Ecological site R151XY006LA
Clayey Chenier Brackish Marsh
55-64 PZ

Last updated: 3/24/2025
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General information

Approved. An approved ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model, enough information to identify the ecological site, and full documentation for all ecosystem states contained in the state and transition model.

MLRA notes

Major Land Resource Area (MLRA): 151X–Gulf Coast Marsh

Major land resource area (MLRA)151, Gulf Coast Marsh, is in Louisiana (95 percent), Texas (4 percent), and Mississippi (1 percent). It makes up about 8,495 square miles (22,015 square kilometers). The towns of Gretna, Chalmette, and Marrero, Louisiana, and the city of New Orleans, Louisiana, are in the eastern part of this MLRA. The town of Port Arthur, Texas, is in the western part. Interstate 10 and U.S. Highway 90 cross the area. The New Orleans Naval Air Station is in this MLRA. Fort Jackson, overlooking the mouth of the Mississippi River, and the Jean Lafitte National Historic Park and Preserve are in the MLRA. A number of national wildlife refuges and State parks occur throughout this area. MLRA 151 is a very complex ecosystem with active deltaic development and subsidence with extreme anthropogenic impact by man with construction of flood protection levees and channelization occurring on the eastern portion of the MLRA. The Western portion of the MLRA is more stable in that portions of the landscape is protected naturally by the Chenier's, although there is Anthropogenic affects of the interior due to channelization for navigation.

Classification relationships

Major Land Resource Area (MLRA) and Land Resource Unit (LRU) (USDA-Natural Resources Conservation Service, 2006) The Natural Communities of Louisiana - (Louisiana Natural Heritage Program - Louisiana Department of Wildlife and Fisheries)

Ecological site concept

These areas are on low ridges on broad coastal brackish marshes at elevations of 2 to 4 feet above sea level. They are flooded with brackish water during storms and high tides. They are also flooded with fresh water during heavy rains. They formed in clayey over load sediments. Slopes range less than 1 percent. This site is a transition site between upland sites and marsh sites having characteristics of both.

Associated sites

R151XY002LA	**Saline Marsh 55-64 PZ** Saline Mineral Marsh occasionally occurs adjacent to the Clayey Chenier Brackish Marsh site.
R151XY005LA	**Brackish Firm Mineral Marsh 55-64 PZ** Brackish Firm Mineral Marsh frequently occurs adjacent to the Clayey Chenier Brackish Marsh site.

Similar sites

R151XY005LA	**Brackish Firm Mineral Marsh 55-64 PZ** Brackish Firm Mineral Marsh occupies the same position on the landscape, has similar plant species composition, but is more productive than the Clayey Chenier Brackish Marsh site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

These areas are on low ridges on broad coastal brackish marshes at elevations of 2 to 4 feet above sea level. They are flooded with brackish water during storms and high tides. They are also flooded with fresh water during heavy rains. They formed in clayey over load sediments. Slopes range less than 1 percent.

Table 2. Representative physiographic features

Landforms	(1) Marsh (2) Delta plain
Elevation	0 m
Slope	0 %
Water table depth	0 – 110 cm
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation is 60 to 65 inches. About 70 percent of the precipitation occurs during the growing season. Rainfall typically occurs as post-frontal precipitation in the winter and heat-convection showers and thunderstorms in the spring and summer. In addition, tropical storms can bring large amounts of rainfall. The freeze-free period averages 325 days and ranges from 290 to 365 dyas, increasing in length from north to south.

Table 3 Representative climatic features

Frost-free period (average)	330 days
Freeze-free period (average)	330 days
Precipitation total (average)	1,600 mm

Influencing water features

INFLUENCING WATER FEATURES
Marsh ecosystems are characterized by unique vegetative and hydrologic factors. Salinity, depth of water, duration of inundation, and slight differences in elevation determine the kinds of plants that can persist in marsh ecosystems. Several factors may affect salinity and/or water depth as well as duration of inundation:

Natural Factors:
• Upstream Hydrology – the duration of flooding is influenced by the volume of water discharged upstream (runoff) in the hydrologic unit. This may be a permanent or transient feature of the water regime.
• Tidal Exchange – all marsh ecosystems are affected to some degree by tidal exchange.
• Salinity – the amount of salt per unit volume of water is a limiting factor in determining which plants can persist in a marsh ecosystem. Measured in parts per thousand (ppt). Relatively few plants can tolerate prolonged exposure or inundation to waters with high salt concentrations.

