COASTAL WETLAND RESTORATION PLANT FACT SHEETS

COASTAL CONSERVATION & RESTORATION

MISSISSIPPI STATE UNIVERSITY EXTENSION

Sea Grant MISSISSIPPI-ALABAMA

When designing a wetland restoration project, such as a living shoreline, mitigation, or treatment wetland, plant selection is one of the most important decisions to be made. Even if everything else is planned perfectly, the wrong plants can lead to project failure. Plant selection depends on a variety of factors, including, but not limited to, salinity, elevation, and flood tolerance.

These fact sheets provide information on a variety of wetland plants that may be used for shoreline restoration projects. Each plant fact sheet includes pictures, listed environmental tolerances, informational websites, and helpful tips for planting.

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Spartina alterniflora inflorescence

Spartina alterniflora meadow

Spartina alterniflora in winter

Scientific name: ***Spartina alterniflora***

Common name: Smooth cordgrass

USDA plant symbol: SPAL

Naturally occurs in

- Regularly and irregularly flooded salt and brackish marshes

Description

- Grows up to 7 feet tall
- Leaves 12 to 20 inches long, rolling inward at the ends
- Stems up to 0.5 inch in diameter and hollow in cross-section
- Spreads primarily by rhizomes
- Wind-pollinated seeds emerge in September and October

Environmental tolerances

- Soils: tolerates a wide range from fine to coarse
- pH range: 3.7 to 7.9
- Salinity: 0 to 35 ppt
- Elevation: low to mid marsh
- Flooding: regular inundation, 1 to 18 inches of standing water

Planting

- Plant midway between high and low tide lines
- Space plants about 12 to 18 inches apart
- Plant between April 1 and September 30
- Plant by hand using common garden tools such as spades or post-hole diggers

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Scientific name: ***Juncus roemerianus***

Common name: Black needlerush

USDA plant symbol: JURO

Juncus roemerianus stem

Naturally occurs in

- Brackish marshes
- Upper edges of salt marshes

Description

- Grows up to 6 feet tall
- Stiff, very pointed leaves
- Short, inconspicuous stems
- Spreads clonally by rhizomes
- Produces mature seeds from July to November

Juncus roemerianus meadow

Environmental tolerances

- Soil: fine to medium textured
- pH range: 4.0 to 7.0
- Salinity: 0 to 35 ppt
- Elevation: low to mid marsh
- Flooding: tolerates regular flooding

Planting

- Plant at the high tide line
- Space plants about 12 to 18 inches apart
- Plant by hand using common garden tools such as spades
- Plant with transplants in any season other than winter

Juncus roemerianus inflorescence

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Spartina patens inflorescence

Spartina patens meadow

Spartina patens inflorescence

Scientific name: ***Spartina patens***

Common name: Saltmeadow cordgrass

USDA plant symbol: SPPA

Naturally occurs in

- Irregularly flooded, fresh to saline marshes
- Sandy beaches and low dunes
- Borders of salt marshes and inland saline areas

Description

- Grows up to 4 feet tall
- Stems are stiff, slender, and hollow
- Leaves are up to 1 foot long and less than a half-inch wide
- Spreads by rhizomes
- Wind-pollinated flowers emerge from late June to October

Environmental tolerances

- Soils: fine to coarse
- pH range: 3.7 to 7.9
- Salinity: 0 to 35 ppt
- Elevation: mid to high marsh
- Flooding: irregular flooding

Planting

- Plant in mid to high marsh
- Space planting units 6 to 12 inches apart
- Plant using common garden hand tools
- Plant in late winter to early spring

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Scientific name: ***Juncus effusus***

Common name: Common rush

USDA plant symbol: JUEF

Juncus effusus

Naturally occurs in

- Tidal fresh marshes and nontidal marshes
- Wet meadows and wet pastures

Description

- Grows up to 4 feet tall
- Stems are unbranched, round with vertical ribs, and sheathed
- No apparent leaves; has basal sheaths
- Can spread clonally by rhizomes
- Seeds emerge from July to September and can be spread by wind, water, or animals

