

BIOTOPE	GEOMORPHIC FEATURE	PLANT ZONATION <sup>1</sup>	
		SUCCESSIONAL COMMUNITY	CLIMAX COMMUNITY
(a)	Forebeach	---	---
	Backbeach	Sesuvium portulacastrum Uniola paniculata Cynodon dactylon Spartina patens Cyperus esculentus Ipomoea spp. Oenothera drummondii	---
(b)	Foredunes	Lightly vegetated seaward facing dune slopes	Dune crest and back slope
		Uniola paniculata Ipomoea stolonifera Ipomoea pes-caprae var. emarginata Croton punctatus Senecio riddellii Physalis viscosa var. spathulaefolia Oenothera drummondii Paspalum setaceum Panicum amarum Cassia fasciculata var. ferrisiae Leptoloma cognatum	Uniola paniculata Paspalum monostachyum Schizachyrium scoparium var. littoralis Senecio riddellii Physalis viscosa var. spathulaefolia Croton capitatus Ambrosia psilostachya Brachiaria ciliatissima
(c,d)	Deflation Flats	Younger Deflation Plain (d)	
		1968-70 Ridge	Older Deflation Plain (c)
		1966 Ridge	
		Ridges	
		Intermediate	
(e)	Active Dune Fields	---	
		---	
(f)	Wind-tidal Flats	---	
		---	

<sup>1</sup>Plant species listed in order of decreasing abundance as qualitatively determined by visual inspection by the authors.

EXPLANATION

- a**  
Ocypode Community  
Beach and related water-laid deposits  
The beach is a gently sloping body of sand deposited by waves and currents along the Gulf of Mexico shore. Adjoining the beach and mapped with it are small washover fans and stream alluvium in gaps through the foredune ridge. The ghost crab *Ocypode quadrata* is the dominant macroinvertebrate found on the beach. Vegetation is sparse with only a few salt tolerant species such as *Sesuvium portulacastrum*, *Uniola paniculata*, and *Ipomoea* spp. occurring on the backshore.
- b**  
Uniola Community  
Foredunes  
Vegetated, relatively stabilized dunes formed by sand blown from the beach by onshore winds occur immediately landward of the beach. Sea oats (*Uniola paniculata*) is the dominant grass on the foredunes and is important in dune-building. The seaward facing slope of the foredunes is lightly vegetated compared to the back slope. Secondary species found on the seaward slope of the foredunes include *Ipomoea* spp., *Croton punctatus* and *Senecio riddellii*. *Paspalum monostachyum* is common to the back slope.
- c**  
Paspalum Community  
Eolian Flats  
Vegetated sandy areas: (c) Older deflation flats with relatively irregular, indistinct low ridges and intermittently ponded shallow troughs left behind the back-island dune field as it migrated westward during the period preceding 1948. The grass *Paspalum monostachyum* is the dominant species and is generally more abundant on the low ridges than in the troughs. Algae, *Bacopa monnieri*, and *Hydrocotyle bonariensis* are intermittently ponded shallow troughs left behind the active dune fields as they migrated westward since 1948. While *P. monostachyum* is the dominant species, the diversity and types of other vegetation changes according to the relative age of various ridges and troughs. Lower diversity and the presence of pioneer species distinguish newer ridges and troughs from slightly older ridge-trough systems.
- d**  
Active Dune Fields  
Areas of unvegetated, actively migrating dunes formed of windblown sand. Active dune fields include (1) blowout dune fields formed by localized wind erosion of vegetated dunes, and (2) a back-island dune field adjoining the wind-tidal flats along Laguna Madre.
- e**  
Wind-tidal Flats  
Flats along Laguna Madre periodically covered by water and composed largely of sand washed and blown from the back-island dunes. Vegetation is limited to small low mounds of sand trapped by roots. Plant species found in this area have a high level of tolerance to salt and include *Sesuvium portulacastrum* and *Salicornia virginica*.
- f**  
Unvegetated Sand Beach and Nearshore Terrace  
Fine-grained sand, blown and washed into the lagoon from Padre Island and partially redistributed by waves and currents, forming a beach and subaqueous nearshore terrace along the east side of Laguna Madre.
- h**  
Artificial Fill

