

# James River Rock Pool Flora

---



## AQUATIC PLANTS

Aquatic plants grow in and around the rock pools and slow channels of the river. Some are rooted in mud or cracks in the rocks; others float on, or near, the water surface. They tend to be soft, fleshy, and easily torn. A few reproduce aggressively and can become invasive. With exceptions, most bloom in mid- to late-summer when the water warms and the river level is low.



## Arrowhead (Duck Potato)

*Sagittaria latifolia* Willd.

Water-plantain Family (Alismataceae)

### Arrowhead

Arrowhead is one of two plants found in the rock pools with clusters of arrowhead-shaped leaves growing ankle to knee high in height. The other is Pickerelweed. Both Arrowhead and Pickerelweed tolerate being submerged in high water and drying out in late summer, and are rooted in mud rather than sand. The leaves of Arrowhead have thick, fleshy stems 3 to 15 inches long and leaf blades up to 7 inches long. Leaf blades may be broad or narrow, but have sharply pointed tips and basal lobes, differentiating it from Pickerelweed, which has rounded leaf tips and heart-shaped bases. White flowers with 3 petals are borne in whorls of 3 on stalks 6-20 inches tall. The upper flowers produce pollen only, while the lower ones produce round balls of tightly packed seeds. Plants bloom from June through September.



➔ **LOOK FOR tubers, or corms, at the base of the stems.** These anchor the plant and, during the winter, provide food for muskrats and waterfowl, hence the common name, 'duck potato'. They were harvested by Native Americans, and in this area, were called 'Tuckahoe' from which the local creek, school, highway, and plantation were later named.



## Marsh Dewflower

*Murdannia kiesak* (Hassk.) Hand.-Maz  
Spiderwort Family (Comellinaceae)

### Marsh Dewflower

*(Non-native and aggressively invasive!)*

An invasive annual plant from Asia that sprawls across mud, sand, and shallow water to form dense mats that crowd out native wetland plants. The leaves are narrowly lance-shaped, and fold to form a sheath around the spreading, prostrate stems. The flowers are about 1/2 inch across, have 3 petals, vary from pale pink or bluish pink to maroon, and are borne singly in the axils of leaves. It is related to and resembles our native spiderwort, but prefers wet conditions. It appears to be spreading in central Virginia.



➡ LOOK FOR low growing plants with stems crisscrossing outward, forming mats or colonies that cover the rocks.



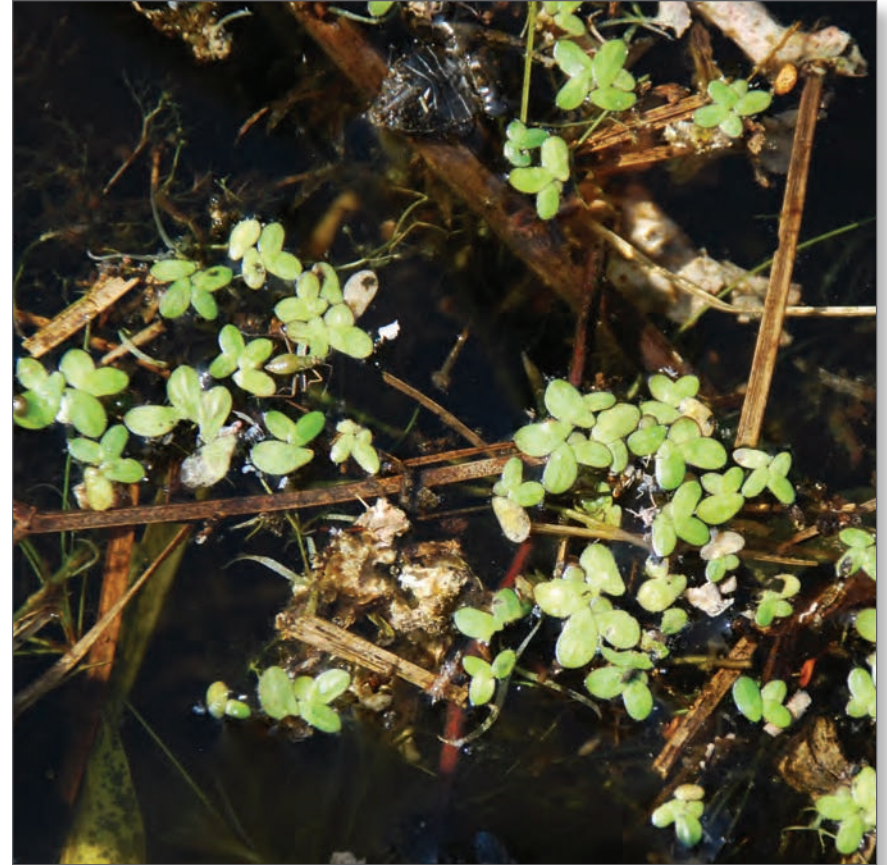
## Duckweed

*Lemna* spp.

Duckweed Family (Araceae)

### Duckweed

Tiny, bright-green, floating plants consisting of one round leaf (less than 1/4 - 3/8 inch across) with a single rootlet. It is the smallest flowering plant, producing one tiny flower with either a single stamen or single pistil. Duckweed reproduces rapidly, often carpeting the surface of still pools or slow-moving backwaters like green scales. It re-populates pools quickly after floodwaters recede. Mallard ducks and geese feed on it, giving it another common name: 'duckmeat'. It is sometimes grown commercially for animal feed, primarily for fish and poultry.



