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Bulletin No. 25: Salt Marsh Plants of Connecticut

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SALT MARSH PLANTS OF CONNECTICUT

THE CONNECTICUT ARBORETUM
CONNECTICUT COLLEGE
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BULLETIN NO. 25

THE CONNECTICUT ARBORETUM

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Front Cover: Saltwater cordgrass *(Spartina alterniflora).*

SALT MARSH PLANTS OF CONNECTICUT

William A. Niering and R. Scott Warren
Connecticut College
Illustrated by
Christine W. Ameele

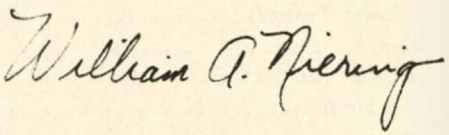
CONTENTS

The Connecticut Arboretum **June 1980**

FOREWORD

This field guide to the plants of Connecticut's coastal wetlands replaces our Reprint Series No. 1, *Tidal Marshes of Connecticut: A Primer of Wetland Plants,* which was written by Mervin F. Roberts and illustrated by Mary Lohmann. It was initially published by the Old Lyme Conservation Commission and reprinted by the Connecticut Arboretum in 1971. The present bulletin, with a new text, has been beautifully illustrated by Mrs. Christine Ameele, to whom I express my gratitude. I would also like to express my thanks to Mr. Mike Shinault for his expert skills in printing this publication, to Mrs. Dale Julier for the design layout, to Mr. Hugh Niering for his excellent figures, and especially to Mrs. Nancy Olmstead for her editorial help and guidance.

The Arboretum has now published several bulletins which we believe will be valuable to those interested in tidal marsh-estuarine ecology. These include Bulletin No. 12, *Connecticut's Coastal Marshes: A Vanishing Resource;* Bulletin No. 18, *Seaweeds of the Connecticut Shore: A Wader's Guide;* Bulletin No. 20, *Tidal Marsh Invertebrates of Connecticut;* Bulletin No. 22, *Our Dynamic Tidal Marshes: Vegetation Change as Revealed by Peat Analysis;* and Bulletin No. 23, *Plants and Animals of the Estuary.* For details on how to obtain these bulletins, see page 32. Through these bulletins we have attempted over the years to highlight the value of the tidal wetland resources and depict the biotic diversity associated with these aquatic systems.



WILLIAM A. NIERING
Director

SALT MARSHES: PATTERNS AND PROCESSES

Their Origin. Salt marshes are grass-dominated tidal wetlands that fringe the land-water interface of many temperate regions throughout the world. The New England tidal marshes are relatively recent land forms that have developed in the last 3000-4000 years. Their development is the result of the interaction of tidal marsh vegetation and a gradually rising sea level. As the post-glacial rise in sea level slowed to about one millimeter per year approximately 4000 years ago, sediment deposition within stands of saltwater cordgrass was able to keep pace with the rise and thus marsh development began. As sedimentation and sea level rise continued, the marshes encroached landward over low-lying upland and freshwater marshes, and seaward over facing mudflats. The landward portion of these newly developing marshes also became sufficiently raised above sea level to permit less flood-tolerant high marsh species to become established (Fig. 1).

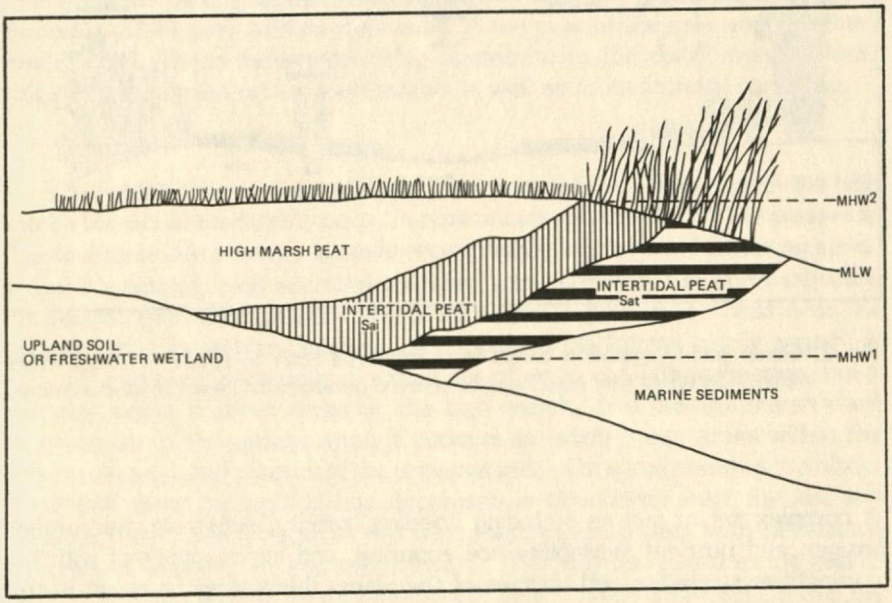


Fig. 1. Bisect showing marsh development oceanward with intertidal saltwater cordgrass, *Spartina alterniflora* tall (Sat) and intermediate (Sai) peat being replaced by high marsh peat. Key: MHW[1] = mean high water when marsh development began; MWH[2] = mean high water at present; MLW = mean low water at present. (After Redfield 1965 [.])

Over several thousand years this process has given rise to our present general pattern of marsh vegetation. A history of the vegetation development on any particular marsh can be reconstructed through analysis of peat samples, as has been documented in an earlier bulletin (2).

Vegetation Pattern and Dynamics. A distinctive pattern of vegetation belting can be found on most New England marshes (3,4). The typical bay to upland sequence includes tall saltwater cordgrass along the intertidal zone, saltmeadow cordgrass, often mixed with spikegrass, on the high marsh, blackgrass near the upland, and switchgrass, reedgrass, or the shrub, marsh elder, at the marsh-upland interface. Naturally occurring minor site differences and variations due to the extremely widespread practice of mosquito ditching are superimposed upon this general pattern and result in a mosaic of vegetation types on any given marsh (Fig. 2).

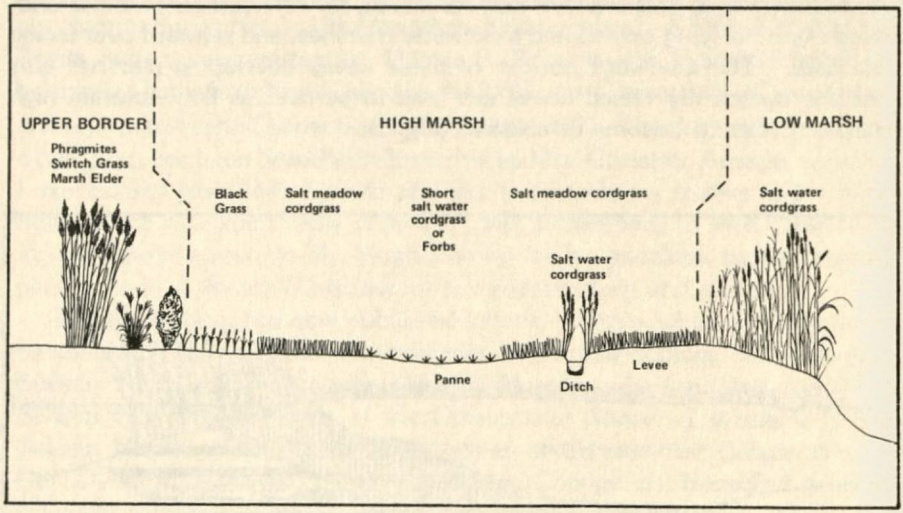


Fig. 2. Generalized vegetation bisect from intertidal zone to upland showing major vegetation types that may be encountered on southern New England marshes.

A complex set of factors including flooding, salinity, substrate, microrelief, oxygen and nutrient availability, ice scouring, and storms interact with the competitive strategies and abilities of the plants themselves to result in this highly variable vegetation pattern.

The intertidal zone is distinctive, with pure stands of saltwater cordgrass. This species also lines the edges of most mosquito ditches, where it receives regular tidal flooding. On the high marsh, saltmeadow cordgrass is the most common species. It is frequently mixed with spikegrass, however, and is often interrupted by areas of the short form of saltwater cordgrass and occasionally by patches of forbs. These latter two vegetation types frequently occur in slight depressions or pannes on the high marsh.

The forbs, in contrast to the grasses, have more showy flowers and usually broader leaves. They include sea lavender, purple gerardia, arrow-grass, seaside plantain, salt-marsh aster, and seaside goldenrod. The sea lavender can add a dramatic touch of color in late summer and the small gerardia has a lovely pink snapdragon-like flower. Arrow-grass is not a grass but has long, grass-like leaves; the plantain has shorter, more linear leaves than the plantains in our lawns to which it is related. These forbs can exhibit wide variation in their size and vigor depending upon site conditions. They are found both in relatively pure patches, as noted above, or as occasional scattered individuals within the expanses of dominant grasses.

