

FISHERY EXPLORATION AND TECHNOLOGY SESSION

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Operation Of The Exploratory Fishing Vessel "Oregon"

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FROM ITS INCEPTION it has been recognized that the overall program for fisheries research in the Gulf of Mexico has certain long range objectives that can be attained only by the integration of results from many kinds of research activity. At the same time it appears reasonable to expect some immediately useful information from activities such as exploratory fishing. The *Oregon* has been operated with attention to both the long range and short range objectives.

The methods employed on the *Oregon* may be most easily illustrated by describing recent fishing operations. Following a recommendation of the Gulf States Marine Fisheries Commission, exploratory fishing for shrimp was begun in July. This work was started with a survey of the area off the coasts of Alabama, Mississippi and Louisiana, near the mouth of the Mississippi. The outer limit of the existing fishery for shrimp in this region is at about the 25 fathom mark. Explorations of waters beyond this range were undertaken. In the late summer of 1950, the only species taken by the *Oregon* beyond a depth of 25 fathoms was *Penaeus aztecus*, the brown grooved shrimp, and this exploration primarily concerned that species. A few drags made inside the 25 fathom line for purposes of comparison did produce some white shrimp *Penaeus setiferus* and the pink shrimp, *Penaeus duorarum*.

The general plan of daily work while fishing on the *Oregon* is as follows: A series of hauls is made. The catches and the conditions under which the catches were made are compared. The information is recorded following a standardized pattern. Even in this daily work an attempt is made to learn something. For example, a pair of shrimp drags are made as identical as possible except for one variable, (e. g.) using a flat trawl for one and a balloon trawl for its pair. The results, recorded in detail, make it possible to draw conclusions about a great many conditions as they affect fishing. It may be possible, for example, to tell immediately which net produces the larger catch. At the same time there will be available a record of the exact location of the haul, the time, depth, weather and bottom conditions and so on. Later with the accumulation of a great many operation records it will be possible to make comparisons of catches with respect to any of these variable conditions. Of course, useful conclusions will have to be based on greater numbers of trials for some kinds of variables than for others.

The work in the area described above revealed the presence of a substantial population of grooved shrimp not being fished by the commercial fleets. Nearly all of the offshore boats working the area are equipped with sufficient cable to work in depths of 25 fathoms but not deeper and the few boats venturing into the deeper water had not encountered promising concentrations of shrimp. During the period from July through September the *Oregon* took large

brown shrimp in every night drag from 30 to 50 fathoms. No small shrimp were included in the catches and the sizes taken in general increased with depth. The largest shrimp, as large as 6 count, were taken in the deepest water and the smaller sizes, 10 to 16 count, in shallower water. During July and August the greatest concentrations were taken in depths of 38 to 40 fathoms, but after a storm at the end of August the heaviest concentrations were found in depths of 32 to 34 fathoms. Near the outer limits of the range, in the greater depths, fewer but larger shrimp were found.

The extreme limits of the range, where the largest shrimp (mostly females) occurred, would not be profitable to fish, but, in general, a part of this area contained consistently greater concentrations than were found inside the 25 fathom range.

The outer limit at which the brown grooved shrimp were taken was 54 fathoms. Few shrimp were taken in depths from 54 to 150 fathoms and these few were of non-commercial species. A total of four drags in 195 to 258 fathoms produced catches of some interest. Preliminary drags over bottom of unknown roughness have been made with a 40 foot flat shrimp trawl on a bridle to a single cable, and this rig was used in all successful drags in deep water. The trawl doors were provided with extra weight and the length of cable used was approximately $3\frac{1}{2}$ times the depth. Shrimp were taken in each of these drags. The most abundant species by far was a red colored shrimp with very long antennae *Hymnopenaeus robustus*. When taken from the water these animals have the color and general appearance of boiled shrimp. In one drag of 45 minutes duration, 60 pounds of 28 count red shrimp were taken along with 61 pounds of scrap. This rate of capture compares favorably with catches of marketable shrimp made by the same gear in shallower water, where good concentrations of shrimp were found. In the deep water drags, a few specimens of other kinds of brightly colored shrimp were taken.

Although the emphasis in the past months has been on shrimp, data on other fishery items have been accumulated having possible future value. Continued observations of fish at the surface have been made. Black-finned tuna were observed at the surface, near the mouth of the Mississippi, over depths of about 50 fathoms. Spiny lobsters were taken with hook and line on rocky bottom near the continental shelf.

In future work off the coast of Texas, the *Oregon* will continue to concentrate primarily on the distribution of brown shrimp and attempt to locate concentrations of commercial value. A very interesting relation of temperature change to movements of this population has been suggested by the data collected so far. It is hoped to get more information on this problem during the future cruises.

Effect Of The Menhaden Operations On Other Fisheries

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THE EFFECTS of menhaden operations on other fisheries has long been a point of argument, particularly among fishermen who know little about the menhaden