Soil features

The dominant soil on this ecological site is Mermentau. These areas are on low ridges on broad coastal brackish marshes at elevations of 2 to 4 feet above sea level. They are flooded with brackish water during storms and high tides. They are also flooded with fresh water during heavy rains. They formed in clayey over loamy sediments. Slopes range less than 1 percent.

Taxonomic Classification:
Mermentau - Clayey over loamy, smectitic over mixed, superactive, nonacid, hyperthermic Typic Endoaquepts

Table 4. Representative soil features

Surface texture	(1) Clay loam (2) Silty clay loam
Family particle size	(1) Loamy
Drainage class	Poorly drained
Permeability class	Very slow
Soil depth	180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	3.05 − 15.24 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified

Electrical conductivity (0-101.6cm)	0 – 20 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	10 – 40
Soil reaction (1:1 water) (0-101.6cm)	6.6 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

Ecological Dynamics of the Site:
The Clayey Chenier Brackish Marsh ecological site is a poorly drained site. Tidal action impacts the site primarily by restricting drainage during periods of high rainfall. Infiltration rates on the soils of this site vary from very slow to moderately fast. The soils are predominantly clayey overwash over sandy chenier. The soils are trafficable to livestock. During periods of low rainfall, the site is trafficable for farm equipment on a limited basis.

Elevations on the site range from sea level to 5 feet above sea level. During periods of high tides, brackish water may be present at lower elevations. Storm tides can inundate the entire site with saline water. Extensive water control is not needed or practical for management of this site due to the elevation of the majority of the site. The water table varies from at or near the soil surface during seasonal high rainfall to 3 ½ feet below the soil surface during periods of low rainfall.

The Clayey Chenier Brackish Marsh is a dynamic ecosystem which changes constantly, and sometimes rapidly, as a result of natural environmental conditions and climatic events. These variations cause temporary shifts in kinds, amounts, and proportions of secondary vegetation. The historic plant community plant community is a mixture of plants, primarily grasses, which can withstand brief periods of high water and temporary increases in salinity levels. Bunchgrasses are most prominent when the site is properly managed. Gulf cordgrass is the dominant species and marshhay cordgrass is the sub-dominant species. Seashore saltgrass and seashore paspalum are significant, but minor components of this plant community.

Fire and livestock grazing are the primary drivers that cause shifts in species composition, diversity of the plant community, and the extent of desired vegetation. Uncontrolled grazing and lack of fire cause the plant species composition to change and the plant community diversity and structure to diminish. If grazing management and prescribed fire are not carried out properly and in a timely manner, the vegetation will transition through a predictable sequence of plant communities and vegetation states.
Elimination of fire from the ecosystem can result in an unhealthy plant community dominated by senescent vegetation and a loss of plant diversity.

In order to maintain or improve the plant community, livestock grazing must be managed by implementing a planned grazing system. Sustainable stocking rates are the primary factor to consider. Grazing management can be enhanced by manipulation of the time, frequency, intensity, and duration of grazing.

Geese are the primary wildlife species on this site. They prefer the site when it is open and free of woody species. They eat the roots, shoots, and tubers of many plants that are common on this site. Freshly burned areas are especially attractive because of the fresh, tender leaf growth. The regrowth provides high quality vegetation for geese. Burns should be sufficient in size to prevent destructive grazing by geese. Deer may occasionally pass through the area, but this is not a preferred site for deer or furbearers because of a lack of plants that they prefer to graze or browse.

Fire is a natural part of the ecosystem. It is a primary tool for management of marsh ecosystems. Fire is used to remove old growth, encourage vigorous new growth, enhance wildlife habitat, improve forage quality, and increase production potential. Burning also changes the structure of the plant community which can be beneficial to many wildlife species.

Burning should be done when there is at least six inches of water covering the marsh. This cushion of water protects the vegetative reproduction tissues of marsh plants. Unless burning is followed by proper grazing management, the plant community may change radically from a gulf cordgrass and midgrass dominated community to a community of short sod-forming grasses. When fire is excluded or not implemented on a timely basis, the plant community becomes dominated by woody shrubs.

State and Transitional Pathways:
The State and Transition Diagram which follows provides information on some of the most typical pathways that the vegetation on this site can follow as the result of natural events, management inputs, and application of conservation treatments. There may be other plant communities that can exist on this site under certain conditions. Consultation with local experts and professionals is recommended prior to application of practices or management strategies in order to ensure that specific objectives will be met.