A short form of saltwater cordgrass, with typically broader leaves than those of most grasses on the high marsh, is frequently found in relatively pure stands in depressions on the high marsh. The stunted growth is due to a complex of factors not completely understood. Studies by our students have shown that in such sites soil salinities can reach 40-60 parts per thousand, nearly twice that of seawater (the open ocean is about 35 ppt and Long Island Sound is 27-29 ppt), and oxygen levels in the peat of the root zone are very low (5, 6). These factors probably contribute to the distribution of short saltwater cordgrass on the high marsh as well as to its stunted condition.

The lighter green, wiry, stiff spikegrass is usually scattered within the high marsh but occasionally may occur in pure stands. It is the last of the grasses to flower and in late summer is easily recognized by its terminal flowering spike. It has a relatively high salt tolerance and can be mixed with short saltwater cordgrass; spikegrass is also frequently found in patches or belts near the upland, often in wetter depressions. A belt of blackgrass (really a rush) is typically found near the upland, where it is often mixed with spikegrass, but it can also occur in other areas on the high marsh. It is the first marsh plant to green up in the spring, when it appears as bright green areas within the brown, winter-killed grasses of the previous year. On some marshes the blackgrass belt near the upland has decreased in abundance over the last few decades, often being replaced by bare, algal-covered peat with occasional bunches of arrow-grass and other forbs. This may be related to the recent rapid rise in sea level (3-10 millimeters per year), which is favoring marsh development landward.

At the upland-marsh interface marsh elder may form a distinctive belt. Here switchgrass can also occur, as well as reedgrass; the latter is especially favored by disturbance. Marsh elder also grows on the locally elevated areas of the high marsh, especially along the banks of mosquito ditches. Groundsel tree, when present, is found next to the marsh elder but landward of it.

If the high marsh grasses have been killed by flotsam or other causes, one of the annual glassworts will probably be the first to colonize the newly open sites. These succulent, cactus-like plants turn a brilliant red in the fall of the year. Such areas may be eventually covered by spikegrass or other marsh species.

In less saline sites on the high marsh or in brackish upper valley marshes one may find such plants as bulrushes, water hemp, and narrow-leaved cattail. Common cattail, with its broader leaves and flower cluster, may also occur in brackish marshes but is more common in freshwater marshes.

Studies by students at Connecticut College have added new insights to our understanding of tidal marshes. One study showed that the short form of salt-water cordgrass is not genetically different from the tall intertidal form but is short due to environmental conditions (7). Another study revealed that with increased tidal range as one moves westward along the Connecticut shoreline, the productivity of the tall intertidal cordgrass increases (8). Apparently the tides provide some sort of "subsidy" in terms of increased nutrients or oxygen availability which results in greater growth. Other student and faculty research has documented long term vegetation changes (9), focused on environmental factors influencing species distribution (10, 5, 6), and studied in detail the impacts of impoundments and tide-gating on our marshes (11).

Invertebrates — the Dominant Animals of Tidal Marshes. The animal populations found on our tidal marshes can generally be divided into those occurring in the intertidal zone and those restricted to the high marsh. Studies in Connecticut (12, 13) have demonstrated that our marshes support a great diversity of species. For insects there are some seven orders and 40 families represented, with leafhoppers and planthoppers being the most abundant herbivorous grazers. Most of the rest of the marsh invertebrates are detritus-algae feeders. On the low marsh fiddler crabs, ribbed mussels, rough periwinkles, and mud snails are most common. Marsh and green crabs are also present. Dominant on the high marsh are marsh snails and certain species of amphipods and isopods. These tidal marsh invertebrates have been described in an earlier bulletin (14).

Ecologically these invertebrates are important primary consumers of the grass production which contributes in part to the estuarine and terrestrial food chains. Much of the detritus derived from marsh plants is greatly enriched in amino acids by invertebrate feeders and bacteria before it is flushed into the estuarine waters.

In addition to this rich invertebrate fauna, marshes also provide critical habitat for a diversity of wildlife, as noted below.

Environmental Impacts. Prior to protective legislation, an estimated 50% of Connecticut's marshes had been lost, primarily due to filling and dredging. Although legislation and pressure from individuals and groups such as the Connecticut Conservation Association have greatly reduced direct destruction, numerous degrading impacts, some not instantly obvious to a casual observer, are still occurring. Locally, industrial pollution, excessive sewage enrichment, and occasional oil spills can adversely affect marsh systems in a variety of ways. One of the most subtle impacts over the years has been causeway construction which alters normal tidal flushing. In Connecticut some 170 such structures, including bridges, culverts, and tidal gates are directly reducing or restricting tidal flushing. Probably the most dramatic vegetation change resulting from tidal restriction has been the replacement of cordgrass-dominated marshes by those covered with reedgrass. It is estimated that up to 10% of our marshes have been converted to reedgrass. This eliminates the normal high and low marsh habitats and, due to its woody nature, reedgrass itself appears to contribute less significantly than cordgrass to the detrital food chain on the marsh. Once reedgrass becomes dominant it dries out the marsh substrate, creating a high seasonal fire hazard and thereby causing increased economic pressure for wetland development. With the installation of self-regulating tidal gates, as has occurred in the town of Fairfield, it is possible to restore normal tidal flushing and rehabilitate such degraded marshes while still providing flood protection for low-lying upland areas. There is a critical need for such a program to be undertaken immediately by the State and the coastal towns of Connecticut. In order to preserve the future integrity of our remaining marsh systems there is a futher urgent need to establish a buffer zone of at least 50-100 feet between the marsh and any new development.

Role of Tidal Marshes. Tidal marshes and especially the contiguous estuaries are recognized as being among the most productive ecosystems in the world. The world's major fisheries are restricted primarily to coastal waters. For example, on the 12 hectare Cottrell Marsh in Stonington, Steever (15) calculated that 88 tons of vascular vegetation are produced annually. If we add the plant production from all of Connecticut's marshes (6100 hectares) and those of Long Island (8790 hectares), we have some 93,000 metric tons that are potentially available for marsh and estuarine organisms. Over the past decade there has developed a considerable literature on the potential role that tidal marshes are serving in enriching the adjacent estuarine water, especially in the transport of dead plant material (16). The significance and impact of this nutrient and organic input from the marsh to the estuary has been questioned (17). This by no means diminishes the value of the tidal marsh-

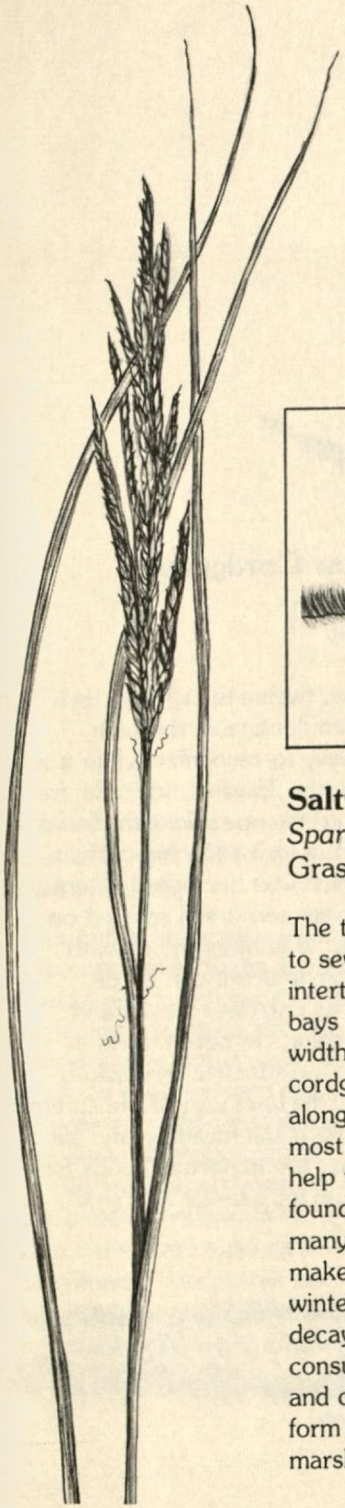
estuarine system, which provides an invaluable nursery ground for finfish and shellfish. In addition, we have learned that in terms of pollution filtration marshes appear to be a sink for heavy metals such as lead and mercury. Studies on the Tinicum marshes near Philadelphia indicate that estuarine marshes can also significantly reduce biological oxygen demand and can reduce nitrogen and phosphorus levels by 50-70% in several hours after sewage effluent has passed across the marsh (18).

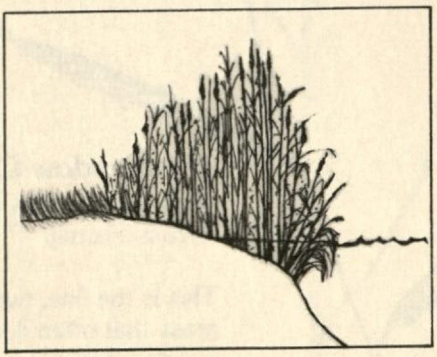
The mere presence of this peaty vegetation barrier along the shoreline has the potential for buffering storm impacts. Also, as the marsh peat builds upward, sediment accretion can potentially reduce that which would be deposited in creek channels if the marshes were not present.