NOTE ON CHANGEABILITY ON MAPPED FEATURES

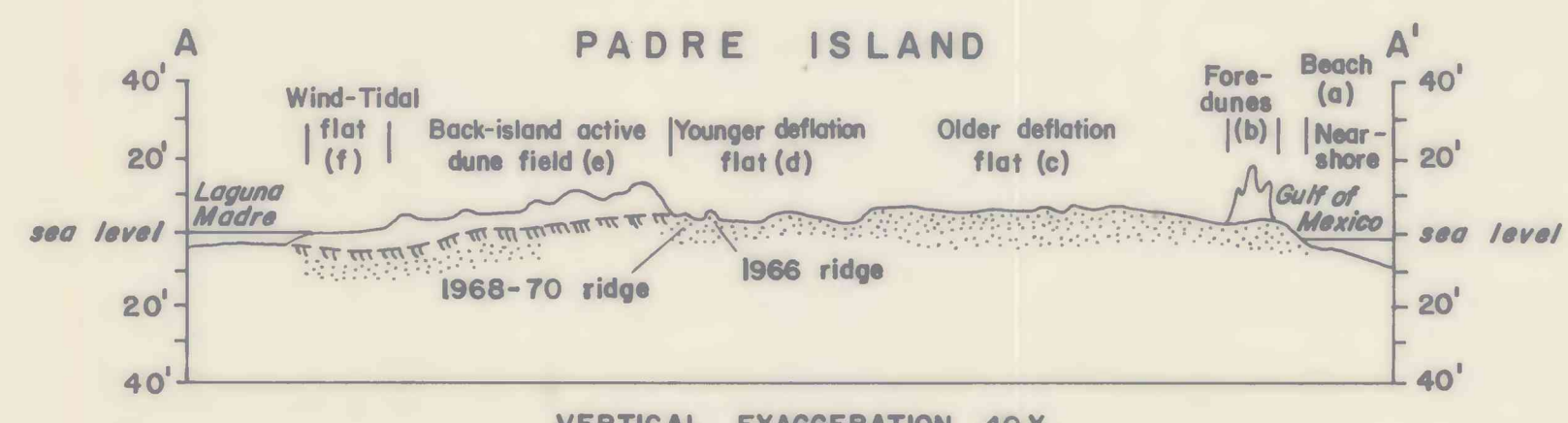
The distribution of biotopes parallels and is largely controlled by the distribution of geomorphic features. Because the sediments comprising these geomorphic features undergo rapid depositional and erosional changes, this mapping cannot be considered a final record but rather must be thought of as a 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. The present mapping is based largely on high-altitude color aerial photographs taken by the National Aeronautics and Space Administration.

ACKNOWLEDGMENT

We are indebted to Mr. Fred Jones for his assistance in the field and for his verification of our identification of the plant species.

REFERENCES CITED

Hill, G. W., and Hunter, R. E., 1977, Map showing biotopes in relationship to geomorphic features of a part of the south-central Texas coastal zone, 1968-1973: U.S.G.S. Open File Report 77-98.  
 Hunter, R. E., and Dickinson, K. A., 1970, Map showing landforms and sedimentary deposits of the Padre Island portion of the South Bird Island 7.5-minute Quadrangle, Texas: U.S.G.S. Misc. Geol. Inv. Map I-159.  
 U.S. Coast and Geodetic Survey, 1887, Coast chart no. 210.



Map Showing Plant Zonation in Relation to Biotopes and Geomorphic Features of the South Bird Island 7.5 Minute Quadrangle, Texas

By  
 Gary W. Hill and Ralph E. Hunter

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards or nomenclature.