Juncus effusus inflorescence

Environmental tolerances

- Soils: fine sediments
- pH range: 4.0 to 6.0
- Salinity: less than 14 ppt
- Elevation: low to mid marsh
- Flooding: can tolerate regular flooding and standing water up to 6 inches

Planting

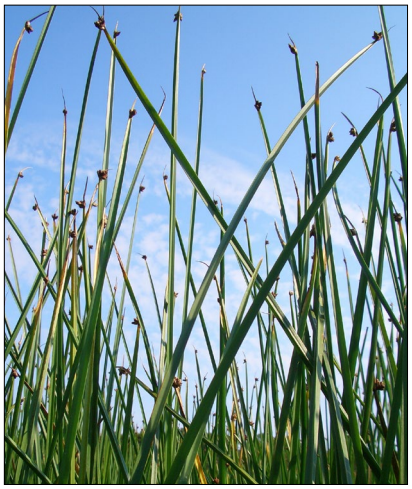
- Plant in regularly flooded soils or those with shallow standing water
- Plant in late fall
- Transplants survive best when planted outside of the growing season and when the soil remains saturated
- Space plants 2 feet apart

Juncus effusus stems

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Schoenoplectus americanus inflorescence



Schoenoplectus americanus stand

Schoenoplectus americanus inflorescence

Scientific name: ***Schoenoplectus americanus***

Common name: Bulrush

USDA plant symbol: SCAM6

Naturally occurs in

- Irregularly flooded brackish marshes
- Upper edges of salt and tidal fresh marshes
- Inland saline areas

Description

- Grows up to 7 feet tall
- Stems are triangular with concave sides
- No apparent leaves
- Can spread by rhizomes or seeds
- Flowers from July to September

Environmental tolerances

- Soils: fine sediments
- pH range: acidic soils
- Salinity: 2 to 17 ppt
- Elevation: low to mid marsh
- Flooding: irregular flooding up to 1 to 2.5 feet, standing water up to 6 inches

Planting

- Space plugs or transplants 12 to 18 inches apart
- Plant in no more than 3 inches of constant flooding; can tolerate up to 18 inches of fluctuating water
- Plant in late spring to early summer

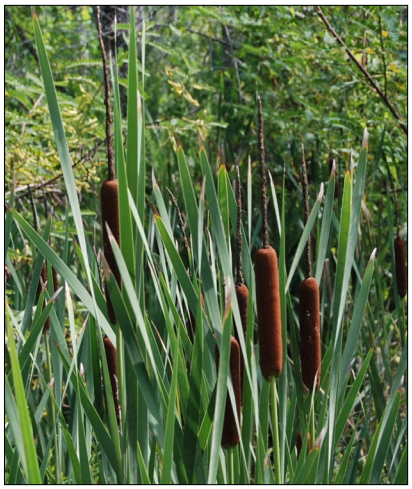
Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- US Forest Service (**https://www.fs.usda.gov/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Scientific name: ***Typha latifolia***

Common name: Broadleaf cattail

USDA plant symbol: TYLA



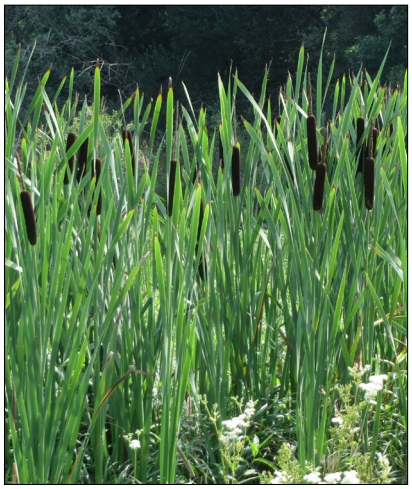
Typha latifolia inflorescence

Naturally occurs in

- Tidal and nontidal fresh marshes
- Ponds and ditches

Description

- Grows up to 10 feet tall
- Tall, erect stem
- Leaves are basal and up to 1 inch wide
- Can spread clonally by rhizomes or by seed
- Flowers from March to July



