

JOB COMPLETION REPORT

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Project No. M-2-R-1 Date: June 25, 1959.
Project Name: Basic Ecological Survey of Area M-2. Job No. D-2
Period Covered: 25 May 1958 to 25 June 1959.

Bottom Sediments of Area M-2

Objectives: To determine the character and distribution of the bottom sediments in the area.

Procedure: Samples of the bottom sediments were obtained by various means including by hand, plastic tube, Ekman dredge, etc. and the distribution of the various bottom types were plotted throughout the area. Information and data were gathered from numerous sources and publications.

Findings: The total area of bays included in Area M-2 is roughly 153,000 acres. More than 97% of the bay bottoms in the area consist of mud in one form or another. Although the character of the muds varies throughout the area, they might be described in a general way as being black (or dark), highly organic, and very sticky. It is obvious that a bay having great expanses of this type of bottom tends to remain generally turbid and that the high turbidities have a pronounced effect on the total ecology.

Shepard (1953, Bulletin of the American Association of Petroleum Geologists, Vol. 37, No. 8) made a systematic comparison of old and new soundings by the U.S. Coast and Geodetic Survey of the bays along the Texas coast. He stated that Galveston Bay showed an apparent overall shoaling of 1.15 feet between 1854 and 1933 (or a rate of 1.44 feet of fill per century). He stated also that several other factors should be taken into consideration in any attempt to study the net changes which might lead to deepening or filling of the bays. These factors are: man-made changes (dredging, filling, etc.), changes in the water content of the silt being deposited on the bay floors, sinking of the land masses surrounding the bays, variation in river discharge, and variation in the silt loads carried by the rivers emptying into the bays. There are probably other factors which would have effects.

In Galveston Bay one such factor is the dredging of shell for various manufacturing and construction uses. The following production figures of shell taken from Galveston Bay (and nearly all of this from Area M-2) were provided by the Sand, Shell and Gravel Division of the Game and Fish Commission:

Fiscal Year

Cubic Yards of Shell Harvested

1955-56	9,049,645
1956-57	9,466,304
1957-58	8,884,035

Average: 9,133,328 cubic yards per year

Measurement of water displacement of "first run washed" shell (fine and whole shell mixed, as it was loaded onto a shell barge) shows that the actual solid volume of material taken from the bay is roughly 47.5% of the total volume reported. Thus, in round figures, about 117 million cubic feet of solid material is taken annually from an area of some 6,678 million square feet. Dividing the area into this estimated volume of material taken from the bay shows an approximate net deepening of 1.75 feet per centruy presently exerted in Area M-2 by the shell dredging industry.

The attached map indicates the types of sediments present and their distribution in the area.

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22 July 1959

Distribution of Bottom Sediments

Area M-2

