Ecological site R150BY728TX
Subaqueous Grassflat

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 150B–Gulf Coast Saline Prairies

MLRA 150B is in the West Gulf Coastal Plain Section of the Coastal Plain Province of the Atlantic Plain and entirely in Texas. It makes up about 3,420 square miles. It is characterized by nearly level to gently sloping coastal lowland plains dissected by rivers and streams that flow toward the Gulf of Mexico. Barrier islands and coastal beaches are included. The lowest parts of the area are covered by high tides, and the rest are periodically covered by storm tides. Parts of the area have been worked by wind, and the sandy areas have gently undulating to irregular topography because of low mounds or dunes. Broad, shallow flood plains are along streams flowing into the bays. Elevation generally ranges from sea level to about 10 feet, but it is as much as 25 feet on some of the dunes. Local relief is mainly less than 3 feet. The towns of Groves, Texas City, Galveston, Lake Jackson, and Freeport are in the northern half of this area. The towns of South Padre Island, Loyola Beach, Corpus Christi, and Port Lavaca are in the southern half. Interstate 37 terminates in Corpus Christi, and Interstate 45 terminates in Galveston.

Classification relationships

USDA-Natural Resources Conservation Service, 2006. -Major Land Resource Area (MLRA) 150B

Ecological site concept

The Subaqueous Grassflats generally are covered by less than 4 feet of water, and the shallowest parts commonly are exposed at the lowest tides. The water depth, as well as the salinity and turbidity, determines the types of grasses that grow on the muddy sand and shell bottom.

Associated sites

R150BY552TX	**Tidal Flat** Higher elevation and not submerged permanently.
R150BY716TX	**Wind Tidal Flat** Higher elevation and not submerged permanently.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified

Herbaceous	(1) *Halodule wrightii* (2) *Cymodocea filiformis*

Physiographic features

These nearly level soils are in shallow-water grass flats of bays and lagoons. Water depth is generally less than 4 feet. Slope ranges from 0 to 1 percent but is mostly is less than 0.5 percent. Elevation ranges from -5 to 0 feet.

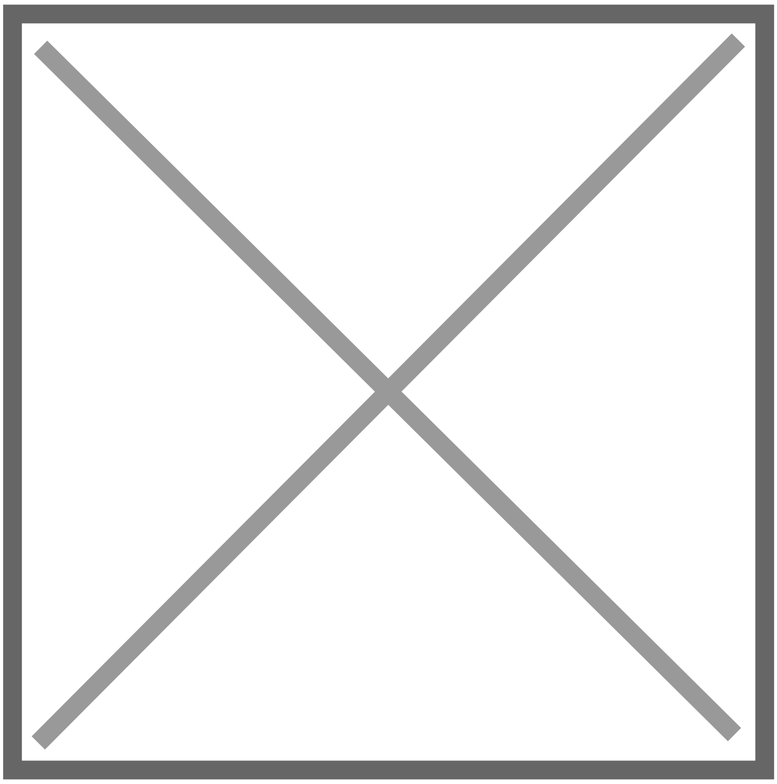

Figure 1.

Table 2. Representative physiographic features

Landforms	(1) Lagoon > Lagoon bottom
Runoff class	Negligible
Flooding duration	Very long (more than 30 days)
Flooding frequency	None to very frequent
Ponding duration	Very long (more than 30 days)
Ponding frequency	Frequent
Elevation	0 m

Slope	0 %
Ponding depth	0 – 120 cm

Climatic features

The climate is predominately maritime, controlled by the warm and very moist air masses from the Gulf of Mexico. The climate along the upper coast of the barrier islands is subtropical subhumid and the climate on the lower coast of Padre Island is subtropical semiarid (due to high evaporation rates that exceed precipitation). Almost constant sea breezes moderate the summer heat along the coast. Winters are generally warm and are occasionally interrupted by incursions of cool air from the north. Spring is mild and damaging wind and rain may occur during spring and summer months. Tropical cyclones or hurricanes can occur with wind speeds of greater than 74 mph and have the potential to cause flooding from torrential rainstorms. Despite the threat of tropical storms, the storms are rare. Throughout the year, the prevailing winds are from the southeast to south-southeast.

