

# Job Report

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## A Survey of Commercially Important Shrimp in the Aransas-Copano Bay Area.

Abstract: Six stations in Aransas, Mesquite, Copano and Mission Bays were sampled semi-monthly with otter trawls and bar seines. Results indicate that shrimp were far less abundant in 1961 than in 1960. Peaks of abundance occurred prior to maximum modal size. Salinity was higher in 1961 than in 1960 and may have affected shrimp populations.

Objective: The object of this study was to determine the relative and seasonal abundance of commercially important species of shrimp, revaluing the prediction of future catches.

Procedure: Six stations were established (Figure 1) in Aransas, Mesquite, Copano, and Mission Bays. Semi-monthly collections of shrimp were made using otter trawls. A twenty-foot trawl of 1 1/2-inch stretch mesh was used to sample Aransas and Mesquite Bays (Figure 1) at what was termed "Roving Trawl Stations." These stations were determined by the presence of commercial fleets. A ten-foot otter trawl with a 1/4-inch inner liner was used to sample at one station in Aransas Bay and two stations in Copano Bay (Figure 1).

Another means of sampling for shrimp was with a small bag-like 1/4-inch mesh bar seine. This bar seine was used chiefly in Mission Bay (Figure 1) and for a short time at the mouth of the Aransas River.

Both the 10- and 20-foot trawls were pulled behind a large inboard work-boat at about 1,200 rpm for a period of 15 minutes. During this 15 minutes about 3,200 feet of bay bottom was covered.

The bar seine was moved through the water by hand for 5 minutes and covered approximately 600 feet of bay bottom.

For each sample station, bottom temperatures, turbidities and salinities were recorded. Water temperatures were measured with a 50°C. thermometer and turbidities were recorded with the aid of United States Geological Survey Turbidity Scale. Salinities were calibrated with specific gravity hydrometers and the use of Knudsen's Hydrographic Tables.

All shrimp captured during the course of this study were measured in millimeters from the tip of the rostrum to the tip of the telson and weighed according to species.

Findings: The results of this study are shown in Figures 2 and 3. Data from the 20-foot trawl samples are not included because this trawl was not introduced until late in 1961 and no data were available from 1960 for comparison.

Figure 1  
Shrimp Trawl Stations in the Aransas-Copano Areas.

