

A GUIDE TO
THE
WETLAND
PLANTS
OF
JUG BAY



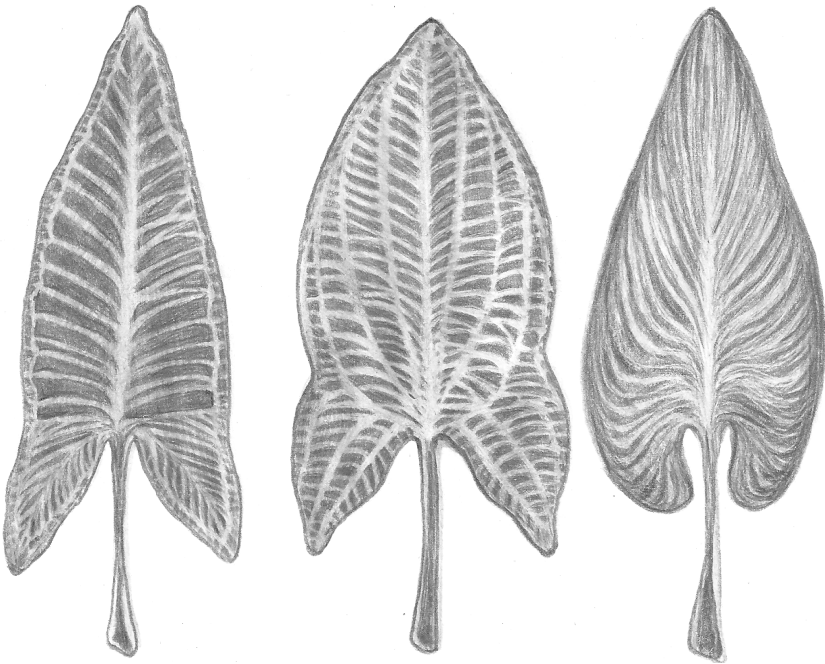
By
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JUG BAY WETLANDS SANCTUARY

Comparison of three types of 'arrowhead' leaves.

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Green Arrow Arum Broadleaf Arrowhead Pickerelweed

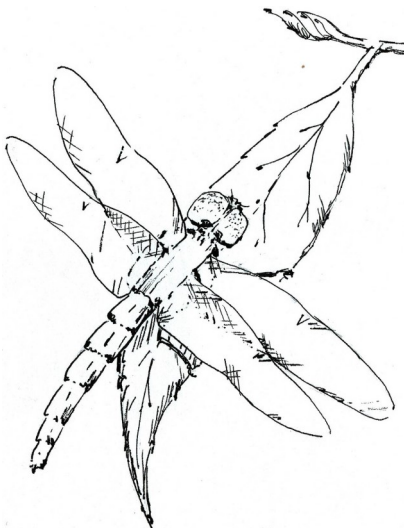
Arrow arum leaves have two, usually divergent, basal lobes opposite their broadly-tapering tips. At the end of the leaf petiole, there are three large divergent veins – one going to each basal lobe and the third to the leaf tip – from which secondary veins emerge something like the teeth of a comb. Near the margins of the leaf, the secondary veins then merge with one or two veins occurring parallel to the edge. Arrowhead lacks a single mid-vein but rather has many veins that branch out from the point where the leaf joins the stem. Pickerelweed leaves likewise have some veins originating from the distal end of the leaf petiole. However, those veins projecting downward arch concentrically into the basal lobes, then curve upward paralleling the leaf margins, and eventually end at the leaf tip. Pickerelweed also have exceptionally smooth leaves.

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NOTES

A GUIDE TO THE WETLAND PLANTS OF JUG BAY

The extensive wetlands at Jug Bay Wetlands Sanctuary are home to a great variety of water-loving plants. More than 150 species of trees, shrubs, and herbaceous plants have been identified, and more are surely to be discovered. This guide will help you learn more about these fascinating plants as you travel through the Sanctuary.



A WETLAND IS...

mysterious, beautiful, rich with life, muddy, exciting, and unexpected. Wetland are transitional habitats, often located between well-drained uplands and the deeper, permanent waters of rivers and bays. Most wetlands share three general characteristics:

- They are covered by water for all or part of the year.
- They possess saturated soils that are depleted of oxygen.
- They have specially adapted wetland plants.

Wetlands are also one of the most productive and ecologically complex habitats on Earth. Wetlands provide food and shelter for a myriad of wildlife and serve as nurseries for fish, shellfish and birds. Wetlands are valuable for human society, too. Most of our nation's commercial finfish and shellfish depend on estuaries and wetlands during portions of their life cycles. Wetlands hold floodwaters, help trap sediments, reduce waterborne pollutants and aid in groundwater recharge. Let's hear it for wetlands!

SEASONS AND CYCLES OF WETLAND PLANTS

Jug Bay's wetlands undergo amazing seasonal changes. In **early spring** the young, curled leaves of Spatterdock (Yellow Pond-lily) begin poking above the mud; they are one of the first signs of the marsh plant community coming back to life. By **late spring** and **summer** a profusion of dense, almost impenetrable plant growth covers the mudflats. This remarkable development during a relatively short growing season attests to the productivity of this ecosystem. By **late summer** wild rice stands 12 feet high. At the end of the growing season, in the **fall** and **early winter**,



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Family	Common Name	Scientific Name	Perennial or Annual Woody or Herbaceous			
			Tidal	Non-Tidal		
Typhaceae	Narrowleaf Cattail	<i>Typha angustifolia</i>	P	H	X	
	Broadleaf Cattail	<i>Typha latifolia</i>	P	H	X	X
	Hybrid Cattail	<i>Typha X glauca</i>	P	H	X	
Ulmaceae	Common Hackberry	<i>Celtis occidentalis</i>	P	W		X
	American Elm	<i>Ulmus americana</i>	P	W		X
Urticaceae	Smallspike False Nettle	<i>Boehmeria cylindrica</i>	P	H	X	X
	Canadian Woodnettle	<i>Laportea canadensis</i>	P	H		X
	Lesser Clearweed	<i>Pilea fontana</i>	A	H		X
	Canadian Clearweed	<i>Pilea pumila</i>	A	H		X
Violaceae	Marsh Blue Violet	<i>Viola cucullata</i>	P	H		X
Vitaceae	Virginia Creeper	<i>Parthenocissus quinquefolia</i>	P	H		X
	Fox Grape	<i>Vitis labrusca</i>	P	H		X

Nomenclature based on USDA Natural Resources Conservation Service Plants database, updated March 2013

This list is based on the Vascular Plants of the Jug Bay Wetlands Sanctuary, the Jug Bay herbarium, and information in Brown & Brown (1972) and Tiner (1988). Thanks to Bill Sipple, David Laughlin, and Cris Fleming for comments.

the tremendous biomass of marsh plants dies back and undergoes bacterial decomposition and degradation. Fungi and sunlight also break down plant tissue. Through decomposition the nutrients in the plant tissue are slowly released into the tidal waters, serving as a major energy source for the estuarine and riverine ecosystem. By **winter** the above-ground plant material dies back, and the wetlands are mostly barren except for stands of brown cattail stalks. Wrack (broken up marsh plants) piles up on shore. Seeds and rhizomes remain alive but dormant in the mud – waiting for the warming temperatures of spring to start the cycle once again.

During the growing season, wetland plants reduce water pollution by readily taking up nutrients such as nitrogen, which enters the river from wastewater treatment plants, farm runoff, and acid precipitation. Bacteria, algae, and wetland sediments also play important roles in chemically transforming nutrient pollutants.

Wetlands nationwide continue to be lost to development and degradation in spite of their universally recognized values. In Maryland alone, over half of the wetlands have disappeared since colonial times. Local, state, and federal regulations now require all development projects that may

adversely impact wetlands to undergo an environmental review process.

