Life in New Hampshire Salt Marshes

A Quick-Reference Field Guide

New Hampshire Department of Environmental Services Coastal Program

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Prepared By

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Dear Reader

As an ecologist, I enjoy learning how living organisms and their habitat interact. I also enjoy sharing this knowledge with others, in hopes to foster a stewardship between people and their environment, thus creating a sense of place and connection to the natural world. I have always also loved studying field guides and believed this would be a good outreach and education tool for New Hampshire's seacoast communities.

When I first envisioned creating a field guide to New Hampshire's salt marshes, it was in early/mid autumn 2002. I wasn't sure how I wanted the field guide to function, look like, or what to include since I had only spent one summer studying salt marsh ecology. I wasn't even quite sure who the audience would be. Nevertheless, I had an idea and knew I could work out the details at a later date. I quickly paced myself against seasonal changes and collected as many plant specimens as possible in order to scan and include them in the field guide. Similarly, I photographed as many plants as possible before they senesced that year.

I worked on the field guide over a period of six months scanning and illustrating plants, downloading photos, and researching information. *"Life in New Hampshire Salt Marshes: A Quick Reference Field Guide"* was finally printed in May of 2003. It included information on plant zonation, and categories such as Grasses, Rushes & Sedges; Herbaceous Flowering Plants; Succulents; Woody Plants; Fish, Crabs & Nekton, as well as the Saltmarsh Sharp-Tailed Sparrow. The audience quickly became conservation commissions, schools, and most importantly, volunteers for the newly created Marsh Monitors: New Hampshire Volunteer Salt Marsh Monitoring Program. 550 copies were initially printed, and a year later only 20 copies remained!

When I look back on the first edition, I see a product that was sufficient for the first printing, but also needed a much additional work. Since I began the publication so late in the season, many of the plant scans and habitat photos were not my own. Many plants didn't even make it into the field guide. It could have been more professional, yet user-friendly. My critique goes on and on.

Beginning in May of 2004, I began to revise the publication. Although I have kept much of the format and information the same, I have changed many things. Most importantly, I have added several plant species to the field guide that were not in the first edition. I have retaken nearly all of the habitat photos and have redrawn many of the illustrations. I have slightly redesigned the layout and have completely revised the fish/nekton section. A description of each section is given on the section page. Lastly, I have added appendices including an index of habitats and plant specimens, and other helpful field guides.

Nearing another field season, and the third year of the volunteer monitoring program, I am truly excited to have been able to revise this publication and offer it to you. This would not be possible without the insight, creativity, assistance (and patience!) of many people whom I call both colleagues and friends. I hope you enjoy this collaborative effort.

The salt marsh is a landscape of natural beauty and intrigue. I encourage you to take this field guide to a nearby marsh and study the vegetative communities, the fish and insect communities, the birds and wildlife. I assure you, you will walk away with a renewed sense of life and desire to preserve and conserve this fragile ecosystem.

Sincerely,

Jen Drociak

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References

- Fish descriptions taken from *"Fishes of the Gulf of Maine"* Fisheries Bulletin 74; Vol 53, Henry B. Bigelow and William C. Shroeder
- Plant taxa taken from *"A Field Guide to Coastal Wetland Plants of the Northeastern United States,"* by Ralph W. Tiner, 1987.
- Plant values taken from *"New England Wetlands: Plant Identification and Protective Laws"* USEPA and *"Wetland Planting Guide for Northern United States"* by Gwendolyn A. Thunhurst.
- Plant zonation in northeastern salt marshes taken from *"A Volunteer's Handbook for Monitoring New England Salt Marshes"* by Carlisle, B.K., A.M. Donovan, A.L. Hicks, V.S. Kooken, J.P. Smith, and A.R. Wilbur. 2002. Massachusetts Office of Coastal Zone Management, Boston, MA.

A Note About This Publication

This field guide is not intended to be a comprehensive listing of all plant and animal species that inhabit New Hampshire salt marshes. Hopefully, it will provide the casual observer with aid in identification of the most frequently encountered species and references to assist in further, more detailed studies for those wishing to know more about salt marsh ecosystems.

Citation

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Introduction

Salt marshes are important transitional habitat between the ocean and the land; they are estuaries where fresh and salt water mix. Salt marsh plants (halophytes) are salt tolerant and adapted to water levels that fluctuate with the tide. Tides carry in nutrients that stimulate plant growth in the marsh and carry out organic material that feeds fish and other coastal organisms. Over time, salt marshes accumulate organic material, forming into a dense layer called peat.

Salt marshes are among the most productive ecosystems on earth, rivaling that of an Iowa cornfield. The position of salt marshes on the landscape and their productivity makes them important not only as a part of the natural world but also to humans. There are about 6,200 acres of salt marsh in New Hampshire, many of which have been damaged by management actions that have had unintentional consequences: restricted tidal flow, filling, ditching, and increased freshwater flows. Due to degradation, restoration is often necessary to improve the following functions that salt marshes provide.

Nursery Area for Fish, Crustaceans, and Insects

We know that the productivity of a corn field goes to feed humans and livestock, so who benefits from salt marshes? Research increasingly points to aquatic wildlife as the main recipient of marsh production. Little vegetation is consumed directly, but is broken down by bacteria and small insects. The decaying plants and microbes are eaten by larger crustaceans, insects, fish, and mussels that reside in the marsh soils, ditches, and pools where they are protected from predators. That is, until the tide comes in and predators are able to locate and eat the smaller critters. Thus, the salt marsh provides the food for larger fish that are important to the New England fishing industry. Over the past decade, fishery stocks in New England have seriously declined. There is evidence that restoring marshes, along with improved fishing management, will help to restore these fish stocks.

Protection Against Waves and Sea Level Rise

Over the past 6,000 years, the ocean has risen many feet in elevation. It is not uncommon to dig in a salt marsh and find the stumps of cedar trees preserved underneath. Because salt marshes trap nutrients and sediment, and build organic matter to form peat, they are able to grow and keep pace with the rising ocean. Current forecasts call for the sea level to rise at least another foot in the next 100 years. The salt marshes will keep pace with this rise if we let them. The marshes also slow the velocity of waves before they reach land and mitigate storm surges. In places where marshes have been destroyed, winter storms are more damaging.

Mosquito Control: A Common Misconception

Historically, people have drained marshes, by creating ditches, to both harvest salt marsh "hay" for cattle, and to control mosquitoes. In many areas, the practice of ditching for mosquito control is ineffective and counterproductive. When marshes are drained, mosquito habitat remains in the panes and pockets of water but their main predator, the mummichog, loses its habitat. Over time, the ditches fill back in causing more stagnant water. The introduction of tide gates does not eliminate mosquitoes either because it results in freshwater ponding, which simply causes freshwater mosquitoes to replace the saltwater species. Restoring marshes can dramatically increase fish populations that control the mosquitoes.

Plant Zonation In Northeastern Salt Marshes

Salt marshes can be extremely difficult places to survive because of wide daily fluctuations in salinity, water, temperature, and oxygen. Few plants have evolved adaptations to cope with the extreme conditions of salt marshes. Plant zonation in a salt marsh results from species-specific adaptations to physical and chemical conditions. Looking out on a healthy salt marsh in full summer growth, one can observe distinct zones of plant growth. Bands of tall grasses inhabit the saturated banks of creeks and bays, and this zone is bordered by a flat "meadow" of grasses and sedges that may extend landward for a great distance before transitioning into upland habitats where there is a greater diversity of shrubs, flowering plants, and grasses.

Low Marsh: The low marsh is located along the seaward edge of the salt marsh. It is usually flooded at every tide and exposed during low tide. It tends to occur as a narrow band along creeks and ditches, whereas the high marsh is more expansive and is flooded less frequently. The predominant plant species found in the low marsh is the tall form of *Spartina alterniflora* (smooth cordgrass). This species can reach a height of six feet and is very tolerant of daily flooding and exposure.

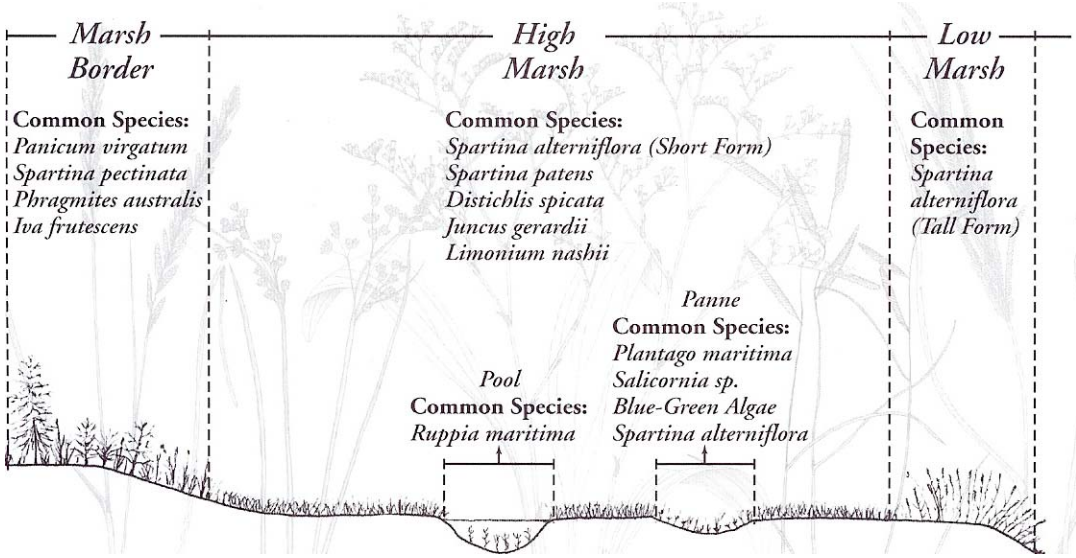
High Marsh: The high marsh lies between the low marsh and the marsh's upland border. It can be very expansive in some areas, sometimes extending hundreds of yards inland from the low marsh area. Soils in the high marsh are mostly saturated, and the high marsh is generally flooded only during higher than average high tides. Plant diversity is low (usually less than 25 species), with the dominant species being the grasses and rushes such as *Spartina patens* (salt hay grass), *Distichlis spicata* (spike grass), *Juncus geradii* (black grass), and the short form of *Spartina alterniflora*. Other plant species commonly found in the high marsh are *Aster tenufolius* (perennial salt marsh aster), and *Limonium nashii* (sea lavender).

Pool/Panne: Pannes are shallow depressions located within the high marsh. They hold standing water and typically dry out during extended dry periods, such as at the end of the summer season. Salinity can reach extremely high concentrations due to evaporation and lack of flushing. Only the most salt-tolerant species can exist at panne edges including *Salicornia spp.* (glassworts), *Plantago maritima* (seaside plantain), and the short form of *Spartina alterniflora*, as well as some blue-green algae. There are some larger, deeper, and more permanent depressions (called pools) in the high marsh that can be vegetated with submerged aquatic species such as *Ruppia maritima* (widgeon grass) and are inhabited by salt marsh fish. Both pools and pannes (when not entirely dried out to cracked dry mud) are valuable habitat for migratory water birds.

Marsh Border/Upland Edge: The marsh border is located at the salt marsh's upland edge and other isolated areas on the marsh where elevations are slightly above the high marsh. The marsh border is usually only flooded at extreme astronomical tides and under irregular conditions such as storm surges or wind-driven tidal inundations, and does not experience waterlogged conditions or severe salt stress. A high diversity of herbs, shrubs, and even trees exists in the marsh border. *Iva frutescens* (marsh elder), *Myrica gale* (sweet gale), *Solidago sempirvirens* (seaside goldenrod), and *Panicum virgatum* (switchgrass) are just some of the many marsh border plants.

