

Job Report

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Project No. MO-R-4 Date February 18, 1963  
Project Name: Survey of Oyster Populations and Associated Organisms  
Period Covered: September 1, 1961 to December 31, 1962 Job No. 8

Study of Oyster Growth and Population Structure  
In San Antonio and Espiritu Santo Bays

Abstract: The number of market oysters present in this area at the start of the study period in September 1961 was very low due to a flood in June 1961, that killed a large percentage of the oysters of the area. This condition gradually improved throughout the study period, but still only small amounts of commercial production had been observed in the area when the study period ended in December 1962. Spat set in the summer and fall of 1962 repopulated the area and the oysters have shown rapid growth. Without further natural mortality in the San Antonio Bay system oyster production during the 1963-1964 oyster season could approach the 1959-1960 peak.

Harvesting of under legal size oysters in Espiritu Santo Bay caused a heavy reduction of oysters in this bay, and no commercial production occurred during the September through December portion of the 1962-1963 season from this bay.

Objectives: To obtain oyster growth rates and population density of the oyster reefs in San Antonio and Espiritu Santo Bays and to determine the centers of commercial harvest in the area for use in making management recommendations.

Procedure: Four stations were established in the San Antonio-Espiritu Santo Bay area from which monthly population samples were collected. Each sample consisted of a standard bushel of oysters taken by a sample dredge. Each live oyster in the bushel sample was counted and measured to the nearest millimeter. Measurements were made by the caliper method using standard six-inch dividers. The straight line distance from hinge to bill was recorded on length frequency sheets. Only live oysters in the unculled bushel sample were counted. Dermocystidium marinum samples were taken from ten oysters out of the population sample. Tissue sections were placed in culture tubes and sent to the Marine Laboratory in Rockport for analysis. Locations of oyster boats working in the area were recorded to determine the reefs receiving dredging pressure.

Findings: Oyster production in this area at the start of the study period in September 1961 was very low throughout the entire area. This was mostly due to a damaging flood in June 1961.

Nearly all of San Antonio Bay was entirely fresh water in June 1961, which killed many oysters in the area. At the start of the study period,

salinities had risen to an average of about 14.5 ppt. for the area (see Project MF-R-4; Job No. 17).

Mortality of oysters on Mosquito Point Reef (see Figure 1) was especially heavy. There was no commercial production from this reef during the 1961-1962 season. As salinities slowly increased throughout the study period, oysters once again populated this reef. In December 1962, salinities in San Antonio Bay were about 25 ppt., and oysters were growing rapidly after a good spat set in the late fall. At this time, Mosquito Point Reef was beginning to recover from the flood, but very little, if any, commercial production occurred from this reef during the study.

Josephine Reef in Espiritu Santo Bay was not greatly affected by the flood (see Figures 2 and 5). However, removal of many barrels of undersized oysters almost completely depleted this reef of commercial and seed oysters during the 1961-1962 season. Espiritu Santo Bay was closed to oystering for the September through November period of the 1962-1963 oyster season to allow the area to recover. When this study period was completed on December 31, 1962, there had been no commercial oyster production from Espiritu Santo Bay. Samples taken from Josephine Reef (Figure 2) indicated a fair amount of commercial size oysters present, but when other factors were considered these did not present a true picture. At Stations 1, 3 and 4, an average time of five minutes was ample to obtain a standard one bushel sample with the one bushel sample dredge. On Josephine Reef in Espiritu Santo Bay, the one standard bushel sample took about thirty minutes to secure, indicating a scarcity of oysters on the reef.

Toward the end of the study period a slight increase of oyster numbers on Josephine Reef was noted.

Panther Point Reef (Station 3, Figure 3) was less severely damaged by the 1961 floods than the other reefs in San Antonio Bay. However, due to the depletion of the Espiritu Santo Bay reefs and the flood damage to the reefs in San Antonio Bay, Panther Point Reef had a heavy degree of pressure from the commercial dredgers in the 1961-1962 season of harvest. It will be noted by checking Figure 3 that most of the commercial size oysters had been harvested from this reef by the end of March 1962.

In December 1962, the reef had begun to recover from this heavy commercial harvest and the damaging flood. There has been no commercial production noted from this reef during the 1962-1963 oyster season up until the end of the study period.

Chicken Foot Reef, located in the southwest portion of San Antonio Bay, was heavily damaged by the 1961 floods, and did not produce during the 1961-1962 season. Samples taken indicate this reef should be in peak production again during the 1963-1964 season if no further mortalities occur.

Very little damage that could be attributed to Hurricane Carla in September 1961 was noted on any of the reefs of the area.

Increased salinities were noted during this study period. A heavy spat set on the reefs in central and upper San Antonio Bay appeared in June 1962. These spat are growing rapidly and should be commercial size (90 mm.) by late in the 1962-1963 season.

Most of the commercial oyster production for 1962-1963 was from the reefs of upper-central San Antonio Bay. Most of the production was by tongs; because the reefs are shallow and undredgable (see Figure 5 for the areas of commercial production during the 1961-1962 season).

