JOB REPORT

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Project Name: Survey of Oyster Populations and Associated Organisms

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

Abstract: Beginning in July, serious oyster mortalities occurred in central and lower San Antonio Bay. Although losses among market oysters were most severe, the smaller seed oysters were also affected. By the end of the year, almost all of the oysters in central San Antonio Bay were dead. The organism responsible for such mortalities was not determined. Since the incidence of the oyster parasite, Dermocystidium marinum, was low during the mortality period, it was not considered to be a primary causative agent.

The mortality was not observed in Espiritu Santo Bay or in the southwestern portion of San Antonio Bay. Spat setting and survival appeared to be good and a general increase in the number of oysters was observed in samples in these two areas by the end of the year.

Commercial oyster production during the 1962-63 season was confined to San Antonio Bay north of the Intra-Coastal Waterway. No production was reported from Espiritu Santo Bay. During the initial months of the 1963-64 season, all production was confined to north-central San Antonio Bay and to the western bay shore. The legal size limit was reduced to three inches.

In December, an outbreak of "red" oysters occurred in local shucking plants. After eight to ten days in cold storage the packaged oysters became red in color. The causative agent was presumed to be a yeast.

Objectives: To obtain population density of oyster reefs in San Antonio and Espiritu Santo Bays and to determine the centers of commercial harvest in the area, for use in regulating the oyster fishery.

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. All live oysters in the bushel sample were measured to the nearest millimeter. Measurements were made along the right valve from hinge to bill. Dermocystidium marinum samples were taken from ten oysters out of each population sample. Tissue sections were placed in thioglycollate-anti-biotic culture medium 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: Sampling stations included Mosquito Point Reef in central San Antonio Bay; Josephine Reef in Espiritu Santo Bay; Panther Point Reef in lower San Antonio Bay; and Chicken Foot Reef in southwest San Antonio Bay. Reef locations are indicated in Figure 1.

Although river flow data were not available, visual observations and salinity data indicated that river discharge was considerably below normal. Salinities ranged from 20 parts per thousand in Hynes Bay in January to over 40 parts per thousand at Panther Point in August.

The number of oysters per unculled bushel collected monthly at each of the four reefs is shown in Figure 2. The number of spat (less than 28 mm) per bushel is shown in Figure 3; the number of oysters over 28 mm in length in Figure 4; and the number of market oysters (over 75 mm) in Figure 5.

Spat were present throughout the sampling period (March - December) but appeared to reach a peak abundance at all four reefs in July. The set was greatest in the lower bay area (Panther Point Reef and Chicken Foot Reef) than in the central bay.

In general, survival of the oyster population appeared to be best at Josephine Reef and Chicken Foot Reef. As indicated in Figure 2, the total number of oysters per sample increased from 465 in March to 550 in December. At Chicken Foot Reef the total number per sample increased from 260 in March to 525 in December. A slight downward trend was noted at Panther Point Reef. In March the total number of oysters per sample was 655; in December the total number was 440. A marked decrease was found at Mosquito Point Reef where the total number of oysters per sample declined from 475 in March to 75 in December.

The number of market oysters per sample followed a similar pattern as shown in Figure 5. Marked declines were apparent at Mosquito Point Reef and Panther Point Reef.

Oyster Mortality

Mortality was first observed in July on Mosquito Point Reef. The percentage of oysters affected steadily progressed until few oysters of any size remained by the end of the year. A portion of Panther Point Reef also suffered an extensive mortality, mainly among market oysters.

The kill was localized in an area bounded on the south by the Intra-Coastal Waterway, on the north by a line between Swan Point and McDowell Point, and on the west by a line from the mouth of the Guadalupe River to Panther Point (Figure 1).

The organism responsible for the mortality has not been determined. Since the incidence of Dermocystidium marinum was low during the mortality period (Table 1) it is not believed to be a primary agent.

