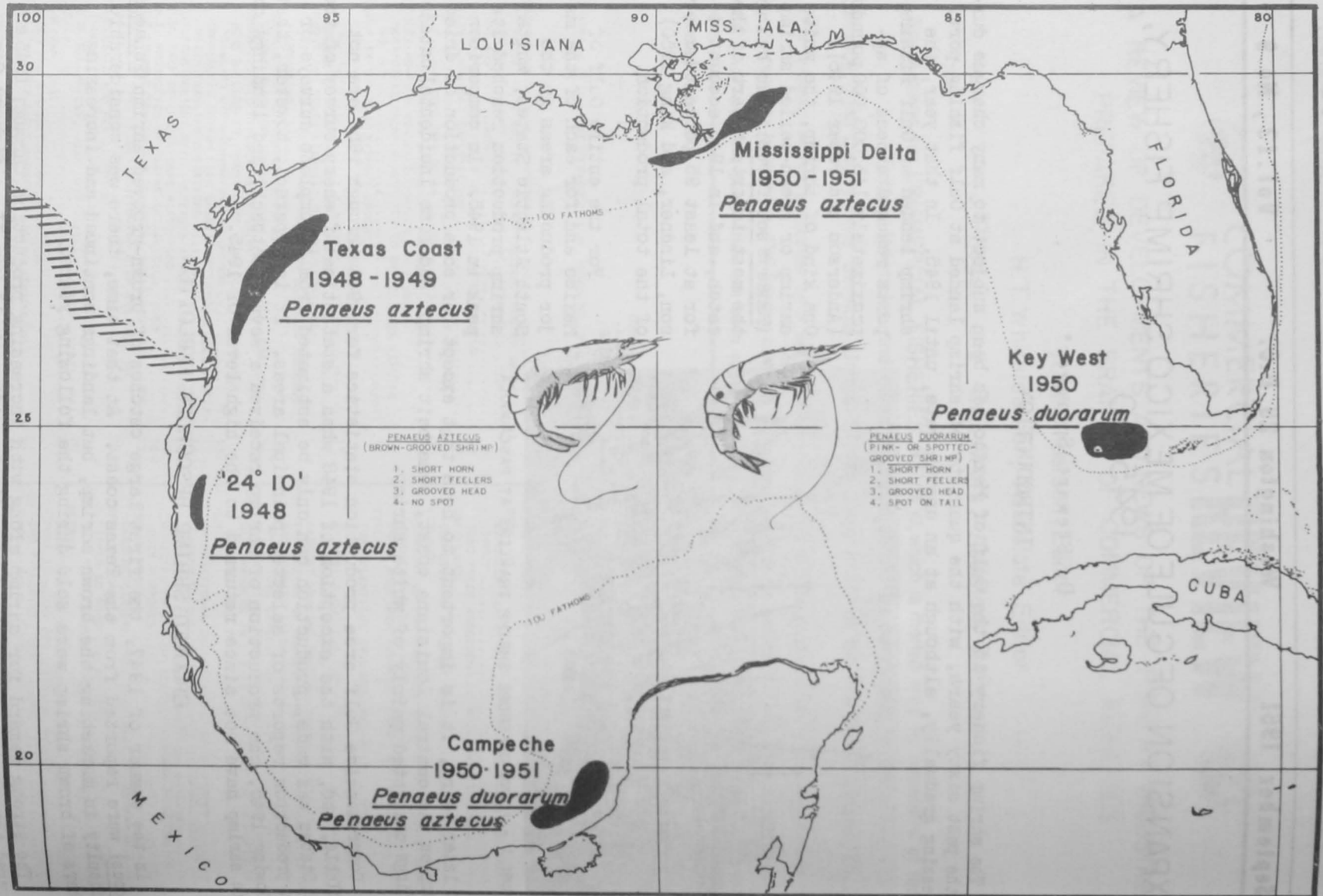


FIGURE 2 - NEW GROUNDS FOR GROOVED SHRIMP.

territorial limits in the offshore white-shrimp fishery range in the Gulf of Campeche, but aside from this, no important new white-shrimp grounds have been found in the Gulf since 1938 when Louisiana fishermen began working the Ship Shoal and Trinity Shoal areas. Along with the increase in travel by some of the larger boats to and from distant fishing grounds, there was a considerable amount of exploration by fishermen. This led to the discovery of the important Key West-Dry Tortugas grounds in late 1949 and early 1950, and was followed by the opening of the fabulous Campeche beds. Both these areas now produce substantial quantities of the pink- or spotted-grooved shrimp (*Penaeus duorarum*), a kind of shrimp not present in any appreciable quantity in the catches prior to 1950.

Fishing in the Key West and Campeche areas for spotted-grooved shrimp is carried on for the most part in depths of less than 25 fathoms. At least until after the middle of 1950, few if any commercial shrimp vessels were equipped to work in deeper waters. Explorations for new shrimp grounds in deeper waters, or in areas or under conditions requiring use of special equipment or fishing gear, could therefore not be expected of commercial vessels. The Gulf States Marine Fisheries Commission at its meeting in July 1950 at Mobile, Alabama, recommended that offshore explorations for shrimp be undertaken by the U. S. Fish and Wildlife Service, and since that time explorations have been carried on in many parts of the Gulf (a comprehensive report on this work will be issued later).

In the fall of 1950, the Service's exploratory fishing vessel Oregon (operated by the Branch of Commercial Fisheries) found concentrations of brown-grooved shrimp (*Penaeus aztecus*) on both sides of the mouth of the Mississippi River in depths of from 30 to 50 fathoms. These grounds were worked at first by only a few commercial boats after news of these new grounds was issued by the Service; but deeper-water trawling steadily increased and early in May 1951, a total of 28 commercial shrimp trawlers were observed at one time working in depths of approximately 43 fathoms



FIGURE 3 - THE SERVICE'S EXPLORATORY FISHING VESSEL OREGON OPERATING IN THE GULF OF MEXICO.