In terms of wildlife, marshes support a rich diversity of wetland birds. In addition to waders such as herons and egrets, some 50 other species, including rails, ospreys, and marsh sparrows, are part of the marsh birdlife. The east coast salt marshes are also part of the Atlantic Flyway, and provide food, shelter, and nesting sites for thousands of waterfowl on their annual migrations. Among the mammals which frequently visit the marshes from the upland are deer and raccoons, while muskrats, which are permanent residents, are abundant and are harvested for their fur.

Tidal marshes are also of aesthetic and artistic value. Over the years they have inspired such poets as Sidney Lanier, as reflected in his beautiful *Marshes of Glynn.* Artists such as Martin Johnson Heade and William M. Chase have painted tidal marshes at Newburyport, Mass. and Hackensack Meadows of New Jersey. More and more people are being attracted to these coastal systems for hiking and nature photography. The marshes will also provide an unlimited outdoor educational resource for future generations concerned with preserving biotic diversity.

For literature cited see page 30.

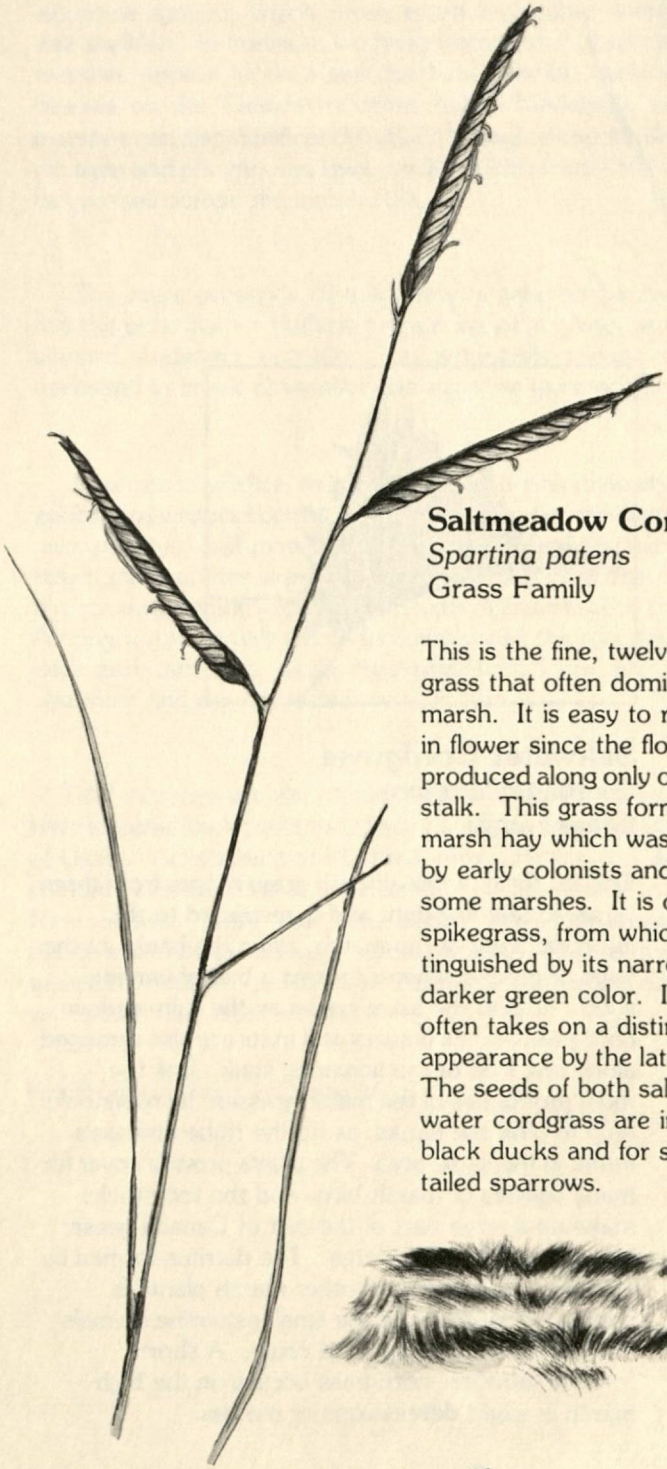




Saltwater Cordgrass

Spartina alterniflora
Grass Family

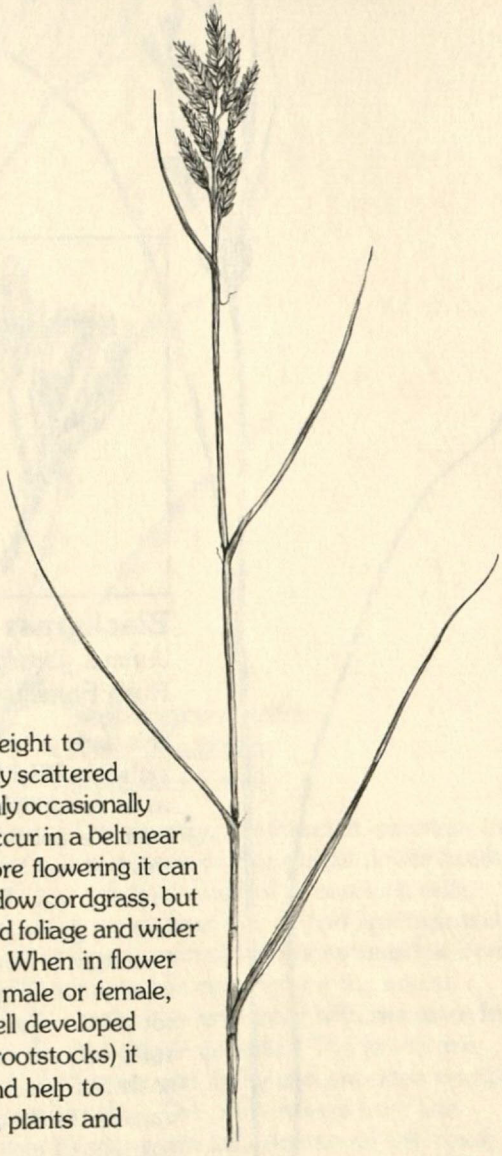
The tall form of this smooth grass ranges from three to seven feet in height and is restricted to the intertidal zone of the marsh, along the banks of the bays or creeks, where it forms a belt of varying width. It is in the same genus as the saltmeadow cordgrass and its flowers and fruits are also arranged along one side of the flowering stalk. It is the most productive of the marsh grasses. Its rootstocks help to bind the banks, as do the ribbed mussels found in the same area. The plants provide cover for many species of marsh birds and the rootstocks make up a large part of the diet of Canada geese wintering along our shores. The detritus formed by decaying cordgrass and other marsh plants is consumed by many of the small estuarine animals and contributes to the food chain. A short form of saltwater cordgrass occurs on the high marsh in slight depressions or pannes.



Saltmeadow Cordgrass

Spartina patens
Grass Family

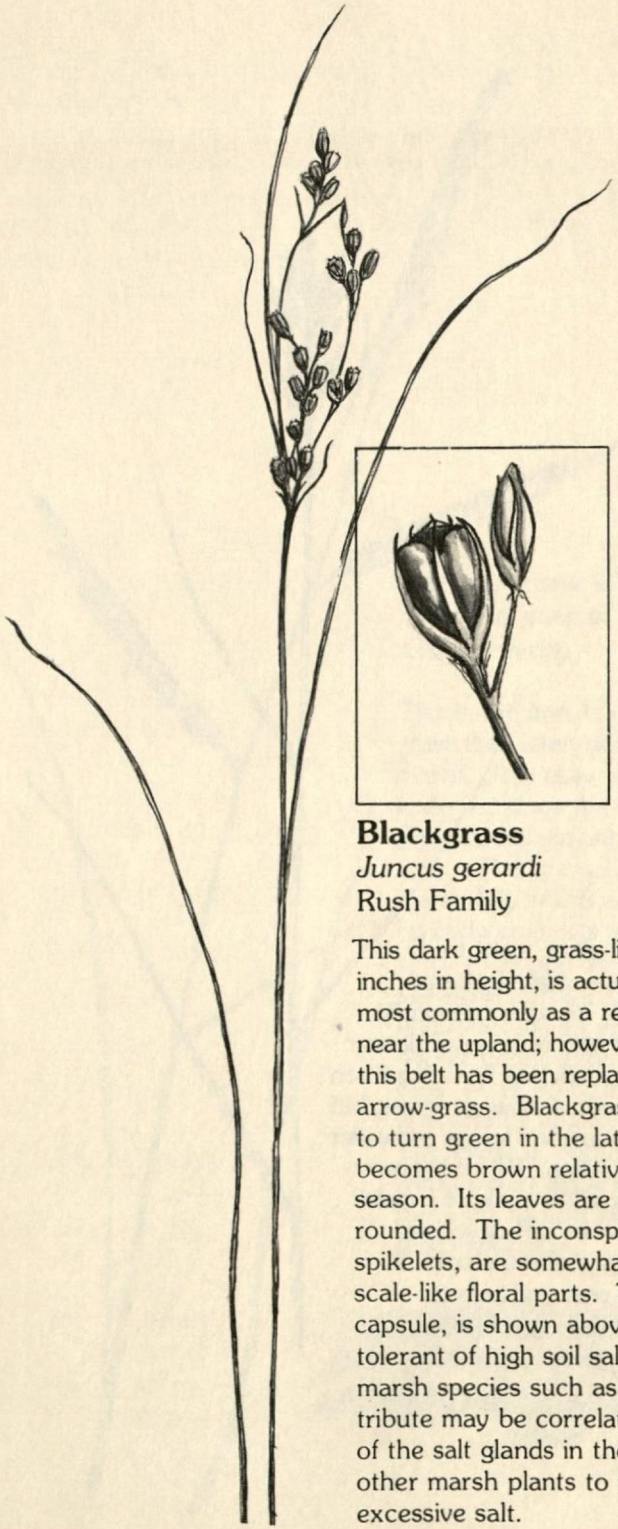
This is the fine, twelve to eighteen inch high grass that often dominates the high marsh. It is easy to recognize when it is in flower since the flowers and fruits are produced along only one side of the flowering stalk. This grass forms the typical salt marsh hay which was harvested extensively by early colonists and is still mowed on some marshes. It is often mixed with spikegrass, from which it can be distinguished by its narrower leaves and darker green color. In pure stands it often takes on a distinctive cow-licked appearance by the later part of the summer. The seeds of both salt-meadow and salt-water cordgrass are important foods for black ducks and for seaside and sharp-tailed sparrows.



