

## Job Report

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Project Name: A Developmental Survey of the Waters of Willacy and Kenedy  
Counties, Especially Those Waters Which are Affected by the  
Opening of Port Mansfield Pass and Channel

Period Covered: June 1, 1960 to August 31, 1961

Job No. G-1

### An Ecological Survey of the Waters of Willacy and Kenedy Counties Which are Affected by or Influenced by Port Mansfield Pass, Jetties and Channel

Abstract: Port Mansfield Pass, between the Gulf and the Laguna Madre, was closed throughout the period to allow construction of jetties. Hydrographic data and biological samples were obtained and the results compared with similar samples obtained during previous years. Changes in vegetative coverage, changes in habit of marine fauna and influx of new species have been noted.

Objective: To compare existing conditions with those which have existed since 1953.

Procedure: To follow precisely the collecting methods used during the original ecological survey and those used for the past two years of this present survey to compare present conditions with those that existed in previous years, and to determine to what extent this pass is affecting the marine fisheries resources of the area.

Findings: At the beginning of the period covered, Port Mansfield Pass was functioning as a fish pass but had not been navigable for over two years. The tetrapod concrete jetties had sunk almost out of sight, and a sand bar had built up across the mouth of the pass from jetty to jetty. Water over the bar was one foot or less in depth.

The Port Mansfield Channel through Padre Island remained navigable to within 500 yards of the Gulf beach throughout the period, but the encroachment of sand dunes had built up numerous sand bars and middle grounds in the channel which made navigation uncertain at all times. That portion of the channel from Padre Island to the Intracoastal Waterway was navigable. Some filling in occurred between spoil dumps, especially in those areas nearest the Intracoastal Waterway.

On July 13, 1960, the pass was closed by dragline at its junction with the Gulf beach to facilitate construction of new jetties. Construction of these impervious granite block jetties was still underway at the end of the project period, scheduled for completion in April 1962. Channel and pass dredging was begun in February 1962, with completion of the project scheduled for May 1962.

Hydrographic and biological sampling commenced in July of 1954 and has been continued through the report period. Hydrographic stations 21 through 25 are located in the area directly affected by the opening of Port Mansfield

Pass.

During the period July 1954 to October 1957, before the pass existed, salinities at station 25, located at the north end of Redfish Bay, ranged from 27.0 to 55.0 o/oo. From November 1957 to July 1960, while the pass was open, salinities at the same location ranged from 26.2 to 44.6 o/oo. From August 1960 to the end of the report period, while the pass was again closed, salinities ranged from 28.0 to 45.8 o/oo. It cannot be stated that the reduced salinities during the period that the pass was open is due to the pass being open. Reliable and accurate rainfall and runoff data for this area are not available.

General mapping of the important bay vegetation in the Redfish Bay area has shown a steady increase in area and stand of shoal grass, Diplanthera wrightii, since sampling was started in 1954. This increase cannot be traced to the opening of the pass either.

Trawl sampling was done at each station since 1954 whenever salinities were obtained. Detailed analysis has been made of the trawl samples from the five stations in the area. The five most important forms taken as far as this report is concerned are the commercial shrimp, juvenile trout, pin perch, pig fish, and anchovies.

Since trout, shrimp, pin perch, and pig fish all prefer the areas of abundant vegetation, the increase in shoal grass area and stand in Redfish Bay and the changes in salinity may be more responsible for annual fluctuations than did the opening and closing of the pass. Juvenile trout have been known to the area since June of 1955 but were not greatly abundant or widespread in range until the summer of 1961. No increase was noted during the period that the pass was open. There was no noted increase in commercial shrimp, pin perch or pig fish during the period that the pass was open, although it was noted that the pin perch entered the area earlier in the year during the period that the pass was open. While the pass was closed, the juvenile pin perch would appear in the Port Isabel area and could easily be traced as they moved north to populate the entire lower Laguna Madre. While the pass was open, juvenile pin perch appeared just inside Brazos Santiago Pass and Port Mansfield Pass simultaneously, and the north end of Redfish Bay was stocked with pin perch four to six weeks earlier than in other years.

The effect of Port Mansfield Pass on the anchovy is somewhat more pronounced. The anchovy was not taken in trawl samples in Redfish Bay prior to the opening of the pass but has been an important winter forage species since the original opening of the pass in November of 1957. Juvenile anchovies are very abundant on the Gulf beach in the immediate vicinity of the Port Mansfield Pass jetties.

Perhaps the most dramatic example of the effect of this pass on fish populations in the Redfish Bay area was the sudden influx of juvenile jack fish in February 1958, just three months after the opening of the pass. These juvenile jacks populated the entire bay and were most abundant on the Gulf beach at the Port Mansfield Pass jetties. They have not been common in the bay before or since.

The effects of the pass on bay sports and commercial fish is not easy to determine. The commercial flounder is definitely more abundant since the opening of the pass and, due to its large concentration in the pass and channel itself, it is suspected that the pass has been influential in the increase in abundance of this fish in the area. The pass effects on trout, redfish, and drum are not yet determined.

Comments: This report can be termed a progress report of a survey which cannot be considered complete until the pass is permanently opened and conditions in the bay become stabilized. The temporary pass opening from November 1957 to

July 1960 has shown that some changes can be expected when the pass is reopened. Species new to the area are expected to be introduced, and the patterns of species already present can be expected to be changed. The study will be continued for another 17 months. During this period the pass will be closed for the first 9 months and open for the remaining 8 months.

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