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 (%)
Grass/Grasslike					
1	**Grass/Grasslikes**			7286-13450	
	gulf cordgrass	SPSP	*Spartina spartinae*	4147-7846	–
	saltmeadow cordgrass	SPPA	*Spartina patens*	2802-5604	–
	seashore dropseed	SPVI3	*Sporobolus virginicus*	448-1345	–
	saltgrass	DISP	*Distichlis spicata*	448-1345	–
	seashore paspalum	PAVA	*Paspalum vaginatum*	448-1345	–
	big cordgrass	SPCY	*Spartina cynosuroides*	0-897	–
	common reed	PHAU7	*Phragmites australis*	0-673	–
	longtom	PADE24	*Paspalum denticulatum*	0-224	–
	torpedo grass	PARE3	*Panicum repens*	56-224	–
	dwarf spikerush	ELPA5	*Eleocharis parvula*	224-112	–
	annual rabbitsfoot grass	POMO5	*Polypogon monspeliensis*	0-112	–
Forb					
2	**Forbs**			0-336	
	herb of grace	BAMO	*Bacopa monnieri*	0-336	–
Shrub/Vine					
3	**Shrubs**			0-224	
	eastern baccharis	BAHA	*Baccharis halimifolia*	0-112	–
	Jesuit's bark	IVFR	*Iva frutescens*	0-56	–
	Carolina desert-thorn	LYCA2	*Lycium carolinianum*	0-56	–
	rattlebox	SEPU7	*Sesbania punicea*	0-56	–

Table 6. Community 1.2 plant community composition

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

Table 7. Community 2.1 plant community composition

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

Table 8. Community 3.1 plant community composition

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

Animal community

The Clayey Chenier Brackish Marsh provides fair habitat for geese, swamp rabbits, and song birds. Predators such as coyotes and bobcats are present on this site. Geese arrive in the marsh in October, and stay though the winter until late March before returning to the North. Geese prefer to feed in open areas with very short, tender vegetation. They eat the roots, tubers, and tender leaf growth of plants. Recently burned areas are favored feeding grounds for geese. After seasonal grazing by geese, these areas are heavily disturbed and often denuded. This is not a preferred site for deer because of a scarcity of desirable browse and food plants. Cattle are grazed in the Clayey Chenier Brackish Marsh. Marsh cattle are often subjected to harsh and strenuous conditions. Insects, disease, standing water, boggy soil conditions, extremely warm temperatures and high humidity, lack of shelter and fresh drinking water sources present unique challenges to cattle grazing in the marsh. During the summer months, heavy infestations of mosquitoes and deer flies cause discomfort and stress for cattle, and can lead to serious health problems. In the most extreme situations mosquitoes can kill cattle, and are especially hazardous to newborn calves. Seasonal grazing is the normal practice. Most cattle are usually moved into the marsh in late October or early November and moved to intensively managed pasturelands or fresher marsh sites by the end of May.

Hydrological functions

The hydrology of the Clayey Chenier Brackish Marsh ecosystem is dominated by tidal activity of the gulf. Historically, the hydrologic head of natural rivers and bayous buffered tidal flow to inland marshes. The development of deepwater navigation canals, as well as the deepening and realignment of natural riverine systems has provided a conduit for salt water into previously fresher marsh ecosystems. Geologic subsidence is another major factor in salt water intrusion into fresher marshes. Storm tides can create overland flow which can completely inundate the site. The low infiltration rates on the clay soils on this site can result in ponding or excess water during storms and seasonally high rainfall periods. Surface water drainage is very slow.

Recreational uses

Hunting, camping, boating, tourism, and bird watching offer recreational opportunities for the public as well as economic opportunities for landowners in the marsh. Goose hunting is prevalent in this area. The marsh sites are preferred areas for resident and migratory waterfowl and songbirds. Hunting camps are common in the marsh. There are many state and national wildlife refuges in the marsh. Recreational boating, fishing, and crabbing are common activities in adjacent water bodies. In recent years, bird watching has become increasingly popular with the public. Bird watching potential can be enhanced by constructing observation platforms, boardwalks, etc. to provide access for visitors.

Inventory data references

Production and Composition Data for Native Grazing Lands (SCS-RANGE-417) clipping data was reviewed to determine species occurrence and production on soils that are representative of the Sandy Chenier ecological site. In addition vegetation transect data from Cameron and Vermillion Parishes collected from 1991-1995 was used to determine species occurrence and production on typical Sandy Chenier ecological sites.

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Approval

Matthew Duvall, 3/24/2025

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	08/24/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

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

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

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

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

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

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

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

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

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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:

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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:**