- Pull Seine Stations
- 10-Foot Trawl Stations
- △ 20-Foot Trawl Stations

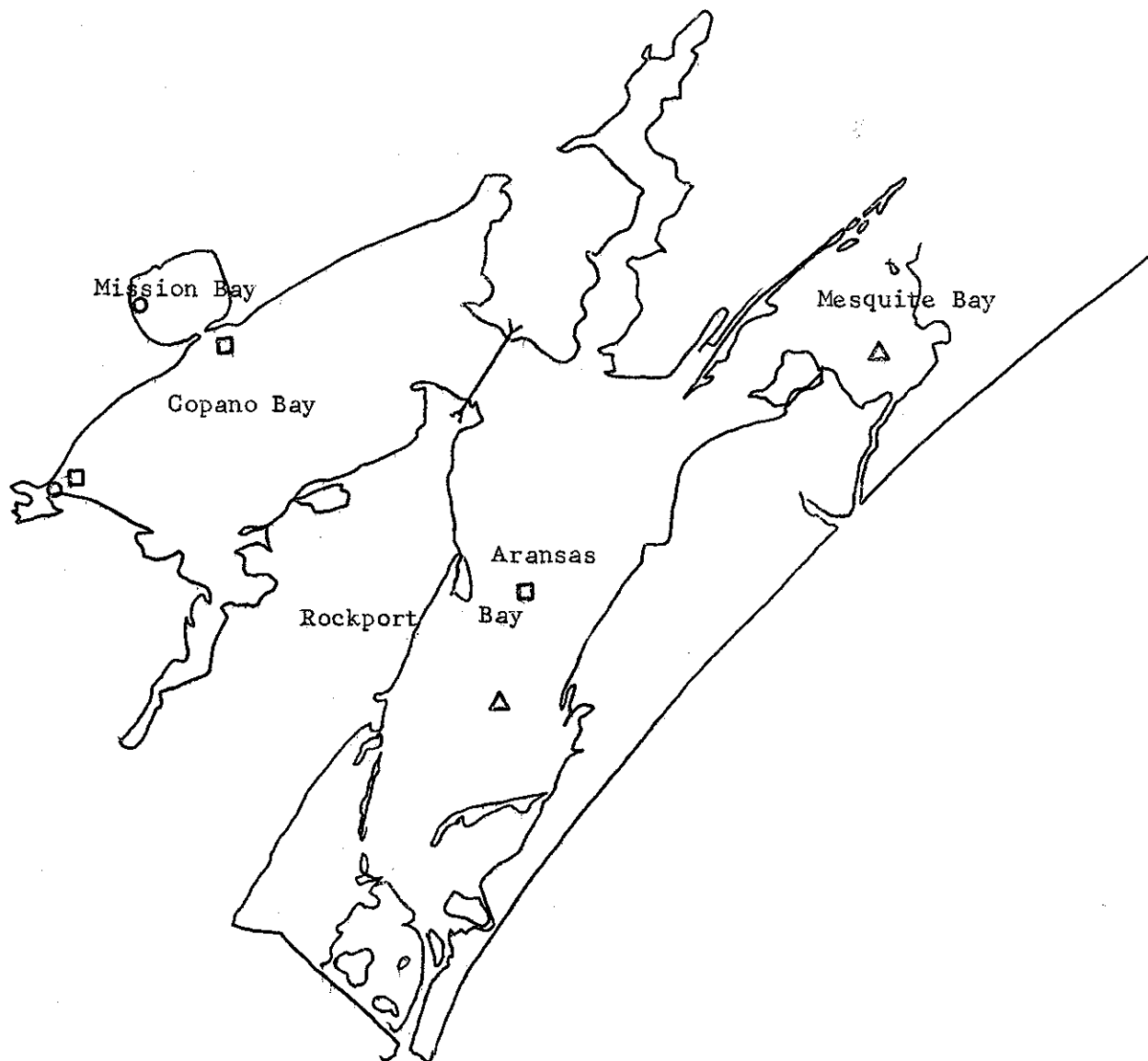


Figure 2  
 Catch Per Unit of Effort Comparisons of White and Brown Shrimp  
 Catches in a 10-Foot Trawl for 1960 and 1961 Related to Rainfall.