Dermocystidium marinum:

Throughout this study period, regular tissue samples have been taken to determine the presence and incidence of this oyster infecting fungus. Below are the results of these checks.

Month	Mosquito Pt. Reef		Josephine Reef		Panther Pt. Reef		Chicken Foot Reef	
	Incidence	% of infection	Incidence	% of infection	Incidence	% of infection	Incidence	% of infection
Dec. 1961	0.4	30	1.5	90	0.1	10	1.1	80
Jan. 1962	0.4	40	1.2	80	0.2	20	1.4	80
Feb. 1962	Boat SKATE out for repairs		0.8	60	Boat SKATE out for repairs			
Mar. 1962	0.6	60	1.2	100	0.1	10	2.0	100
Apr. 1962	0.4	40	2.1	100	1.0	70	1.6	100
May, 1962	0.7	40	0.8	60	0.5	40	1.1	60
June, 1962	0.0	0	1.5	90	0.6	40	2.0	100
July, 1962	0.0	0	1.6	90	1.6	90	2.0	100
Aug. 1962	0.2	20	1.4	80	1.3	70	1.5	90
Sept. 1962	0.4	40	1.5	80	1.3	80	1.7	90
Oct. 1962	0.0	0	0.0	0	0.0	0	0.0	0
Nov. 1962	0.7	60	1.3	80	1.6	70	2.2	100
Dec. 1962	0.4	30	1.5	90	0.1	10	1.1	80

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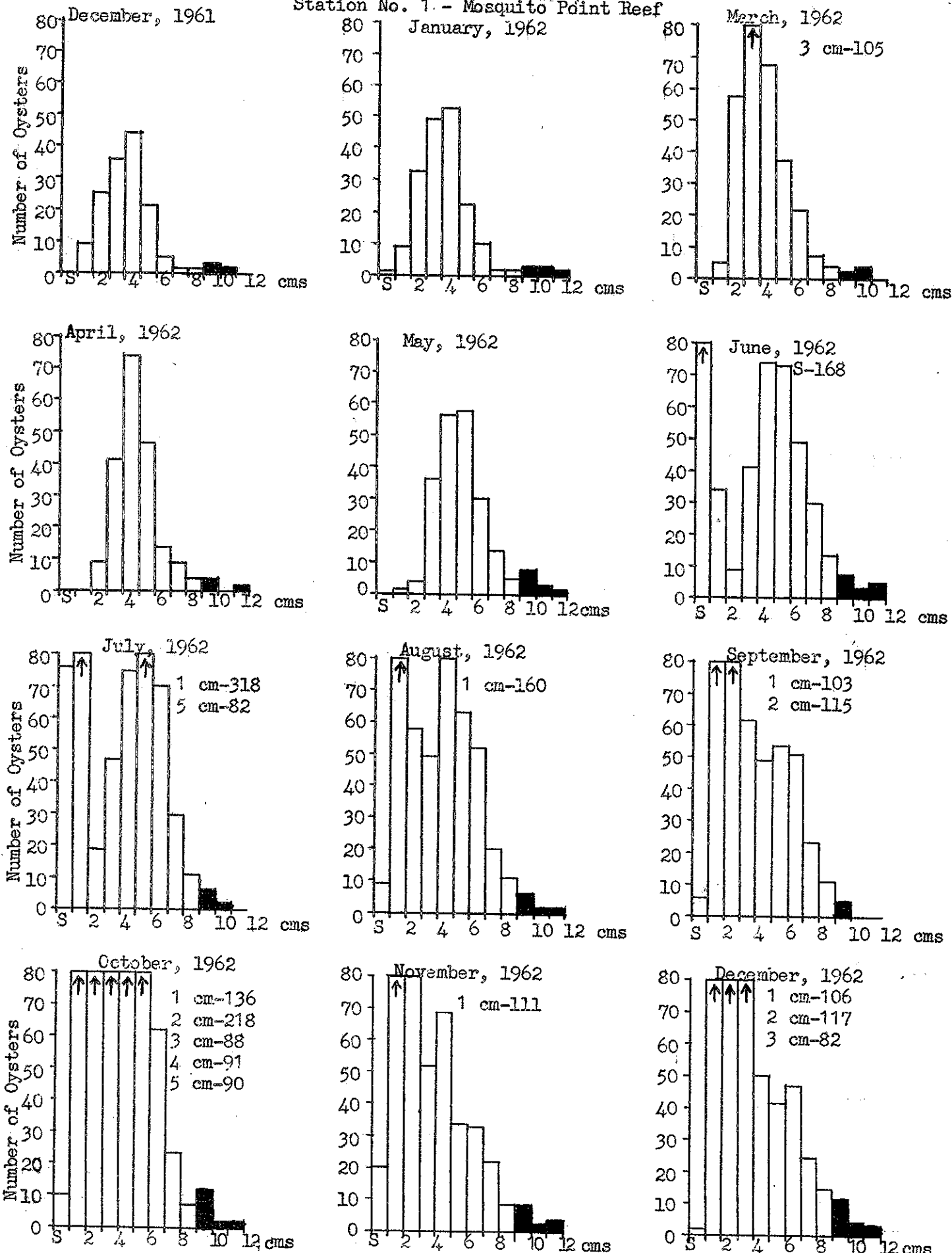
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Project Leader

