

EXPLANATION

WETLANDS AND ASSOCIATED ENVIRONMENTS

MAP UNITS CHARACTERIZED BY BARREN OR SPARSELY VEGETATED AREAS

- B** **BEACHES:** Gulf shoreline to seaward edge of fore-island dunes, sand and shell, scattered salt-tolerant plants and shrubs on backbeach.
- WA** **WASHOVER AREAS:** Hurricane/storm-surge channels, sand and shell, subject to intense wave and current activity during hurricanes, scattered active dunes.
- LF** **LOW SAND AND MUD FLATS:** Wind-tidal, relatively frequent flooding, algal mats common, locally scattered vegetation, predominantly sand on the barrier islands and mud on the mainland.
- HF** **HIGH SAND AND MUD FLATS:** Topographically high wind-tidal flats, less frequent flooding than lower flats, local scattered vegetation, also flats not affected by tides, and channel margins and bars along streams and stream valleys; locally grade into upland areas, predominantly sand on the barrier islands and mud on the mainland.
- W** **SHALLOW SUBAQUEOUS FLATS, TIDAL POOLS, INLAND RESERVOIRS AND PONDS, AND NATURAL AND DREDGED CHANNELS:** Flats and pools affected by wind tides, coastal water bodies saline to brackish, inland water bodies fresh, locally fringed by water-tolerant plants.
- BR** **BEACHES AND BERMS:** Bay-estuary-lagoon margin, sand and shell, generally barren, locally scattered salt-marsh vegetation.

MAP UNITS CHARACTERIZED BY VEGETATION ASSEMBLAGES

- GF** **GRASSFLATS:** Subaqueous flats with marine grasses, vegetation generally dense but includes areas with moderate to sparse vegetation, water less than 6 ft (2 m) deep, includes one or more of the following: *Halodule beaudetii*, *Halophila engelmannii*, *Ruppia maritima*, and *Cymodocea filiformis*.
- SP** **SALT-WATER MARSHES:**
  - PROXIMAL MARSH:** Relatively close communication with bay-estuary-lagoon waters, frequent inundation by wind tides.
  - DISTAL MARSH:** Less frequent inundation by bay-lagoon waters than proximal marsh.
- LM** **LOW MARSH:** Frequently wet or contains standing water.
- HM** **HIGH MARSH:** Drier than low marsh, locally grades into transitional assemblage.
- FL** **FRESH-WATER MARSHES:** Frequently wet or contains standing water.
- PH** **HIGH MARSH:** Drier than low marsh, may grade into transitional area. Fresh-water marsh species typically include one or more of the following: *Spartina spartea*, *Typha domingensis*, *Scirpus americanus*, *Scirpus californicus*, *Paspalum spp.*, *Echinochloa spp.*, *Cyperus spp.*, *Aster spiroseus*, *Ludwigia spp.*, *Sagittaria spp.*, *Polygonum spp.*, *Bacopa monnieri*, *Juncus spp.*, *Echinodorus spp.*, *Lemna spp.*, *Sesbania drummondii*, *Salix nigra*, and *Parkinsonia aculeata*.
- MU** **SAND OR MUD FLATS/MARSHES, UNDIFFERENTIATED:** Flats with scattered marsh vegetation comprising approximately 50 to 60 percent of wetland area, subject to wind-tidal flooding in areas near bay-lagoon system; type of marsh vegetation variable—dependent upon salinity and moisture of substrate.
- WM** **WETLAND/UPLAND AREAS, UNDIFFERENTIATED:** Mixtures of wetland and upland areas, characterized by (1) numerous small depressions or ponds, and transitional areas surrounded by upland dunes or lag ridges and by (2) hummocky upland areas (dunes and mounds including erosional remnants) surrounded by sand and mud flats and marshes.
- TA** **TRANSITIONAL AREAS AND VEGETATED SALINE FLATS:** Vegetation assemblages transitional between wetland and upland areas, occasionally flooded, commonly mixed wetland and upland assemblages, or salt-tolerant assemblage on saline flats. Species in these areas typically include one or more of the following: *Spartina spartea*, *Borrichia frutescens*, *Cynodon dactylon*, *Monanthochloa littoralis*, *Salicornia spp.*, *Batis maritima*, *Suaeda spp.*, *Lycium carolinianum*, *Paspalum spp.*, *Panicum spp.*, *Andropogon spp.*, *Dichrochloa spp.*, *Iva spp.*, *Aristida spp.*, *Sesuvium spp.*, *Helianthus spp.*, *Scirpus halepensis*, *Cyperus spp.*, *Echinochloa spp.*, *Croton spp.*, *Baccharis spp.*, and *Cassia fasciculata*.
- WD** **WOODLANDS IN FLUVIAL AREAS AND POORLY DRAINED DEPRESSIONS:** Water-tolerant trees and shrubs on river floodplains and in poorly drained areas. Woodland species typically include one or more of the following: *Parkinsonia aculeata*, *Acacia farnesiana*, *Tamarix spp.*, *Salix nigra*, *Celtis spp.*, *Sapum sebiferum*, *Frautrea sp.*, and *Ulmus crassifolia*.