Types of Plants

The plants of freshwater tidal wetlands fall into a variety of categories. Most of the plants in the wetland are **emergent macrophytes**, species that are relatively large and that stand above the mud or water surface. Many are **perennials**, which grow up every year from a rhizome (underground storage stem) in the mud. Spatterdock and cattails are perennials. Many other plants are **annuals**, which sprout from seeds in the spring. Wild Rice and Jewelweed are annuals.

Jug Bay is also home to submerged aquatic vegetation, also called **SAVs**. These threadlike, flowering plants are rooted in the mud, yet they float in the water. At low tide they form a tangle on the exposed mud. Coon's Tail and Hydrilla [page 22], are examples of freshwater SAVs. Once found in abundance in the Chesapeake Bay and its watershed, SAV beds are much reduced because of light-blocking algae and sediments. Since the 1980s, SAVs have made a

Poaceae	Sweet Woodreed	<i>Cinna arundinacea</i>	P	H	X	X
	Deertongue	<i>Dichanthelium clandestinum</i>	P	H	X	X
	Coast Cockspur Grass	<i>Echinochloa walteri</i>	A	H	X	
	Virginia Wildrye	<i>Elymus virginicus</i>	P	H	X	X
	Rattlesnake Mannagrass	<i>Glyceria canadensis</i>	P	H	X	X
	Fowl Mannagrass	<i>Glyceria striata</i>	P	H		
	Rice Cutgrass	<i>Leersia oryzoides</i>	P	H	X	X
	Whitegrass	<i>Leersia virginica</i>	P	H		
	Nepalese Browntop	<i>Microstegium vimineum</i>	A	H		X
	Switchgrass	<i>Panicum virgatum</i>	P	H	X	X
	Common Reed	<i>Phragmites australis</i>	P	H	X	
	Annual Wildrice	<i>Zizania aquatica</i>	A	H	X	
Polygonaceae	Halberdleaf Tearthumb	<i>Polygonum arifolium</i>	P	H	X	X
	Marshpepper Knotweed	<i>Polygonum hydropiper</i>	A	H	X	
	Dotted Smartweed	<i>Polygonum punctatum</i>	A	H	X	X
	Arrowleaf Tearthumb	<i>Polygonum sagittatum</i>	P	H	X	X
	Swamp Dock	<i>Rumex verticillatus</i>	P	H	X	
Pontederiaceae	Kidneyleaf Mudplantain	<i>Heteranthera reniformis</i>	P	H	X	
	Pickerelweed	<i>Pontederia cordata</i>	P	H	X	X
Potamogetonaceae	Curly Pondweed	<i>Potamogeton crispus</i>	P	H	X	X
Primulaceae	Fringed Loosestrife	<i>Lysimachia ciliata</i>	P	H		X
Ranunculaceae	Littleleaf Buttercup	<i>Ranunculus abortivus</i>	P	H	X	X
	Blisterwort	<i>Ranunculus recurvatus</i>	P	H	X	X
	King of the Meadow	<i>Thalictrum pubescens</i>	P	H	X	X
Rosaceae	Canadian Serviceberry	<i>Amelanchier canadensis</i>	P	W	X	X
	White Avens	<i>Geum canadense</i>	P	H		X
	Red Chokeberry	<i>Pholonia pyrifolia</i>	P	W		X
	Swamp Rose	<i>Rosa palustris</i>	P	W	X	X
Rubiaceae	Common Buttonbush	<i>Cephalanthus occidentalis</i>	P	W	X	X
	Stickywilly	<i>Galium aparine</i>	A	H	X	
Salicaceae	Black Willow	<i>Salix nigra</i>	P	W	X	X
Saururaceae	Lizard's Tail	<i>Saururus cernuus</i>	P	H		X
Scrophulariaceae	Red Turtlehead	<i>Chelone obliqua</i>	P	H	X	X
	Sharpwing Monkeyflower	<i>Mimulus alatus</i>	P	H	X	X
Smilacaceae	Roundleaf Greenbrier	<i>Smilax rotundifolia</i>	P	W		X
Sparganiaceae	American Bur-reed	<i>Sparganium americanum</i>	P	H		
	Broadfruit Bur-reed	<i>Sparganium eurycarpum</i>	P	H	X	X

Family	Common Name	Scientific Name	Perennial or Annual Woody or Herbaceous			
			Tidal	Non-Tidal		
Grossulariaceae	Virginia Sweetspire	<i>Itea virginica</i>	P	W	X	X
Hamamelidaceae	American Witchhazel	<i>Hamamelis virginiana</i>	P	W		X
	Sweetgum	<i>Liquidambar styraciflua</i>	P	W		X
Hydrocharitaceae	Waterweed	<i>Elodea canadensis</i>	P	H	X	
	Waterhyme	<i>Hydrilla verticillata</i>	P	H	X	
Iridaceae	Harlequin Blueflag	<i>Iris versicolor</i>	P	H	X	X
Juncaceae	Common Woodrush	<i>Luzula multiflora</i>	P	H	X	X
	Common Rush	<i>Juncus effusus</i>	P	H	X	X
	Poverty Rush	<i>Juncus tenuis</i>	P	H	X	X
Lamiaceae	Virginia Water Horehound	<i>Lycopus virginicus</i>	P	H	X	X
	American Water Horehound	<i>Lycopus americanus</i>	P	H		
	Wild Mint	<i>Mentha arvensis</i>	P	H		
	Blue Skullcap	<i>Scutellaria lateriflora</i>	P	H	X	X
Lauraceae	Northern Spicebush	<i>Lindera benzoin</i>	P	W		X
Lemnaceae	Common Duckweed	<i>Lemna minor</i>	A	H	X	X
Liliaceae	Turk's-cap Lily	<i>Lilium superbum</i>	P	H		X
Lythraceae	Swamp Loosestrife	<i>Decodon verticillatus</i>	P	H	X	X
Magnoliaceae	Sweetbay	<i>Magnolia virginiana</i>	P	W	X	X
Malvaceae	Crimson-eyed Rosemallow	<i>Hibiscus moscheutos</i>	P	H	X	X
Najadaceae	Southern Waternymph	<i>Najas guadalupensis</i>	A	H	X	
	Bristle Waternymph	<i>Najas minor</i>	A	H	X	
	Nodding Waternymph	<i>Najas flexilis</i>	A	H	X	
Nymphaeaceae	Yellow Pond-lily	<i>Nuphar lutea</i>	P	H	X	
	Green Ash	<i>Fraxinus pennsylvanica</i>	P	W	X	
Oleaceae	Pumpkin Ash	<i>Fraxinus profunda</i>	P	W	X	
Onagraceae	Purpleleaf Willowherb	<i>Epilobium coloratum</i>	P	H		X
	Seedbox	<i>Ludwigia alterniflora</i>	P	H		X
	Marsh Seedbox	<i>Ludwigia palustris</i>	P	H		X
Plantaginaceae	American Sycamore	<i>Platanus occidentalis</i>	P	W	X	X

moderate comeback throughout the Chesapeake Bay region.

Herbaceous plants, including cattail and Spatterdock, have soft stems and are pliant to the touch. They make up the majority of species in the marsh. **Woody plants** have hard stems. These may be trees such as Red Maple or Pumpkin Ash or shrub-sized plants such as Buttonbush and Swamp Rose. They are commonly found in swamps or scrub-shrub wetlands.