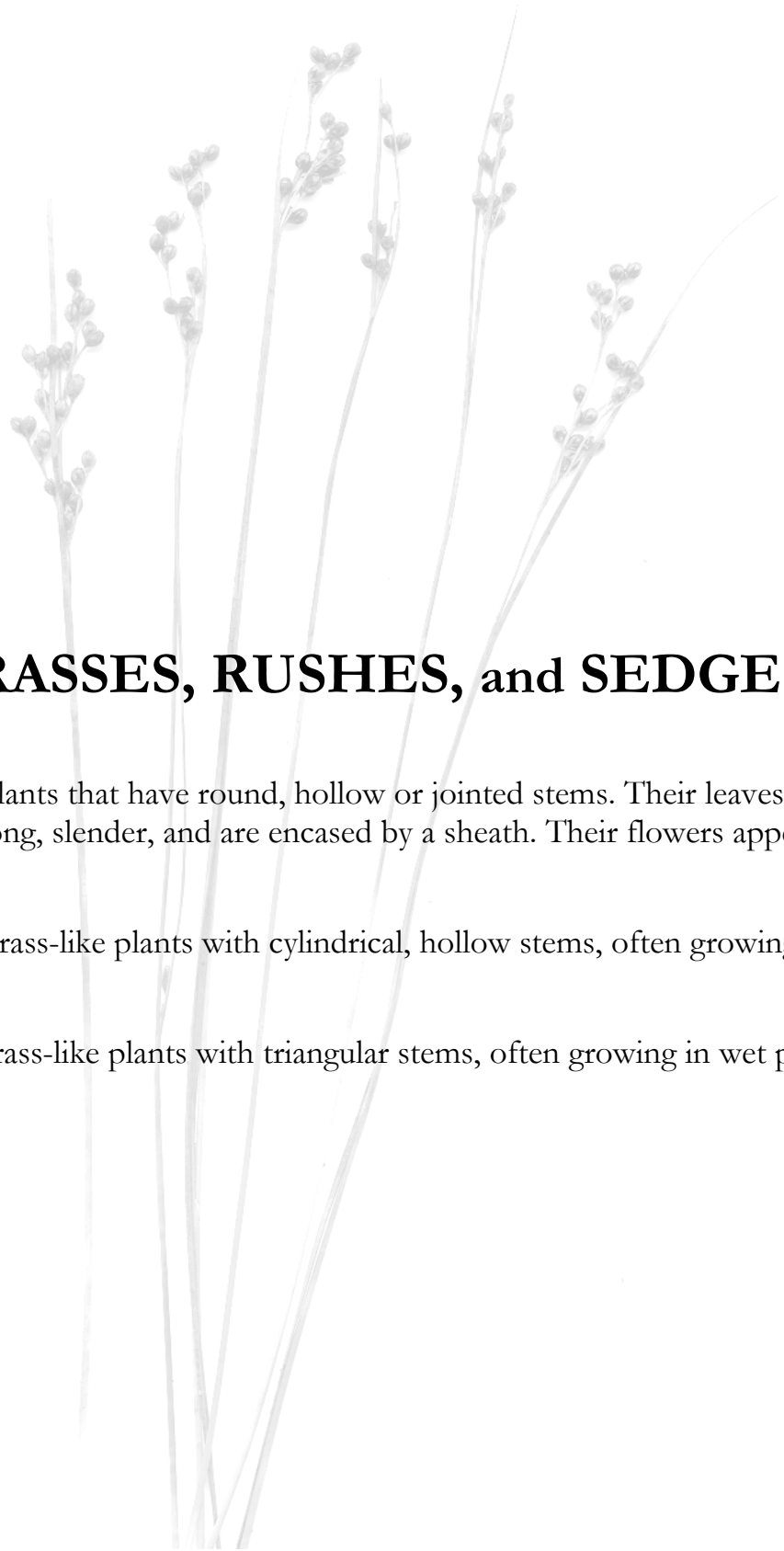
Plant Zonation in Northeastern Salt Marshes

(Courtesy Massachusetts Coastal Zone Management)



Common Salt Marsh Plants in New Hampshire

Common Name	Latin Name	Habitat	Code	Common Name	Latin Name	Habitat	Code
Baltic Rush	*Juncus balticus*	Brackish Areas	JB	Rugosa Rose	*Rosa rugosa*	Marsh Border	RR
Black Grass	*Juncus gerardii*	High Marsh	JG	Salt Marsh Aster	*Aster tenufolius*	High Marsh	AT
Broad-Leaf Cattail	*Typha latifolia*	Brackish Areas	TL	Salt Marsh Bulrush	*Scirpus maritimus*	Brackish Areas	SM
Bushy Knotweed	*Polygonum ramosissimum*	Marsh Boder	PR	Salt Marsh Bulrush	*Scirpus robustus*	Brackish Areas	SR
Common Glasswort	*Salicornia europaea*	Pool/Panne	SE	Salt Marsh Gerardia	*Agalinas maritima*	High Marsh	AM
Common Reed	*Phragmites australis*	Marsh Border	PA	Salt Meadow Grass	*Spartina patens*	High Marsh	SP
Creeping Bent Grass	*Agrostis stolonifera*	High Marsh	AS	Saltwater Cordgrass	*Spartina alterniflora*	Low Marsh	SA
Glossy Buckthorn	*Rhamnum europaea*	Marsh Border	RE	Sea Blite	*Sueada linearis*	Pool/Panne	SL
Hedge Bindweed	*Convolvus sepium*	Marsh Border	CS	Sea Lavender	*Limonium nashii*	High Marsh	LN
Jewelweed	*Impatiens capensis*	Brackish Areas	IC	Seashore Alkali Grass	*Puccinellia maritima*	High Marsh	PUM
Marsh Elder	*Iva frutescens*	Marsh Border	IF	Seaside Arrow Grass	*Triglochin maritima*	High Marsh	TM
Marsh Orach	*Atriplex patula*	High Marsh	AP	Seaside Goldenrod	*Solidago sempervirens*	High Marsh	SS
Marsh Rush	*Juncus effusus*	Brackish Areas	JE	Seaside Plantain	*Plantago maritima*	Pool/Panne	PM
Meadowsweet	*Spiraea latifolia*	Marsh Border	SPL	Sensitive Fern	*Onoclea sensibilis*	Brackish Areas	OS
Narrow-Leaf Cattail	*Typha angustifolia*	Brackish Areas	TA	Silverweed	*Potentilla anserina*	High Marsh	PAS
Northern Bayberry	*Myrica pensylvanica*	Marsh Border	MP	Soft-Stem Bulrush	*Scirpus validus*	Brackish Areas	SV
Olney Three Square	*Scirpus olneyii*	Brackish Areas	SO	Speckled Alder	*Alnus rugosa*	Brackish Areas	AR
Poison Ivy	*Toxicodendron radicans*	Marsh Border	TR	Spike Grass	*Distichlis spicata*	High Marsh	DS
Prairie Cordgrass	*Spartina pectinata*	Brackish Areas	SPE	Sweet Gale	*Myrica gale*	Marsh Border	MG
Purple Loosestrife	*Lythrum salicaria*	Brackish Areas	LS	Switchgrass	*Panicum virgatum*	Marsh Border	PV
Red Fescue	*Festuca rubra*	High Marsh	FR	Unknown Species	*Unknown Species*		UK
Reed Canary Grass	*Phalaris arundinacea*	High Marsh	PHA	Widgeon Grass	*Rupia maritima*	Pool	RM



GRASSES, RUSHES, and SEDGES

Grasses: Plants that have round, hollow or jointed stems. Their leaves are alternate, long, slender, and are encased by a sheath. Their flowers appear in spiklets.

Rushes: Grass-like plants with cylindrical, hollow stems, often growing in wet places.

Sedges: Grass-like plants with triangular stems, often growing in wet places.

BALTIC RUSH
Juncus balticus

Height: Medium; 1 ½ - 3 ft. tall. Soft stems are unbranched and round.

Leaves: Leaves are sheaths up to 5 in long and have a fine, pointed tip.

Flowers: Grow in clusters and arise from a single point on the upper half of the stem. Flowers late May into September.

Habitat: Brackish and irregularly flooded areas.

Value: Bases and roots provide food for muskrat. Seedheads and young plants provide food for wildfowl, upland gamebirds, marshbirds, and songbirds.

Similar Species: Soft rush (*Juncus effusus*) does not generally occur in brackish marshes, but may be present where there is freshwater influence. Black grass (*Juncus gerardii*) occurs in salt marshes, is smaller, and its stem bears conspicuous leaves.

BLACK GRASS
Juncus gerardii

Height: Low to medium; ½ – 2 ft.

Leaves: One or two long leaves (up to 8 inches).

Flowers: Dark-brown with yellowish stripes growing on an erect, branched stem. Flowers June into September.

Habitat: High marsh. Grows with *Spartina patens* or forms pure stands in cowlicked mats.

Value: Provides food for waterfowl and upland birds. Attracts marsh and songbirds. Roots may be eaten by muskrat.

Similar Species: Canada rush *(Juncus canadensis)* grows in fresher habitats and is taller (1-3 ft).

NARROW-LEAF CATTAIL
Typha angustifolia

Height: Medium to tall; 3-5 ft.

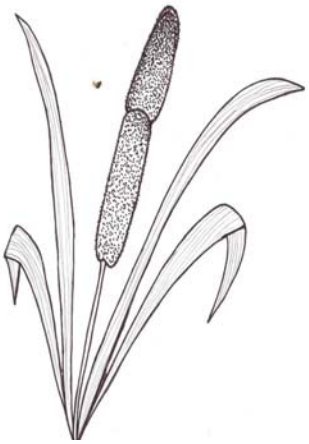
Leaves: Simple, elongate, linear, flattened and ascend along the stem. Usually less then 10 leaves.

Flowers: Grow at the top of a long stalk and arranged in two separate cylinder-shaped spikes (male spike above female spike separated by a space). Flowers late May through July.

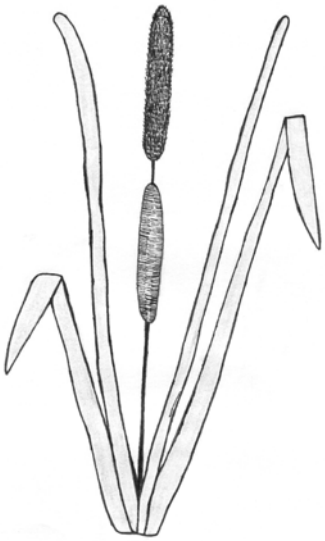
Habitat: Brackish areas. May be an indication of restricted freshwater drainage or increased stormwater runoff.

Value: Seeds and rootstock of both Narrow-Leaf Cattail and Broad-Leaf Cattail provide food for muskrat and beaver, and provide cover and nesting for wood ducks, marsh wren, and the red-winged blackbird. Cattail are good filters and provide great nutrient and metal uptake functions.

Similar Species: Broad-leaved cattail *(Typha latifolia)* grows taller (up to 9 ft), has wider leaves (up to 1 in) and has no space between male and female spikes.



Broad-Leaf Cattail
Typha latifolia



Narrow-Leaf Cattail
Typha angustifolia

COMMON REED
Phragmites australis

Height: Tall, erect; 4-14 ft. tall; usually forms dense stands.

Leaves: Grayish-green, close together and usually sticking out from stems at a large angle, up to 2 ft. long and 1 in. wide.

Flowers: Clusters ½ - 1 ft. long, often purple when young (as shown), usually whitish and fluffy when old. Flowers late July to October.

Habitat: Brackish and irregularly flooded areas. Also found at the marsh border/upland edge.

MOST STANDS OF THIS PLANT ARE EXOTIC AND INVASIVE!

How To Distinguish Native From Non-Native *Phragmites*

Stems: Non-native stems are typically green, but may have a little purple color along the nodes. Native stems have some chestnut or purple color where leaves are pulled back, exposing the stem. Native stems are often shiny. Black spots often appear on native stems late in the growing season.

Leaf Collars: Leaf collars on the non-native variety are always green, while leaf collars on the native variety may be purple.

Leaf Sheaths: On fall stems, the leaf sheaths on the non-native variety remain attached. Leaf sheaths on native stems are lost or very loosely attached so leaves drop off the native plants before the introduced plants. This is the best indicator based on phenology (seasonal changes) and morphology that distinguishes native or non-native varieties.

OLNEY THREE-SQUARE
(Also Chair-Maker's Rush)
Scirpus olneyii

Height: Medium to tall; usually around 3 ft. tall but can grow up to 7 ft. Stems stout and triangular shaped.

Flowers: Brown spikelets are blunt-tipped. Flowers June through September.

Habitat: Brackish and irregularly flooded areas. Also found at the marsh border/upland edge.

Value: Seeds and rhizomes provide food for many bird species.

PRAIRIE CORDGRASS/SLOUGH GRASS

(Also Rough Cordgrass)

Spartina pectinata

Height: Medium to tall; 3-6 ½ ft. tall. Stems round and hollow.

Leaves: Very long leaves; up to 4 ft., with very rough edges that taper to a threadlike tip. When dry, leaves may roll inward.

Flowers: Clusters; up to 1 ½ ft. long; usually have fewer than 20 branches, all similar lengths. The two lower scales of each spikelet are usually bristle-tipped.

Habitat: Brackish and irregularly flooded areas. Also found at the marsh border/upland edge.

Value: Rootstalks and seeds provide food for waterfowl, marshbirds, shorebirds, songbirds, and aquatic and terrestrial furbearers. Also provides nesting for the marsh wren.

Similar Species: Salt meadow cordgrass *(Spartina patens)* is usually found at lower elevations in the high marsh and is a much smaller version of this species. They are closely related and can hybridize to produce an intermediate form.

Courtesy of Alyson Eberhardt

SALT MARSH BULRUSH
Scirpus robustus

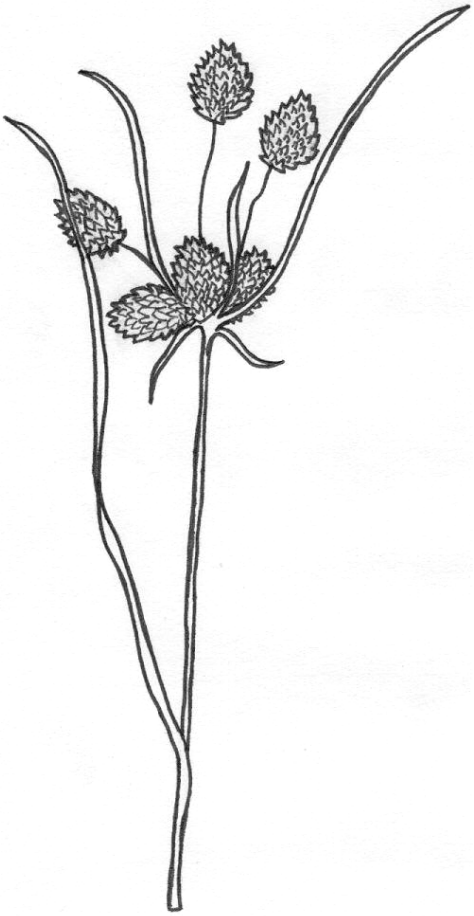
Height: Medium; 3-4 ft. tall. Stems short and triangular.