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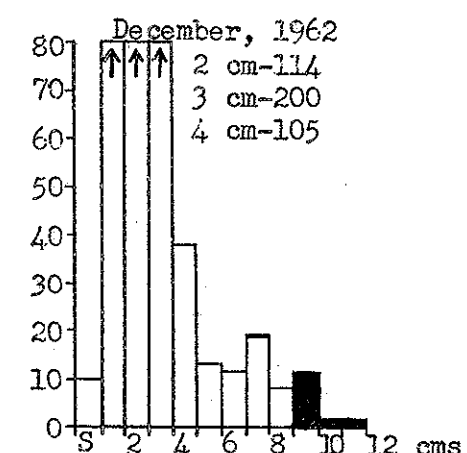
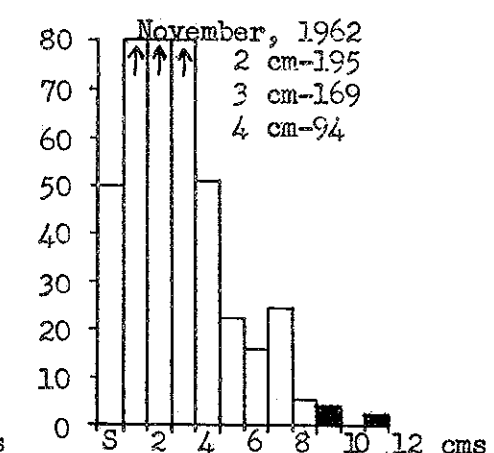
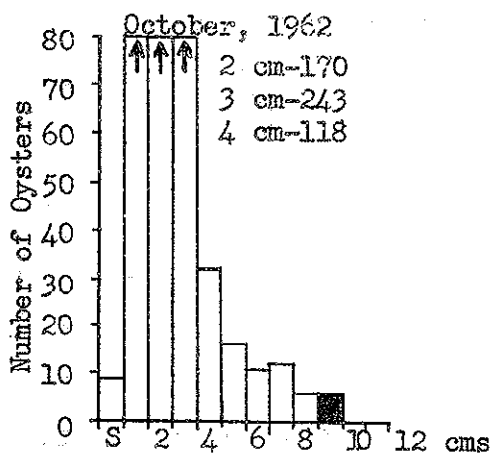
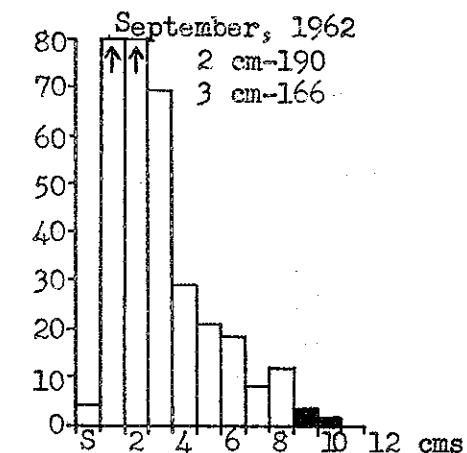
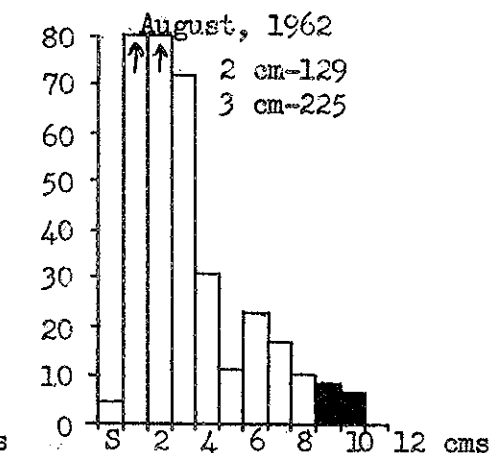