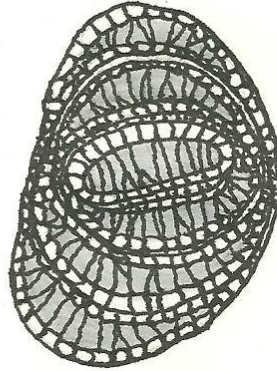
Characteristics of Wetland Plants

The tidal wetlands at Jug Bay are a stressful environment for plants. The species that live here have evolved survival mechanisms that upland plants lack. These adaptations help them deal with:

- oxygen-depleted soils due to water saturation (the roots of all plants need oxygen in order to survive)
- unstable soils (tree and plant roots grow in soil the consistency of chocolate pudding)
- different water levels from daily tides (plants are alternately inundated and left dry)

Structural Adaptations

Cut a stalk of Spatterdock or cattail and examine it. In cross section the stem appears to be composed of strawlike tubes. These tubes, which are found in many wetland plants, are a special tissue called **aerenchyma** (air-en-KY-ma).



Cattail aerenchyma

Their function is to carry oxygen from the leaves down to the roots. Aerenchyma is an adaptation to help the plant avoid root anoxia (oxygen depletion). Another structural adaptation found in some wetland species (for example, jewelweed, and wild rice) is the development of **adventitious roots** just above the water line. These aerial roots are able to take up oxygen directly from the atmosphere. Red maples and ash develop a flared trunk that acts like a buttress to stabilize the tree in the wet soil.

Reproductive Strategies

Wetland plants have developed ways of **pollination** and **seed dispersal** so that they successfully propagate. Bright flowers such as those of the Spatterdock, arrowhead, and marsh hibiscus

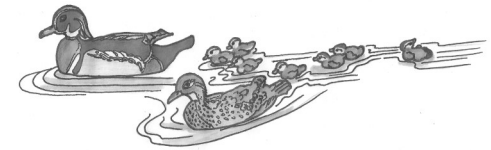
Betulaceae	Hazel Alder	<i>Alnus serrulata</i>	P	W	X	X
	River Birch	<i>Betula nigra</i>	P	W	X	X
Bignoniaceae	Trumpet Creeper	<i>Campsis radicans</i>	P	H		X
Campanulaceae	Cardinalflower	<i>Lobelia cardinalis</i>	P	H	X	X
Caprifoliaceae	Japanese Honeysuckle	<i>Lonicera japonica</i>	P	W		X
	American Black Elderberry	<i>Sambucus canadensis</i>	P	W	X	X
	Southern Arrow-wood	<i>Viburnum dentatum</i>	P	W	X	X
	Blackhaw	<i>Viburnum prunifolium</i>	P	W		X
Ceratophyllaceae	Coon's Tail	<i>Ceratophyllum demersum</i>	A	H	X	
Clethraceae	Coastal Sweetpepperbush	<i>Clethra alnifolia</i>	P	W	X	X
Convulvulaceae	Whitestar	<i>Ipomoea lacunosa</i>	A	H	X	
Cornaceae	Silky Dogwood	<i>Cornus amomum</i>	P	W	X	X
	Blackgum	<i>Nyssa sylvatica</i>	P	W		X
Cuscutaceae	Dodder	<i>Cuscuta gronovii</i>	P	H	X	X
Cyperaceae	Greenwhite Sedge	<i>Carex albolutescens</i>	P	H		
	Longhair Sedge	<i>Carex comosa</i>	P	H	X	X
	Fringed Sedge	<i>Carex crinita</i>	P	H	X	X
	Gray's Sedge	<i>Carex grayi</i>	P	H		
	Greater Bladder Sedge	<i>Carex intumescens</i>	P	H	X	X
	Hairy Sedge	<i>Carex lacustris</i>	P	H	X	
	Smoothsheath Sedge	<i>Carex laevivaginata</i>	P	H	X	X
	Shallow Sedge	<i>Carex lurida</i>	P	H	X	X
	Muehlenberg's Sedge	<i>Carex muehlenbergii</i>	P	H	X	X
	Awlfruit Sedge	<i>Carex stipata</i>	P	H	X	X
	Weak Stellate Sedge	<i>Carex seorsa</i>	P	H		
	Squarrose Sedge	<i>Carex squarrosa</i>	P	H		
	Cattail Sedge	<i>Carex typhina</i>	P	H		
	Blunt Broom Sedge	<i>Carex tribuloides</i>	P	H	X	X
	Fox Sedge	<i>Carex vulpinoidea</i>	P	H		
	River Bulrush	<i>Schoenoplectus fluviatilis</i>	P	H	X	X
	Common Threesquare	<i>Schoenoplectus pungens</i>	P	H	X	X
	Softstem Bulrush	<i>Schoenoplectus tabernaemontani</i>	P	H	X	X
	Woolgrass	<i>Scirpus cyperinus</i>	P	H		X
	Leafy Bulrush	<i>Scirpus polyphyllus</i>	P	H	X	X
Dioscoraceae	Wild Yam	<i>Dioscorea villosa</i>	P	H	X	X
Ericaceae	Swamp Doghobble	<i>Eubotrys racemosa</i>	P	W		X
	Swamp Azalea	<i>Rhododendron viscosum</i>	P	W		X
	Highbush Blueberry	<i>Vaccinium corymbosum</i>	P	W		X
Fabaceae	Groundnut	<i>Apios americana</i>	P	H	X	X

Characteristics of Wetland Plants of Jug Bay

Family	Common Name	Scientific Name	Perennial or Annual Woody or Herbaceous			
			Tidal	Non-Tidal		
Ferns						
Aspleniaceae	Common Lady Fern	<i>Athyrium filix-femina</i>	P	H	X	
	New York Fern	<i>Thelypteris noveboracensis</i>	P	H	X	
	Eastern Marsh Fern	<i>Thelypteris palustris</i>	P	H	X	X
Onocleaceae	Sensitive Fern	<i>Onoclea sensibilis</i>	P	H	X	X
Osmundaceae	Cinnamon Fern	<i>Osmunda cinnamomea</i>	P	H	X	X
	Royal Fern	<i>Osmunda regalis</i>	P	H	X	X
Salviniaceae	Carolina Mosquito Fern	<i>Azolla caroliniana</i>	A	H	X	X
Flowering Plants						
Acanthaceae	American Water-willow	<i>Justicia americana</i>	P	H	X	
Aceraceae	Red Maple	<i>Acer rubrum</i>	P	W	X	X
Acoraceae	Sweetflag	<i>Acorus calamus</i>	P	H	X	X
Alismataceae	American Waterplantain	<i>Alisma subcordatum</i>	P	H	X	X
	Broadleaf Arrowhead	<i>Sagittaria latifolia</i>	P	H	X	X
Amaranthaceae	Tidalmarsh Amaranth	<i>Amaranthus cannabinus</i>	P	H	X	
Anacardiaceae	Eastern Poison Ivy	<i>Toxicodendron radicans</i>	P	W	X	X
Annonaceae	Pawpaw	<i>Asimina triloba</i>	P	W	X	
Apiaceae	Spotted Water Hemlock	<i>Cicuta maculata</i>	P	H	X	
	Hemlock Waterparsnip	<i>Sium suave</i>	P	H	X	X
Aquifoliaceae	American Holly	<i>Ilex opaca</i>	P	W	X	
	Common Winterberry	<i>Ilex verticillata</i>	P	W	X	X
Araceae	Jack in the Pulpit	<i>Arisaema triphyllum</i>	P	H	X	
	Goldenclub	<i>Orontium aquaticum</i>	P	H	X	X
	Green Arrow Arum	<i>Peltandra virginica</i>	P	H	X	X
	Skunk Cabbage	<i>Symplocarpus foetidus</i>	P	H	X	
Asteraceae	Smooth Beggartick	<i>Bidens laevis</i>	A	H	X	X
	Common Boneset	<i>Eupatorium perfoliatum</i>	P	H	X	X
	Flat-top Goldentop	<i>Euthamia graminifolia</i>	P	H	X	X
	Climbing Hempvine	<i>Mikania scandens</i>	P	H	X	X
	Purplestem Aster	<i>Symphotrichum punimceu</i>	P	H	X	
Balsaminaceae	Jewelweed	<i>Impatiens capensis</i>	A	H	X	X
Berberidaceae	Mayapple	<i>Podophyllum peltatum</i>	P	H	X	X

attract insects that aid in pollination. Wind helps in the pollination of several wetland grasses, including Wild Rice and Phragmites.