Leaves: Elongate, linear, and grasslike leaves taper to a long point.

Flowers: Mature spikelets usually reddish-brown, and the bristle tips of their scales recurved. Flowers July to October.

Habitat: Brackish and irregularly flooded areas. Also found at the marsh border/upland edge.

Similar Species: Salt marsh bulrush *(Scirpus maritimus)*.



SALT MEADOW CORDGRASS
(Also Salt Hay)
Spartina patens

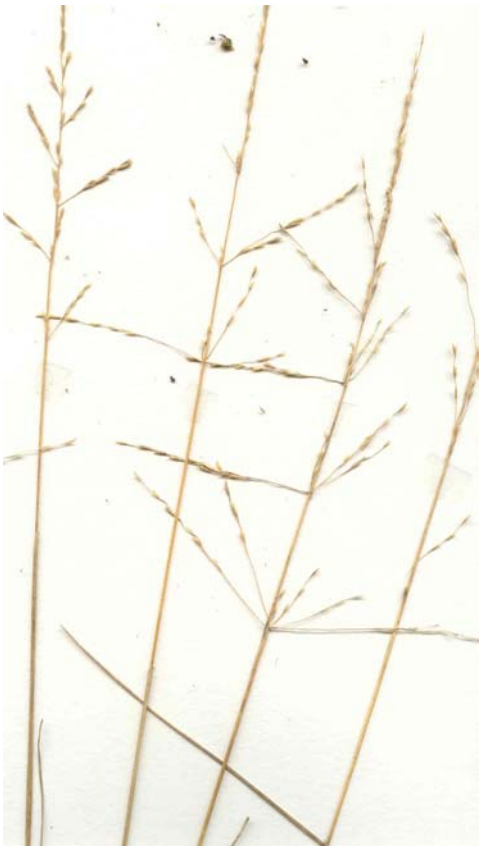
Height: Low to medium; 1-3 ft. tall.

Leaves: Very narrow linear leaves with margins rolled inwardly.

Flowers: Clusters to 8 in. long, usually with 3 to 6 branches. Flowers from late June into October.

Habitat: High marsh. Grows with *Juncus gerardii* or forms pure stands in cowlicked mats.

Value: Provides food for shellfish and other tide-water invertebrates, ducks, geese, shore and marsh birds, deer, and small mammals. Builds peat, creating flat meadows. Erosion and storm damage control. An important contributor to detritus.



SEASHORE ALKALI GRASS
Puccinellia maritima

Height: Low to medium; 8-32 in. tall. Stems are hollow and round.

Leaves: Two-ranked leaves are less than a ½ in. wide and often rolled inward. Leaves clasp stem. Forms small tufts.

Flowers: Spikelets with 4-11 flowers. Flowers June into September.

Habitat: Irregularly flooded areas of the high marsh.

SMOOTH CORDGRASS
Spartina alterniflora

Height: Low to tall; less than 1-6 ft.

Leaves: Long, smooth, tapering to a long point with inwardly-rolled tip. Leaf margins smooth or weakly rough.

Flowers: Grow in floral spikes up to 1 ft. long, usually with long, upright branches. Flowers July through September.

Habitat: Tall form found in the low marsh and creek edges. Short form found in irregularly-flooded areas of the high marsh; specifically in salt pannes.

Value: Entire plant used by birds, fish, shellfish, and other tide-water invertebrates and mammal species inhabiting a salt marsh. Seeds and roots are a significant food source for waterfowl and provide habitat value for birds such as willet. This plant has high value as an erosion-control defense and absorption of storm-wave energy. The dead and decomposing stems and leaves are a primary contributor to detritus in a salt marsh ecosystem.

SOFT-STEMMED BULRUSH
Scirpus validus

Height: Tall; usually 5 ft. tall, but can grow up to 10 ft.

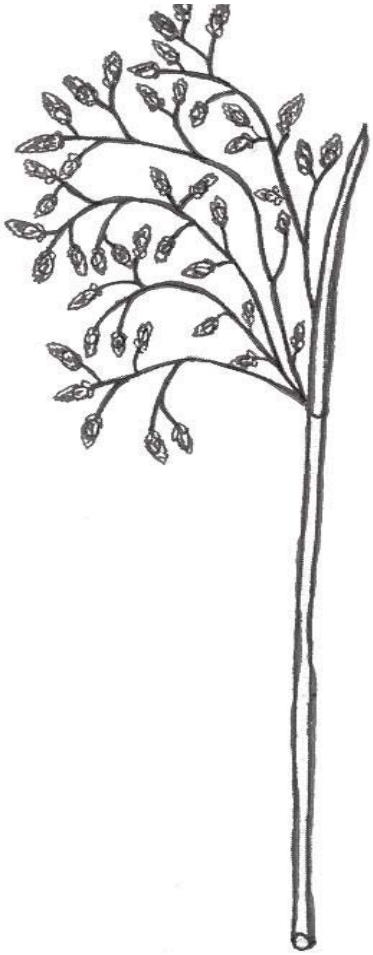
Leaves: Soft, round stem tapers to a point. Usually grayish-green with no apparent leaves.

Flowers: Many-stalked budlike spikelets covered by reddish-brown scales located immediately below the top of stem. Clusters mostly drooping, but not in higher salinity areas (see scanned specimen). Flowers June into September.

Habitat: Brackish areas and irregularly flooded areas. Also found at the marsh border/upland edge.

Value: The seeds are eaten by waterfowl.

Courtesy of Vic Ramey, 2001
University of Florida



SPIKE GRASS/SALT GRASS
Distichlis spicata

Height: Low; 8-16 in. tall, or usually less than 2 ft.

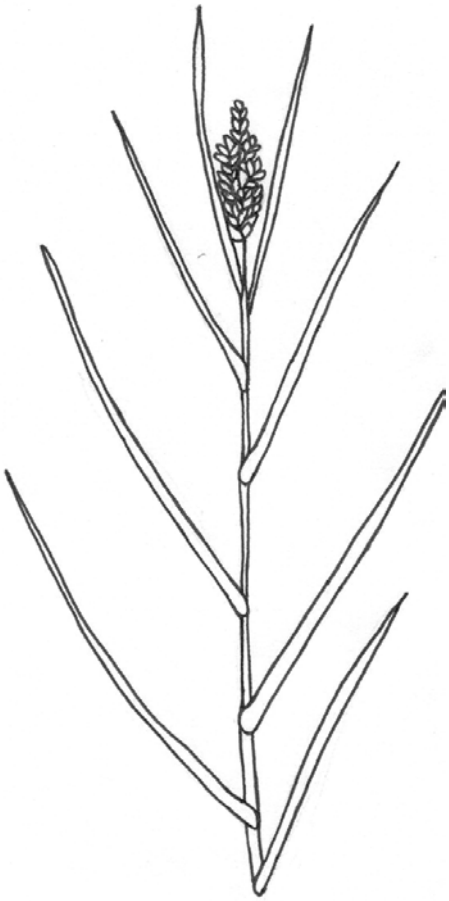
Leaves: Numerous linear, distinctly two-ranked leaves with smooth margins usually rolled inwardly and overlapping. Color on stems display a gradient from yellow to green.

Flowers: Yellow clusters flowering from August into October.

Habitat: Irregularly flooded areas of the high marsh. Often growing with *Spartina patens* in the high marsh, or in pure dense stands in wet depressions.

Value: The seeds, plants, and roots are eaten by ducks, geese, shore birds, small mammals, and deer.

Similar Species: Can be confused with black grass (*Juncus gerardii*) or salt meadow cordgrass *(Spartina patens)* when not in bloom. The leaf blades on spike grass, however, are longer and bluish-green in color and distinctly two-ranked or arranged nearly on opposite sides of the stem. The stem of spike grass is lighter in color when it emerges from each leaf.



SWITCHGRASS
Panicum virgatum

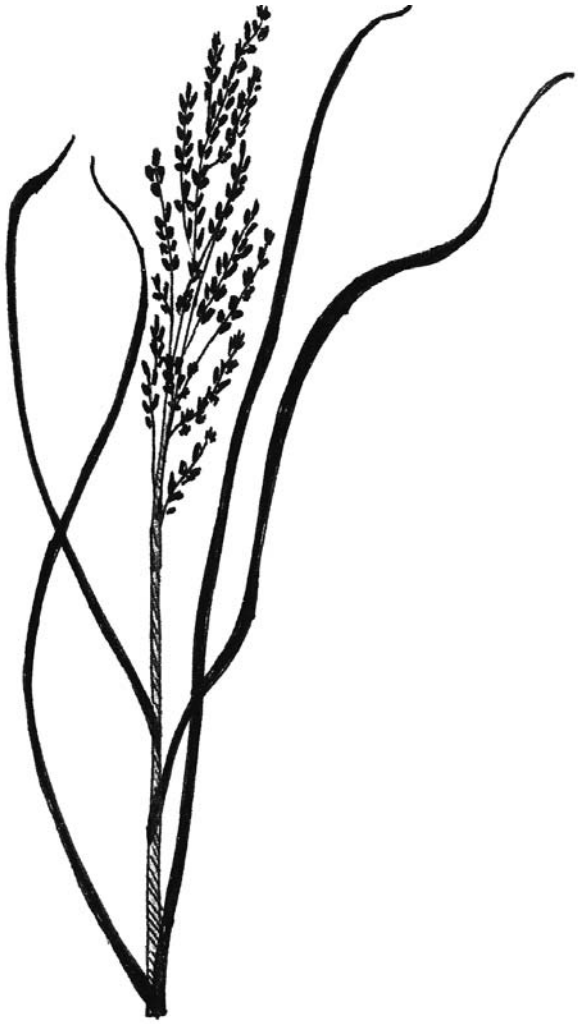
Height: Medium to tall; up to 6 ½ ft. forming dense clumps.

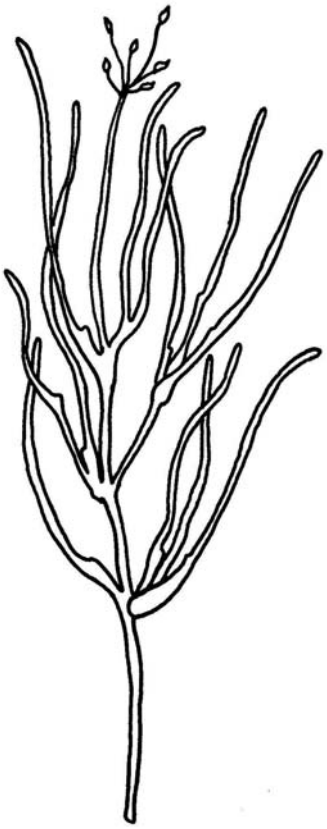
Leaves: Long, tapered, sometimes with few hairs at base.

Flowers: Many spikelets on slender stalks. Flowers July through September.

Habitat: Brackish and irregularly flooded areas. Also found at the marsh border/upland edge.

Value: Seeds and young foliage provide food for waterfowl, wild turkey, red-winged blackbird, sparrows. Plants provide food for muskrat, rabbit, and deer.





WIDGEON GRASS
Ruppia maritima

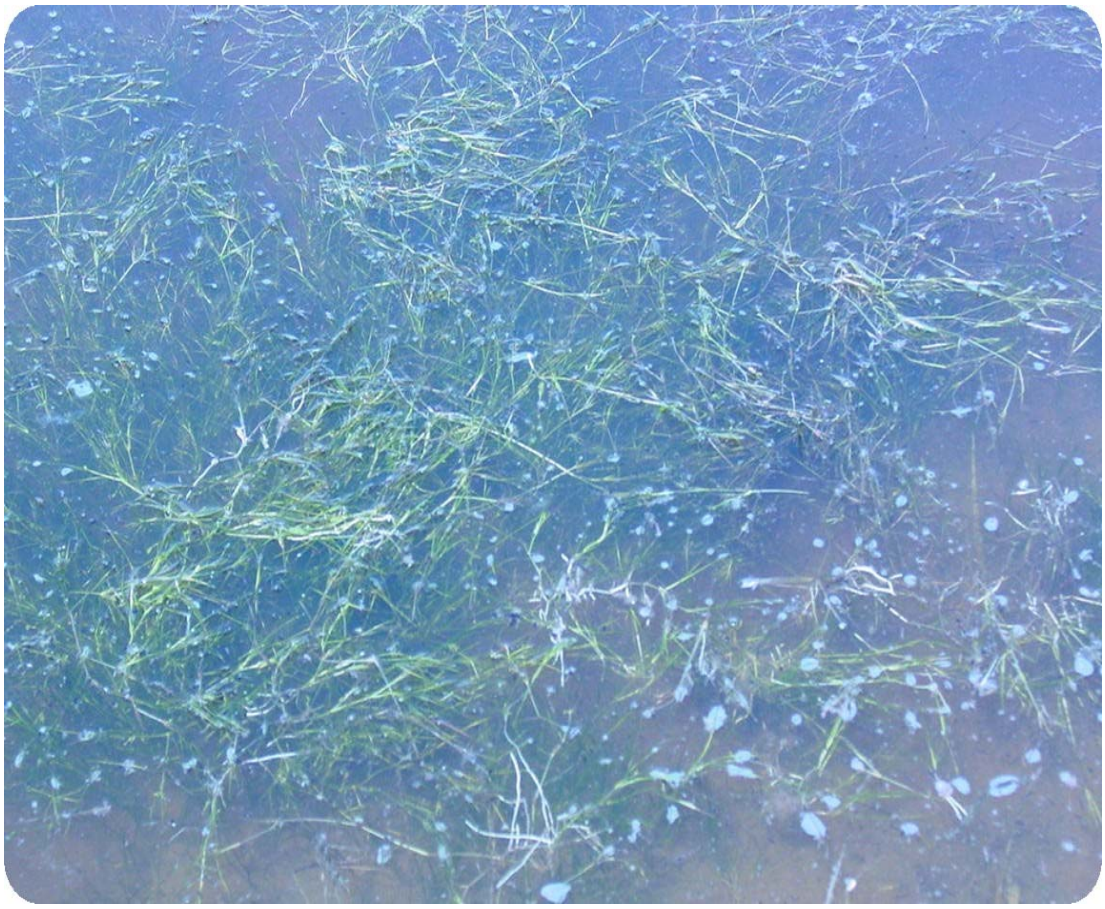
Height: Stems simple or branched and up to 3 ft. long.