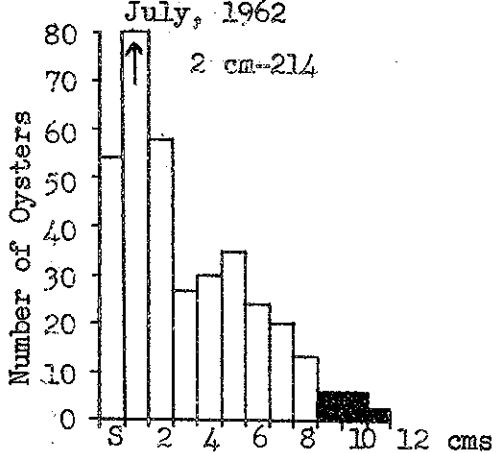
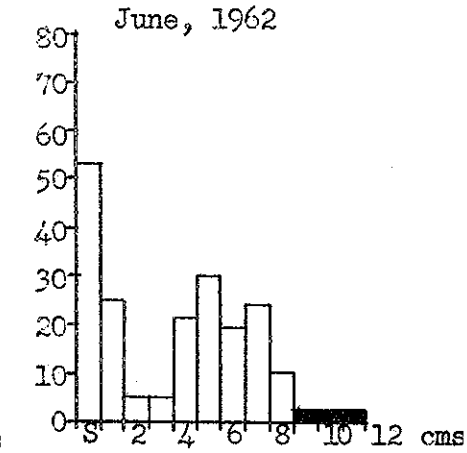
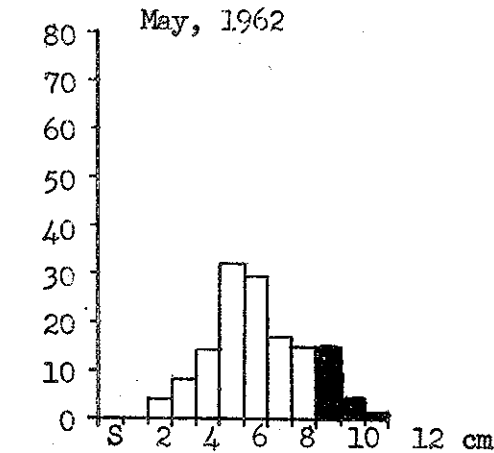
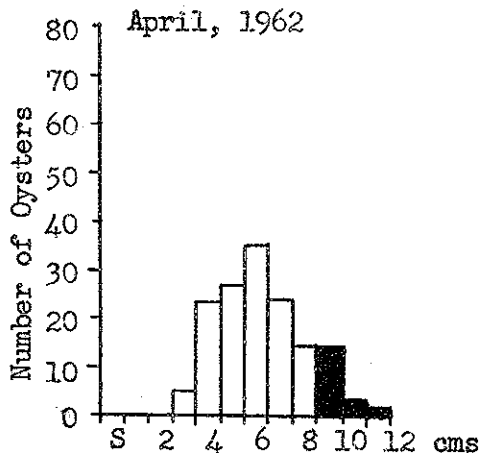
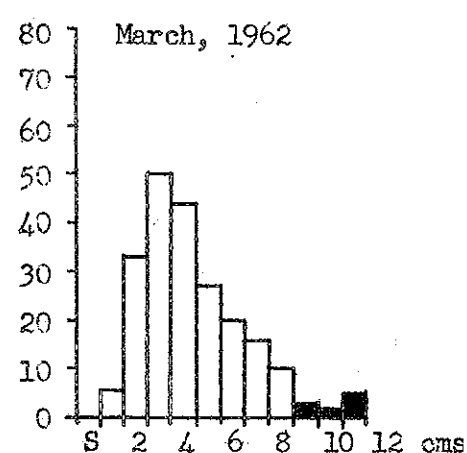
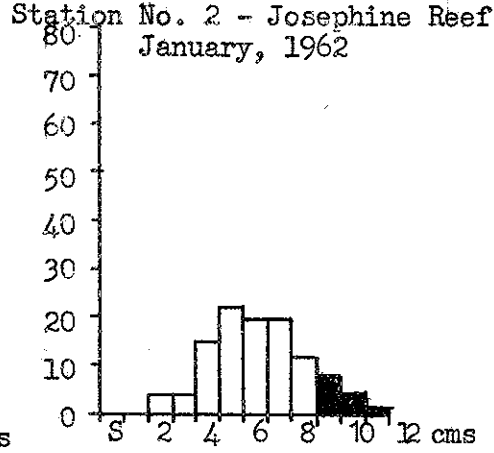
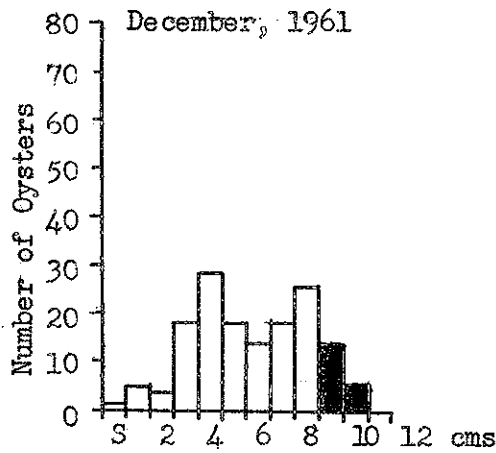
  