The buoyant seeds of arrow arum float in and out with the tide and, as a consequence, are dispersed over a large area. Wild rice grains fall straight down from the top of the plant to the mud below, where they germinate the following year. Nearly pure stands of Wild Rice result from such concentrated seed dispersal.



Types of Wetlands

Several types of wetlands are found at Jug Bay.

- Tidal Freshwater Marsh**

Marshes are wetlands that are composed of herbaceous or soft-stemmed plants. Most of us are more familiar with **salt marshes** than with freshwater marshes. Salt marshes directly border the Chesapeake and are extensive on the outer coast at Chincoteague and along the New Jersey shore. Only a handful of species can tolerate the high salinity conditions of the salt marsh. Freshwater marshes, on the other

hand, support an abundance of plant species. At Jug Bay the water is fresh (no saltwater), yet Jug Bay marshes are subject to the rise and fall of the tides. This is because Jug Bay is close enough to the Chesapeake Bay – 50 miles up the Patuxent River – to be affected by tides, yet too far upstream for saltwater to penetrate. The water rises and falls about 2.5 feet twice every day. The tidal freshwater marshes at Jug Bay cover hundreds of acres and are the most extensive type of wetland found here.

- **Swamp**

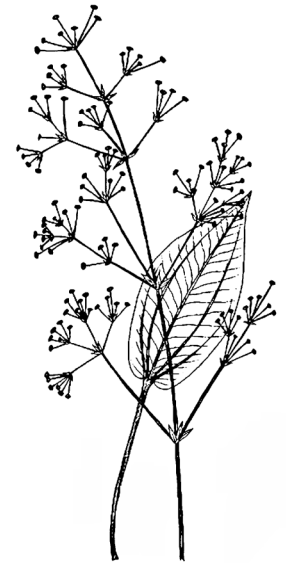
A swamp is a wetland where the dominant plants are trees. Swamps at Jug Bay occur at the higher edge of the marsh close to the drier slopes. The swamp is inundated by water for only brief periods during the tidal cycle. Red Maples, Blackgum, Green Ash, Pumpkin Ash, and Sweetbay Magnolias are found here; herbaceous species such as Jewelweed, tearthumbs, and Lizard’s Tail occur as well.

- **Scrub-shrub Wetland**

The scrub-shrub wetland consists of a mixture of shrubs or woody-stemmed plants and herbaceous plants. This wetland type generally occurs as a zone in between the marsh and swamp. Look for Common Buttonbush, Black

**AMERICAN
WATERPLANTAIN**
Alisma subcordatum
**Marsh
Perennial**

Growing up from a rhizome, this plant has large egg-shaped leaves with heart-shaped bases. It sends up a 40-inch panicle with small three-petaled white flowers. Flattened fruits and seed heads appear after blooming. Found in only a few places along the Marsh Boardwalk, this plant is easy to overlook. Watch for the delicate blossoms between June and September in the tangled marsh growth.



LIZARD’S TAIL
Saururus cernuus
**Swamp
Perennial**

Growing from spreading and aromatic rootstocks. Lizard’s Tail has tiny fragrant white flowers on a 4 to 6 inch spike with a drooping tip. Leaves are dark green and heart-shaped. The plant can be found in swamps and near streams. It blooms in June and July.



RED TURTLEHEAD
Chelone obliqua
 Swamp, Forested Floodplain
 Perennial

A member of the snapdragon family, this plant grows in wet, wooded areas. Its hooded pink flower, which somewhat resembles the head of a turtle, blooms in late summer and fall. It has narrow-toothed lance-shaped leaves.



TIDALMARSH AMARANTH
 (was called WATER HEMP)

Amaranthus cannabinus

Marsh
Perennial

Found in tidal rivers as well as in salt and brackish marshes, this plant has alternate lance-shaped leaves and green flowers on slender spikes. It grows to 10 feet high and blooms from July to August. Waterfowl, songbirds, deer and small mammals use the leaves and seeds for food.



Willow, Hazel (formerly Smooth) Alder, Swamp Rose, Crimsoneyed Rosemallow (formerly Marsh Hibiscus), and even Eastern Poison Ivy.

• **Forested Floodplain or Nontidal Wetland**

Nontidal wetlands occur above the reach of the tides. At Jug Bay this type of wetland occurs along a spring or small stream that flows toward the Patuxent River. During periods of heavy rain, these waterways may fill and overflow. Skunk Cabbage, Lizard's Tail, Jewelweed, and clearweed are found here, shaded by White Oak, American Beech, Red Maple, and American Holly.

HOW TO USE THE GUIDE

To help you identify and locate wetland plants, we have included a map (see centerfold) that shows the major stands and types of plants found on both sides of the Marsh Boardwalk, as well as those along the trails leading to the boardwalk. For information and illustration of specific plants, refer to the list of plants starting on page 12. The common names is listed first, followed by the scientific name, where it is found, and whether it is perennial or annual.

The Boardwalk passes through **Swamp**, **Marsh**, and **Scrubshrub** habitats and is about a third of a mile long. A leisurely stroll along the boardwalk will take about 30 minutes.

WHERE TO BEGIN

We suggest that you begin at the **Observation Deck**. From there you have a spectacular view of the wetland's great variety of plants and the many channels that flow in and out from the Patuxent River. When you leave the deck, turn right on the path that will take you to **Otter Point Trail**. Proceed to the right on the Otter Point Trail for about 75 feet until you see the **Marsh Boardwalk** sign.

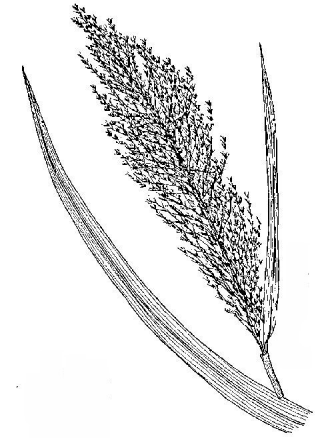


COMMON REED

Phragmites australis

**Marsh
Perennial**

Growing 12 feet tall often in disturbed areas, phragmites is slowly increasing its range at Jug Bay. Flowers appear as feathery plumes at the top of the plants. Phragmites has little food value for wildlife but some marsh birds will nest in the reeds. Once established, the plant spreads rapidly, forming dense stands and forcing out other more beneficial plant species. It has been used for erosion control.



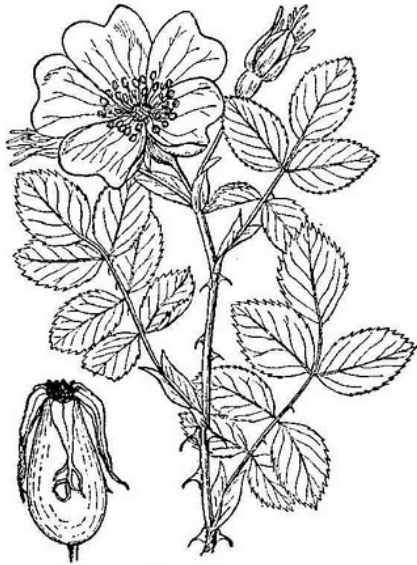
CARDINAL FLOWER

Lobelia cardinalis

**Marsh, Swamp
Perennial**

This 2- to 5-foot plant has bright red tubular flowers atop a stalk with narrow lance-shaped leaves. It is pollinated mainly by hummingbirds; insects are usually unable to reach the base of the flowers. Its name derives from its color: red like the robes worn by Roman Catholic cardinals. It blooms in late summer and fall in the upper parts of the marsh.