Leaves: Threadlike leaves with leaf sheaths present, alternately arranged.

Flowers: On stalks. Fleshy fruit.

Habitat: Saline and brackish waters of pools; rarely fresh waters.

Similar Species: The leaves of horned pond weed (*Zannichellia palustris*) are also threadlike but oppositely arranged; its flowers and fruits are very short-stalked. Horned pond weed can thrive in inland fresh and alkaline waters; whereas widgeon grass is mostly found in salt waters.



FLOWERING PLANTS

Flowering Plants: Plants that produces both flowers and fruit. Their seeds are contained in the fruit.

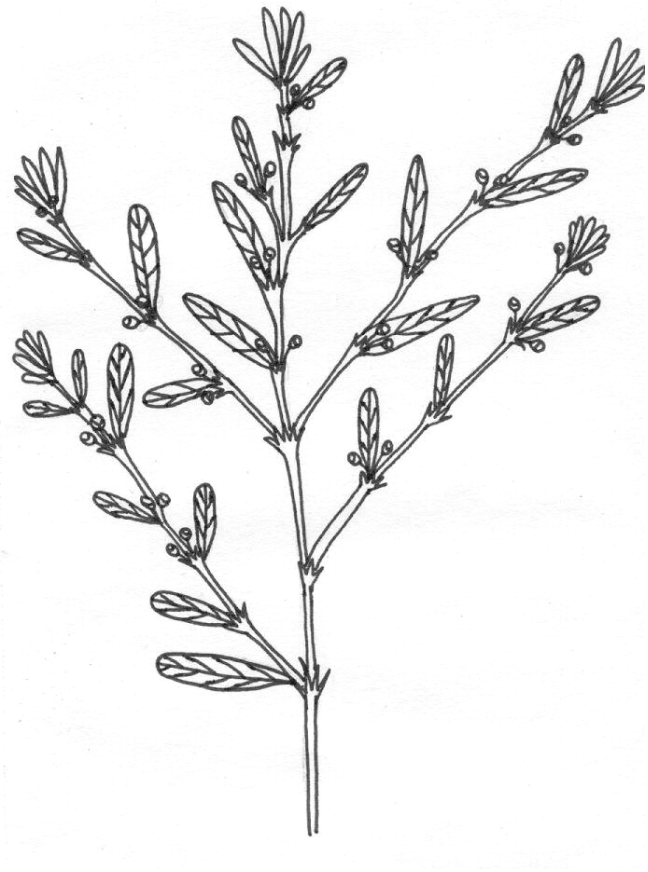
BUSHY KNOTWEED
Polygonum ramosissimum

Height: Low to medium, 1-3½ ft. tall. Stems jointed, sheathed above the joints, with many ascending branches.

Leaves: Alternate, linear or narrow lance-shaped yellow-green tapering at both ends.

Flowers: Small, yellow-green flowers sometimes with pink margins that grow on stalks and are dwarfed by its leaves. Flowers July through October.

Habitat: Marsh border/upland edge. Mostly found in inland (Great Bay) marshes.



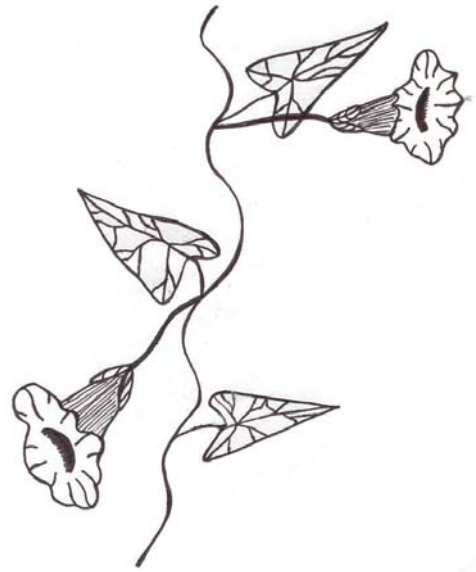
HEDGE BINDWEED
Convolvulus sepium

Height: Smooth, twining vine, growing up to 10 ft. long.

Leaves: Triangular-shaped.

Flowers: Funnel-shaped flowers, pinkish with white stripes. Resembles morning glory. Flowers mid-May into September.

Habitat: Brackish areas and the marsh border/upland edge.



JEWELWEED
(Also Spotted-Touch-Me-Not)
Impatiens capensis

Height: Medium to tall, 2-5 ft.

Leaves: Simple, alternate, course-toothed, fleshy leaves.

Flowers: Few to several orange or orange-yellow three-petaled tubular flowers with reddish brown spots and curved spur at end. Flowers June through September.

Habitat: Brackish areas and the marsh border/upland edge.

Value: Crushed flowers and leaves can be used to stop the itch associated with poison ivy.

PERENNIAL SALT MARSH ASTER
Aster tenufolius

Height: Medium; 6 in. to 2 1/4 ft. tall.

Leaves: Fleshy, linear, sometimes narrowly lance-shaped leaves, few in number. Upper leaves smaller than lower leaves.

Flowers: Pale purple, blue or white daisy-like flowers in heads with 15-25 petal-like rays. Flowers August through October.

Habitat: Irregularly flooded areas of the high marsh. Also found in brackish areas, or the marsh border/upland edge.

Similar Species: Annual salt marsh aster *(Aster subulatus)* occurs in similar habitats, but its flower heads are smaller, its flowers have very short purplish rays, and it is an annual with a short taproot.

Photos courtesy of Alyson Eberhardt

PURPLE LOOSESTRIFE
Lythrum salicaria

Height: Medium; 2-6 ft. tall. Square, almost woody stems.

Leaves: Opposite, lance-shaped, often with heart-shaped bases somewhat clasping stem sometimes in whorls of threes.

Flowers: Purplish and on a spike. Flowers from June through August.

Habitat: Brackish areas and the marsh border/upland edge.

THIS PLANT IS EXOTIC AND INVASIVE!

RUGOSA ROSE
Rosa rugosa

Height: Medium; 3-5 ft. tall.

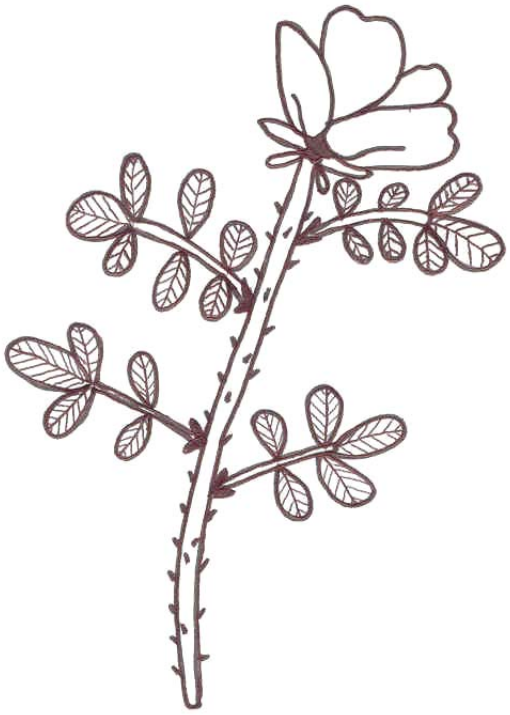
Leaves: Dark green shiny leaflets. Upper branches covered with dense bristles.

Flowers: Large, pink, purple, or white flowers from June through October. Produce orange to red fruit, 1 inch diameter, from mid-summer through fall.

Habitat: Marsh border/upland edge.

Value: Rose hips provide food for birds and wildlife, and the plant is also a fragrant species at the coast.

Similar Species: Swamp Rose *(Rosa palustris)* which grows in tidal fresh marshes, inland forested and shrub wetlands. Swamp Rose has smaller and more numerous flowers and fruit.



SALT MARSH GERARDIA
Agalinis maritima

Height: Low to medium; often 4 in. tall but sometimes up to 14 in.

Leaves: Mostly opposite, fleshy or succulent leaves.

Flowers: Small pink to purple five-lobed bell-shaped flowers grow in pairs of 2 to 5, and flower from the bottom up. Flowers mid July to October.

Habitat: Irregularly flooded areas of the high marsh; specifically in salt pannes.

THIS IS A RARE & THREATENED PLANT OF NEW HAMPSHIRE.

According to the N.H. Natural Heritage Program, salt marsh gerardia is rare and threatened in New Hampshire. Of 18 locations identified since 1980, only 15 have been verified today. Populations in the state range from just a few plants to more than 1,000 at the best locations.

It is rare in New Hampshire because it is near the northern extent of its range. A short growing season, colder temperatures, and habitat loss reduce the plants' ability to thrive in New Hampshire.

SEA LAVENDER
(Also Marsh Rosemary)
Limonium nashii

Height: Low; 8-24 in. tall.

Leaves: Leaves stemming from the base of the plant are lance-shaped to spoon-shaped, and taper at the base.

Flowers: Numerous, small lavender five-lobed tubular flowers on a single stalk. Widely branched. Flowers July through September; its second growing season (biennial). This plant is an annual.

Habitat: Irregularly flooded areas of the high marsh.

SEASIDE ARROW GRASS
Triglochin maritimum

Height: Low to medium. Leaves usually less than 1 ft. tall, with flowering stems taller.

Leaves: Fleshy leaves, up to 20 in. long, with sheaths. Very fragrant when crushed (smells like the herb cilantro).

Flowers: Numerous small green flowers. Flowers May through August.

Habitat: Irregularly flooded areas of the high marsh.

Similar Species: The leaves of *Plantago maritima* (seaside plantain) are similar but lack leaf sheaths and form a basal rosette. Seaside plantain also grows in shallow pannes on the high marsh.

SEASIDE GOLDENROD
Solidago sempervirens

Height: Medium to tall; usually 3-4 ft.

Leaves: Alternate, thick, fleshy. Lance-shaped or oblong. Decreasing in size toward the top of the stem.

Flowers: Numerous yellow flowers grow on stalks. Flowers August through October.

Habitat: Irregularly flooded areas of the high marsh. Also found at the marsh border/upland edge.

Value: The seeds and foliage are occasionally eaten by some song birds and small animals.