Spikegrass

Distichlis spicata
Grass Family

This highly salt-tolerant plant, eight to fifteen inches in height, is a widely scattered species on the high marsh. It is only occasionally found in pure stands but may occur in a belt near the upland in wetter sites. Before flowering it can easily be confused with saltmeadow cordgrass, but its very stiff, light green stems and foliage and wider leaf angle aid in its recognition. When in flower its relatively large spikes, either male or female, are most distinctive. With its well developed rhizome system (underground rootstocks) it can pioneer bare marsh peat and help to stabilize the marsh. The young plants and rootstocks are eaten by geese.



Blackgrass

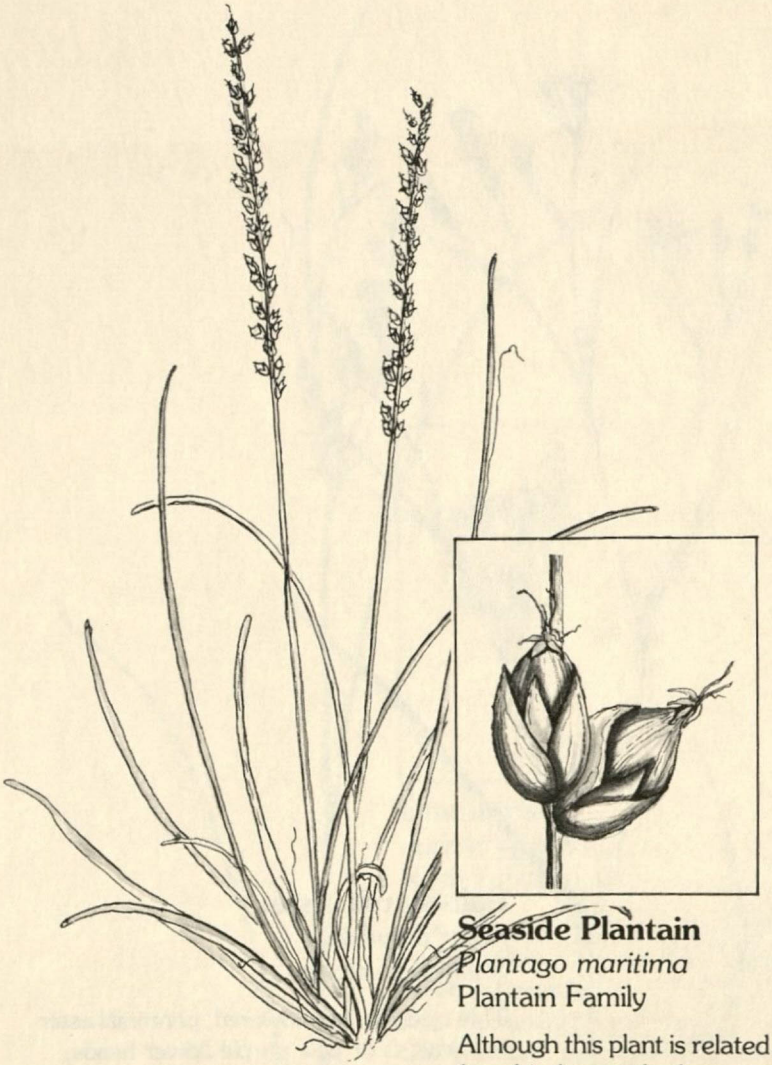
Juncus gerardi
Rush Family

This dark green, grass-like plant, ten to fifteen inches in height, is actually a rush. It grows most commonly as a relatively pure belt near the upland; however, on some marshes this belt has been replaced by forbs, especially arrow-grass. Blackgrass is the first species to turn green in the late spring and then becomes brown relatively early in the season. Its leaves are long, narrow and rounded. The inconspicuous flowers, in spikelets, are somewhat lily-like but with scale-like floral parts. The dried fruit, a capsule, is shown above. Blackgrass is less tolerant of high soil salinity than are other marsh species such as spikegrass. This attribute may be correlated with the absence of the salt glands in the leaves that permit other marsh plants to rid themselves of excessive salt.

Salt-marsh Aster

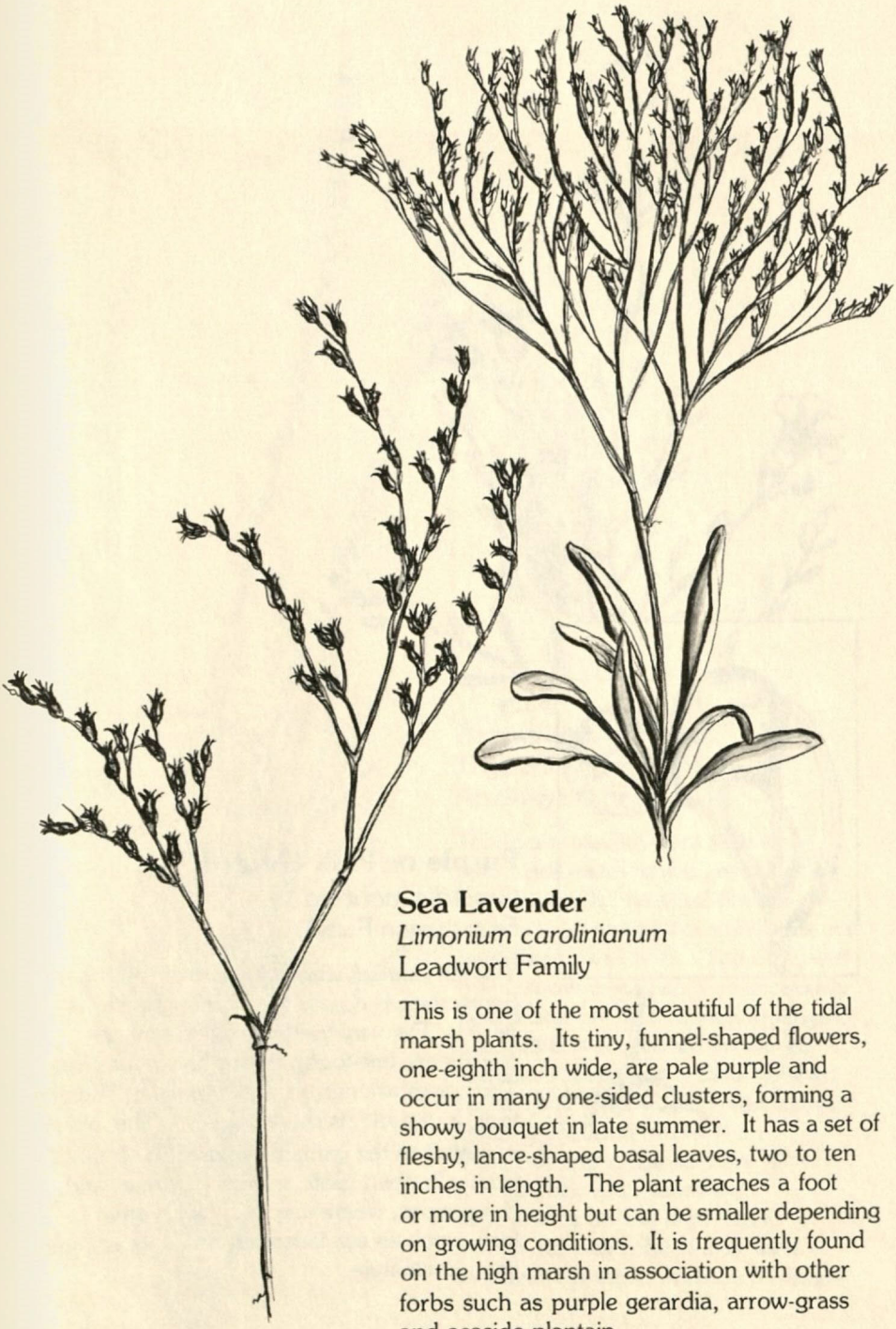
Aster tenuifolius
Sunflower Family

This straggly, few-flowered, perennial aster has whitish or pale purple flower heads, each from one-half to one inch wide. It grows from one to two feet high and is found scattered in the saltmeadow cordgrass or in openings on the marsh where it is associated with sea lavender and purple gerardia. The leaves are narrow and fleshy and are often on zigzag stalks. The plant flowers from late August into fall. An annual salt marsh aster, *A. subulatus*, has much smaller flower heads, from one-fourth to one-half inch wide.