Coordinator

Figure 1  
Station No. 1 - Mosquito Point Reef



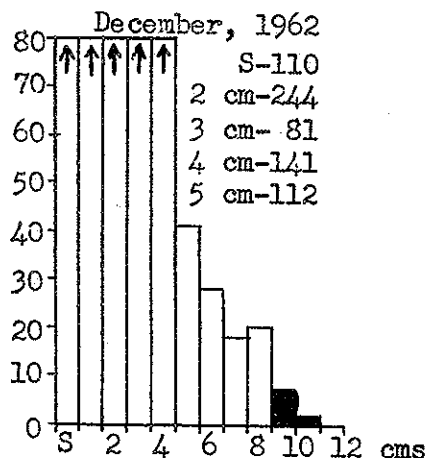
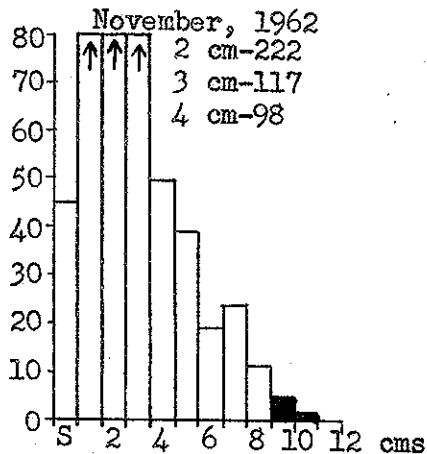
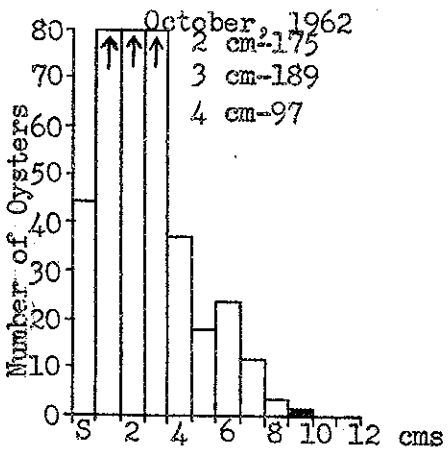
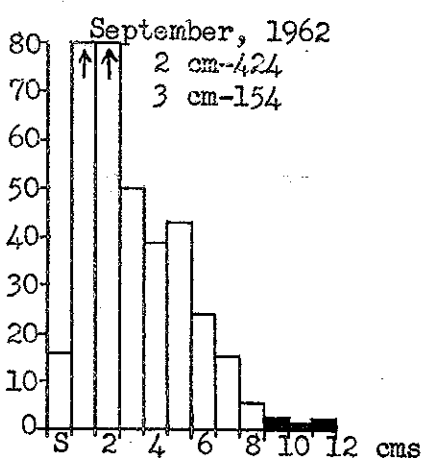
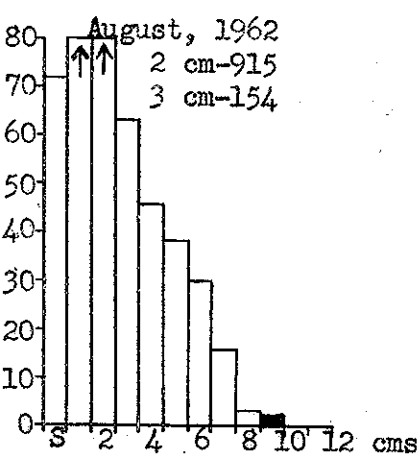
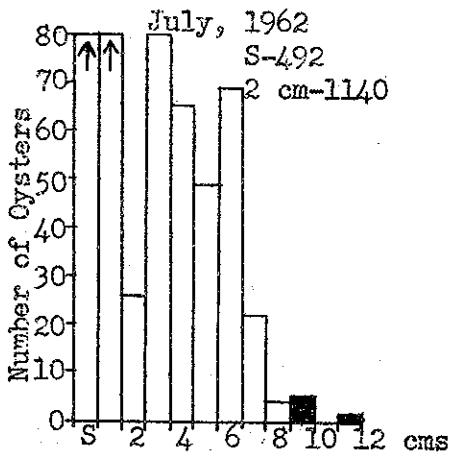
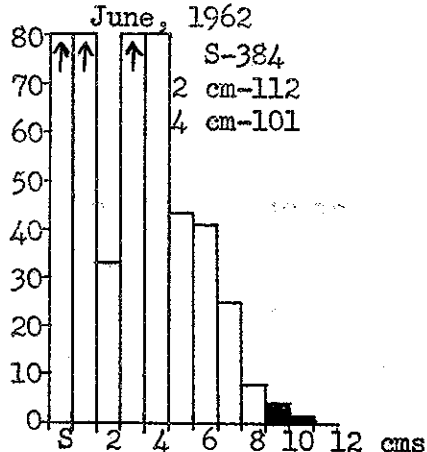
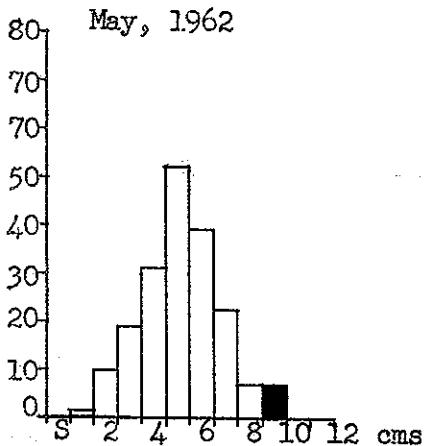
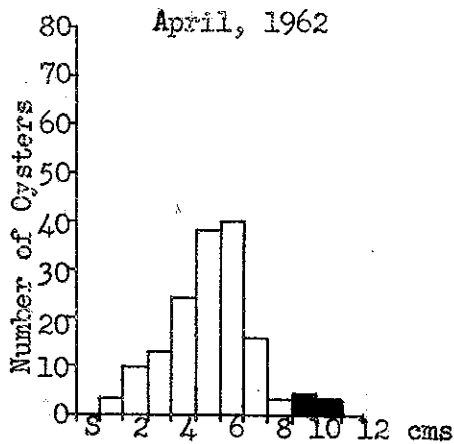
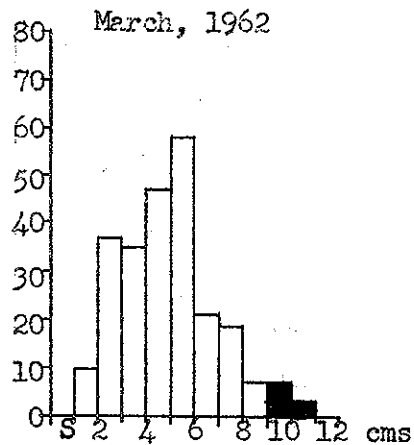
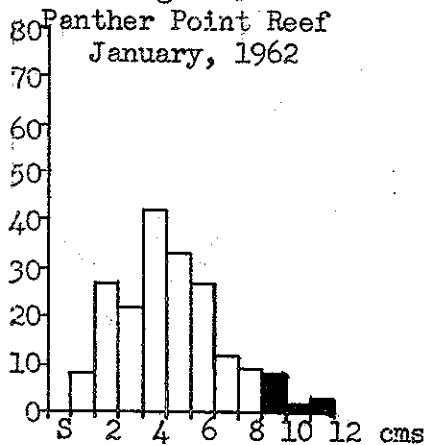
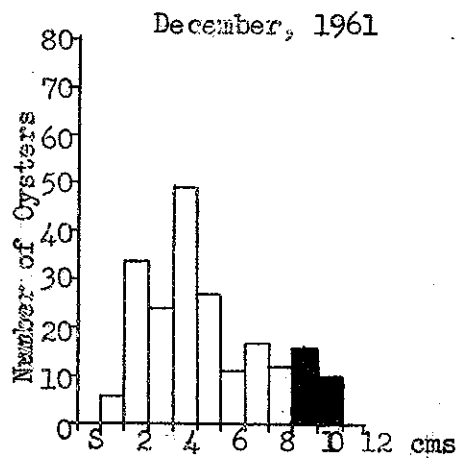
■ -Commercial Size Oysters\_4- S-Spat (0 to 1 cm)