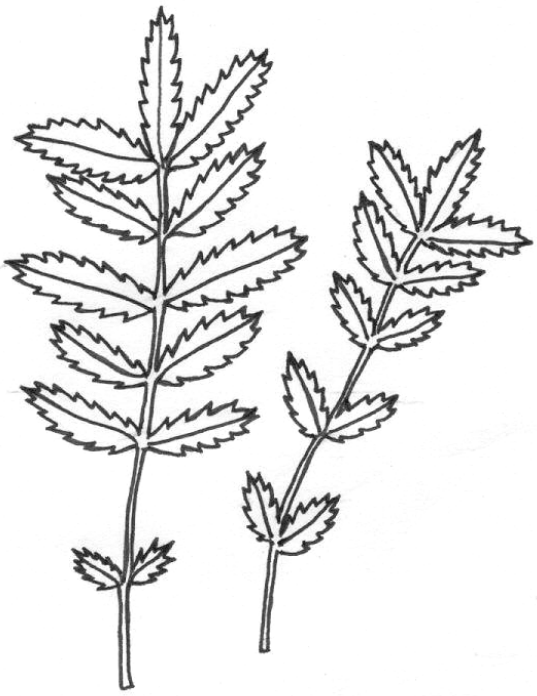
SILVERWEED
Potentilla anserina

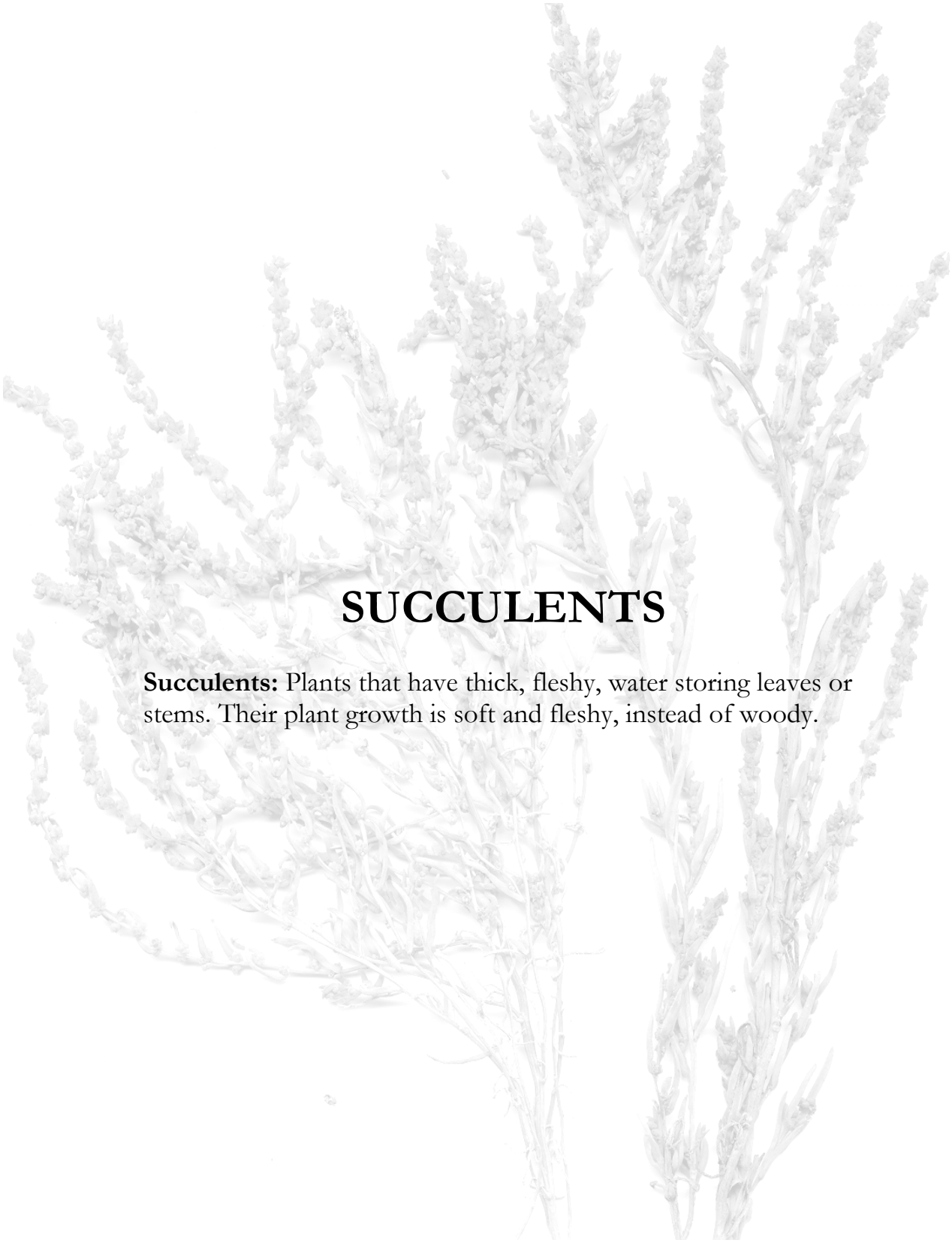
Height: Low, creeping; up to 1 ft. tall.

Leaves: Basal leaves with seven or more sharply toothed leaflets that are silver on underside.

Flowers: Yellow, 5-petaled on a leafless stalk. Flowers May through September.

Habitat: Irregularly flooded areas of the high marsh. Also found at the marsh border/upland edge.





SUCCULENTS

Succulents: Plants that have thick, fleshy, water storing leaves or stems. Their plant growth is soft and fleshy, instead of woody.

ATLANTIC SEA-BLITE
Suaeda linearis

Height: Low to medium; 8-32 in. tall.

Leaves: Fleshy leaves are usually flat on one side and rounded on the other. Upper leaves smaller than bottom leaves.

Flowers: Tiny, greenish, in small clusters at the base of many upper leaves. Flowers August to October.

Habitat: Irregularly flooded areas of the high marsh; specifically in salt pannes.

Similar Species: Another species of sea-blite (*Suaeda maritima*) is lower growing, weakly-erect or creeping (rarely over 12 in. tall); its leaves are rounder, pale green and usually whitened.

COMMON GLASSWORT
Salicornia europaea

Height: Low groundcover; up to 1 ½ ft. tall. Fleshy, conspicuously jointed stems upright or sprawling; often bright red in autumn.

Leaves: Spikes usually less than $^{3}/_{16}$ in. in diameter, the sections between their joints as long as thick, or longer.

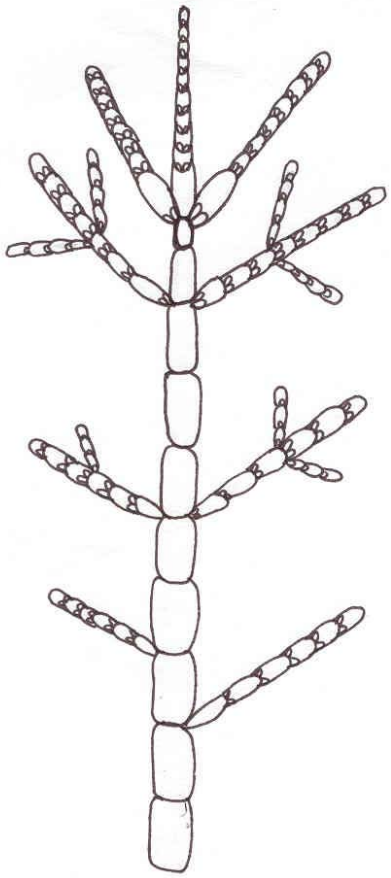
Habitat: Irregularly flooded areas of the high marsh; specifically in salt pannes or disturbed areas.

Value: Stems are edible and serve as food for waterfowl, geese and ducks. Also edible to humans when green.

Similar Species: Bigelow's Glasswort *(Salicornia bigelovii)* has sharp-tipped scales below the spikes, thicker spikes, and does not have creeping lower branches.

Common Glasswort during summer

Common Glasswort during autumn



MARSH ORACH
(Also Spearscale)
Atriplex patula

Height: Low to medium; up to 3 ½ ft. long or tall, but usually less than 1 ft.

Leaves: Triangular shaped and fleshy.

Flowers: Very small green flowers grow on ball-shaped clusters on open, nearly leafless spikes at upper leaf nodes. Flowers July to November.

Habitat: Irregularly flooded areas of the high marsh.

Similar Species: Goosefoot *(Chemopodium viburnum)* is sometimes found at upper borders of salt and brackish marshes. It has egg-shaped leaves that are irregularly toothed.

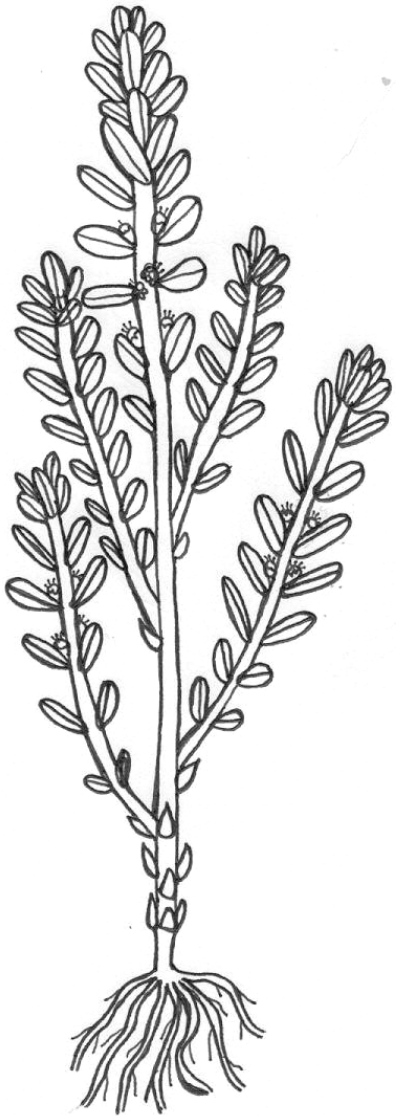
SEA MILKWORT
Glaux maritima

Height: Low growing, erect, or creeping; up to 14 in. tall. Stems simple or branched.

Leaves: Fleshy, narrowly oblong to linear. Round or blunt-tipped, opposite.

Flowers: Small five-lobed pink, white, or red flowers. Petals joined at base to form a short tube.

Habitat: Irregularly flooded areas of the high marsh; specifically in salt pannes.



SEASIDE PLANTAIN
Plantago maritima

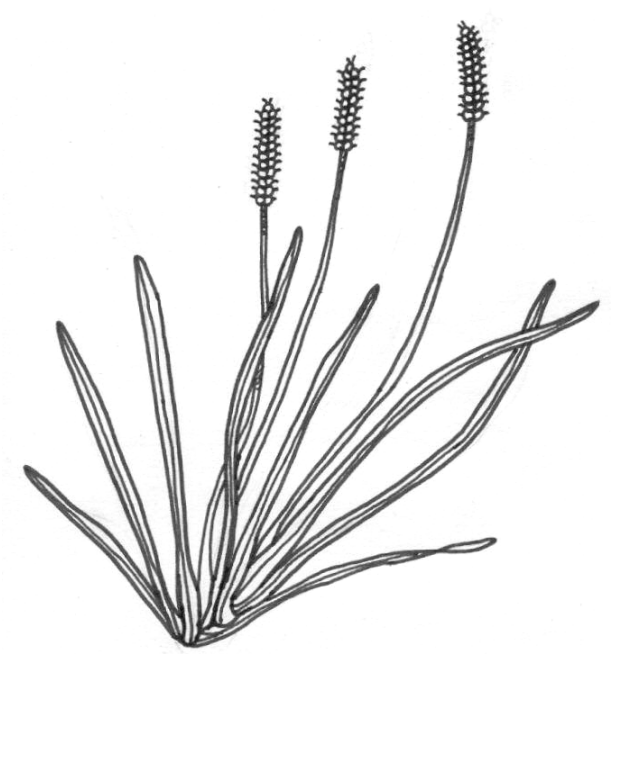
Height: Low; up to 1 ft. tall.

Leaves: Fleshy leaves originating from the base of the plant and are linear to narrow-shaped, tapering to a point.

Flowers: Several to many small whitish or greenish flowers that grow on a separate stalk, up to 1 ft. long.

Habitat: Irregularly flooded areas of the high marsh.

Similar Species: Fleshy basal leaves of seaside arrow grass (*Triglochin maritimum*). This plant is much taller in height and has rounded leaves, while the leaves of seaside plantain tend to be triangular in shape. Seaside arrow grass also smells like the herb cilantro, whereas seaside plantain does not.



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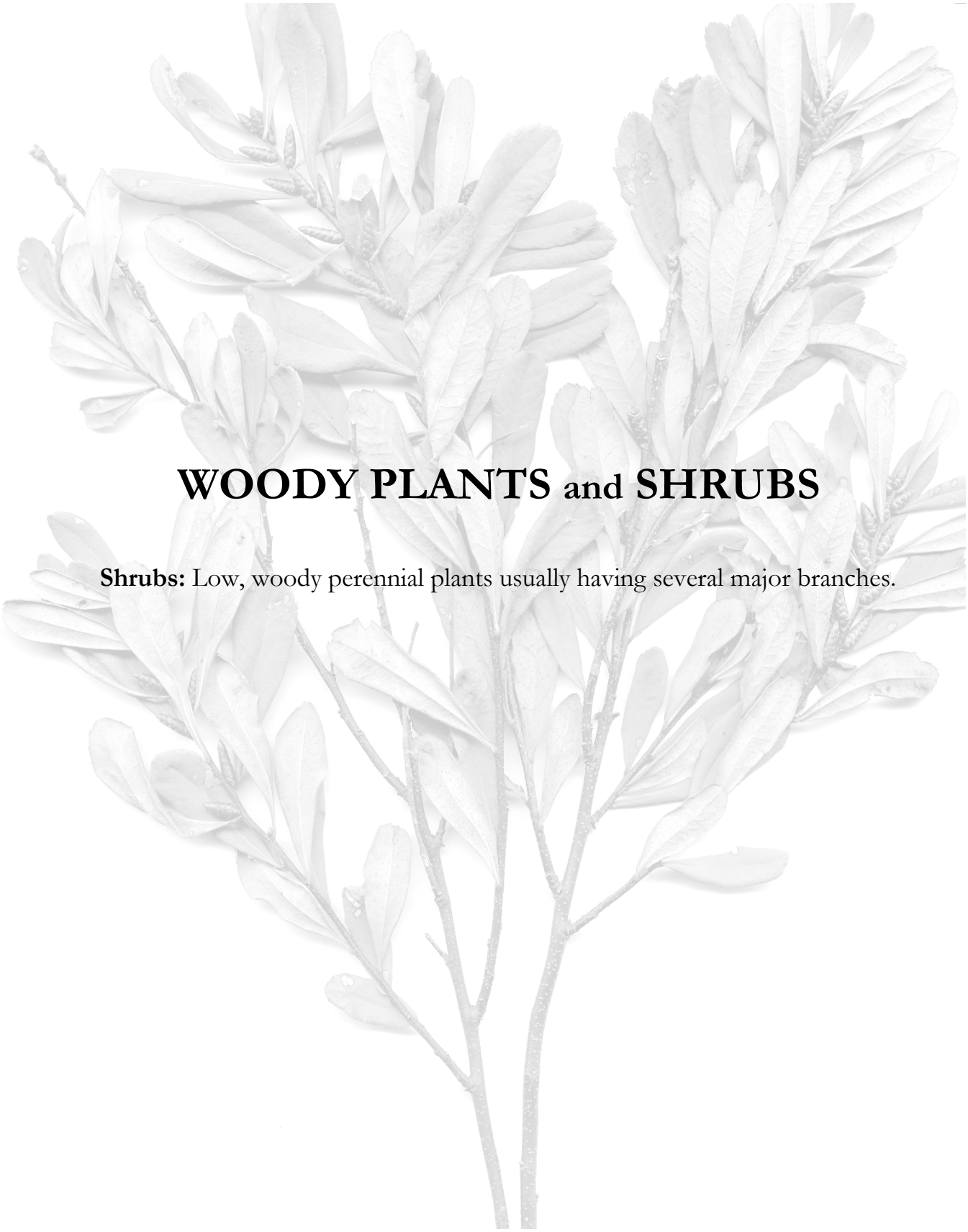


WOODY PLANTS and SHRUBS

Shrubs: Low, woody perennial plants usually having several major branches.