Seaside Plantain
Plantago maritima
Plantain Family

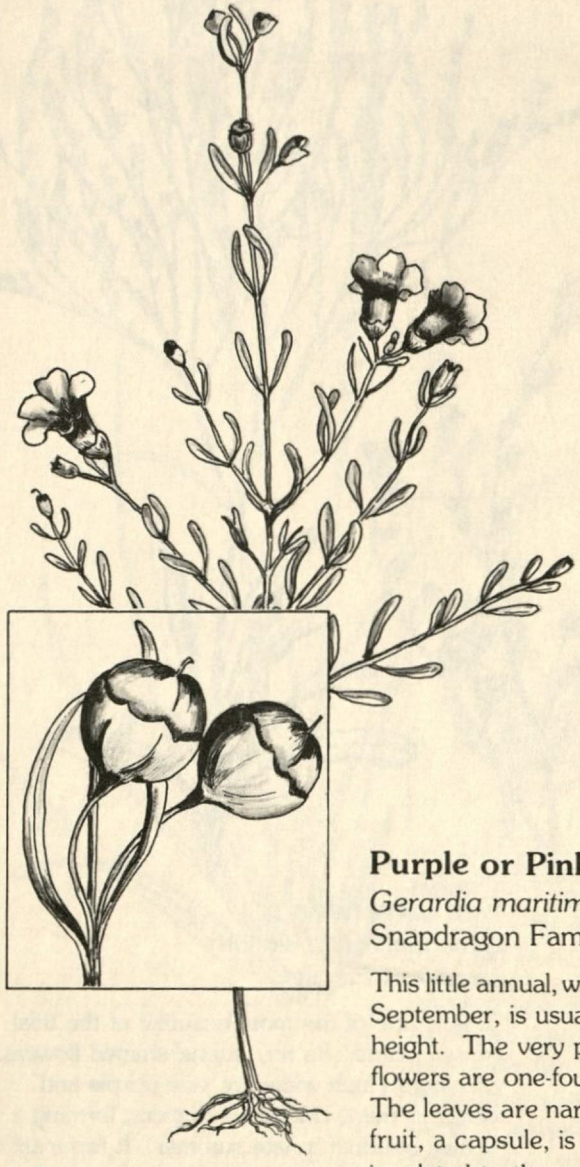
Although this plant is related to the plantains found in lawns, the leaves are narrower and somewhat triangular on cross section. They are arranged in a rosette and resemble those of arrow-grass but are shorter, more fleshy, and have a V-shaped rather than round cross section. The inconspicuous flowers are borne on a short stalk. The pear-shaped fruits (shown above) split around the middle upon opening, dispersing the seeds. This is one of the species often found in areas on the high marsh that are not dominated by grasses, such as slight depressions or pannes.



Sea Lavender

Limonium carolinianum
Leadwort Family

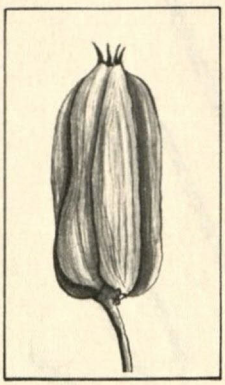
This is one of the most beautiful of the tidal marsh plants. Its tiny, funnel-shaped flowers, one-eighth inch wide, are pale purple and occur in many one-sided clusters, forming a showy bouquet in late summer. It has a set of fleshy, lance-shaped basal leaves, two to ten inches in length. The plant reaches a foot or more in height but can be smaller depending on growing conditions. It is frequently found on the high marsh in association with other forbs such as purple gerardia, arrow-grass and seaside plantain.



Purple or Pink Gerardia

Gerardia maritima
Snapdragon Family

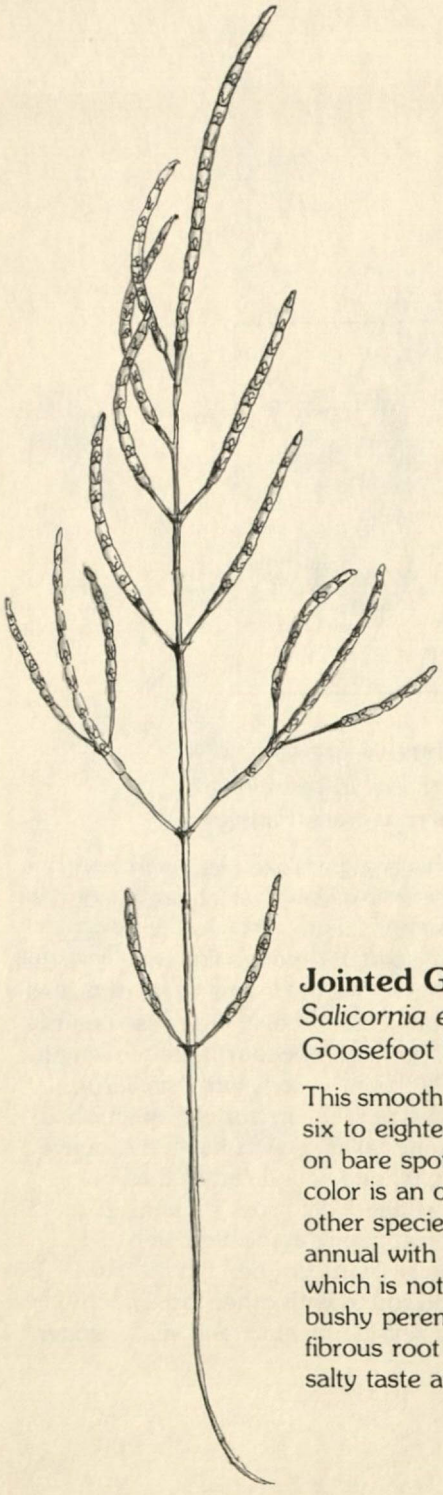
This little annual, which blooms from mid-July to September, is usually less than eight inches in height. The very pretty, tubular, pinkish flowers are one-fourth to one-half inches long. The leaves are narrow and opposite. The dried fruit, a capsule, is shown above. This plant is related to the garden snapdragon. It usually occurs in open spots, including pannes and depressions, where it is found with other forbs such as sea lavender, arrow-grass, and seaside plantain.



Arrow-grass

Triglochin maritima
Arrow-grass Family

This is a grass-like plant with long, sword-like leaves which are a foot or more in length. Its small flowers are scattered along a flowering stalk that rises above the leaves. The elongated fruits (show above) are conspicuously ridged and one-fourth inch in length. This plant is somewhat similar to seaside plantain but is distinguished by its taller growth habit, distinctive fruits, and round rather than V-shaped leaf cross section. It is frequently associated with depressions on the high marsh and found with other forbs such as seaside plantain and sea lavender.