Figure 2  
Station No. 2 - Josephine Reef  
January, 1962



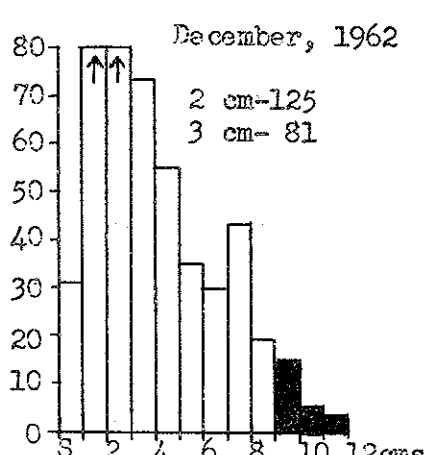
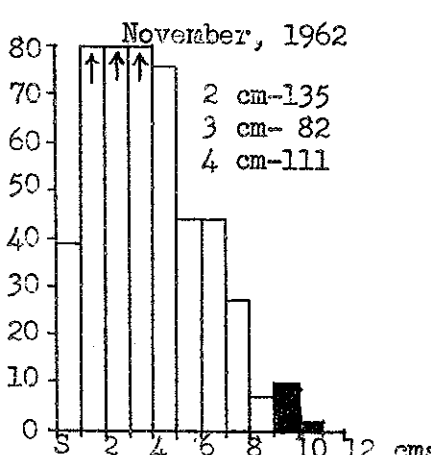
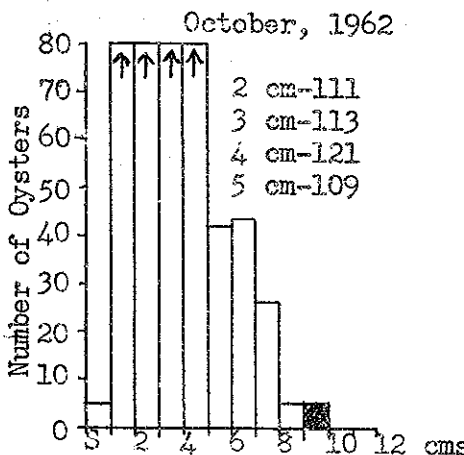
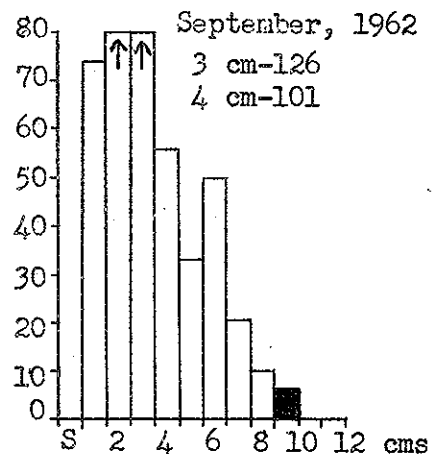
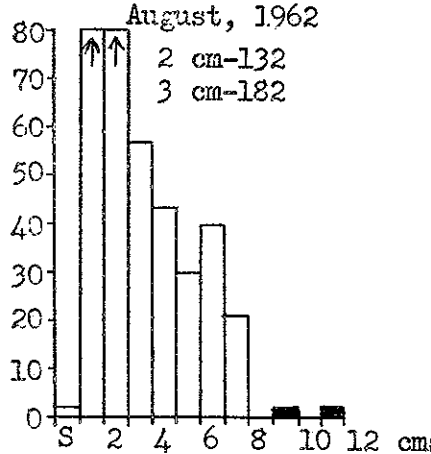
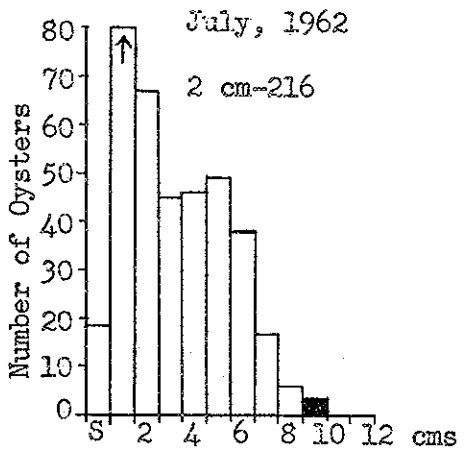