SWAMP ROSE

Rosa palustris
Scrub-shrub
Perennial

The fragrant pink flowers of this thorny deciduous shrub bloom in June and July. At the base of each leaf are hooked prickles. Fleshy red fruits (hips) and buds are eaten by songbirds and deer.

CLIMBING HEMPVINE

Mikania scandens
Marsh, Scrub-shrub
Perennial

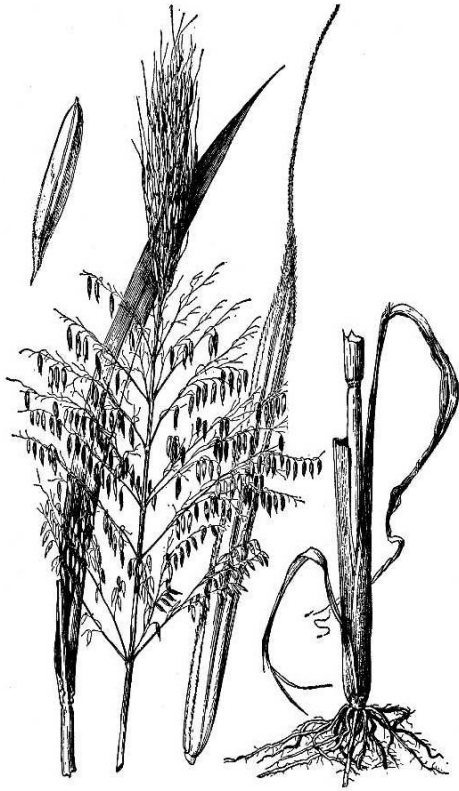
This member of the aster family is a vine with triangular-shaped, opposite leaves that grow up and over other marsh plants and shrubs. Clusters of white or pink flowers bloom in late summer. It is often found in the higher end of the marsh, where it twines up cattails and other plants.



Follow the path and stairs down to the Marsh Boardwalk, which goes to the right. The first stretch is through a **swamp** with Red Maple, Green Ash, Pumpkin Ash, Sweetbay (Magnolia), and many wetland plants. On your right, just past the swamp, is a bench where you can rest and re-view the guide for a few minutes. The ferns, mosses, and Mountain Laurel growing on the hillside can make you feel as if you're sitting in a tropical rain forest!

Continue along the boardwalk and notice how the landscape opens up as you come to the **marsh**. Low-growing Spatterdock (Yellow Pond-lily) is mixed with stands of Annual Wildrice, then the cattail take over near the end of the boardwalk. The shrubs and small trees here on the upland (right) side of the boardwalk are part of a **scrub-shrub wetland**, a transitional area where the soil is drying out and the marsh is slowly changing to woodland.

At the end of the boardwalk is a path that follows a **forested floodplain** or **nontidal wetland** up through the woods. As you cross the small bridge, look for a spring in the ravine that seeps from underground. Continue on the path to the top of the hill and back to the **Wetlands Center**. Tell us what you've discovered!



ANNUAL WILDRICE

Zizania aquatica

Marsh

Annual

Reaching a height of over ten feet, this annual grass has large, soft, flat tapered leaves (up to four feet long and two inches wide) with margins rough to the touch. Pistillate (female) flowers are on broomlike branches at the top, while the staminate (male) flowers dangle from spreading side branches below. Narrow half-inch black seeds have long tails to help them fall straight down into the mud when ripe. In the fall, the decomposing rice plants provide

a rich source of organic matter to the river and estuary.

Unlike the wild rice that grows around northern Minnesota and the Great Lakes, the variety here at Jug Bay drops its ripe seeds (rice grains) so quickly that it has no commercial value. Its value to wildlife, however, is immense. The seeds are eaten by game birds, songbirds, muskrat, deer, and waterfowl. The wild rice marshes are an exceptional stop-over habitat for thousands of fall migrant Sora rails. Wood Ducks feed on both seeds and flowers, as do Red-winged Blackbirds. The Marsh Wren weaves the reeds into a globular-shaped nest.

EASTERN POISON IVY

Toxicodendron radicans

Swamp, Scrub-shrub, Forested floodplain

Perennial

"Leaves of three – Let it be!" is the well-known motto for this deciduous plant, which may cause an itchy skin rash when any part of the plant is touched. Taking many disguises, poison ivy can grow as a shrub, as a low-growing plant, or as a trailing or climbing vine. The thick, hairy vines, often seen growing up to the tops of mature trees, are *not* part of the trees – they are Eastern Poison Ivy vines, which can also give you a rash. The plant's white berries are a favorite food source for many birds, which scatter them widely.



COMMON BUTTONBUSH

Cephalanthus occidentalis

Scrub-shrub

Perennial



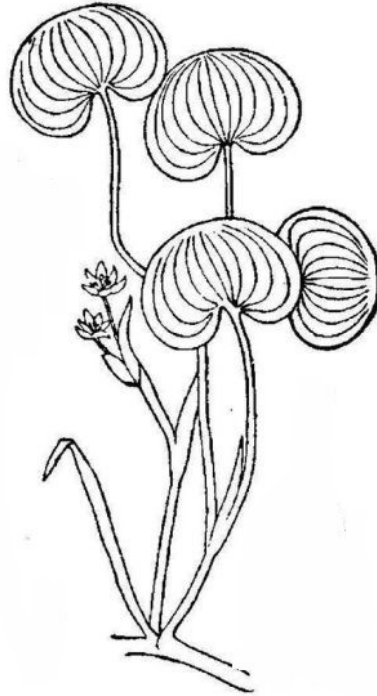
This shrub grows on the upland side of the Marsh Boardwalk. Fragrant white globular flower heads, which look like pin-cushions, mature in the fall to form round "button" seed heads. Marsh birds nest in the branches, and waterfowl and muskrats eat the seeds.

KIDNEYLEAF MUDPLANTAIN

Heteranthera reniformis

**Marsh
Perennial**

This inconspicuous plant floats on the top of the water at high tide. White or pale-blue flowers bloom from August to October. Uncommon at Jug Bay, the plant is found in only a few locales. Seeds are eaten by ducks, and the leaves shelter fish and insects.



AMERICAN WITCHHAZEL

Hamamelis virginiana

**Scrub-shrub
Perennial**

This shrub is known for its medicinal uses as a skin astringent. The leaves have wavy edges and uneven bases. In the fall after the leaves have dropped, yellow flowers bloom and the woody seed pods burst open, shooting out black seeds over a large distance. Seeds are eaten by deer, quail, and beaver.



YELLOW POND-LILY (SPATTERDOCK)

Nuphar lutea

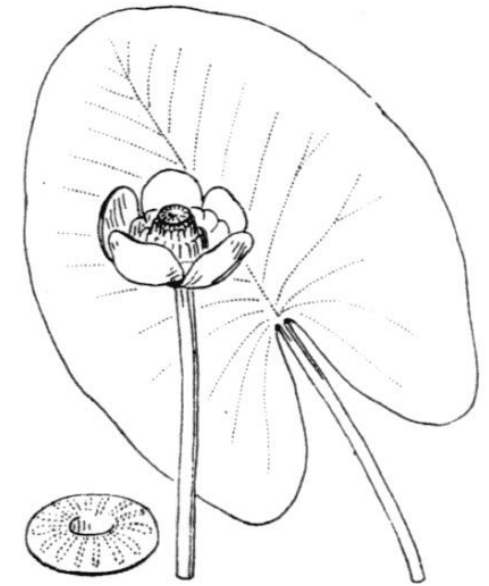
**Marsh
Perennial**

Spatterdock, or Yellow Pond-lily, commonly grows in colonies and reaches a height of up to 3 feet. This plant has large heart-shaped leaves that remain erect at high tide and do not float. A single two-inch yellow flower is produced between May and October.