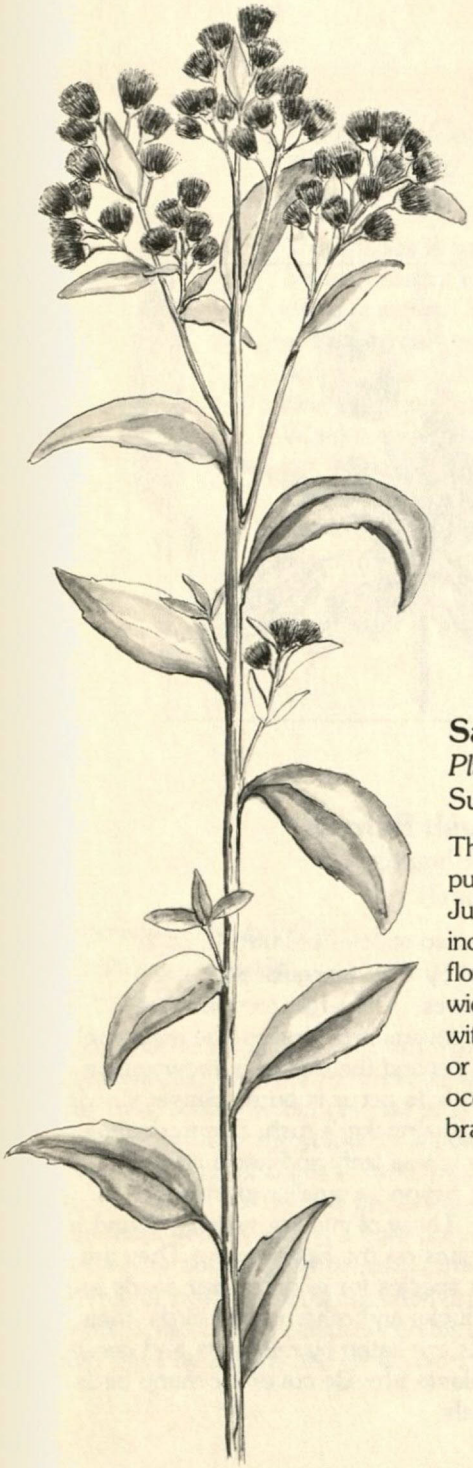


Jointed Glasswort; Saltwort

Salicornia europaea

Goosefoot Family

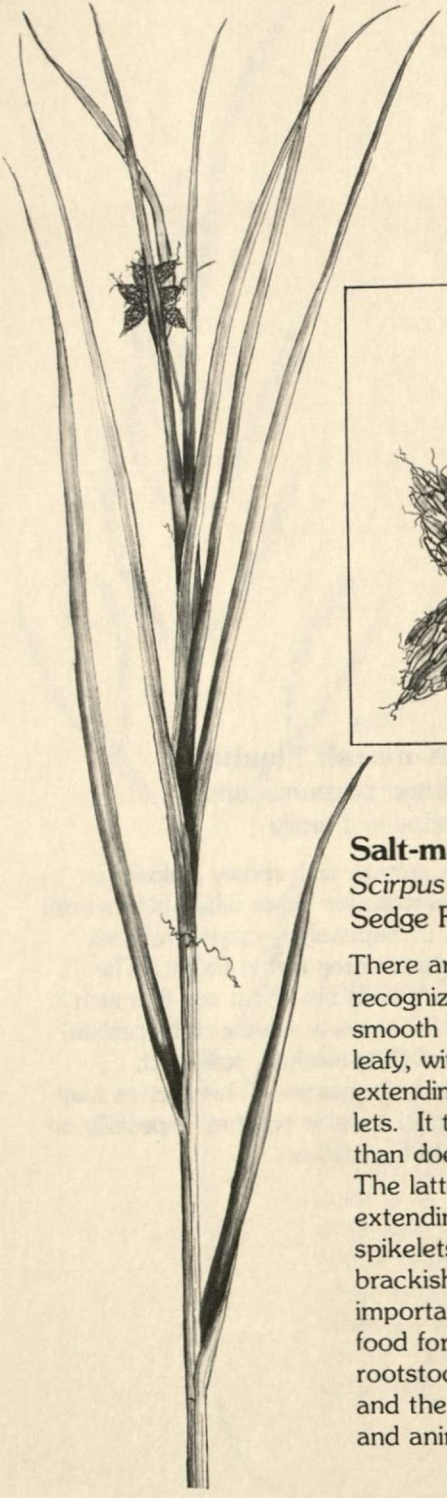
This smooth, fleshy, leafless, cactus-like annual is from six to eighteen inches in height. It is often found on bare spots on the marsh, where its bright red fall color is an outstanding feature. There are two other species of glassworts; a short, unbranched annual with stout, fleshy stems *(S. bigelovii)*, which is not more than one foot in height, and a bushy perennial *(S. virginica)* that has a resistant, fibrous root system. The glassworts have a very salty taste and are sometimes added to fresh salads.

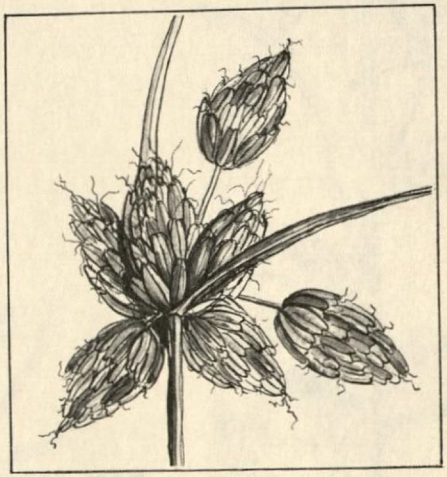


Salt-marsh Fleabane

Pluchea purpurascens
Sunflower Family

This annual, with showy pinkish or purplish flower heads which bloom from July to September, ranges from six inches to three feet in height. The flower heads are about one-fifth inch wide. Leaves are ovate to lanceolate, with slightly toothed, scalloped, or smooth margins. This species may occur in sizeable patches, especially on brackish marshes.



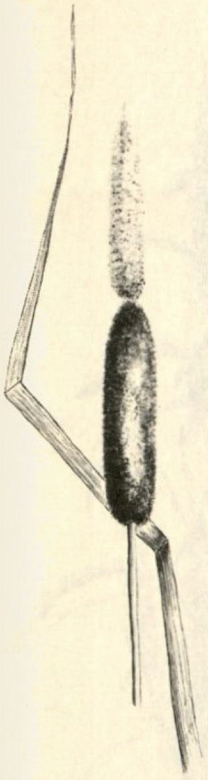


Salt-marsh Bulrush

Scirpus robustus

Sedge Family

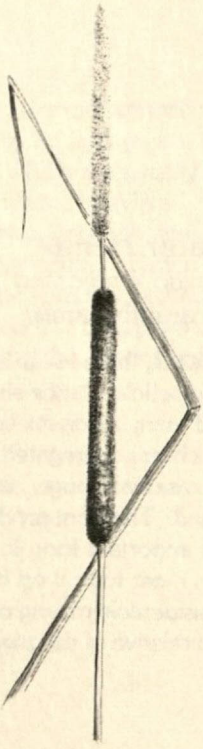
There are two species of bulrush, both recognized by their triangular stems and smooth leaves. The larger form is more leafy, with several short leaves (the involucre) extending beyond the cluster of brown spikelets. It tends to occur in purer, denser stands than does chairmaker's rush, *S. americanus*. The latter is less leafy and has a single leaf extending beyond a smaller cluster of spikelets. These plants are typically found in brackish sites on the high marsh. They are important species for wildlife; their seeds are food for ducks and other marsh birds, their rootstocks are eaten by muskrats and geese, and the plants provide cover for many birds and animals.



Common Cattail

Typha latifolia
Cattail Family

This species is typically found in freshwater marshes but also occurs in the upper reaches of some valley marshes. The leaves are wider than those of the narrow-leaved cattail, being up to 1½ inches across. The yellow male flowers (stamens) are directly above the female flowers (pistils). When mature, the cluster of brownish fruits persists but the male flowers fade, leaving a bare stalk. Cattails form dense stands and provide favorable habitat for red-winged blackbirds, marsh wrens, and muskrats.



Narrow-leaved Cattail

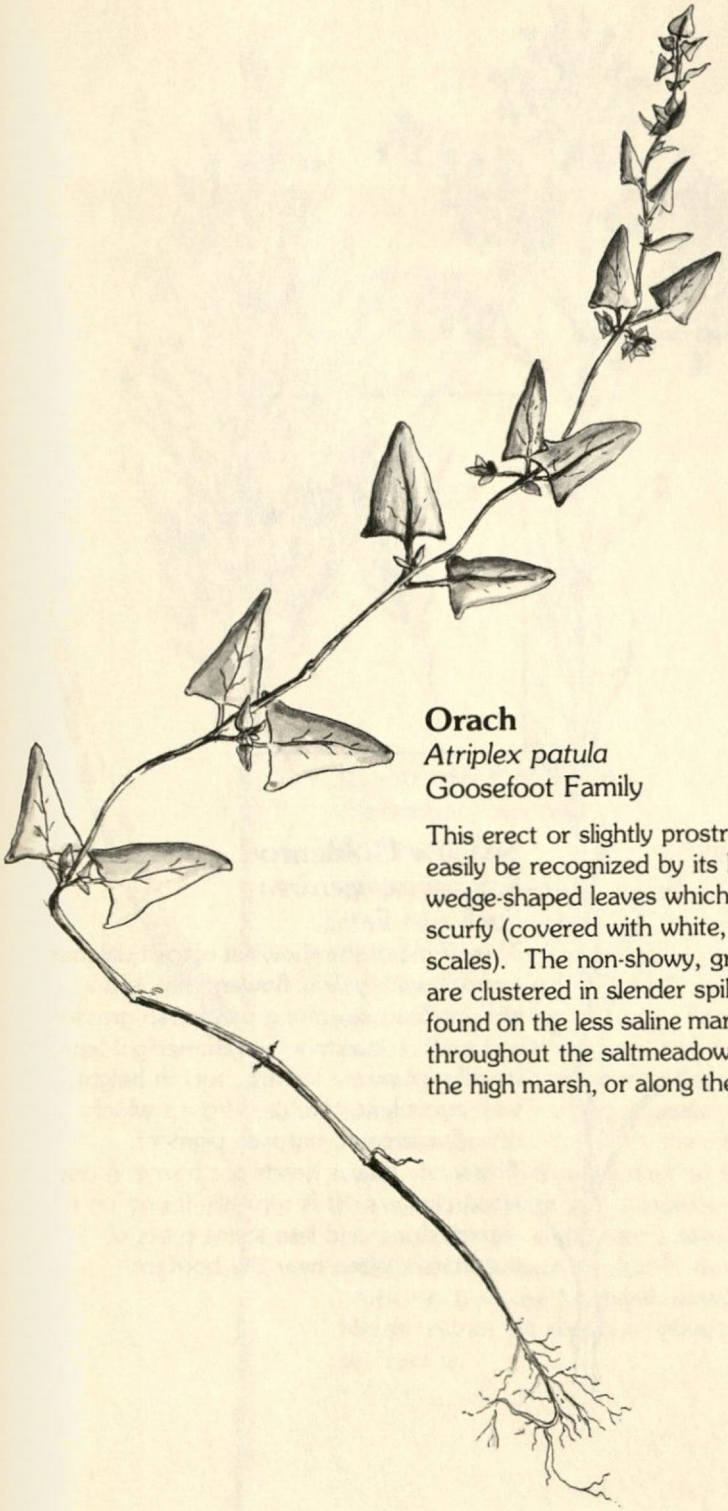
Typha angustifolia
Cattail Family

This species is found in brackish marshes. It is distinguished from the common cattail by its narrower leaves (about one-half inch across) and the gap between the yellow male flowers (stamens) toward the top of the spike and the female flowers (pistils) below. When the plants are mature only the fruits persist, leaving a bare portion of the stalk projecting above. This persisting fruit cluster is narrower than that of the common cattail. The starchy rootstocks of these plants are edible and were ground into meal by Indians and early colonists.