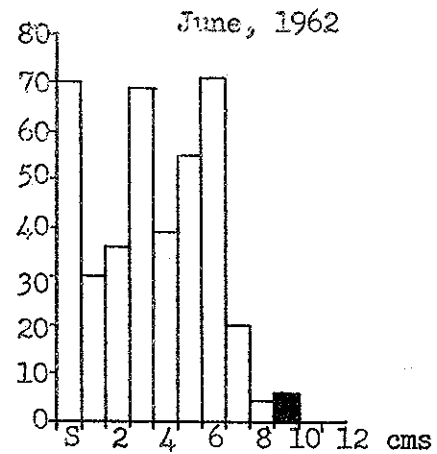
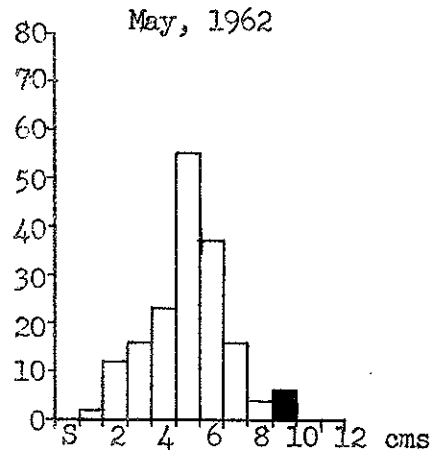
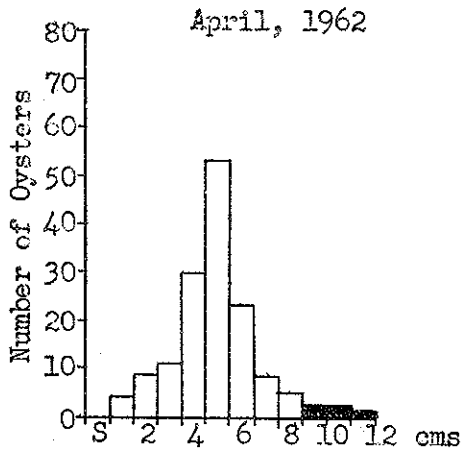
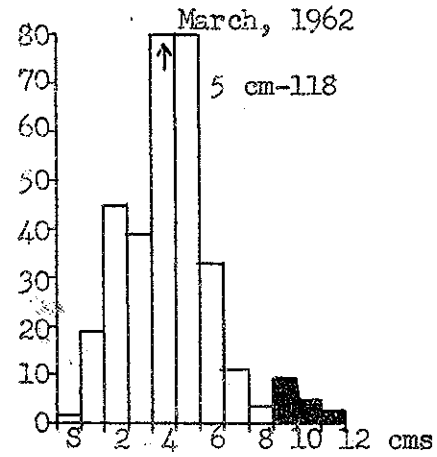
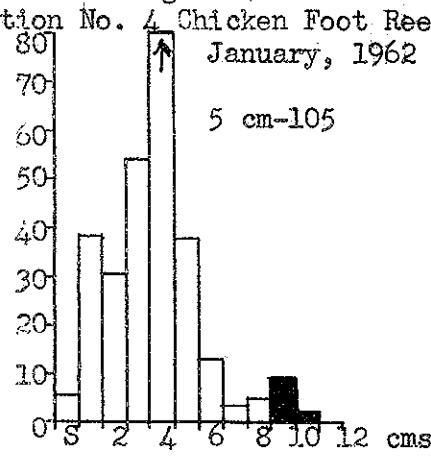
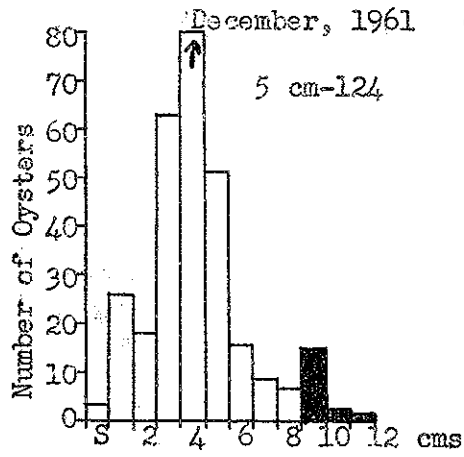
■ -Commercial Size Oysters S-Spat (0 to 1 cm)