Typha latifolia stand

Environmental tolerances

- Soils: tolerates most soil types
- pH range: tolerates ranges from basic to acidic
- Salinity: fresh to brackish water
- Elevation: low marsh
- Flooding: regular flooding

Planting

- Plant in low to mid marsh
- Plant in late fall
- Plant transplants 3 feet apart

Typha latifolia inflorescence

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- US Forest Service (**https://www.fs.usda.gov/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Pontederia cordata leaves

Pontederia cordata inflorescence

Pontederia cordata inflorescence

Scientific names: ***Pontederia cordata***

Common name: Pickerelweed

USDA plant symbol: POCO14

Naturally occurs in

- Tidal and nontidal fresh marshes
- Shallow areas of ponds and lakes

Description

- Grows up to 4 feet tall
- Waxy leaves at ends of stems
- Leaves range from oval to heart-shaped, 2 to 10 inches long, and 0.5 to 6 inches wide
- Spreads by creeping rhizomes and seed
- Seeds emerge between May and October on showy, purple flowers

Environmental tolerances

- Soils: tolerates a wide range from fine to coarse soils
- pH range: 6.0 to 8.0
- Salinity: less than 3 ppt
- Elevation: low marsh
- Flooding: tolerates irregular inundation up to 20 inches

Planting

- Transplants should be planted in saturated but not continuously flooded sediments
- Plant transplants in late spring to early summer
- Requires partial to full sun; will not grow in full shade
- Spreads rapidly; plant 2 to 3 feet apart

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Scientific name: ***Sagittaria latifolia***

Common name: Duck potato

USDA plant symbol: SALA2

Sagittaria latifolia inflorescence

Naturally occurs in

- Tidal and nontidal marshes and swamps
- Borders of streams, lakes, and ponds

Description

- Grows up to 4 feet tall
- Single, elongated stem
- Leaves are broadly or narrowly arrow-shaped
- Leaves are 2 to 16 inches long and 1 to 10 inches wide
- Spreads primarily by seed and vegetatively by underground tubers

Sagittaria latifolia leaves

Environmental tolerances

- Soils: tolerates a range from fine to coarse sediments
- pH range: 6.0 to 6.5
- Salinity: fresh to lightly brackish waters
- Elevation: low marsh
- Flooding: tolerant of inundation 6 to 12 inches deep

Planting

- Plant below high tide line
- Plant in mid to late spring
- In degraded sites, plant 1 to 2 feet apart
- In ideal site conditions, plant up to 6 feet apart

Sagittaria latifolia inflorescence

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Distichlis spicata

Distichlis spicata inflorescence

Distichlis spicata

Scientific name: ***Distichlis spicata***

Common name: Salt grass

USDA plant symbol: DISP

Naturally occurs in

- Irregularly flooded salt marshes
- Tidal fresh and brackish marshes

Description

- Grows up to 16 inches tall
- Stems are stiff, hollow, and round
- Leaves are numerous, 2 to 4 inches long, less than 0.5 inch wide, and rolled inward
- Spreads primarily by rhizomes and sometimes stolons
- Flowers between June and October

Environmental tolerances

- Soils: tolerates fine to coarse sediments
- pH range: 6.8 to 9.2
- Salinity: 0 to 50 ppt; optimum growth around 15 ppt
- Elevation: mid to high marsh
- Flooding: highly flood-tolerant but prefers irregular flooding

Planting

- Plant at or just below high tide line
- Plant in late spring to early summer
- Spreads rapidly; space transplants 3 to 5 feet apart

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- US Forest Service (**https://www.fs.usda.gov/**)
- *Selected Plants of Grand Bay National Estuarine Research Reserve and Grand Bay National Wildlife Refuge*
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Scientific name: ***Ilex vomitoria***