Water Hemp

Acnida cannabina
Amaranth Family

This tall, three to six foot high annual has long-petioled, lance-shaped, alternate leaves and many inconspicuous greenish flowers which are aggregated into elongated clusters. Occasionally huge, almost tree-like specimens are found. The plant produces large quantities of seeds which are important food for waterfowl, particularly black ducks. It is most typical on brackish marshes where there is considerable mixing of fresh and salt water. Water hemp is a relative of the pigweeds, common weeds in gardens.



Orach

Atriplex patula

Goosefoot Family

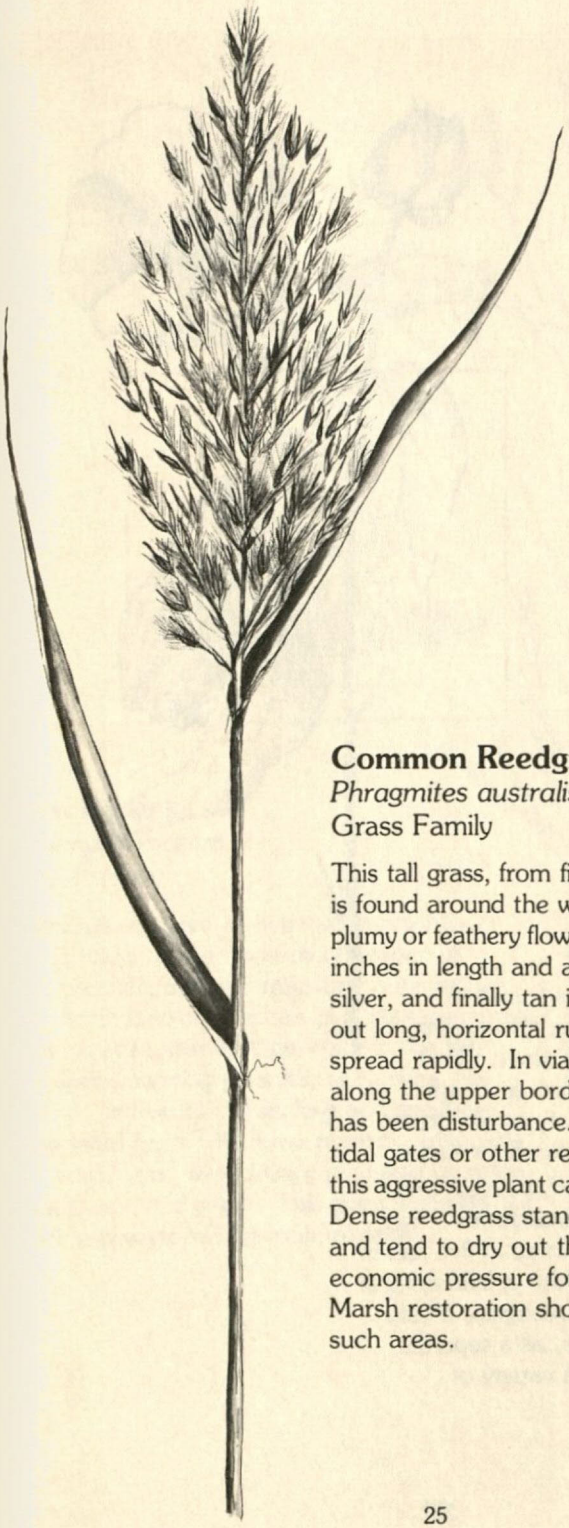
This erect or slightly prostrate annual can easily be recognized by its light green, wedge-shaped leaves which are usually scurfy (covered with white, bran-like scales). The non-showy, greenish flowers are clustered in slender spikes. Orach is found on the less saline marshes, scattered throughout the saltmeadow cordgrass on the high marsh, or along the upper border.

Seaside Goldenrod

Solidago sempervirens

Sunflower Family

This is one of the showiest of the tidal marsh species, with yellow flowers that add a striking feature among the marsh grasses in the fall. It is a smooth-stemmed goldenrod, usually from one to three feet in height, with succulent, toothless leaves which often have some purplish pigment. The many flower heads are borne in one-sided clusters. It is typically found on the higher, drier, and less saline parts of the marsh, often near the borders.



Common Reedgrass

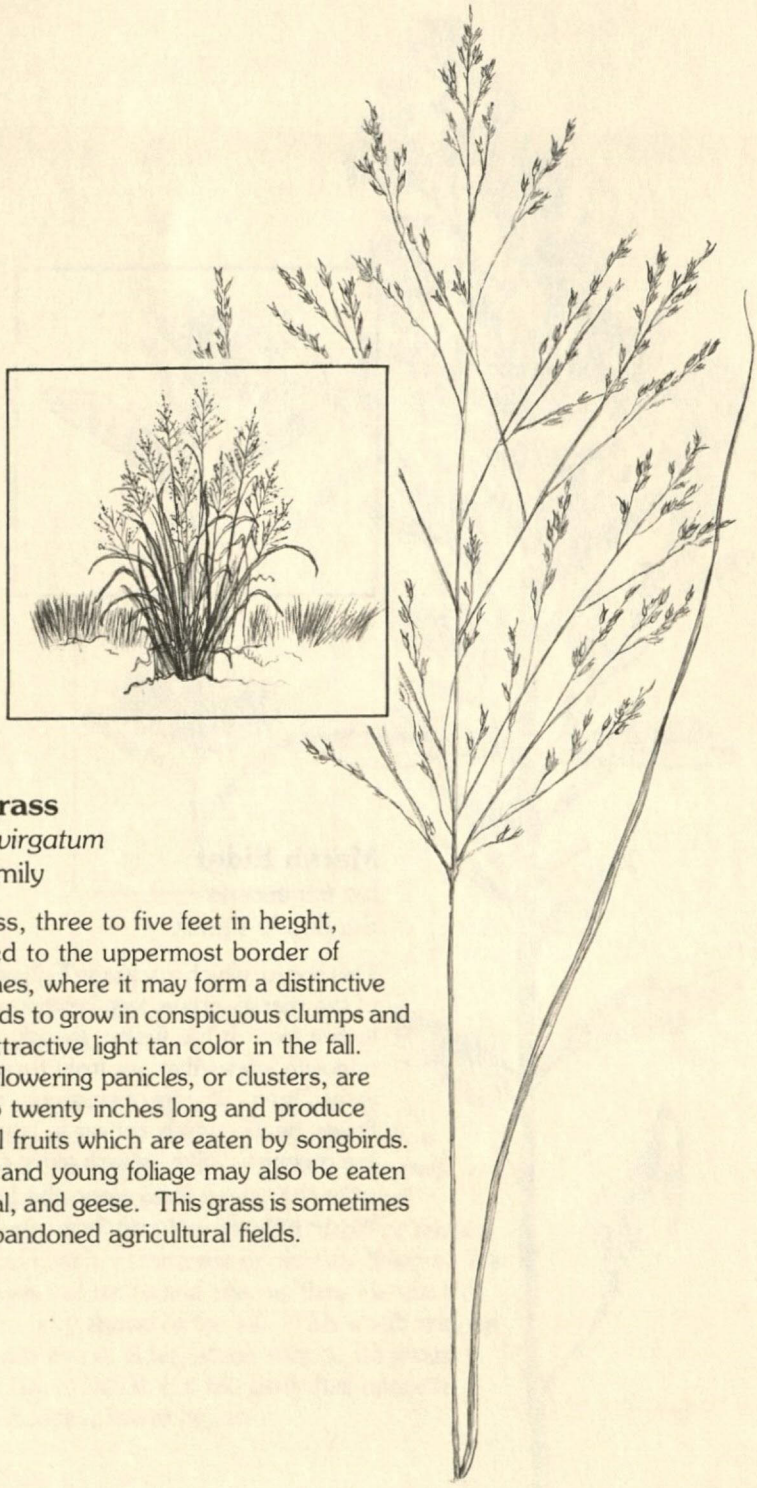
Phragmites australis
Grass Family

This tall grass, from five to fifteen feet in height, is found around the world. The distinctive plumy or feathery flower clusters are six to twelve inches in length and are initially reddish, then silver, and finally tan in color. The plant sends out long, horizontal runners and can thus spread rapidly. In viable marshes it is found along the upper border, especially where there has been disturbance. With the installation of tidal gates or other restrictions to tidal flooding this aggressive plant can replace the cordgrasses. Dense reedgrass stands are a severe fire hazard and tend to dry out the marsh, thus adding an economic pressure for marsh development. Marsh restoration should be advocated in such areas.