Leaves and flowers arise from a thick spongy underground stem called a rhizome embedded below the mud. The blackish rhizomes work their way up from the mud in winter, where they look like strange marsh creatures!

Yellow pond-lily leaves help shade the water for fish and other aquatic life. The rhizome is used as an ingredient in cooking in some countries and some cultures also use this plant for medicinal purposes. Seeds can be used to make 'popcorn.' A small beetle feeds on Spatterdock and tiny flies are likely pollinators.

Spatterdock is expanding in coverage here.



BROADLEAF CATTAIL

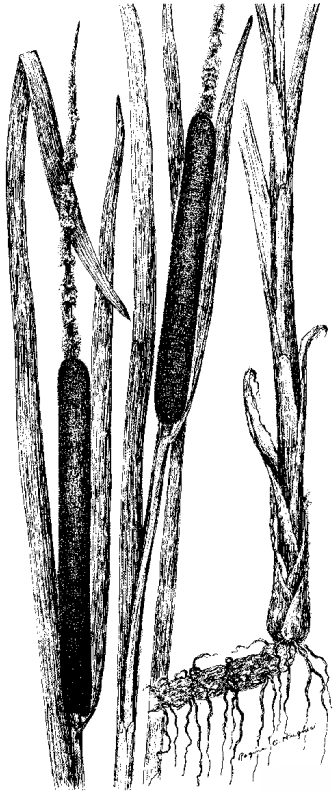
Typha latifolia

NARROWLEAF CATTAIL

Typha angustifolia

Marsh

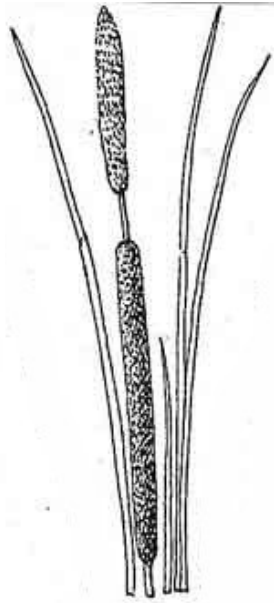
Perennial



Typha latifolia

Typha angustifolia

Forming extensive stands at Jug Bay, cattails are easily recognized in late summer and through winter by the brown cigar-shaped "cat's tail," which is made up of tiny seedlike fruits with long hairs. Seeds are wind-dispersed. Broadleaf Cattails have broader, 1-inch wide leaves and almost no gap between male and female flowers. Narrowleaf Cattails have 1/2-inch wide leaves and staminate (male) flowers that are separated by a gap from the pistillate (female) flowers.



Cattails provide shelter and food for waterfowl, songbirds (especially Red-winged Blackbirds, Sora Rails, and Marsh Wrens), and muskrats. Muskrats use the long leaf blades to build dome-shaped lodges in the marsh.

Cattails trap sediments from the water and slowly change the habitat from wet to dry,

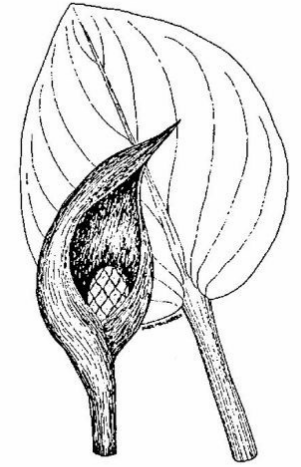
SKUNK CABBAGE

Symplocarpus foetidus

Swamp,

Forested Floodplain

Perennial



The earliest plant to appear and flower in the spring, Skunk Cabbage first pokes its way up through the snow or mud in February. Purple and green floral hoods (spathe), with knob-shaped flower clusters inside (spadix) appear first, followed by large green "elephant-ear" leaves. When crushed, the plant gives off a distinct odor, which helps attract insect pollinators. Skunk Cabbage is a relative of the Jack-in-the-Pulpit and Green Arrow Arum.



HARLEQUIN BLUEFLAG

Iris versicolor

Marsh, Swamp

Perennial

This wildflower is found in the upland edges of swamps and marshes. Its swordlike leaves emerge in early spring, and violet-blue flowers bloom from May to August. The plant has little food value for wildlife, but the flowers add brilliant splashes of color to the marsh.



DOTTED SMARTWEED

Polygonum punctatum

Swamp, Scrub-shrub

Annual

Smartweed has tiny white, green, or pink flowers that appear from early summer to October, after which seeds are formed. The lustrous black or brown seeds have a peppery taste; they are relished by ducks in the fall. The rhizomes or underground tubers are also eaten by waterfowl.

**SMOOTH BEGGARTICK
(BUR MARIGOLD)**

Bidens laevis

Marsh

Annual

Blooming in late August and September, the Smooth Beggartick is a member of the sunflower family and produces spectacular yellow flowers. The number of plants that grow up in the marsh varies greatly from year to year; however, a large bank of flowers can almost always be seen from the Observation Deck in the fall.



so eventually cattails may die off.

Native Americans relied heavily on cattails for their survival. They ate the roots, new shoots, pollen, and seeds. The fluffy seed hairs were used as tinder for fires and as diaper material in papoose carriers. Dried reeds were made into baskets, mats, and roofing for their summer longhouses.

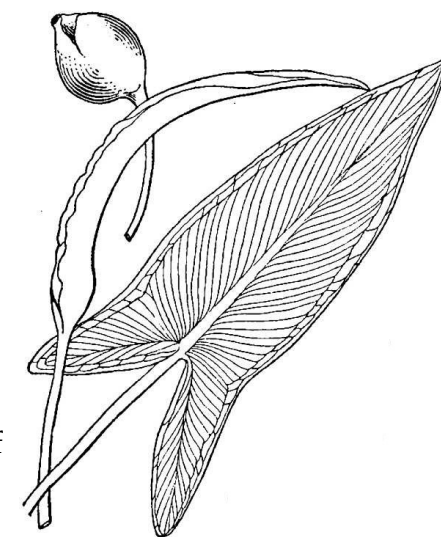
GREEN ARROW ARUM

Peltandra virginica

Marsh

Perennial

Up to three feet high, Green Arrow Arum has thick, fleshy, arrow-shaped leaves with three lobes. Each lobe has a prominent midvein, which branches out from the center vein, and veins along the leaf edge. Flowering in tidal marshes along the river from May through July, Green Arrow Arum produces tiny, inconspicuous flowers on a fleshy spike (spadix) enclosed within a pointed, leaflike green sheath (spathe). Green seeds form within the stalk; when they are ripe, they disperse by floating in and out of the marsh with the tides from late summer through the following spring. The seed coat splits open, exuding a sticky jellylike substance. The sticky gel helps anchor the seed in the mud to aid germination. Seeds are a favorite of Wood Ducks and muskrats.