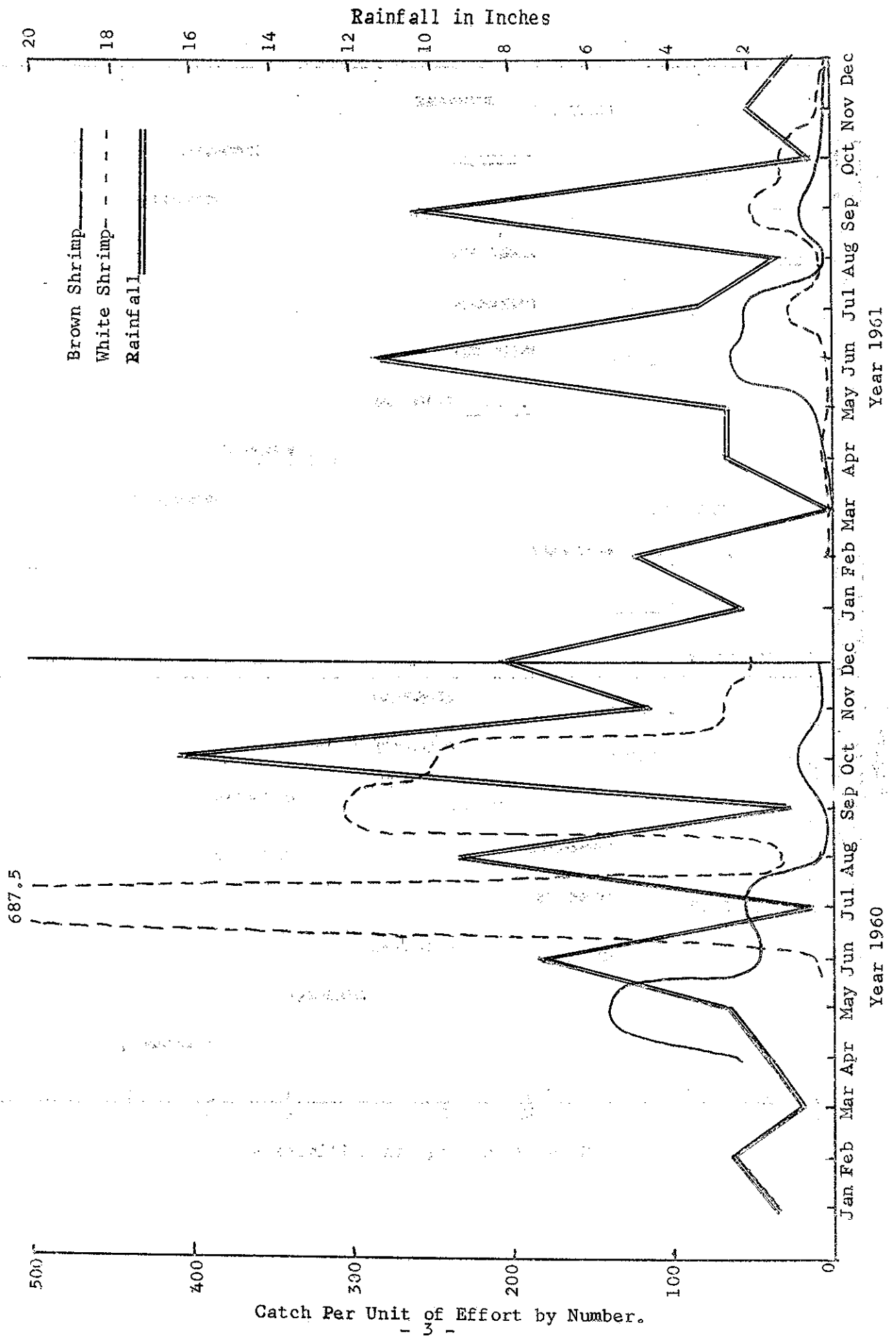


Figure 3

A Comparison of Modal Size Ranges for  
White and Brown Shrimp from the Aransas-  
Copano Area in 1960 and 1961.