BAYBERRY
Myrica pensylvanica

Height: Low to medium; 3-5 ft. tall.

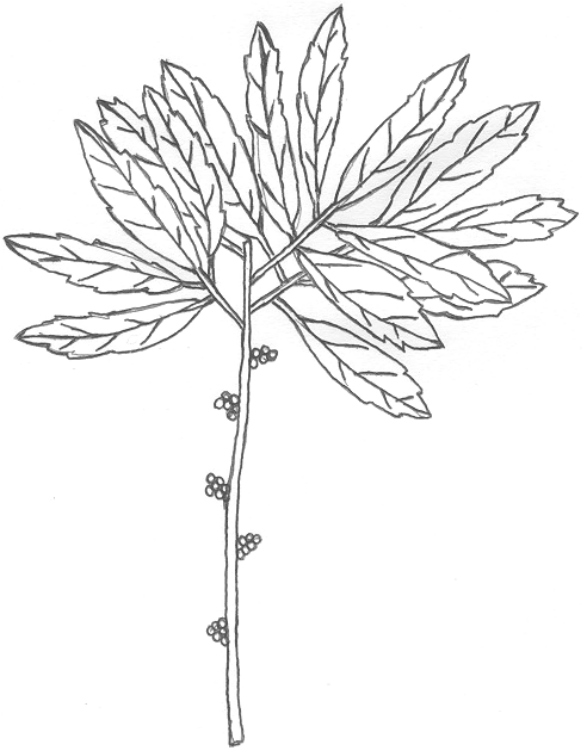
Leaves: Oblong to lance-shaped to egg-shaped.

Flowers: Waxy ball-like fruits that often persist through winter and grow on clusters below leafy twigs.

Habitat: Marsh border/upland edge, inland (Great Bay) marshes, and tidally-restricted marshes.

Value: Provides cover and food for songbirds, waterfowl, shorebirds, and marshbirds. The berries are the source of the aromatic wax used in making bayberry-scented candles and some industrial deodorants.

Similar Species: Can be confused with sweet gale *(Myrica gale)* but the leaves of bayberry are generally broader than sweet gale and the twigs of sweet gale bear nutlets/flowers at their tip.



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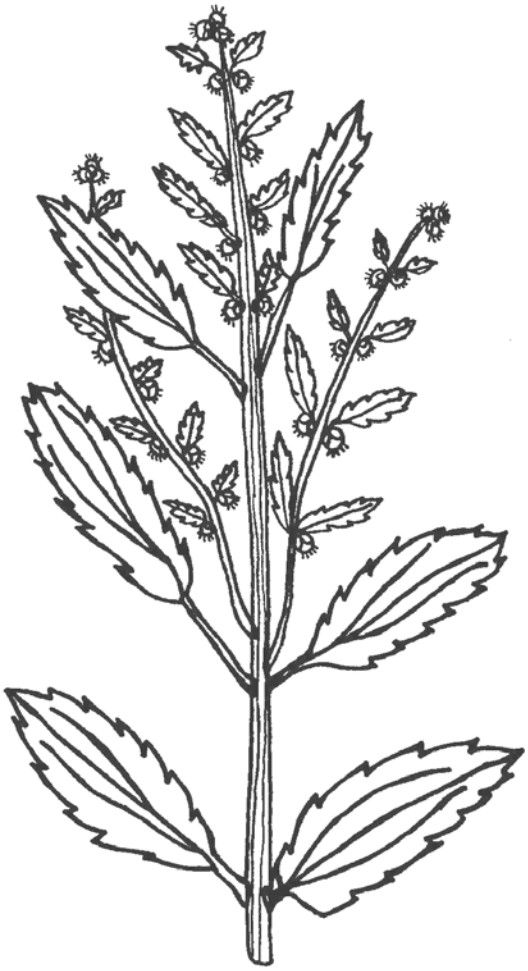
MARSH ELDER
(Also High-Tide Bush)
Iva frutescens

Height: 2–12 ft., usually less than 6 ft. Stems hairy above and smooth below. Twigs branched with vertical lines.

Leaves: Simple, coarse-toothed, fleshy. Egg-shaped to lance-shaped. Oppositely arranged except for top-most leaves.

Flowers: Small greenish-white in heads on erect leafy spikes.

Habitat: Marsh border/upland edge and on spoil banks next to ditches.



MEADOWSWEET
Spiraea latifolia

Height: Low to medium; 3-5 ft. tall.

Flowers: Pyramidal terminal cluster of small, white or pale pinkish flowers.

Habitat: Marsh border/upland edge.

Similar Species: Resembles steeplebush *(Spiraea tomentosa,)* but has reddish-brown stems and pale colored flowers. The underside of steeplebush leaves are whitish, while meadowsweet are not.

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POISON IVY
Toxicodendron radicans

Height: Erect deciduous shrub, trailing vine, or climbing plant. Shrub can grow up to 6 ft. tall, but this plant is taller as a vine.

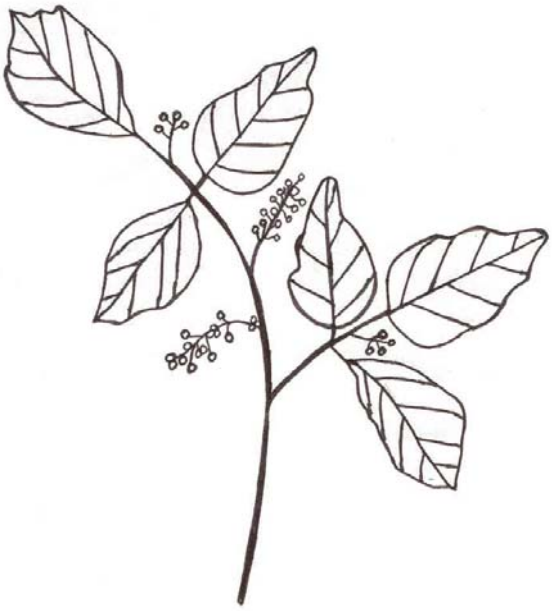
Leaves: Long-stalked compound leaves divided into three leaflets, each leaflet having a longer stalk than the side leaflets.

Flowers: Small yellowish flowers with five petals borne on lateral clusters. Fruits small grayish white balls also borne on clusters. Flowers May through July.

Habitat: Marsh border/upland edge.

CAUTION!

THIS PLANT CAN CAUSE SEVERE SKIN IRRITATION.
DO NOT TO TOUCH ANY PART OF THIS PLANT.



SWEET GALE
Myrica gale

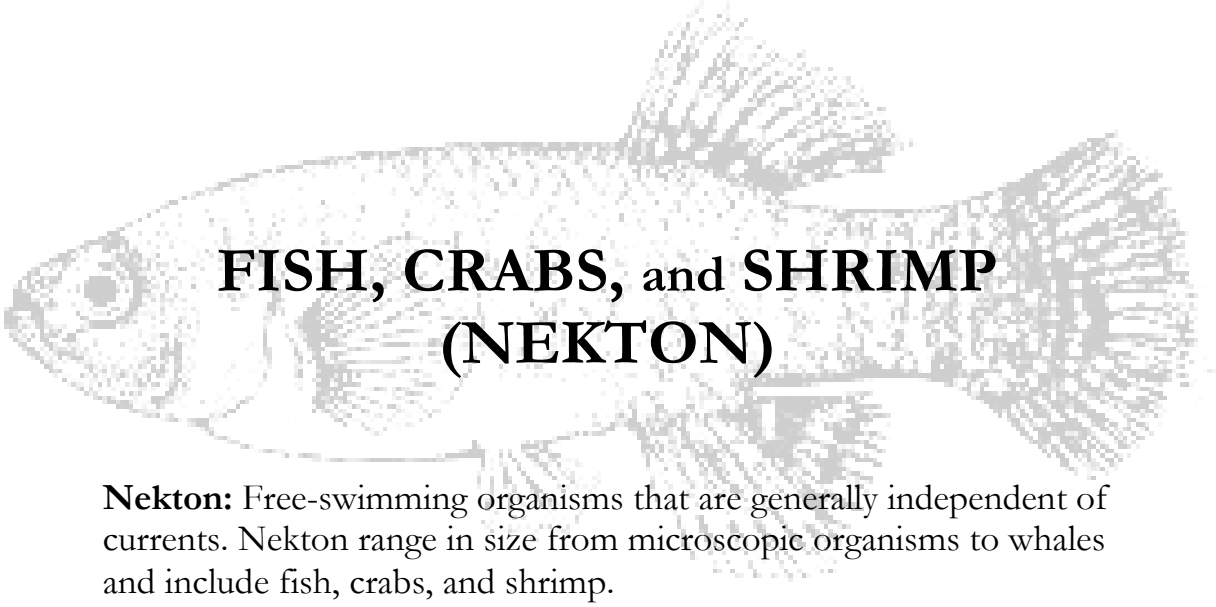
Height: Low to medium; up to 5 ft. tall.

Leaves: Oblong, lance-shaped, with tapering wedge-shaped bases. Fragrant when crushed.

Flowers: Grow in dense clusters at the top of the previous year's twigs. Flowers April into June.

Habitat: Marsh border/upland edge and tidally-restricted marshes.

Similar Species: Can be confused with bayberry but leaves of sweet gale are smaller and twigs bear nutlets/flowers at their tips.



FISH, CRABS, and SHRIMP (NEKTON)

Nekton: Free-swimming organisms that are generally independent of currents. Nekton range in size from microscopic organisms to whales and include fish, crabs, and shrimp.

Fish: Cold-blooded aquatic vertebrates whose bodies are covered with scales and they breathe through gills.

Crabs: Crustaceans that have eyes on short stalks and broad, flattened, shelled bodies, called a carapace.

Shrimp: Small, slender crustaceans with long tails and single pairs of pincers.

MUMMICHOG
Fundulus heteroclitus

Coloration

- **Male (Non-Breeding Season):** Dark green to steel-blue with white or yellow mottling and narrow, irregular silvery bars on the side. Underside is white or pale yellow. Dorsal and caudal fins are dark green or dusky with pale mottling. Sometimes there is a dark eyespot on the rear of the dorsal fin.
- **Male (Breeding Season):** Pigmentation is intensified. Back and upper sides darkening almost to black, while yellow of underside becomes more brilliant and body takes on a steel-blue reflection.
- **Female:** Much paler than the male. Uniform olive to bottle-green, dark above and lighter below. Do not have definite markings though their sides often show faint and indefinite cross bars of a deeper tone of the same hue. Fins much paler.
- **Juvenile:** Both sexes have dark transverse bars on their sides.

Male mummichog (top) and female mummichog (bottom). Courtesy of Alyson Eberhardt.

Other Descriptors

- **Body:** Chunky/stout. Thickest just in back of the pectoral fins; tapering to the tail.
- **Top of Head:** Flat between the eyes.
- **Snout:** Blunt.
- **Mouth:** Small and at tip of snout. Does not gape back to eye.
- **Eyes:** Large.
- **Fins:** No spines.
- **Scales:** Large, plate-like and rounded.
- **Dorsal (Top) Fin:** Behind the middle of the body and over anal fin.
- **Pectoral Fin:** Broad and rounded.
- **Tail (Caudal) Fin:** Rounded.

Male

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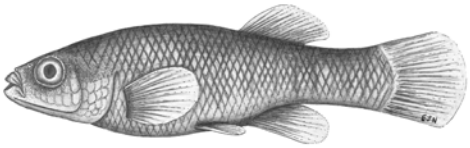
Female



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Average Length

- **Adults:** 45 to over 100mm.
- **Juvenile:** Under 45mm.