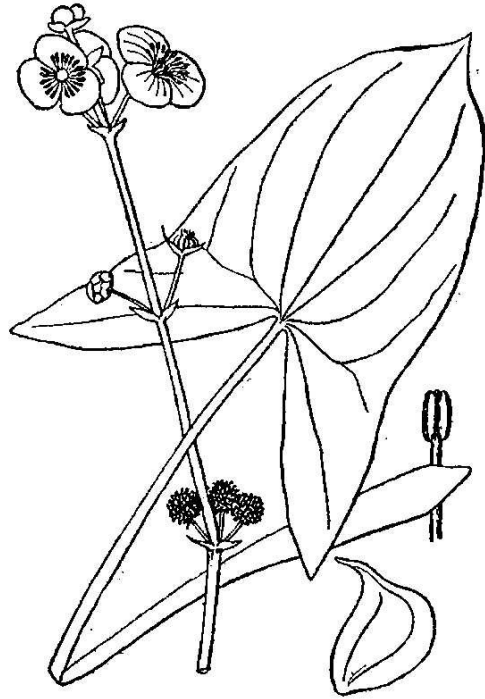
BROADLEAF ARROWHEAD

Sagittaria latifolia

Marsh

Perennial

Arrowhead leaves are arrow-shaped and similar to Green Arrow Arum leaves. Arrowhead lacks a single midvein, but rather has many veins that branch out from the point where the leaf joins the stem. The showy white flowers have three petals and yellow centers. The green seed balls are in groups of three.



Arrowhead is also called 'duck potato,' since its potato-like tubers are eaten by ducks (as well as by muskrats). Native Americans cooked the tubers and sometimes opened up muskrat houses to get to the animals' cache of roots.

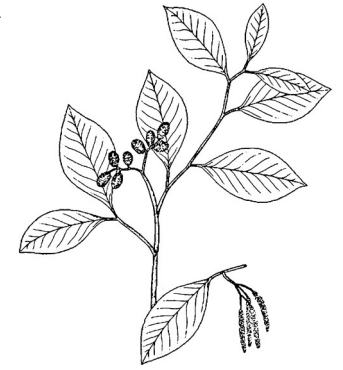
HAZEL ALDER

Alnus serrulata

Scrub-shrub, Swamp

Perennial

Seen along the Marsh Boardwalk, this small tree grows well in wet soils. It has double-toothed oval leaves and smooth bark with small speckles. Both the male flowers (catkins that droop) and female fruit (small pine cone-like structures) are found on the same plant. Female flowers first appear in March; the male flowers stay on the plant all winter and open in April. Alders grow rapidly and often form thickets, which make good cover for birds and other wildlife. Deer, if they are hungry enough, will eat the twigs.



SWEETBAY (MAGNOLIA)

Magnolia virginiana

Swamp, Scrub-shrub

Perennial

When crushed, the leaves are spicy and fragrant; they are white underneath and have a conspicuous midrib. Here in Maryland, the smooth untoothed leathery leaves are "nearly evergreen"; that is, some of the leaves remain on the tree all through the winter. Large white fragrant flowers bloom between May and July, and dark red fruits develop between September and October.

Growing in both swamps and uplands, the Sweetbay is favored by beavers, which use it for building dams.



WATERTHyme

Hydrilla verticillata

Marsh

Perennial

Hydrilla is often considered a nuisance when it forms dense beds that interfere with recreational use of waterways. On the other hand, hydrilla is an excellent food source for waterfowl and habitat for fish. A native to Asia it was first discovered in the US in 1960.



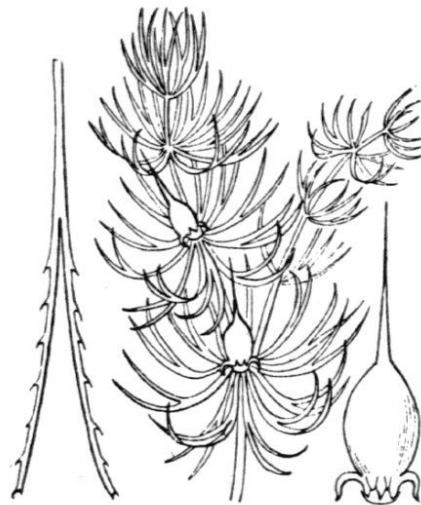
COON'S TAIL

Ceratophyllum demersum

Marsh

Perennial

Coon's Tail is shade tolerant and free-floating, making it less sensitive to turbid water conditions. It is an important food source for waterfowl as well as a key shade, shelter, and spawning medium for some fish.



PICKERELWEED

Pontederia cordata

Marsh

Perennial

Pickerelweed (2-4 feet tall) produces spikes of purple-blue flowers that bloom from May until October. Emerging from underground rhizomes, the fleshy heart-shaped leaves have closely parallel veins that follow the general shape of the leaf. The plant is similar to Green Arrow Arum, which has larger, triangular-shaped leaves with three dominant veins.



During the winter, the upper portion of the plant decomposes entirely, leaving mud flats bare. Although Pickerelweed can propagate by seed, it is a perennial that sends up new growth each year from a rhizome. The sticky red seeds are eaten by ducks, and the thick, short rhizomes are eaten by muskrats.

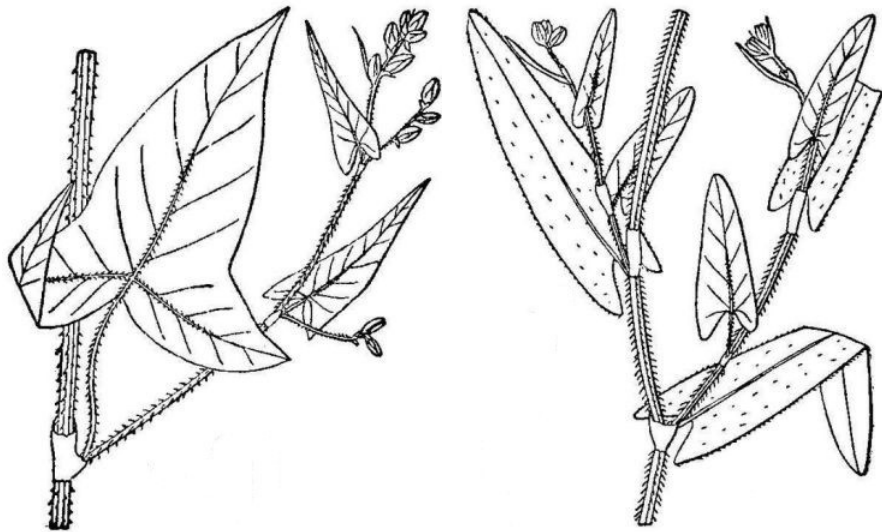
HALBERDLEAF TEARTHUMB *Polygonum arifolium*

ARROWLEAF TEARTHUMB *Polygonum sagittatum*

Marsh, Swamp, Scrub-shrub

Annual

Forming tangled thickets in late summer, these vines grow up and over other marsh plants. Tearthumb's name comes from the sharp spines that grow along its stems. The leaves are smooth, narrow, and arrow-shaped. Flowers are pink or white and grow in loose clusters at the end of long stalks. The hard seeds are eaten by waterfowl, Red-winged Blackbirds, Soras, songbirds, and small mammals.



Polygonum arifolium

Polygonum sagittatum

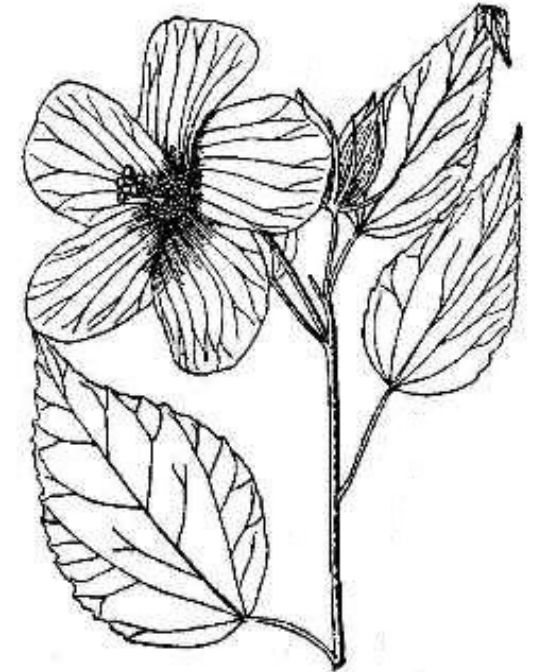
CRIMSONEYED ROSEMALLOW

Hibiscus moscheutohydrilla

Scrub-shrub

Perennial

This tall (3-7 feet), leafy member of the mallow family grows in the higher parts of the marsh. The large five-petaled flowers are pink or white and sometimes have a red center. Leaves are egg- or heart-shaped, smooth above, velvety on the underside. The plant flowers from late July through August.