Figure 3  
Panther Point Reef  
January, 1962



■ -Commercial Size Oysters S-Spat (0 to 1cm)

Figure 4  
Station No. 4 Chicken Foot Reef



■ -Commercial Size Oysters    S - Spat (0 to 1 cm)

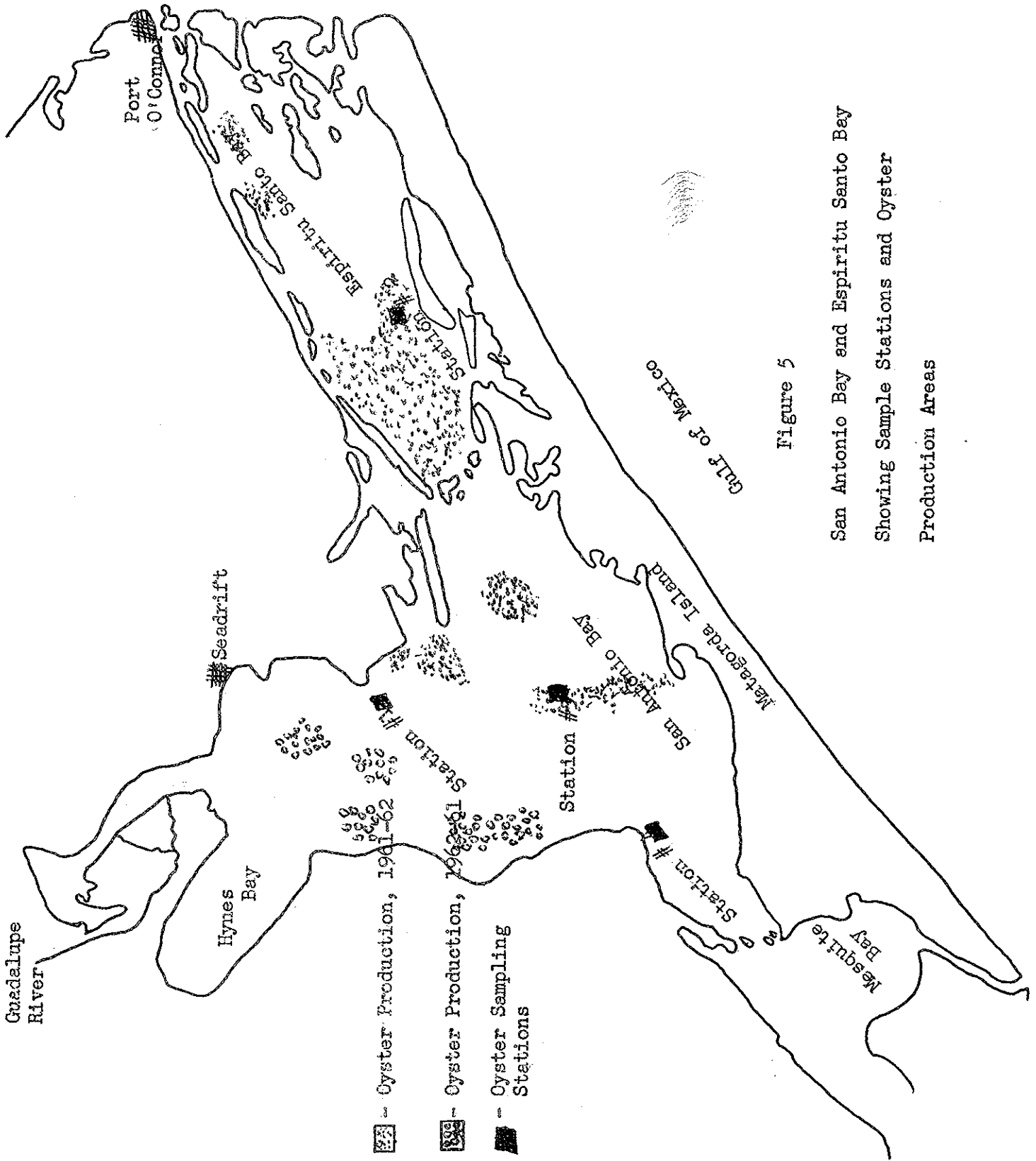


Figure 5

San Antonio Bay and Espiritu Santo Bay  
 Showing Sample Stations and Oyster  
 Production Areas