

Areal extent of wind-tidal flats
adjacent to the Laguna Madre
of Texas

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A wind-tidal flat is a broad, barren flat bordering a lagoon or bay and is innundated at irregular intervals by lagoonal or bay waters under the influence of wind-generated tides (Hayes 1965). A wind tide is described as "a rise in water level on the downwind side of a body of water, such as a lagoon, caused by the force of wind on the water surface" (Weise and White 1980). Unlike the vegetated marsh shorelines of the humid to subhumid upper and middle Texas coast, these barren tidal flats are extensive around the periphery of the Laguna Madre along the semiarid, lower Texas coast (see Table). In fact, within the Land-cut area of the central portion of the Laguna Madre the entire lagoon is occuppied by wind-tidal flats.

Wind-tidal flats occupy over 360 sq.mi. of land adjacent to the Laguna Madre. Of the five coastal counties bordering the Laguna Madre, Kenedy County has the most with 174.5 sq.mi. (47% of total), followed by Cameron with 88.6 sq.mi. (24%), Willacy with 62.9 sq.mi. (17%), Kleberg with 28 sq.mi. (8%), and Nueces with 15.5 sq. mi. (4%, see notation on Table concerning Nueces County).

The "transition zone", totaling 74 sq.mi., is also most extensive within Kenedy County with 66.2 sq.mi. or 89% of the total coverage (see Table). This zone is located between the wind-tidal flats and mainland uplands and is composed mainly of cayos, clay dunes, and wind-eroded mainland.

Areal extent of wind-tidal flats in the Laguna Madre area of south Texas, including Baffin Bay and South Bay (according to the University of Texas Bureau of Economic Geology Environmental Geologic Atlas (es), Texas Coastal Zone (Brown et.al. 1976, 1977, 1980); all values are in square miles.

Environmental Geologic Unit (type of wind-tidal flat)	County (North to South)					Total
	Nueces	Kleberg	Kenedy	Willacy	Cameron	
Wind-tidal flat, sand loose, rarely flooded	0	0	23	0	0	23
Wind-tidal flat, sand and mud, firm	14.3	27	62.5	34.8	57.8	196.4
Wind-tidal flat, sand and mud, extensive algal mats, altern. emergent-submerg.	0	1	36	19.8	30	86.8
Wind-tidal flat, mud and sand, algal-bound mud, gypsiferous, firm	1.2	0	40	4.5	0	45.7
Wind-tidal flat, mud and sand, extensive algal mats, depressed relief, wet and soft	0	0	13	3.8	0.8	17.6
Total wind-tidal flat by county	15.5	28	174.5	62.9	88.6	369.5
Percent of total	4	8	47	17	24	100
Transition zone, wind-tidal flat to eolian sand sheet, wind deflation, concentrated clay dunes, sand	0	0.5	66.2	7.3	0	74

*Nueces County figures also include wind-tidal flats outside of Laguna Madre. Square miles not separable by bay system in publication.

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