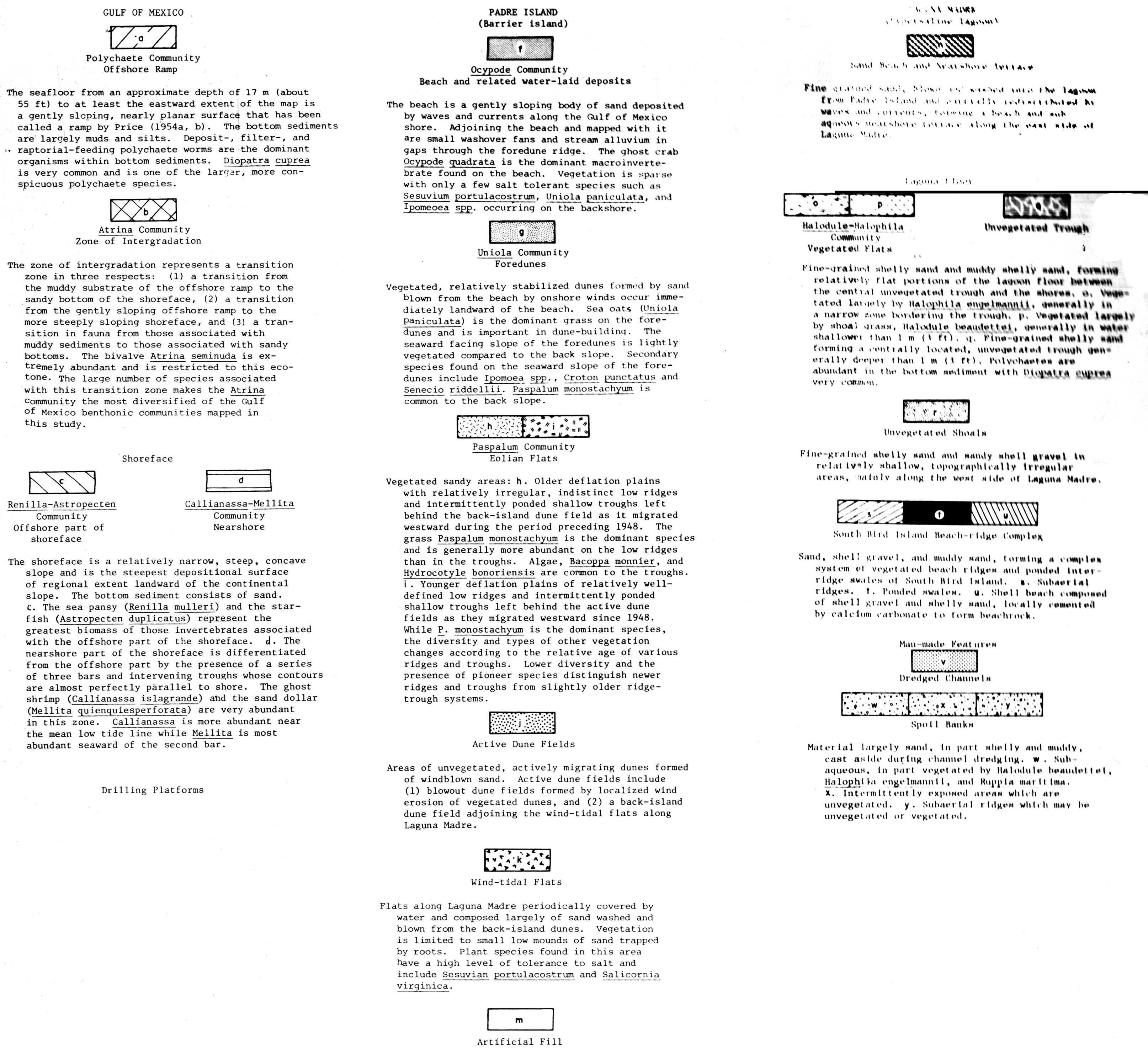


MAP SHOWING
BIOTOPES IN RELATION TO GEOMORPHIC FEATURES OF A PART OF THE
SOUTH-CENTRAL TEXAS COASTAL ZONE, 1968-1973

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EXPLANATION



NOTE ON CHANGEABILITY OF MAPPED FEATURES

The distribution of biotopes parallels and is largely controlled by the distribution of geomorphic features. Because the sediments comprising these geomorphic features undergo rapid depositional and erosional changes, this mapping cannot be considered a final record but rather must be thought of as a datum point from which future changes may be measured. As evidenced by comparisons of the latest aerial photographs with older maps and aerial photographs, some features change more slowly than others. Except for the open marine environment, the present mapping is based largely on high-altitude color aerial photographs taken by the National Aeronautics and Space Administration. Different geomorphic features were mapped at different times; therefore, to prevent confusion, the period during which each major geomorphic feature was mapped is noted in the short description below.

Mapping of the Laguna Madre was based on aerial photos taken January 19, 1973; a day of exceptionally low turbidity in the lagoon. The map derived from the aerial photos was field checked during the summer of 1973. The area covered by subaqueous vegetation has been more extensive during the wet period 1968-1973 than it was during a period of drought and accompanying high salinity in the lagoon when the vegetation was studied by Simmons (1957). Vegetation has increased considerably on the shoals and subaqueous spoil banks during the interval 1968 to 1973. For example, the subaqueous spoil banks were largely bare in 1968 and were about 50 percent vegetated in 1973. Relative abundances of the various grasses also changed during that period; the *Halodule* beds either did not exist or were greatly reduced in their distribution and density during drought periods.

Geomorphic features on Padre Island were mapped in 1967-1968 and reported on by Hunter and Dickinson (1970). Biotopes were studied at various times between 1968 and 1973. Relatively high rainfall during this time span resulted in the steady expansion of vegetation and in increasing sediment stabilization. A comparison of present mapping with the coastal survey of 1860-1882 (U.S. Coast and Geodetic Survey, 1887) shows many changes during the last century. That map shows the following landform zones from east to west as described by Hunter and Dickinson (1970): (1) the Gulf of Mexico beach, located within 100 m east or west

of its present position; (2) a vegetated foredune ridge similar in width and position to the present one; (3) an irregular pattern of dunes, largely vegetated, in the middle part of the island; (4) a low vegetated flat in the western part of the island; and (5) a Laguna Madre shoreline characterized by small isopods, bars, and spits. Also at the time of this early map there was not a low plain in the middle part of the island as exists today nor was a back-island dune field present.

Geomorphic features and related biotopes found in that part of the Gulf of Mexico mapped in this study are based on data gathered during a number of scientific cruises in 1972-1974. Biotopes associated with the open marine environment are probably the most stable of any found in the study area. Major storms, such as hurricanes, produce the most drastic changes in offshore biotopes.

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