Marsh Mallow; Swamp Rose Mallow

Hibiscus palustris
Mallow Family

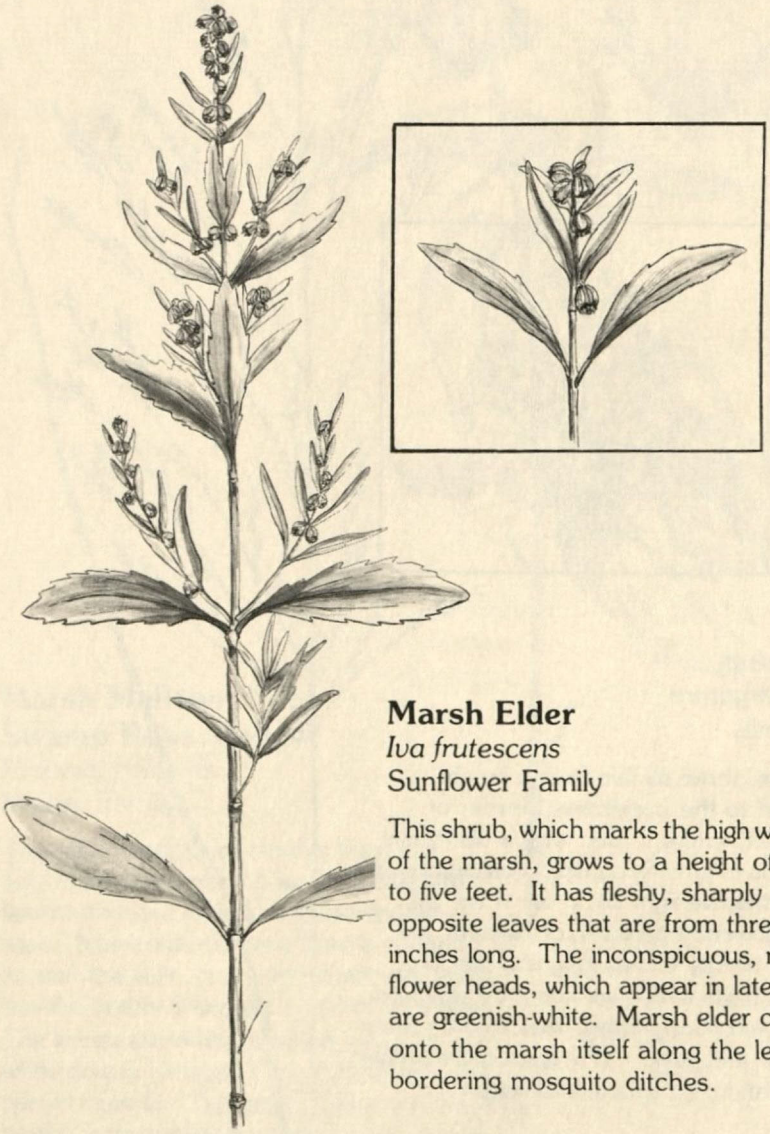
This tall, coarse plant blooms from late July to September, with large, showy pink flowers that are from four to seven inches wide. Numerous stamens form a column around the style, and a ring of narrow, green, leaf-like bracts is present beneath the calyx. The leaves are ovate, toothed, pointed, and white-downy beneath. The fruit forms a five-parted capsule. This plant, three to five feet in height, is most typical along the upland edge of the marsh. Some botanists recognize a very similar plant, *H. moscheutos*, as a separate species; others regard it as a variety of *H. palustris*.



Switchgrass

Panicum virgatum
Grass Family

Switchgrass, three to five feet in height, is restricted to the uppermost border of tidal marshes, where it may form a distinctive belt. It tends to grow in conspicuous clumps and turns an attractive light tan color in the fall. The open-flowering panicles, or clusters, are from six to twenty inches long and produce many small fruits which are eaten by songbirds. The seeds and young foliage may also be eaten by rails, teal, and geese. This grass is sometimes found in abandoned agricultural fields.

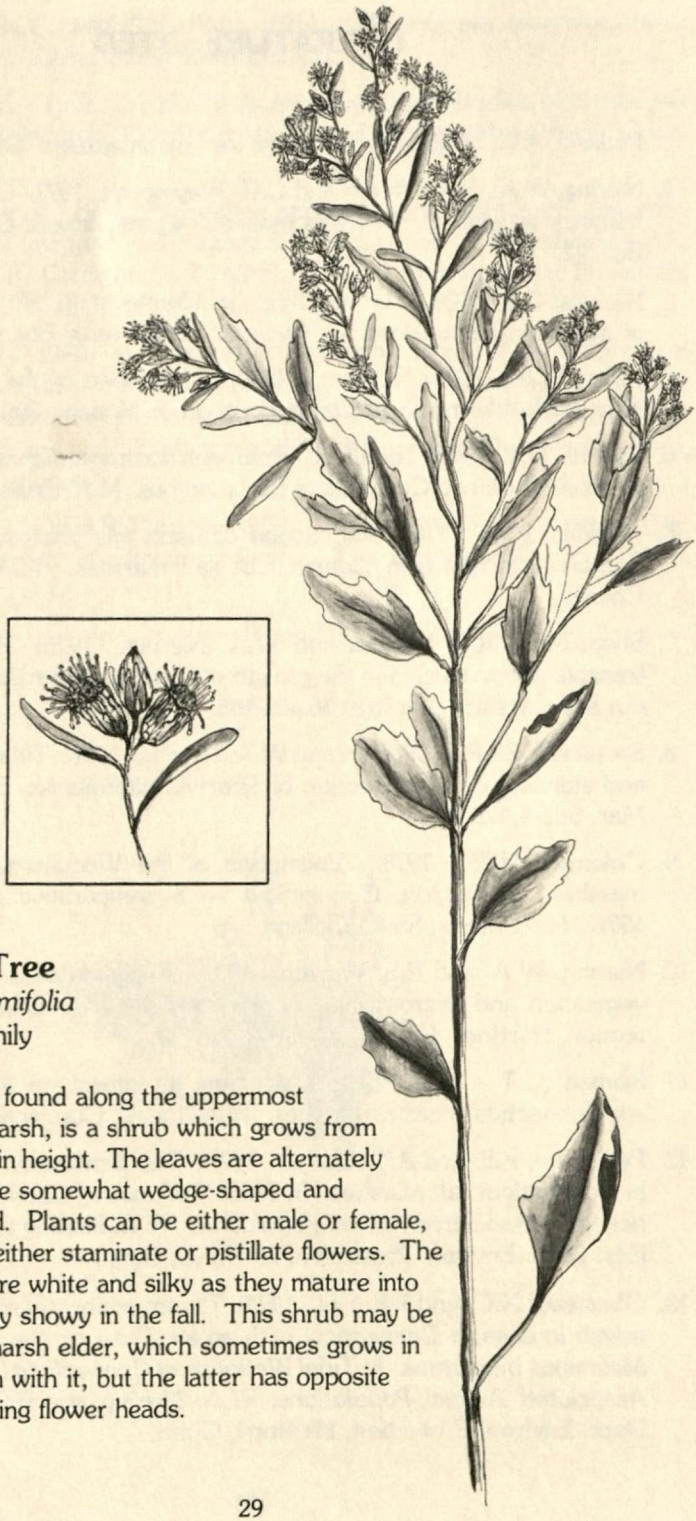


Marsh Elder

Iva frutescens

Sunflower Family

This shrub, which marks the high water border of the marsh, grows to a height of from two to five feet. It has fleshy, sharply toothed, opposite leaves that are from three to four inches long. The inconspicuous, nodding flower heads, which appear in late summer, are greenish-white. Marsh elder can extend onto the marsh itself along the levees bordering mosquito ditches.



Groundsel Tree

Baccharis halimifolia
Sunflower Family

Groundsel tree, found along the uppermost border of the marsh, is a shrub which grows from three to six feet in height. The leaves are alternately arranged and are somewhat wedge-shaped and coarsely toothed. Plants can be either male or female, thus producing either staminate or pistillate flowers. The female flowers are white and silky as they mature into fruit and are very showy in the fall. This shrub may be confused with marsh elder, which sometimes grows in close association with it, but the latter has opposite leaves and nodding flower heads.

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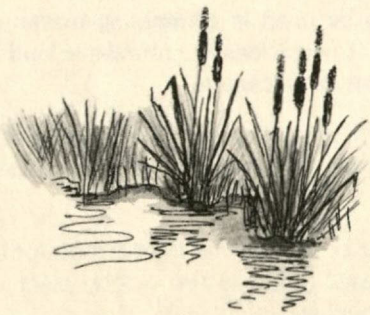

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