The dark brown round seed pods remain on the stems through the winter. The plant propagates by both seeds and rhizomes.

During colonial times a confection was made from mucilaginous roots of a related species of this plant, the Common Marshmallow (*Althaea officinalis*) so this marsh hibiscus is sometimes called a "marshmallow."

SWEETFLAG

Acorus calamus

**Swamp
Perennial**

Sweetflag leaves are sword-like with a rigid mid-vein and grow to four feet high. All parts of the plant are fragrant when bruised. The roots have a sweet flavor and were once used for making candy. Minute green-yellow flowers grow on a 2-3 inch long spike, which juts from the stem at the base of the plant. The plant is eaten by muskrats.



JEWELWEED

Impatiens capensis

**Marsh, Swamp, Scrub-shrub
Annual**

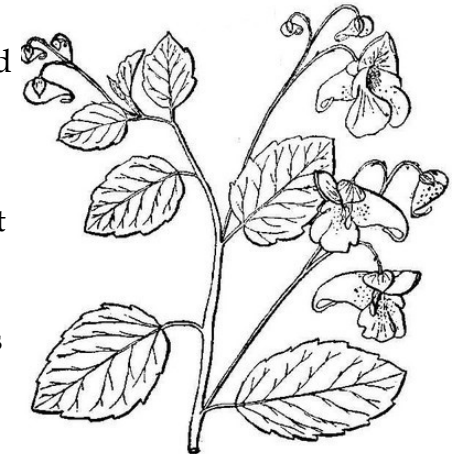
This wildflower, which flourishes in both tidal and nontidal areas, has many succulent, light-green translucent stems that bear brilliant orange funnel-shaped flowers with darker orange spots.

When the leaves are held under water, they become

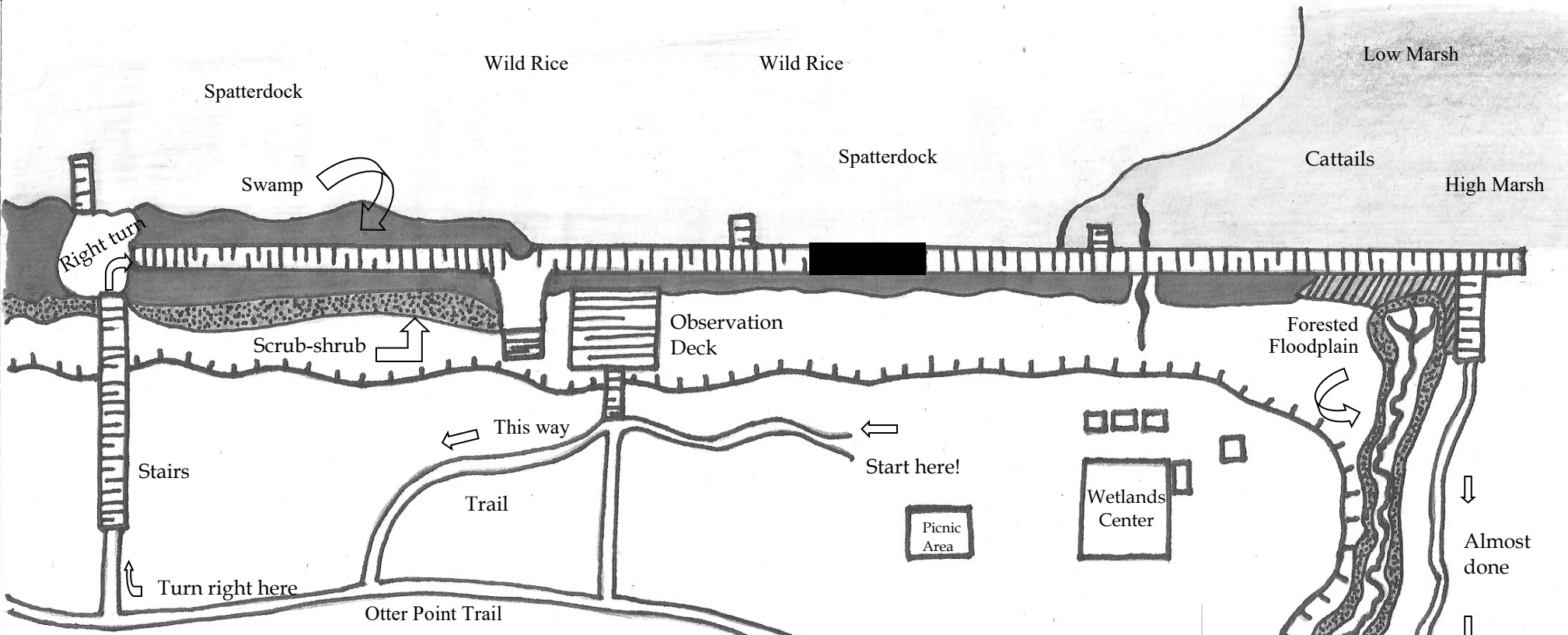
silvery and jewel-like.

Ripening seed pods split open with a pop to eject seeds over seven feet.

When touched, the pods burst – hence its other name, Touch-Me-Not.



Ruby-throated Hummingbirds drink its nectar, birds and mice eat the seeds, and rabbits browse on the leaves. Jewelweed's juices have long been used as a natural remedy to treat poison ivy and encounters with stinging nettles. It is still used in some skin medications.



SWAMP
Tidal/non-tidal
Trees, woody shrubs and
herbaceous plant

- Alder, Smooth
- Arrowwood, Southern
- * Arrow Arum, Green
- Ash, Green
- Red Maple
- Blackgum
- * Blueflag, Harlequin
- Doghobble, Swamp
(Fetterbush)
- Fern, Cinnamon
- * Jewelweed
- * Lizard's Tail
- Pepperbush, Coastal Sweet
- * Sweetbay (Magnolia)
- * Sweetflag
- * Tearthumbs
- * Smartweed, Dotted
- * Skunk Cabbage
- * Turtlehead, Red

SCRUB-SHRUB
Tidal/non-tidal
Shrubs and herba-
ceous plants

- Arrowwood, Southern
- Blueberry, Highbush
- * Buttonbush
- * Jewelweed
- * Rosemallow,
Crimsoneyed
- Rose, Swamp
- * Sweetbay (Magnolia)
- * Tearthumbs

LOW MARSH
Tidal
Herbaceous plants

- * Pickerelweed
- * Pond-lily, Yellow
(Spatterdock)

HIGH MARSH
Tidal
Herbaceous plants

- * Arrow Arum, Green
- * Arrowhead, Broad-leaved
- * Cattails
- * Coon's Tail
- * Hempweed, Climbing
- * Reed, Common
(Phragmites)
- * Scaldweed (Dodder)
- * Tearthumbs
- * Waterhyme (Hydrilla)
- * Wild Rice, Annual

**FORESTED
FLOODPLAIN**
Non-tidal
Trees, shrubs, and
herbaceous plants

- Arrowwood, Southern
- Beech, American
- Greenbriers
- Holly, American
- Laurel, Mountain
- Maple, Red
- Oak, White
- * Skunk Cabbage

* These plants are described in the guide.
For information on other plants, please
consult the field guides available from
the naturalists at the Wetlands Center.