BENTHIC MACROINVERTEBRATE ASSEMBLAGES

INNER SHELF

- N** **NEARSHORE ASSEMBLAGE—**26 to 60 ft (7.9 to 18.3 m) in depth; dominantly sand (greater than 80 percent sand). Characteristic species: *Mollusca: Parvicornia multilineata*, *Tellina versicolor*, *Solen viridis*, *Natica pusilla*, *Polychaeta: Lumbrineris verilli*, *Mediomastus californiensis*, *Magelona pettibonae*, *Onchopeltus texana*, *Owenia fusiformis*, *Spiopterus borboryx*, *Apogonopsis pygmaea*, *Armadilla agilis*, *Scopelogadus fagii*, *Scopelogadus fagii*, *Crustacea: Monoculodes cf. M. gyei*, *Acanthoscaevola sp. A*, *Platysephopus sp. A*, *Trichophorus floridanus*.
- T** **TRANSITIONAL ASSEMBLAGE—**48 to 90 ft (14.6 to 27.4 m) in depth; dominantly muddy sand. Characteristic species: *Mollusca: Abra aequalis*, *Parvicornia multilineata*, *Linga amantia*, *Natica pusilla*, *Tendinopsis*, *Cadulus californiensis*, *Polychaeta: Diopatra cuprea*, *Magelona cf. M. mytilacea*, *Arcticoke yalorti*, *Tharyx marioni*, *Aglossophorus verilli*, *Lumbrineris emmeti*, *Lumbrineris verilli*, *Sthenelasma boa*, *Cossura delta*, *Scopelogadus fagii*, *Tauberia gracilis*, *Isotia pulchella*, *Spiocheilopterus costarum aculeatus*, *Nereis micromma*, *Magelona sp. A*, *Parapionopsis pinnata*, *Spiopterus borboryx*, *Licorina striata*, *Mediomastus californiensis*; *Crustacea: Ampelisca brevisulcata*, *Spionculidia phaeocloni strabi*.
- O** **OUTER ASSEMBLAGE—**73 to 98 ft (22.3 to 29.9 m) in depth; dominantly mud (average 5.4 percent sand). Characteristic species: *Polychaeta: Cossura delta*, *Lumbrineris verilli*, *Nereis micromma*, *Parapionopsis pinnata*, *Nephtys incisa*, *Magelona sp. A*, *Vinca cf. N. nigrescens*, *Crustacea: Ampelisca agassizi*.
- LAGUNA MADRE—**Characteristic species: *Mollusca: Argyrodon pagurum*, *Laevicardium montoni*, *Crepidula convexa*, *Bitum varium*, *Cacum pulchellum*; *Polychaeta: Exogone dispar*, *Chone dumeri*, *Prionospio heterobranchia*, *Melina maculata*, *Mediomastus californiensis*; *Crustacea: Oxyurastylis salinoi*, *Elaeopus levis*, *Grandidierella bonnieroides*, *Hemiteles favei*.
- BAFFIN-ALAZAN BAYS (including Laguna Salada)—**Characteristic species: *Mollusca: Mulina lateralis*, *Argyrodon pagurum*, *Crepidula convexa*, *Bitum varium*, *Acteocina canaliculata*, *Polychaeta: Prionospio heterobranchia*, *Typosyllis (Langehansia) sp.*, *Exogone dispar*, *Spio pettibonae*; *Crustacea: Harrieta faxonii*, *Ampelisca abdita*, *Erchsonella attenuata*, *Grandidierella bonnieroides*, *Oxyurastylis salinoi*, *Cymatocera compla*, *Crepidula tubulosa*.
- LAGUNA MADRE—**Characteristic species: *Mollusca: Tellina ampensis*; *Polychaeta: Heteromastus bilobatus*, *Anothella mucosa*, *Scopelogadus fagii*.
- BAFFIN-ALAZAN BAYS (including Laguna Salada)—**Characteristic species: *Mollusca: Mulina lateralis*, *Acteocina canaliculata*; *Crustacea: Ampelisca abdita*, *Grandidierella bonnieroides*.
- BAY CENTER ASSEMBLAGE—**Dominantly sandy mud and mud; 2 to 16 ft (0.6 to 4.9 m) in depth. *LAGUNA MADRE—*Characteristic species: *Mollusca: Muciluna acuta*, *Tellina texana*, *Lysoria hyalina floridana*, *Mulina lateralis*, *Algeria trassiana*, *Cummingia nitelloides*, *Chione cancellata*, *Mitella lunata*, *Cacum pulchellum*, *Odotostoma gibbosa*, *Acteocina canaliculata*, *Nassarius acutus*; *Polychaeta: Magelona pettibonae*, *Cymenella torquata*, *Mediomastus californiensis*; *Spionculidia phaeocloni strabi*.
- BAFFIN-ALAZAN BAYS (including Laguna Salada and Cayo del Grullo)—**Characteristic species: *Mollusca: Mulina lateralis*, *Acteocina canaliculata*, *Acteocina punctostriata*; *Polychaeta: Parapionopsis pinnata*; *Crustacea: Ampelisca abdita*, *Grandidierella bonnieroides*.
- SERPULID REEF ASSEMBLAGE—**Relict serpulid reefs composed of "colonies" of calcareous tubes formed by polychaetes. Characteristic species: *Mollusca: Mulina lateralis*, *Lysoria hyalina floridana*, *Brachidontes exustus*; *Polychaeta: Nereis succinea*; *Crustacea: Edeote montosa*.