Common name: Yaupon

USDA plant symbol: ILVO

Ilex vomitoria fruit

Naturally occurs in

- Upper edges of salt and brackish marshes
- Nontidal forested wetlands

Description

- Grows up to 28 feet tall
- Evergreen shrub
- Leaves are oval, dark green, and up to 1.25 inch long

Ilex vomitoria

Environmental tolerances

- Soils: will grow in a variety of soil types but prefers coarse sediments
- pH range: 4.5 to 7.0
- Salinity: moderately tolerant to salinity and salt spray
- Elevation: high marsh
- Flooding: tolerates occasional flooding

Planting

- Most easily established by using transplants
- Plant in spring and fall
- Space about 20 feet apart
- Plant on upper edges of marsh above high tide line

Ilex vomitoria leaves

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Baccharis halimifolia

Baccharis halimifolia leaves

Baccharis halimifolia

Scientific name: ***Baccharis halimifolia***

Common name: Eastern baccharis

USDA plant symbol: BAHA

Naturally occurs in

- Upper edges of irregularly flooded salt, brackish, and tidal fresh marshes

Description

- Grows up to 10 feet tall
- Deciduous shrub
- Egg-shaped, coarse-toothed to smooth leaves, up to 2.5 inches long
- Easily confused with Iva frutescens (marsh elder), but eastern baccharis has alternate leaves, while marsh elder has opposite leaves

Environmental tolerances

- Soils: tolerates a wide range of soils from fine to coarse
- pH range: 5.0 to 8.0
- Salinity: tolerates salt spray up to 15 ppt
- Elevation: high marsh
- Flooding: tolerates irregular flooding but cannot survive standing water

Planting

- Plant shrubs at least 7 feet apart
- Plant on upper edge of marsh above high tide line
- Plant in early to late spring

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Selected Plants of Grand Bay National Estuarine
- *Research Reserve and Grand Bay National Wildlife Refug*e
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)

Scientific name: ***Uniola paniculata***

Common name: Sea oats

USDA plant symbol: UNPA

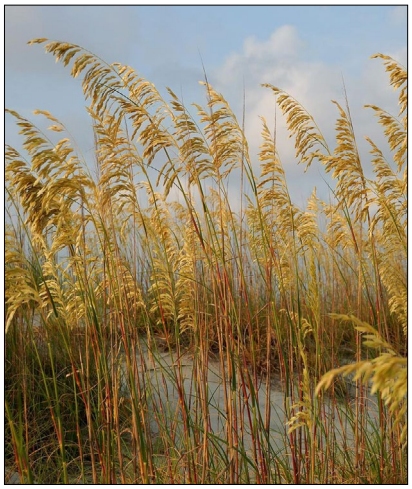
Uniola paniculata stand

Naturally occurs in

- Upper dunes along beachfronts
- Barrier islands

Description

- Grows up to 6 feet tall
- Leaves can grow up to 24 inches
- Leaves less than 1 inch wide
- Seed head produced in summer
- Spreads primarily by rhizomes when plant base is covered by sand



Uniola paniculata

Environmental tolerances

- Soils: prefers coarse, sandy sediment
- pH range: 6.9 to 7.9
- Salinity: thrives in salt spray but cannot tolerate waterlogged soils
- Elevation: upland sand dunes
- Flooding: requires dry conditions

Planting

- Space plantings 2 to 5 feet apart
- Plant any time of year
- Plant on upland berms in sand

Uniola paniculata inflorescence

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)

Panicum amarum inflorescence

Panicum amarum on sandy shoreline

Panicum amarum in a marsh

Scientific name: ***Panicum amarum***

Common name: Bitter panicum

USDA plant symbol: PAAM2

Naturally occurs in

- Coastal dunes

Description

- Grows up to 7 feet tall
- Leaves are 0.25 to 0.5 inch wide and 7 to 20 inches long
- Leaves are bluish-green
- Spreads extensively by rhizomes to form clumps

Environmental tolerances

- Soils: dry, sandy soils
- pH range: 5.0 to 7.5
- Salinity: can tolerate salt spray but will not survive waterlogged soils
- Elevation: upland on dunes
- Flooding: needs dry conditions