Commercial Oyster Production

During the 1962-63 oyster season Hynes Bay and Guadalupe Bay were closed to oystering by the State Health Department but San Antonio Bay and Espiritu Santo Bay were open. The legal oyster size was three and one-half inches in length and dredging was permitted in waters less than six feet in depth. As shown in Figure 1, most of the harvest was taken from north-central San Antonio Bay. There was no known production from Espiritu Santo Bay. Approximately 75 per cent of the oyster harvest was obtained by tonging. The average production was six barrels of culled oysters per boat per day.

At the start of the 1963-64 season, areas open to commercial production were the same as those open during the previous season. The legal size limit was changed by proclamation to three inches in length. As shown in Figure 1, only north-central and west-central San Antonio Bay were worked by oyster boats.

In December an outbreak of "red" oysters occurred at shucking houses around San Antonio Bay. After eight to ten days in cold storage the packaged oysters turned red or bloody. This was presumably caused by a red yeast.

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Table 1

Infection of Reef Oysters with *D. marinum*

	Panther Pt.		Chicken Ft.		Mosquito Pt.		Josephine	
	Dm	%*	Dm	%*	Dm	%*	Dm	%*
Jan.	----	---	----	---	----	---	----	---
Feb.	----	---	----	---	----	---	----	---
Mar.	.75	60	.30	40	0.0	0	.25	40
Apr.	1.95	90	2.65	80	.05	10	1.15	70
May	----	---	----	---	----	---	----	---
June	1.35	50	1.55	70	.2	30	1.75	80
July	0.00	0	.3	30	0.0	0	.85	50
Aug.	.8	60	.6	80	0.0	0	.4	30
Sept.	1.25	100	.35	60	0.0	0	1.8	100
Oct.	----	---	----	---	----	---	----	---
Nov.	.65	60	1.3	60	0.0	0	1.15	50
Dec.	.55	50	1.0	90	----	---	1.05	70