- TOTAL SPECIES DIVERSITY (H')**—for explanation of diversity, see text.
- 0.000 - 1.499
- 1.500 - 1.999
- 2.000 - 2.499
- 2.500+
- Sample locality (refer to pl. VI for sample station number)
- Total number of live species
- Highlights stations of similar diversity

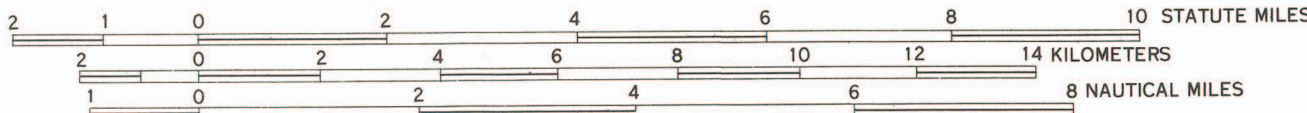
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PLANNING THROUGH THE COASTAL ZONE  
MANAGEMENT ACT OF 1972, ADMINISTERED BY  
THE OFFICE OF COASTAL ZONE MANAGEMENT,  
NATIONAL OCEANIC AND ATMOSPHERIC  
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COMMERCE, AND BY THE MINERALS  
MANAGEMENT SERVICE, U.S. DEPARTMENT OF  
THE INTERIOR.

MAPPING AND CARTOGRAPHY BY BUREAU OF ECONOMIC GEOLOGY  
Wetlands mapped by W. A. White and T. R. Canan; invertebrate assemblages mapped by T. R. Canan,  
R. S. Kimble, and T. G. Littleton; Cartography by B. M. Hartmann, R. L. Dillon, Chief Cartographer.

DATA SOURCES

Wetlands mapped from November 1979 color-infrared stereoscopic aerial photographs. Invertebrate assemblages mapped from cluster analyses of live species at selected sample localities. Map base adapted from USGS topographic maps. Shoreline features and navigation channels updated using 1979 photographs. Major highways updated to 1980 from county road maps published by the Texas Department of Highways and Public Transportation. Bay bathymetry based on soundings made at sample station localities (pl. VI) not adjusted to sea-level datum. Inner-shelf bathymetry adapted from Coast and Geodetic Survey smooth sheets (1938-39). Location and extent of serpulid reefs, modified from Brown and others (1977). Additional acknowledgments and sources of data given in text.

SCALE 1:125,000



TOPOGRAPHIC CONTOUR INTERVAL 5 FEET

BATHYMETRIC CONTOUR INTERVAL BAYS 2 FEET, SHELF 6 FEET

10,000 meter Universal Transverse Mercator grid ticks, zone 14, shown in blue.

1982 MAGNETIC DECLINATION FOR CENTER OF THIS SHEET IS  
APPROXIMATELY 7°52'00" EASTERLY. ANNUAL CHANGE IS 5'42"  
WESTWARD.

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PLATE V. DISTRIBUTION OF WETLANDS AND BENTHIC MACROINVERTEBRATES,  
SUBMERGED LANDS OF TEXAS, KINGSVILLE AREA