The average annual precipitation is 45 to 57 inches in the northeastern half of this area, 26 inches at the extreme southern tip of the area, and 30 to 45 inches in the rest of the area. Precipitation is abundant in spring and fall in the southwestern part of the area and is evenly distributed throughout the year in the northeastern part. Rainfall typically occurs as moderate-intensity, tropical storms that produce large amounts of rain during the winter. The average annual temperature is 68 to 74 degrees F. The freeze-free period averages 340 days and ranges from 315 to 365 days.

Table 3 Representative climatic features

Frost-free period (characteristic range)	370 days
Freeze-free period (characteristic range)	370 days
Precipitation total (characteristic range)	660-810 mm
Frost-free period (actual range)	370 days
Freeze-free period (actual range)	370 days
Precipitation total (actual range)	660-860 mm
Frost-free period (average)	370 days
Freeze-free period (average)	370 days
Precipitation total (average)	740 mm

- (1) CORPUS CHRISTI NAS [USW00012926], Corpus Christi, TX
- (2) PADRE IS NS [USC00416739], Padre Island Ntl Seashor, TX
- (3) PORT MANSFIELD [USC00417184], Port Mansfield, TX
- (4) PORT ISABEL CAMERON AP [USW00012957], Los Fresnos, TX
- (5) PORT ISABEL [USC00417179], Port Isabel, TX

Influencing water features

These soils are permanently submersed in seawater

Wetland description

This site is permanently submersed with seawater.

Soil features

The Baffin series consists of very deep, very poorly drained (permanently submersed) soils that formed in slightly fluid sandy and loamy estuarine sediments. The Baffin series is the only correlate soil and is classified as a Coarse-loamy, siliceous, active, calcareous, hyperthermic Sodic Hydraquents.

Table 4. Representative soil features

Parent material	(1) Lagoonal deposits – igneous, metamorphic and sedimentary rock
Surface texture	(1) Sandy clay loam (2) Fine sandy loam
Drainage class	Subaqueous
Permeability class	Slow
Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Calcium carbonate equivalent (0-152.4cm)	0 – 20 %
Clay content (0-5.1cm)	20 – 30 %
Electrical conductivity (0-152.4cm)	40 – 90 mmhos/cm

Sodium adsorption ratio (0-152.4cm)	40 – 80
Soil reaction (1:1 water) (0-152.4cm)	6.5 – 8.4

Ecological dynamics

In shallow, quiet areas of the lagoon, away from the high-energy shorelines, are broad, subaqueous flats upon which thrive marine grasses and a variety of invertebrates. Grassflats are dominated by shoalgrass, but it also includes clovergrass, turtlegrass, manateegrass, and widgeongrass. The grassflats of the Upper Laguna Madre were at water depths generally less than 4 feet. The southern portion of the Upper Laguna Madre is an area known locally as The Hole. The “Hole” is a shallow sub-bay system with depths of 2.5 feet or less, and often less than 1 foot. Seagrass beds have consistently been recognized as important coastal nursery habitat for a variety of fisheries and wildlife. This relative abundance of submerged aquatic vegetation is the result of shallow and clear water, allowing good light penetration. Laguna Madre waters are clear because these lagoon bottoms are sandy and generally lack clayey sediments. Dredging and its potential effect on water clarity is a concern.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Animal community

The animal communities of the Coastal Prairie communities are influenced by fresh and salt water inundations. Cattle and many species of wildlife make extensive use of the site. White-tailed deer may be found scattered across the prairie and are found in heavier concentrations where woody cover exists. Feral hogs are present and at times become abundant. Coyotes are abundant and fill the mammalian predator niche. Rodent populations rise during drier periods and fall during periods of inundation. Alligators are locally abundant and make frequent use of the marshes depending on salt concentrations in the marshes. The region is a major flyway for waterfowl and migrating birds. Hundreds of thousands of ducks, geese, and sandhill cranes abound during winter. Whooping cranes are an important endangered species that occur in the area, especially near Aransas National Wildlife Refuge. Northern harriers are common predatory birds seen patrolling marshes. Curlews, plovers, sandpipers, and willets are shorebirds that make use of the tidal areas. Seagulls and terns are plentiful throughout the year trolling the shores as well. Further inland, rails, gallinules, and moorhens make use of the brackish marshes.

Inventory data references

Information presented was derived from the Range Site Description, NRCS clipping data, literature, field observations, and personal contacts with range-trained personnel.

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Contributors

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Approval

Bryan Christensen, 9/22/2023

Acknowledgments

Site Development and Testing Plan: Future work, as described in a Project Plan, to validate the information in this Provisional Ecological Site Description is needed. This will include field activities to collect low, medium and high-intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document. Annual reviews of the Project Plan are to be conducted by the Ecological Site Technical Team.

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	09/17/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