➔ *LOOK FOR different species. One is very small, one is larger, and one has red underneath. Some have single rootlets, others have several. You will need a hand lens for this activity. Also notice the temperature difference between the surface water and water underneath floating mats of duckweed.*



## Hydrilla

*Hydrilla verticillata* (L.f.) Royle

Water Plantain Family (Hydrocharitaceae)

### Hydrilla

*(Non-native and aggressively invasive!)*

*Be careful not to take any with you!*

This aquarium plant escapee originates from Europe and Asia and forms masses of branching, rope-like underwater stems that root loosely to the substrate. The 1/2 inch leaves are arranged in whorls of 3-8 around the stem, and have fine marginal teeth visible to the naked eye. This differentiates it from similar-looking native species with smooth margined leaves. Inconspicuous white flowers are borne singly at the water's surface in mid-to late-summer. Male and female flowers are separate on the same plant. The stems uproot and break easily, readily sprout roots, and grow quickly, making it one of our most aggressive and invasive aquatic plants. It often clogs waterways, fouling boat motors and destroying both water sports and recreational fishing.



➔ *LOOK FOR the color change of leaves as you go down the stem. Bright green at the surface, they become dark brown as the upper growth captures the sunlight and stops the photosynthesis below. These dying leaves use up the dissolved oxygen in the water, making the lower areas devoid of life.*



## Grassy Mud Plantain

*Heteranthera dubia* (Jacquin) Macmillan  
Pickerelweed Family (Pontederiaceae)

### Grassy Mud Plantain

Two types of perennial mud plantains are found in the rock pools, and their common names clearly describe their differences. Grassy Mud Plantain has 6-inch long leaves about 1/2 inch wide that float on the surface of still pools or wave in the gentle to moderate currents of the river. Leaves have no mid-vein and leaf bases form a sheath around the stem. Yellow, star-shaped flowers appear in late summer and fall in leaf axils on 3-4-inch stems that hold them at or just above the water's surface. Each flower lasts only a day and is followed quickly by slim pods with tiny seeds. Another name for this plant is Water Star-grass.



➔ *LOOK FOR strange little swellings called plant galls on the lower part of the stem. These are caused by a harmless fungus. Find them by feeling down to the roots, but do not pull up the plant.*



## Roundleaf Mud Plantain

*Heteranthera reniformis* R & P

Pickerelweed Family (Pontederiaceae)

### Roundleaf Mud Plantain

Sprawling around pool edges and in shallow waters, this plant arranges its 2-inch leathery, kidney-shaped leaves to expose each to the sun. Leaf stems are slightly swollen and fleshy. Its growth-form and roots help to trap sediment and build up soil to provide habitat for other plants to colonize. White flowers are borne in spikes of 4-8 blooms which all open on the same day. Blooming may begin in June and continue through September, depending on temperatures and water levels. These plants are sometimes used in aquariums.



➔ LOOK FOR yellow or green spots at the base of the top petal on the flowers.



## Pickerelweed

*Pontederia cordata* L.

Pickerelweed Family (Pontederiaceae)

### Pickerelweed

Arrowhead-shaped leaves with rounded leaf tips and heart-shaped leaf bases help differentiate this plant from its look-alike, Arrowhead. Pickerelweed is one of the first plants to colonize muddy shorelines, and serves as a protective habitat for small fish and amphibians. Its violet-blue flowers have 3 upper lobes joined together and 3 separate lower lobes and are clustered in spikes 3-4 inches long. They resemble garden hyacinths and may begin blooming in June, continuing sporadically into the fall.



➔ *LOOK FOR* slender, predatory fish called Pickerel hunting amid its vegetation. They get their name from taking advantage of this habitat.





## Water-willow

*Justicia americana* (L.) Vahl  
Acanthus Family (Acanthaceae)

### Water-willow

Water-willow forms large colonies in the James River as its creeping underground stems take root on shorelines, shoals, and the river bottom in slower moving water. Among the rock pools, the colonies are limited in size, sometimes to just a few plants, by the amount of soil available. Growing 12 inches to 2 feet tall, with lance-shaped, opposite leaves, the plants resemble young willow bushes. White flowers with a purple throat look like miniature orchids and are grouped between stem and leaf bases. They appear from early summer into the fall. The dense growing habit make beds of Water Willow both a nursery for many fish and a filter that traps sediment and builds up shoals for trees like American Sycamore and Black Willow to colonize.



➔ *LOOK FOR honey bees and butterflies sipping nectar from the flowers and first-year water snakes hunting minnows among the stems. Pull on a stem and you will see how well anchored it is.*



## Water-celery or Wild Celery

*Vallisneria americana* Michaux

Frog's-bit Family (Hydrocharitaceae)

### Water-celery, Wild Celery

In shallow, moving water look for clumps of long, narrow, blunt-tipped leaves waving like ribbons just under the surface. Clear light green leaf edges contrast with the darker green, net-veined center section. The short stems of this perennial branch and root repeatedly, forming patches which provide shelter for small fish and invertebrates and trap sediment, gradually building up habitat for other plants. Male and female flowers are produced separately in late summer, the male flowers separating to float freely, and the solitary female flowers remaining attached to a long stem that holds them at the waters' surface. Once pollinated, these flower stems contract, pulling the fruit under the surface to ripen and survive cold weather. These underground buds, leaves and seeds are highly nutritious and easily reached, thus making this a valuable food plant for wildlife. It is eaten by ducks, geese, muskrats and even fish.



➔ *LOOK FOR* the two shapes the slender flower stem assumes. When straight or loosely coiled, it is ready to produce female flowers at the surface and brittle male flowers underwater that break off and float up. When coiled or tightly kinked, it has pulled the seed pods back underwater.