Habitat

- Shallow areas of muddy pannes, open pools, creeks, and ditches of salt and brackish marshes. They are resistant to lack of oxygen, presence of carbon dioxide, and unfavorable surroundings and can thus survive very poor water quality. With the ebb of the tide they are trapped in pools and pannes where they remain until the next tide if the water remains. If the pools dry, they will burrow into the mud. During the winter, they stay at the bottom of deeper pools and creeks, in approximately 6-8 in. of mud.

Feeding Habits

- This omnivorous fish feeds on small invertebrates, diatoms, algae, or detritus.

Similar Species

Striped killifish *(Fundulus majalis)*. Female killifish are fairly easy to identify since it is the only fish with horizontal stripes/bars (developed at about 30mm or so). The real trick is being able to identify the male killifish and the female mummichog. The male killifish has darker, more pronounced vertical bars and its head is more pointy and streamlined than the male mummichog. Killifish also have scales in front of their eyes, whereas the mummichogs do not. These scales are a characteristic present in both sexes for each species, (i.e. both the male and female *F. majalis* have preorbital scales, *heteroclitus* does not).

STRIPED KILLIFISH
Fundulus majalis

Coloration

- **Color:** Paler than the Mummichog.
- **Male:** Vertical bars/stripes throughout life. Stripes increase from approximately 7-12 when young, to approximately 14-20 when adult. More brilliant during breeding season, back turning almost black and the underside turning orange or golden. Fins bright yellow.
- **Female:** Original vertical bars transformed with growth into 2-3 horizontal stripes on each side. Upper stripe is uninterrupted from gill opening to tail. Lower stripe is in two segments. One is close behind the pectoral to above the ventral. The other is backward to close behind the rear edge of the anal fin. Olive-green above; white below.
- **Both Sexes:** Have a silvery appearance and can have a black spot on the last ray of the dorsal fin.

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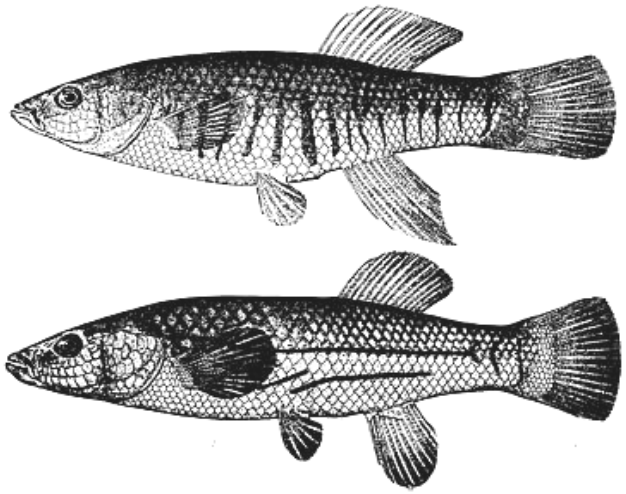
Other Descriptors

- **Body:** More slender than the Mummichog and tapers toward head and tail.
- **Top of Head:** Upper surfaces of their heads flattened.
- **Snout:** Longer and more pointy than the Mummichog.
- **Mouth:** Terminal or protruding lower jaw.
- **Scales:** Preorbital scales (scales in front of the eyes). This is a major distinguishing feature from the Mummichog.
- **Tail (Caudal) Fin:** Rounded.
- Lack of dorsal spine and lateral line.



Copyright Northeast Fisheries Science Center

Top: Male; Bottom: Female

Average Length

- Larger than the Mummichog. Up to 130mm.

Habitat

- Similar to the Mummichog; though keeps more strictly to salt water and found more often along open beaches.

Feeding Habits

- Exploit a larger niche than *Fundulus heteroclitus*. Eats small animals, mollusks, crustaceans, fish, insects, and insect larvae.

Similar Species

- Mummichog *(Fundulus heteroclitus)*. Female killifish is fairly easy to identify. It is the only fish with horizontal stripes/bars (developed at about 30mm or so). The real trick is being able to identify the male killifish and the female mummichog. The male killifish has darker, more pronounced horizontal bars and its head is more pointy and streamlined than the female mummichog. The male killifish also has scales in front of its eyes, whereas the female mummichog does not.

ATLANTIC SILVERSIDE
Menidia menidia

Coloration

- **Backside/Top:** Translucent gray-green.
- **Underside/Bottom:** Rounded white underside.
- **Side:** Upper parts of sides thickly speckled with dark brown. Silver band outlined above by a narrow black stripe running along each side, from close behind the pectoral fin to the base of the caudal fin.

Courtesy of Alyson Eberhardt

Other Descriptors

- **Body:** Slender/Thin.
- **Top of Head:** Short head.
- **Mouth:** Small.
- **Eyes:** Large.
- **Scales:** Large scales with smooth margins.
- **Dorsal (Top) Fin:** First: 3-7 spines, originates halfway between the tip of the snout and base of the caudal fin. Second: 7-10 spikes and originates over the middle of the anal fin.
- **Tail (Caudal) Fin:** Moderately forked.

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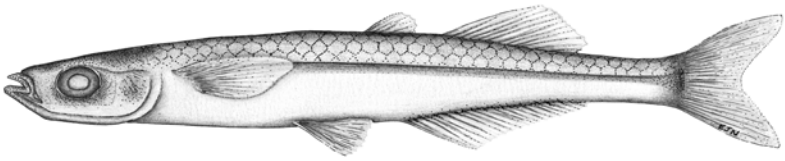
Average Length

- Up to 150mm.

Habitat

- Sandy, gravelly shores. Inner bays, river mouths, brackish waters swimming among the submerged grasses. Rarely found in water deeper than a few feet in summer, but will descend to greater depths in the winter to avoid the cold temperatures of the water.



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Feeding Habits

- This omnivorous fish feeds on zooplankton, copepods, shrimp, amphipods, young squid, worms, and even insects and algae.

NINESPINE STICKLEBACK
Pungitius pungitius

Coloration

Courtesy of Alyson Eberhardt

- **Backside/Top:** Dull olive, brown, black.
- **Underside/Bottom:** Silver.
- **Side:** Upper parts of sides faintly barred or darker blotched.
- Color varies with season of the year, state of sexually maturity, and with color of bottom on which the fish is living. Those on dark mud are darker; those on bright sand are paler.
- All become more brilliant during breeding season. A reddish tint appears under the head, underside turns greenish, black dots develop here and there over entire body.

Other Descriptors

- **Body:** Slender.
- **Scales:** None.
- **Dorsal (Top) Fin and Anal Fin:** Former stands above latter – alike in form tapering from front to rear. Anal preceded by a single stout recurved spine.
- **Tail (Caudal) Fin:** Weakly rounded.

Average Length

- Up to 76 mm.

Habitat

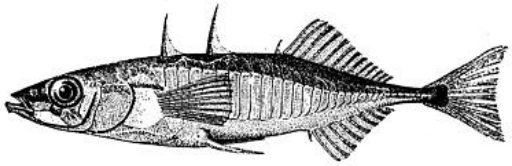
- Estuaries, salt marshes. Uses spines as weapons of offense and defense.

Feeding Habits

- This omnivorous fish feeds on invertebrates, small fish, fish eggs, copepods, isopods, shrimp.

OTHER STICKLEBACKS

THREESPINE STICKLEBACK
Gasterosteus aculeatus



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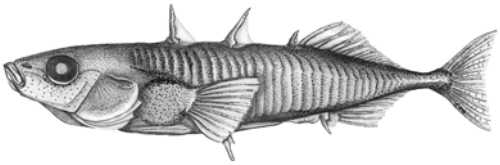
FOURSPINE STICKLEBACK
Apeltes quadracus



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Quick Key to Identifying Sticklebacks

- **Dorsal Spines:** 7 or more = Ninespine Stickleback
- **Boney Plates:** None on upper part of the sides, but bony ridge on either side of abdomen (triangular in cross section) = Fourspine Stickleback
- **Flat Belly/Sharp Back:** Fourspine Stickleback
- **Many Bony Plates:** (28 or more) plates on each side = Threespine Stickleback

HERRING
Alosa spp.

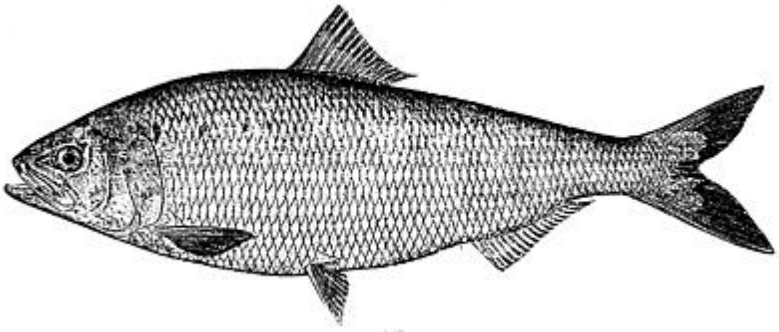
Coloration

Copyright Northeast Fisheries Science Center

- **Backside/Top:** Iridescent deep steel blue or greenish blue on the backside/top with green reflections.
- **Underside/Bottom:** Iridescent silver.
- **Side:** Iridescent silver.
- **Gill Covers:** Golden or brassy gloss.
- **Ventral and Anal Fins:** Translucent white.
- **Pectoral Fins:** Dark at base and along upper edge.
- **Caudal and Dorsal Fins:** Dark grayish, shading into green or blue.

Other Descriptors

- **Body:** Flat, elongate and compressed. Underside is sharp-edged.
- **Snout:** Moderately pointed.
- **Mouth:** Large jaw angled upward. Teeth on lower jaw in young.
- **Eyes:** Large.
- **Fins:** Blue-black spot near edge of gill openings, with one or two smaller spots after it.
- **Scales:** Large and loosely attached. Rear margins are rounded.
- **Dorsal (Top) Fin:** Small. Stands over much smaller ventrals and originates about midway the length of the body.
- **Tail (Caudal) Fin:** Deeply forked with lobes.
- **Anal Fin:** Longer than dorsal fin.



Average Length

- Approximately 200 mm.

Habitat

- Schooling fish found in open waters of the ocean and large rivers, reservoirs and lakes.
- Likes cooler waters and tends to stay in deep water in the open water column.

Feeding Habits

- Young feed on small crustaceans and aquatic insects in fresh water.
- In salt water, they feed on shrimp.
- Adults feed mainly on plankton.
- Diet includes algae, zooplankton, mayflies, mollusks, fish eggs, and fish.

Similar Species

- Herring can be Alewife *(Alosa pseudoharengus)* or American Shad *(Alosa sapidissima.)*

GREEN CRAB
Carcinus maeneus
(Also European Shore Crab)

THIS CRAB IS EXOTIC & INVASIVE!

Since making their way from Europe to the East Coast of the United States in the 18th century (and more recently to the West Coast). They have caused widespread problems by taking over the range and habitat of native blue crabs.

Description

- **Color:** Not usually green in color, but rather mottled. Abdomen contains yellow patches.
- **Mottling:** May change from green to orange to red.
- **Carapace (Abdomen) Shape:** Wider at head, tapering.
- **Spines on Carapace (Abdomen):** 5 spines on either side.
- **Legs:** Unbanded but spotted.
- **Hind Walking Legs:** Relatively flat.

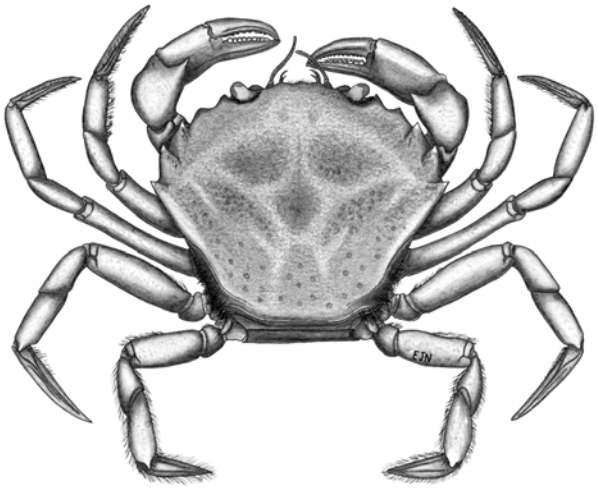
Copyright Fisheries & Oceans Canada

Average Length

- **Growth:** Rapid. They may molt as frequently as every 30 days, increasing their size by around 30 percent.
- **Native Range:** Up to 86 mm.
- **North America:** Up to 110 mm.

Habitat

- Marine embayments and estuaries, where they migrate between the subtidal and intertidal zone.
- Seagrass areas yet also non-vegetated clean sandy substrate, or mud.
- Do not live on exposed, rocky or sandy open coastlines.



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Feeding Habits

- Omnivorous, but feed mainly on bivalve shellfish. Work overseas suggests that the crabs have wrecked havoc on native bivalve populations, destroyed local fisheries and wiped out aquaculture ventures.

ASIAN (or JAPANESE) SHORE CRAB
Hemigrapsus sanguineus

THIS CRAB IS EXOTIC & INVASIVE!

This Japanese import was released from ballast water in New Jersey around 1987 and has since pushed its way north into Massachusetts and south into North Carolina. An omnivore that feeds on young clams, scallops, oysters, algae, fish larvae, and many other species, these crabs pose a threat to New England ecosystems and aquaculture operations. The Japanese Shore Crab has been found to compete with other exotic crabs.