* Percentage of Infection

Dm Incidence of Infection

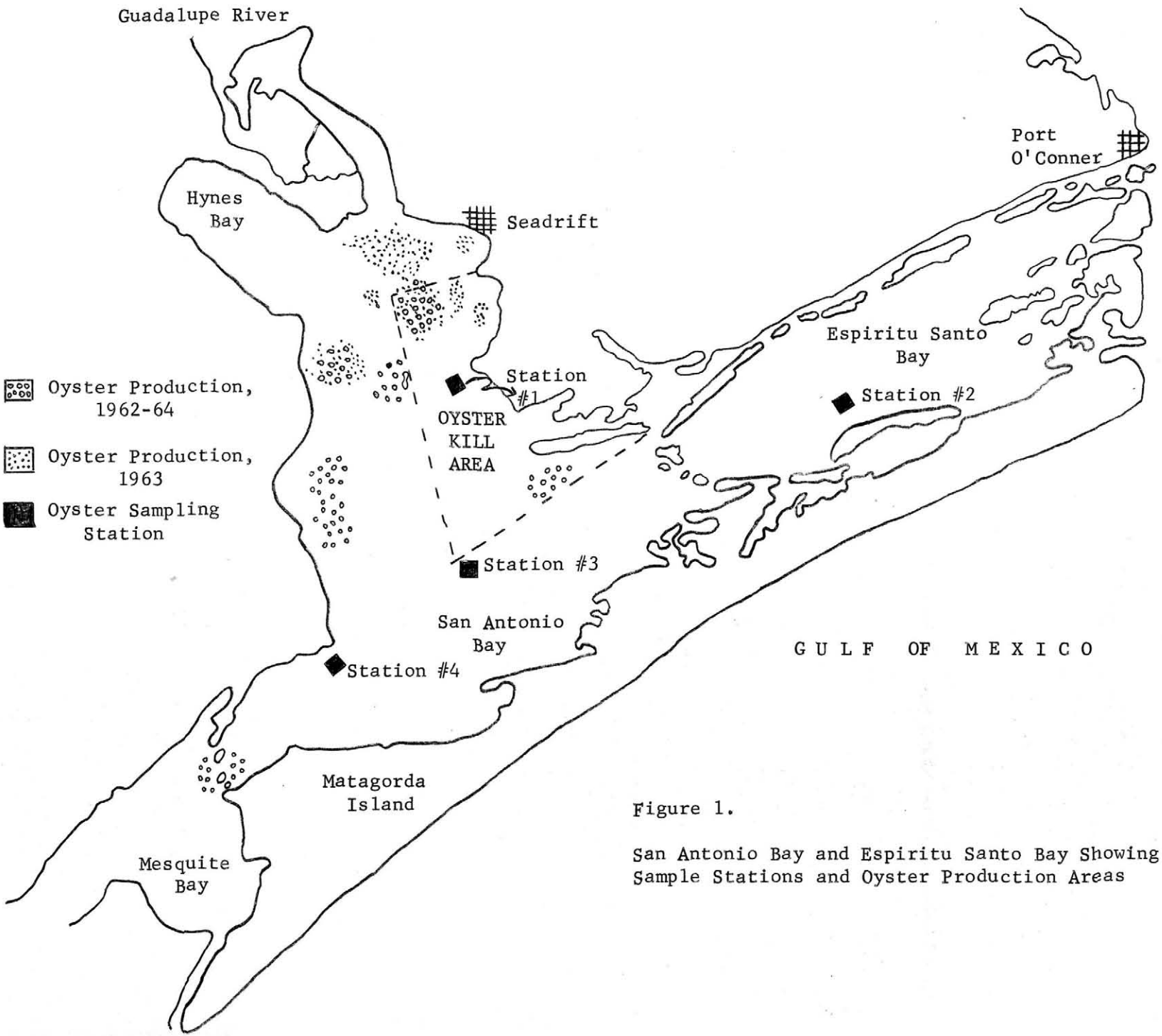

Figure 1.

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

Figure 2:

Total Number of Oysters per One Bushel Sample During 1963

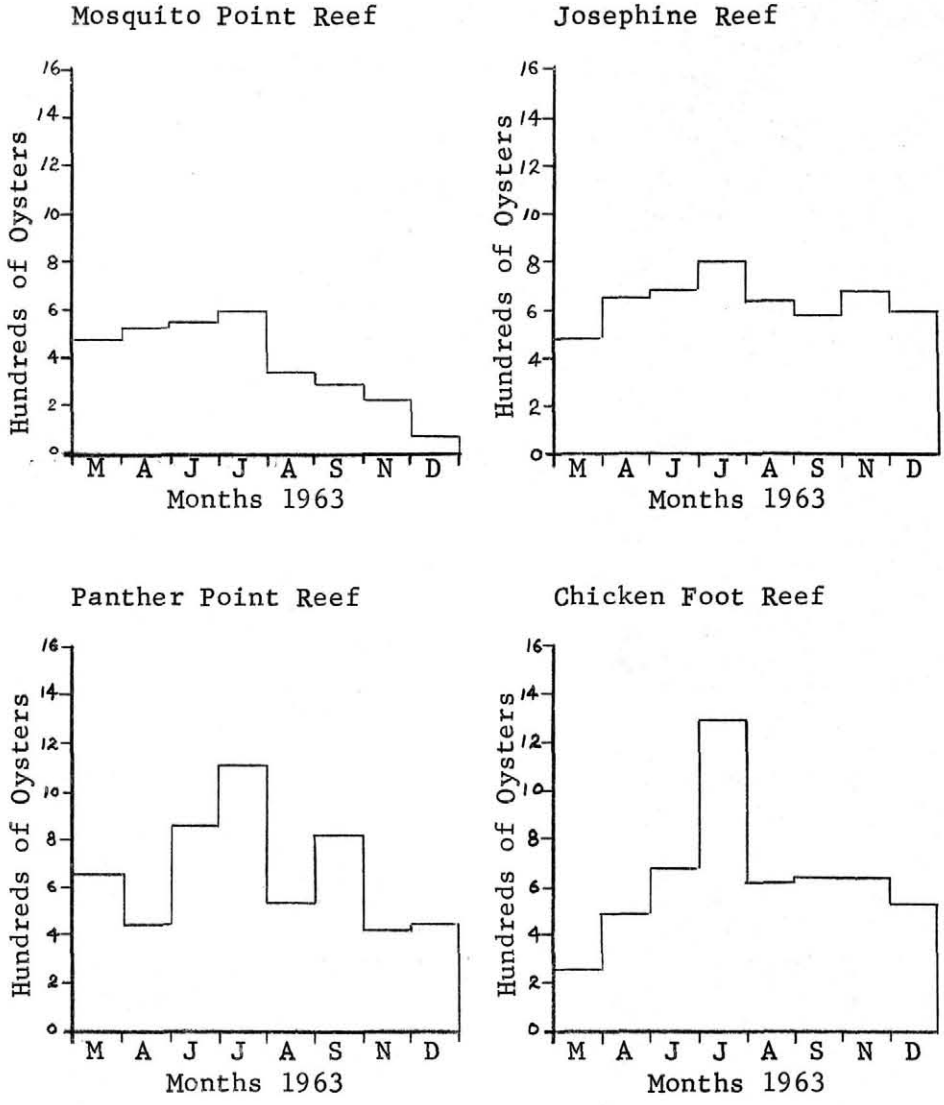

Figure 3:

Number of Spat per One Bushel Samples During 1963

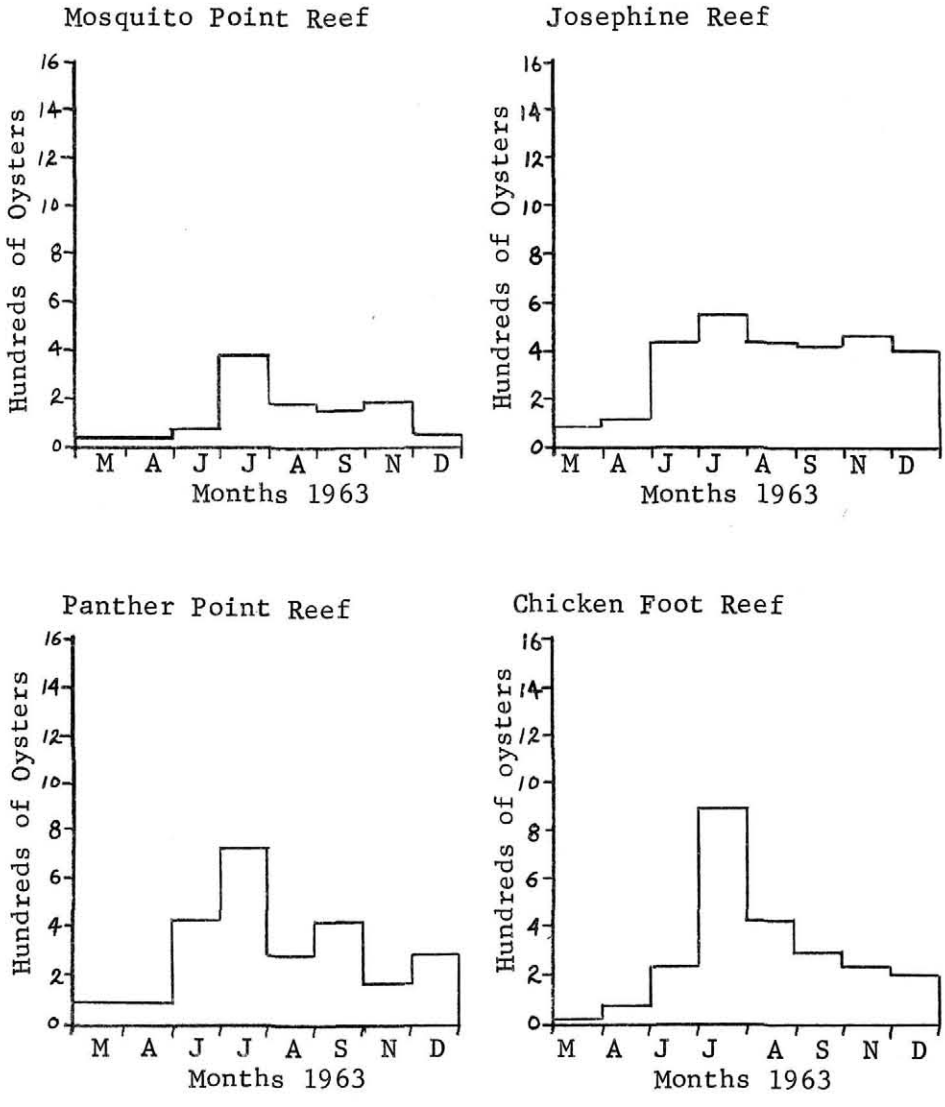

Figure 4:

Number of Oysters Over 28 mm in Length Per One Bushel Samples During 1963

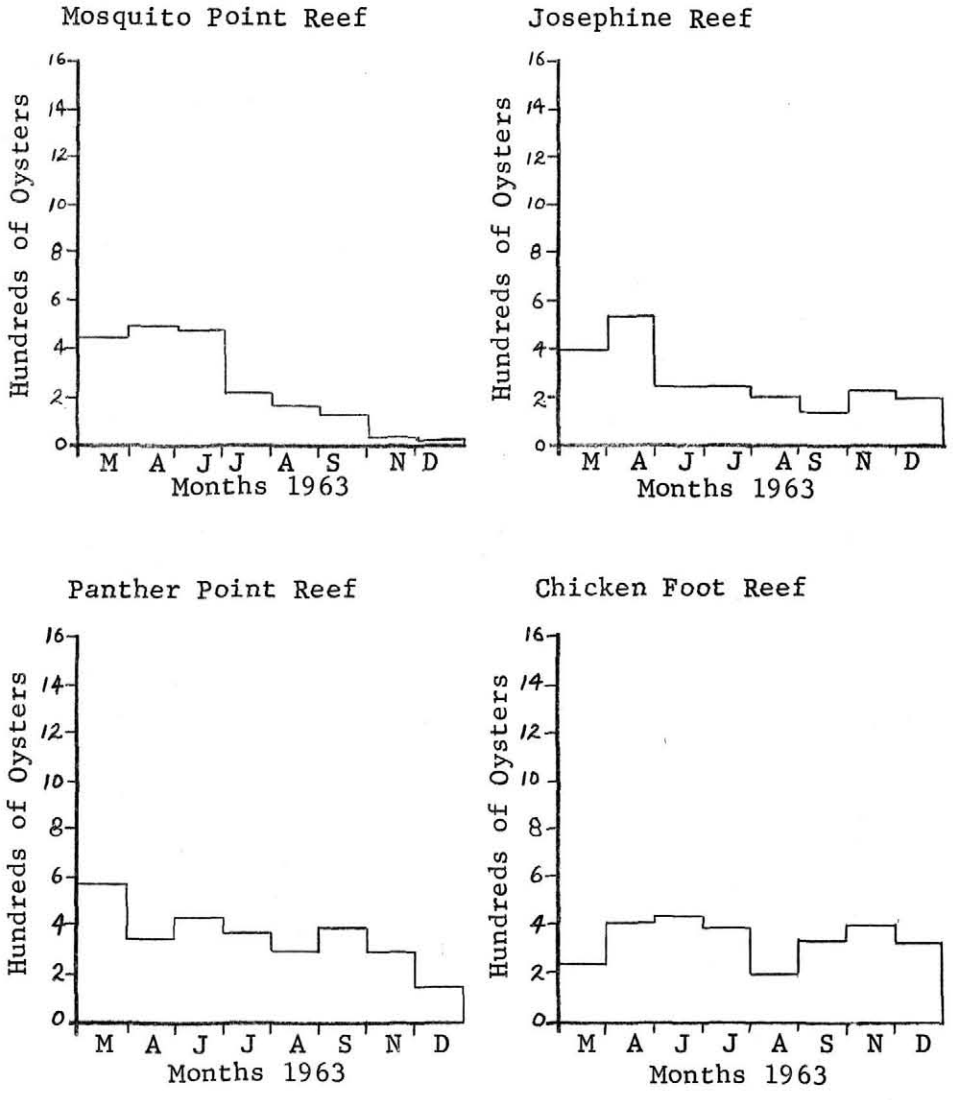

Figure 5:

Number of Market Oysters (over 75 mm in length) per Bushel Sample in 1963