Planting

- Can grow from stem cuttings in fall
- Can grow in late winter or early spring with potted plants
- Plant 2 to 3 feet apart in staggered rows 2 feet apart

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)

Scientific name: ***Iva frutescens***

Common name: Marsh elder

USDA plant symbol: IVFR

Iva frutescens

Naturally occurs in

- Upper borders of irregularly flooded salt and brackish marshes

Description

- Deciduous shrub
- Grows up to 12 feet tall but usually about 6 feet tall
- Fleshy, egg-shaped leaves grow up to 6 inches long and
- 2 inches wide
- Often confused with Baccharis halimifolia (eastern baccharis), but marsh elder has opposite leaves, while eastern baccharis has alternate leaves

Iva frutescens leaves

Environmental tolerances

- Soils: tolerates a wide range of soils from fine to coarse
- pH range: 5.0 to 5.7
- Salinity: 0 to 15 ppt
- Elevation: high marsh
- Flooding: needs dry soils

Planting

- Grow from seed, propagate from bare root, or transplant from containers
- Not flood-tolerant, so plant on the very upper edge of the marsh
- Plant at least 6 feet apart
- Requires full sun
- Plant in early to mid-spring after last frost

Iva frutescens leaves

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Chesapeake Bay Native Plant Center (**https://www.allianceforthebay.org/native-plant-center/**)

Myrica cerifera

Myrica cerifera leaves

Myrica cerifera fruit

Scientific name: ***Myrica cerifera***

Common name: Wax myrtle

USDA plants symbol: MOCE2

Naturally occurs in

- Upper edges of tidal salt, brackish, and fresh marshes
- Irregularly flooded tidal and nontidal swamps

Description

- Evergreen shrub or tree
- Grows up to 36 feet tall but usually 10 to 15 feet tall
- Smooth, grayish-green bark
- Leaves are oblong and grow up to 3.75 inches long and 1 inch wide

Environmental tolerances

- Soils: tolerates a wide range from fine to coarse
- pH range: 5.0 to 7.2
- Salinity: 0 to 10 ppt
- Elevation: high marsh
- Flooding: tolerant of both drought and flooding once established

Planting

- Grow from seed, propagate from bare root, or transplant from containers
- Plant in the upper edge of the marsh
- Plant in late winter to early spring
- Space about 10 feet apart

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- *Field Guide to Coastal Wetland Plants of the Southeastern United States* (Tiner, 1993)
- Chesapeake Bay Native Plants Center (**https://www.allianceforthebay.org/native-plant-center/**)

Scientific name: ***Sagittaria lancifolia***

Common name: Bulltongue arrowhead

USDA plant symbol: SALA

Sagittaria lancifolia male flowers

Naturally occurs in

- Fresh wetlands
- Ponds and ditches

Description

- Grows up to 3 feet tall
- Leaves are elongate, oval- to lance-shaped
- Leaves are 8 to 24 inches long
- White flowers emerge March to October

Sagittaria lancifolia stand

Environmental tolerances

- Soils: tolerant of a wide range from fine to coarse
- pH range: 6.0 to 7.2
- Salinity: 0 to 5 ppt
- Elevation: low marsh
- Flooding: can tolerate up to 12 inches of consistent flooding

Planting

- Can grow from seed or divided clumps, but transplanting from corms is preferred
- If transplanting, space 10 to 12 inches apart
- Prefers full sun
- Best if corms are planted when plants are dormant in late fall to early spring

Sagittaria lancifolia female flowers

Resources

- USDA Plants Database (**https://plants.usda.gov/home**)
- Mississippi Aquatic Plants (**https://masgc.org/jcho/**)
- Florida Native Plant Society (**https://www.fnps.org/**)
- University of Florida IFAS Extension (**https://sfyl.ifas.ufl.edu/**)
- Selected Plants of Grand Bay National Estuarine Research Reserve and Grand Bay National Wildlife Refuge

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