FIGURE 4 - THE TAIL OF A 100-FOOT SHRIMP TRAWL ON THE DECK OF THE OREGON WITH A MIXED CATCH OF SHRIMP AND FISH.

near the Southwest Pass of the Mississippi River. More extensive utilization of these grounds may be expected in the fall of 1951. The contribution to total production by the utilization of the offshore grounds in the north Gulf of Mexico is difficult to estimate since the grounds are adjacent to areas formerly exploited and still important in the shrimp production picture. Landings are still generally reported without distinction as to kind of shrimp, and conditions are changing so fast that estimates are not likely to be consistently accurate.

In 1946, with a decline in the apparent availability of shrimp, the fishing industry in the Gulf had to cope with the problem of utilizing expanding production facilities. Total production declined in spite of high fishing intensity, and the catch dropped to approximately 120,000,000 pounds in 1948. This condition was met by consumer-educational campaigns to reduce buyer resistance for the unfamiliar grooved shrimp and by explorations for new grounds, followed by development of these grounds into important shrimp-producing areas. The net result has been an increase in the Gulf's shrimp production for 1950 over the preceding peak production year, 1945. The Fish and Wildlife Service estimated the total United States 1950 catch in the Gulf at about 160,000,000 pounds, an 11 percent increase over 1945 production and an increase of 33 percent over the 1948 catch. No statistical breakdown of 1950 shrimp landings by type or species is available but estimates made by the Service's Market News Service office at New Orleans are as follows:

	<u>% white shrimp in total 1950 catch</u>	<u>% grooved (both species) shrimp in 1950 catch</u>
Texas	20 - 25	75 - 80
Louisiana	80 - 85	15 - 20
Mississippi	35 - 40	60 - 65
Alabama	20 - 25	75 - 80
Florida Gulf Coast, in- cluding Key West	5 - 10	90 - 95

It should be emphasized that these estimates are made on the basis of a small amount of sampling and are given here only to show the trend in the fishery. The trend is important, however, since the estimates show that from 40 to 50 percent of present production is grooved shrimp as against less than 5 percent in 1945.

OUTLOOK AND DISCOVERY OF RED SHRIMP

There appears to be no basis for an estimate of the future productivity of present fishing grounds. It can be pointed out, however, that there are still areas in the Gulf having stocks of shrimp not being utilized for one reason or another. One such area lies off the coasts of Louisiana and Texas between the 91st and 95th meridians in depths of from 26 to 50 fathoms. Sample drags by the Oregon in the fall and winter of 1950 have produced large brown shrimp (*Penaeus aztecus*) regularly.



FIGURE 5 - EXPLORATORY FISHING OVER UNKNOWN BOTTOM IS HARD ON GEAR. THIS NET HAS JUST BEEN REPAIRED AT SEA AND IS BEING READIED FOR USE. NEW WEB THAT HAS BEEN PUT IN IS WHITE AND UNTREATED. ONE OF THE LONG-RANGE OBJECTIVES IN THE EXPLORATIONS OF THE OREGON IS TO CHART BOTTOM THAT IS TRAWLABLE.

No thorough exploration of the area has yet been undertaken, and no unusually heavy concentrations have been encountered in the few sample drags made. These grounds are a considerable distance from United States Gulf ports, and unfavorable weather conditions in winter plus the lack of fixed points for dead-reckoning navigation will undoubtedly delay utilization of shrimp from this area.

Off the west coast of Florida, north of Ft. Myers, there is a vast expanse of bottom in the 10- to 50-fathom depth range. For the most part, this area is not explored but is characterized by rough bottom unsuited to trawling with conventional gear. Both types of grooved shrimp occur in some parts of the region, but whether these can be taken from the rough bottom in exploitable or commercial quantity remains to be determined. Tests of modified and new-type trawls designed for rough bottom are being carried out as part of the shrimp explorations by the Service.

The Oregon, in exploratory drags made in deeper water, has found one other kind of shrimp in sufficient quantity to be of commercial interest. This is the red shrimp (Hymenopeneus robustus). The largest numbers have been taken in 190 to 240 fathoms on mud bottom off the Alabama, Mississippi, and Louisiana coasts and off Aransas Pass, Texas. These shrimp are brick red as they come from the water. The heads are proportionately larger than the heads of the white shrimp, but the over-all size is about the same as the common white shrimp. These red shrimp have an excellent flavor, and when the heads are removed, have an especially attractive appearance.

Red shrimp have been taken by the Oregon in every exploratory drag made in depths from 190 to 240 fathoms on mud bottom. Most of the drags in these depths have been made with a 40-foot flat trawl put out on a 20-fathom bridle from a single trawling cable. However, several drags were made with a conventional 100-foot flat trawl with cables to each door. Both rigs worked well on cable lengths $3\frac{1}{2}$ times the depth. The time taken to bring the net from 200 fathoms to the deck has averaged about 28 minutes, and it is quite probable that the time required for the net to be set and reach bottom in 200 fathoms is slightly more than 28 minutes. Since the drop-off to deeper water is rather sharp in most 200-fathom depths in the north Gulf, it is necessary to use an echo depth sounder while setting and working the trawl. Investigations of the extent of the stocks of red shrimp are being continued by the Oregon. Other kinds of shrimp, most of them red or brightly colored, have been taken in deep drags, but thus far none except the red shrimp (Hymenopeneus robustus) have been found in sufficient quantity to be of commercial interest.

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