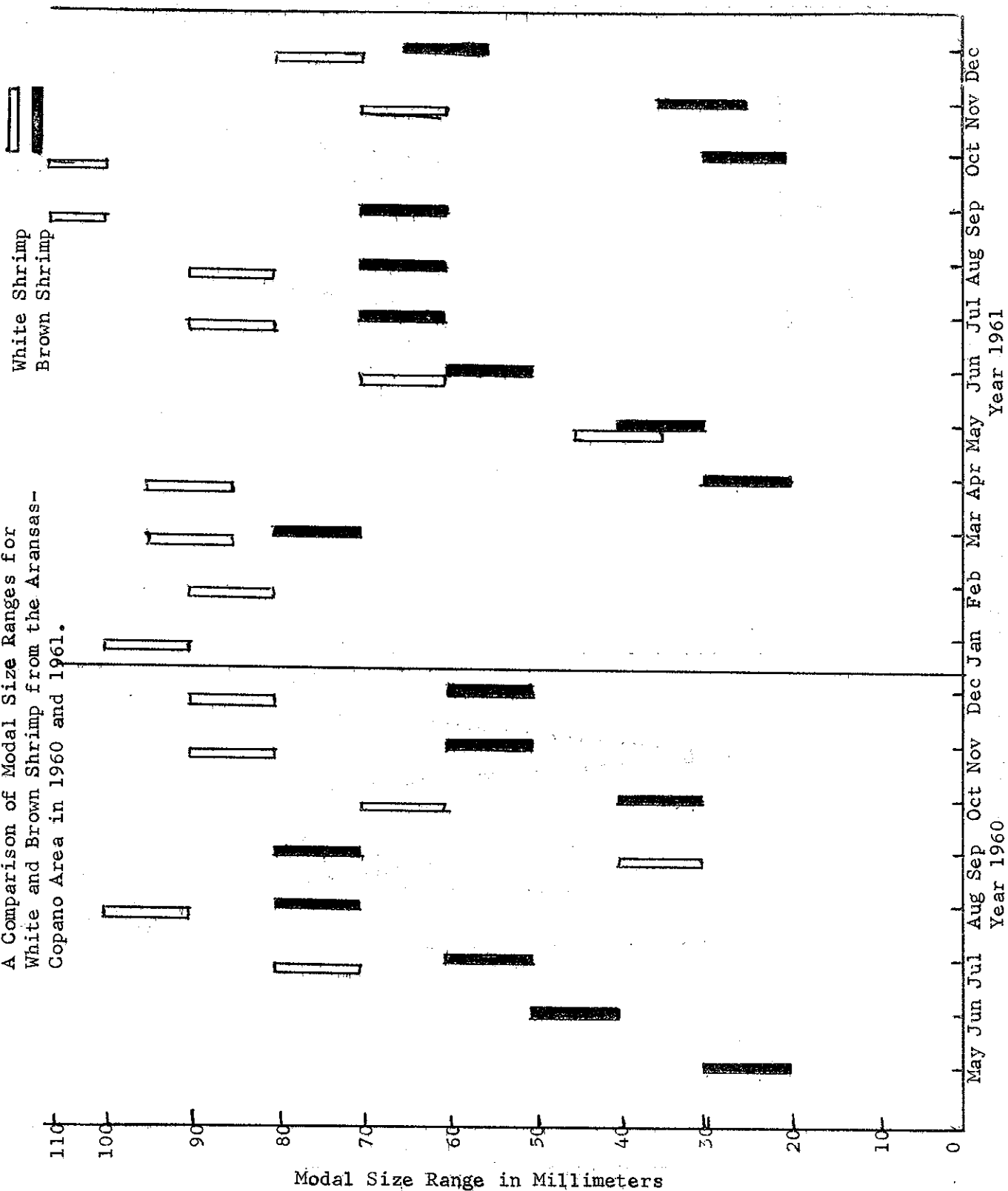


Figure 2 is a comparison of catch per unit of effort with the 10-foot trawl for 1960 and 1961. It is apparent that 1961 had a far lower catch per unit of effort per month than 1960. The peaks of production for these two years occurred at essentially the same time each year; it is only the catch figures which differ. Since the same size trawl was used for both studies, no difference in efficiency could account for a difference in catch. The same stations were used in 1960 and 1961; therefore, stations do not account for the difference.

Gunter (1954) shows a correlation between white shrimp, Peneaus setiferous, production and rainfall. This factor probably influenced production of white shrimp in 1961 since rainfall did decline.

The extent of damage to nursery groups from oil well brine has not been determined. The salinity level of this brine water is about 70 ppt., and with reduced rainfall, it is understandable that nursery areas at the mouth of rivers carrying this brine would become much more saline than the normal or optimum required for good shrimp production. This would be a local problem only and does not explain the lowered shrimp production for the whole coast of Texas.

Figure 3 is a comparison of the modal size ranges of white and brown shrimp for 1960 and 1961. In comparing modal size with peaks of abundance (Figure 2) it is apparent that the two do not coincide, small shrimp are more plentiful before the maximum modal size is attained. During the peaks of abundance, a great deal of culling would take place before commercial size requirements could be met. If the season was opened any earlier than it was for the past two years, many shrimp would needlessly be destroyed.

In determining the season's opening, consideration should be given these problems.

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#### Bibliography

Gunter, Gordon. 1954. The relation of total rainfall of the state and catch of marine shrimp, Penaeus setiferus, in Texas waters. Bull. Mar. Sci. Gulf and Carib. 4:2

