

Job Report

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Project No. M-9-D-4 Date 20 July 1960.

Project Name: A Development Survey of the Waters of Willacy County, Especially Those Which are Affected by the Opening of the Port Mansfield Pass and Channel.

Period Covered: 1 June 1959 to 31 May 1960. Job No. G-1

A Survey of the Waters of Willacy County Which Are Affected By or Influenced by the Port Mansfield Pass, Jetties, or Channel.

Objectives: To compare existing ecological conditions with those conditions which existed prior to the opening of this pass and channel.

Procedure: Follow precisely the collecting methods used during the original ecological survey; compare the present conditions with those which existed prior to the opening of the pass; and determine to what extent this pass has affected the marine fisheries resources of the area.

Findings: For the most part, few changes have occurred in the project area during the past year and conditions throughout the year were much the same as those which existed for the corresponding months of the year previous. East Channel remains navigable from the Intracoastal Canal to within 1,000 yards of the gulf beach although some silting in of the channel has taken place at the gaps between the spoil banks. The channel area from 1,000 to 100 yards of the gulf beach has widened and contains several middle-grounds separated by migratory channels. These channels, while very narrow, are from 4 to 8 feet in depth and the tops of the middle-grounds are exposed at low tide. At this point the channel turns abruptly south and runs parallel to the beach for 100 yards before turning east to the gulf. This channel is only 50 feet wide but is kept scoured by the current. Between the jetties, a bar extends from jetty to jetty. Water on the bar is only one foot in depth. There have been no significant changes in these conditions for the past two years except that the middle grounds have extended westward. The pass to the gulf has been navigable only to skiffs and small outboard rigs for over two years.

Ecological conditions in the Redfish Bay area remain much the same as the year previous. Normal salinities in summer range from 37 to 41 o/oo and from 42 to 52 o/oo in winter. The comparatively low summer salinities are due to the adequate water circulation in the area affected by Brazos Santiago Pass at Port Isabel where the prevailing current enters and the East Pass and Land Cut which provide the exits. Circulation is assisted by the Intracoastal Canal. Circulation is adequate to allow complete water exchange before salinity increase due to evaporation has exceeded 5 o/ob. High winter salinity, especially in the north end of Redfish Bay, is due to the transport of hypersaline waters of Baffin Bay and the Upper Laguna Madre by the prevailing northerly winds.

The salinity pattern has changed little in Redfish Bay since work started in 1953; little change was expected nor was any salinity decrease needed.

Vegetation has increased over the previous year throughout the area. Both shoal and widgeon grass stands which first appeared during the 1958-59 season have become well established. Additional stands have appeared this year. This

increase in vegetated areas appears to be responsible, at least in part, for the marked increase in juvenile brown shrimp and bait fish populations as well as the increased use of vegetated area for the spawning of the spotted trout.

Juvenile brown shrimp have been more generally distributed throughout the area in the past two years. The increase corresponds to the dredging of the pass and the increase in vegetative stands. A corresponding increase in pin perch populations has also been noted. Piggies or pig fish, once rare in the area, now constitute a substantial portion of the bait fish population and the juvenile spot croaker appeared in numbers for the first time in 1960.

Prior to 1959, the juvenile spotted trout were found only at Station #22. In the summer of 1959, they also appeared at Station #24. In June of 1960, the juvenile spotted trout appeared at all five stations and in all intermediate sampling stations worked extending the entire length of the area.

Trout, drum and redfish populations have been abundant over the entire project area. These populations have always been abundant, however, and no significant change in numbers was noted. During the 1959-60 contract drum netting season over 514,000 pounds of dressed drum (640,000 pounds live weight) were taken from the Lower Laguna Madre. Most of these were harvested from Willacy County, the project area. This does not include sports, trot line or illegal net landings. Drum appeared to be as plentiful at the end of the contract season as they were at the start.

Flounder populations have increased in the area from a few scattered specimens to a population of significant numbers in the past two years to provide a new sports fishery to the area.

Work in the East Pass itself has been meager due in part to insufficient time and personnel. Since most movements through the pass are at night, overnight sampling at least one night each week would be necessary to gain a clear picture of the use of this pass. Some movements through the pass have been noted, however. Adult flounder were noted going from bay to gulf in November of 1959 while larval shrimp, crabs, anchovies and croaker entered the bay on incoming tide. Juvenile spot and golden croaker, mullet, pin-perch and anchovies were very abundant on the gulf beach in March, 1960 and were brought into the bay in large numbers on each incoming tide. A few orange-sponge blue crabs used the pass in March and April to emigrate from the bay to spawn. Larval white shrimp of 7 to 13 mm were noted in the pass on May 17, 1960. Nocturnal migrations of 75 to 85 mm brown shrimp from bay to gulf were noted in June and July.

Comments: While East Pass is a definite aid to the migrations of larval, juvenile and adult forms to and from the gulf, the quantitative effect on each species is not yet known (i.e., what percentage of increase of the total populations of any species is the direct result of the opening of East Pass?) Considerable information has been gained from this study by comparing results from 1953 to 1957 when no pass existed; 1957 to 1958 when a navigable pass existed and 1958 to 1960 when a model fish pass was present. Future developments will make it possible to re-run the survey, however, and present the opportunity to correct errors and fill in gaps. At this writing, new jetty construction has been ordered with work to start immediately. A dredge is due at the pass in a matter of days to close the pass at the beach to allow more efficient construction of the jetties. The contract calls for completion of the jetties in 740 calendar days starting July 11, 1960 with channel and pass re-dredging immediately thereafter. This study will continue to note the effects of pass closing in 1960 and the re-opening as a permanently navigable pass in 1962.

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Accepted by Howard T. Lee

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Figure I - Station Locations Area M-9, Redfish Bay.