Courtesy Megan Tyrell

Description

- **Color:** Depending on its location, color mottling can range.
- **Mottling:** Green to purple to orange-brown to red.
- **Carapace (Abdomen) Shape:** Square.
- **Spines on Carapace:** 3 spines on either side.
- **Legs:** Light and dark red bands.
- **Claws:** Red spots. Male has distinctive fleshy, bulb-like structure at base of moveable finger.
- **Hind Walking Legs:** Somewhat round.

Average Length

- **North America:** 35-42 mm.

Habitat

- Shallow, hard-bottomed intertidal areas, artificial structures, under rocks. Can tolerate a large range of salinities and temperatures.

Feeding Habits

- Omnivorous. Feed on macroalgae, salt grass, larval and juvenile fish, small invertebrates such as amphipods, gastropods, bivalves, barnacles, and polychaetes.

SHORE/GRASS SHRIMP
Paleomonetes vulgaris

Description

Courtesy of Barbara Driscoll

- **Abundance:** The most common shrimp.
- **Body Shape:** Somewhat rounded.
- **Body Color:** Transparent gray.
- **Mottling:** Red, yellow, and blue spots.
- **Rostrum (Horn):** Serrated, well-developed extending over the eyes.
- **Telson (Tail Piece):** Spiny.
- **Walking Legs:** First two pair have obvious claws.

Average Length

- Up to 50 mm.

Habitat

- Estuarine waters, beds of submerged vegetation.

Feeding Habits

- Omnivorous. Larvae feed on zooplankton and algae; adults feed on algae, marine worms, and other crustaceans.

SAND SHRIMP
Crangon septemspinosa

Description

Copyright Carol & Mark Archambault

- **Abundance:** Less abundant, but still common.
- **Body Shape:** Flattened from top to bottom.
- **Body Color:** Transparent to pale grey or brown.
- **Mottling:** Many irregular, tiny, star-shaped black spots.
- **Rostrum (Horn):** Short.
- **Telson (Tail Piece):** Often blackish.
- **Walking Legs:** First pair heavy with backward-bending hook-like claw at tip. Second and third are very slender.

Average Length

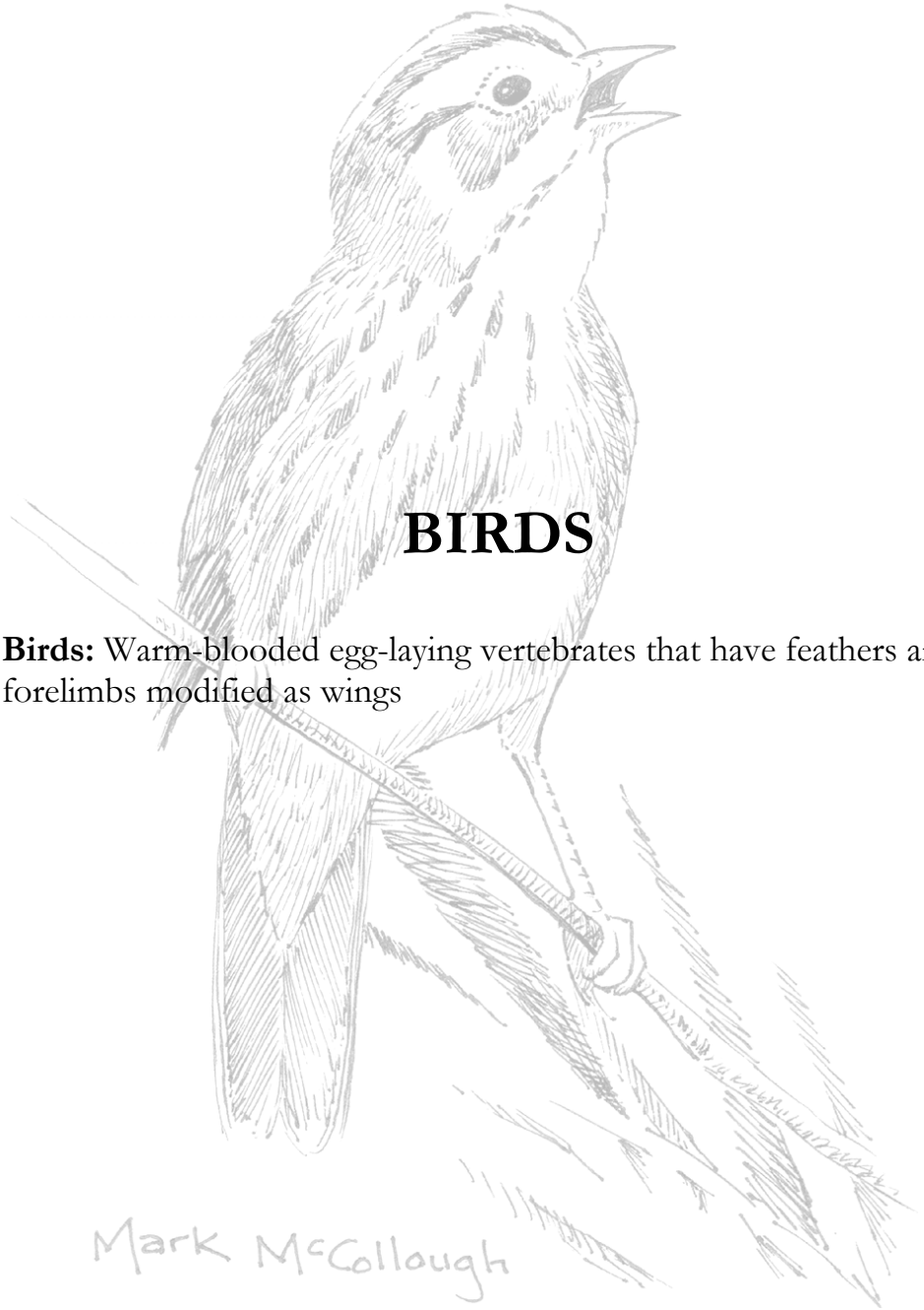
- Up to 70mm.

Habitat

- Estuarine waters, beds of submerged vegetation.

Feeding Habits

- Omnivorous. Feed on invertebrates, organic debris, and larval fish.



BIRDS

Birds: Warm-blooded egg-laying vertebrates that have feathers and forelimbs modified as wings

SALTMARSH SHARP-TAILED SPARROW

Copyright Garth McElroy

Wetland birds require certain types of habitats for different aspects of their l ives, such as nesting, feeding, perching, or migration. Salt marshes offer a variety of habitats, such as mudflats, pannes, pools, various types of vegetation, and open water. Birds have evolved a variety of adaptations to exploit the resources in these habitats. Habitat diversity in salt marshes results from a variety of physical, chemical, and biological variables. Alterations to physical variables such as hydrology, chemical variables such as salinity, or biological variables such as vegetation will affect the type and distribution of habitats in a salt marsh, and therefore the biological communities that can live there.

Humans may alter the habitat that a bird requires. For example, the salt marsh sharp-tailed sparrow requires suitable densities of *Spartina patens* (salt meadow cord grass) and *Spartina alterniflora* (smooth cordgrass) for nesting and feeding. Alterations to natural hydrology or salinity regimes may reduce availability of these vegetation types.

Description (Adult - Both Sexes)

- **Length:** 5 inches
- **Bill:** Large, conical
- **Head:** Large, flat
- **Tail:** Short
- **Face:** Orange
- **Cheek:** Grey
- **Throat:** White
- **Crown:** Grey
- **Breast:** Buffy; sides with dark streaks
- **Belly:** White
- **Wings:** Brown
- **Streaking:** Dark and light on back

Description (Juvenile)

Similar to adult but has buffer underparts with less streaking and browner, not gray, upper parts

Copyright Garth McElroy

Salt Marsh Birds In New Hampshire

Common Name	Latin/Scientific Name	AOU
American Black Duck	*Anas rubripes*	AMBL
American Crow	*Corvus caurinus*	AMCR
American Goldfinch	*Carduelis tristis*	AMGO
American Robin	*Turdus migratorius*	AMRO
Bank Swallow	*Riparia riparia*	BANS
Barn Swallow	*Hirundo rustica*	BARS
Belted Kingfisher	*Ceryle alcyon*	BEKI
Black-capped Chickadee	*Parus atricapillus*	BCCH
Black-crowned Night Heron	*Nycticorax nycticorax*	BCNH
Black Rail	*Laterallus jamaicensis*	BLRA
Blue Jay	*Cyanocitta cristata*	BLJA
Blue-wing Teal	*Anas discors*	BWTL
Bobolink	*Dolichonyx oryzivorus*	BOBO
Brown-headed Cowbird	*Molothrus ater*	BHCO
Canada Goose	*Branta canadensis*	CAGO
Chimney Swift	*Chaetura pelagica*	CHSW
Clapper Rail	*Rallus longirostris*	CLRA
Common Grackle	*Quiscalus quiscula*	COGR
Common Tern	*Sterna hirundo*	COTE
Common Yellow Throat	*Geothylpis trichas*	COYE
Double-crested Cormorant	*Phalacrocorax auritas*	DCCO
Eastern Kingbird	*Tyrannus tryrannus*	EAKI
European Starling	*Sturnos vulgaris*	EUST
Gray Catbird	*Dumetella carolinensis*	GRCA
Great Blue Heron	*Ardea herodias*	GBHE
Great Egret	*Ardea alba*	GREG
Great Black-backed Gull	*Larus marinus*	GBBG
Greater Yellowlegs	*Tringa melanoleuca*	GRYE
Green-wing Teal	*Anas carolinensis*	GRWT
Green Heron	*Butorides striatus*	GRHE
Herring Gull	*Larus argentatus*	HEGU
King Rail	*Rallus elegans*	KIRA
Least Bittern	*Ixobrychus exilis*	LEBI
Least Sandpiper	*Calridris minutilla*	LESA
Laughing Gull	*Larus atricilla*	LAGU
Least Tern	*Sterna albifrons*	LETE
Mallard	*Anas platyrhynchos*	MALL
Marsh Wren	*Cisthorus palustris*	MAWR
Mourning Dove	*Zenaida macroura*	MODO
Nelson's Sharp-tailed Sparrow	*Ammodramus n. subvirgatus*	NSTS
Northern Cardinal	*Cardinalis cardinalis*	NOCA
Northern Harrier	*Cricus caneus*	NOHA
Osprey	*Pandion haliaetus*	OSPR
Purple Martin	*Progne subis*	PUMA
Red-tailed Hawk	*Buteo jamaicensus*	RTHA
Red-winged Blackbird	*Agelaius phoeniceus*	RWBL
Ring-billed Gull	*Larus delawarensis*	RBGU
Rough-winged Swallow	*Stelgidopteryx ruficollis*	NRWS
Saltmarsh Sharp-tailed Sparrow	*Ammodramus c. caudacutus*	SSTS
Savannah Sparrow	*Passerculus sandwichensis*	SASP
Seaside Sparrow	*Ammodramus maritima*	SSSP
Semipalmated Sandpiper	*Calidris pusilla*	SESA
Sharp-shinned Hawk	*Accipiter striatus*	SSHA
Short-billed Dowitcher	*Limnodromus griseus*	SBDO
Snowy Egret	*Egretta thula*	SNEG
Song Sparrow	*Melospiza melodia*	SOSP
Spotted Sandpiper	*Actitis macularia*	SPSA
Swamp Sparrow	*Melospiza georgiana*	SWSP
Tree Swallow	*Tachycinets bicolor*	TRES
Turkey Vulture	*Cathartes aura*	TUVU
Virgina Rail	*Rallus limicola*	VIRA
Willet	*Catoptrophorus semipalmatus*	WILL
Willow Flycatcher	*Empidonax trailii*	WIFL

Appendix A. Index of Habitats & Associated Plants

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Appendix B:
Other Helpful Plant Identification and Reference Guides

The Book of Swamp and Bog: Trees, Shrubs, and Wildflowers of Eastern Freshwater Wetlands
by John Eastman
1995 Stackpole Books
ISBN 0-8117-2518-9

A Field Guide to Coastal Wetland Plants of the Northeastern United States
by Ralph W. Tiner, Jr.
1987 University of Massachusetts Press
ISBN 0-870-23538-9

Freshwater Wetlands - A Guide to Common Indicator Plants of the Northeast
by Dennis W. Magee
1981 University of Massachusetts Press
ISBN 0-87023-317-3

Northeastern Wetland Flora: Field Office Guide to Plant Species
by USDA – NRCS/Northeastern National Technical Center, Chester Pennsylvania

Plants in Wetlands: A Redington Field Guide to Biological Interactions
by Charles B. Redington
1994 Kendall/Hunt Publishing Company
ISBN 0-84038-983-3

Pond and Brook
by Michael J. Caduto
1990
ISBN 0-87451-509-1

Pond Life: A Golden Guide
by George K. Reid
1987 Golden Books
ISBN 0-30724-017-7

Through The Looking Glass
by Susan Borman, Robert Korth, Jo Temte
1997/1999 Wisconsin Lakes Partnership
ISBN 0-93231-032-X

Wetland Planting Guide for Northeast United States
by Gwendolyn A. Thunhorst
1993 Environmental Concern, Inc.
ISBN 1-88322-602-3

Wetlands - National Audubon Society Nature Guides
by William A. Niering
1985 Alfred A. Knopf, New York
ISBN 0-39473-147-6