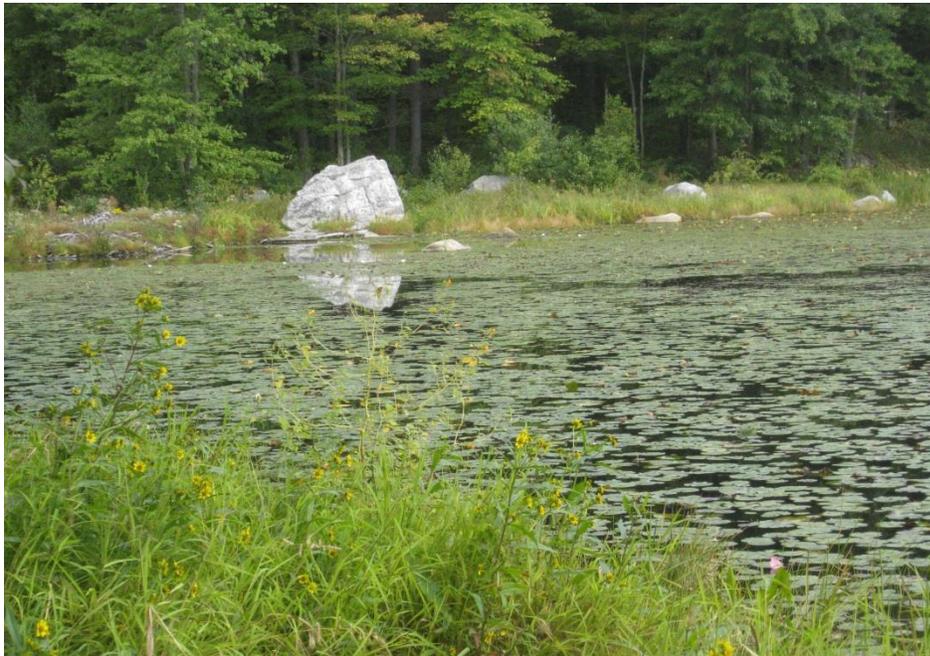


AQUATIC PLANTS OF FITZGERALD LAKE



The following pages describe aquatic plants observed by Matt Hickler, botanist and ecologist, on July 12, 2012, at the Fitzgerald Lake Conservation Area. His report listing the various species and notes is on the final page.

Two additional species, watershield and water chestnut, not on Hickler's list, but present in Fitzgerald Lake, are also included in this summary.

Bill Williams
October, 2013

PLANT LIST BY COMMON NAME

Brazilian water-meal	Listed by Hickler as papillate water-meal
Common arrowhead	
Common cattail	
Common spikerush	Listed by Hickler as creeping spikerush
Greater duckweed	
Humped bladderwort	
Northern water-meal	
Ribbonleaf pondweed	
Slender tiny pondweed	
Spineless hornwort	Listed by Hickler as forked coontail
Water chestnut	Not listed by Hickler
Water lily	
Water purslane	
Watershield	Not listed by Hickler

BRAZILIAN WATERMEAL

Wolffia braziliensis (Lemnaceae family)



Another common name is watermeal

Range

Eastern, Central and West Coast of U.S., South America

Description

Watermeal is an extremely small floating aquatic plant without leaves, stems or roots. Its body, called a frond or thallus, is somewhat oval and 0.5-1mm long. The upper side of the fronds is medium to dark green and the underside is light green. The plant produces flowers infrequently in late summer or early fall.

Habitat and Culture

Watermeal is found in calm waters, such as ponds or swamps. It thrives in full sun and in waters that are nutrient rich with nitrogen and phosphorus. It is frequently found with other plants in the Lemnaceae family, particularly duckweed.

Other

Some waterfowl, fish, snapping turtles and insects feed on watermeal. It also provides habitat for aquatic invertebrates. Where watermeal covers the entire surface, oxygen levels are reduced.

COMMON ARROWHEAD

Sagittaria latifolia



Other common names: Arrowhead, Broadleaf arrowhead, Indian potato

Range

Arrowhead is found in the United States and southern Canada.

Description

Arrowhead is an emergent plant with arrow-shaped leaves up to about 8 inches long. It produces one inch wide white flowers which bloom in mid to late summer. The fruit, pictured above, is burr-like, green and about one inch in diameter. Arrowhead roots form tubers and rhizomes.

Habitat and Culture

Arrowhead is found in lakes, ponds swampy areas and streams, usually in shallow water. Propagation is from seeds or rhizomes.

Other

Waterfowl feed on seeds and tubers, and the tubers, rhizomes and leaves provide food for muskrats.

COMMON CATTAIL

Typha latifolia



Other common names are catninetail, punks, corn dog grass

Range:

North America and Eurasia

Description:

Cattails are an emergent wetland plant with flat, blade-shaped leaves 3 – 10 feet long that extend the length of the stem. The leaves are green/ blue-grey in color. The tall green stem is topped by a brown, cylindrical spike consisting of the pistillate which is topped by a light yellow/brown staminate spike. Small flowers bloom in early summer. The fruit form is a small nutlet which produces abundant miniscule seeds.

Habitat and Culture

Cattails are found growing in the sandy or muddy soil of marshes, rivers and pond borders. They can survive in standing water up to about 1.5 feet deep. Cattails thrive in full sun. Propagation is from rhizomes which can be over 2 feet long.

Other

Cattails rootstocks are a plentiful source of food for muskrats, and insects feed on cattail stalks, leaves and flowers. Cattails provide cover for animals and birds, particularly red-winged blackbirds. Cattail leaves are used as nesting material by birds.

COMMON SPIKERUSH

Eleocharis palustris



Other common names are creeping spikerush, and pale spikerush.

Range

Common spikerush is native to North America and is found in most states.

Description

Spikerush is in the sedge family. Plant stems are 2 – 3 feet high and can be singular or in small clusters. The stems are leafless and the leaves are structured as sheaths. The foliage is dark green, and flowers which appear in the summer months are brown and inconspicuous. The seeds mature during August – October and are a yellow/brown color.

Habitat and Culture

Common spikerush needs ample sun and a permanent or seasonally flooded area. The primary means of propagation are from rhizomes and sometimes from seed.

Other

Spikerush is a food source and provides shelter for wildlife. It is also used as a method of soil stabilization.

GREATER DUCKWEED

Spirodella polyrhiza (Lemnaceae family)



Other common names: Duckweed, Lesser duckweed

Range

North and South America, Europe, Africa, Australia

Description

Duckweed is a floating aquatic plant. Its foliage is a thallus, which functions as both a leaf and stem. It is round to oval in shape, and its size is 1/16 – 1/8 of an inch. Thallus top sides are green and the bottoms are purple. Each thallus has 3-5 rootlets up to 15mm in length hanging from its underside. Inconspicuous flowers bloom in mid-summer. Duckweed forms in thick clusters and can look like a solid mat.

Habitat and Culture

Duckweed can be found in lakes, ponds, slow moving streams, marshes. Needs full to partial sun. It may be particularly abundant in water having elevated nitrogen and phosphate levels. It can be spread to other aquatic bodies by waterfowl.

Other

Fish, waterfowl, turtles and insects feed on the hanging roots. Duckweed provides shelter for aquatic animals and insects. A heavy cover of duckweed in smaller ponds can lead to depleted oxygen levels. Duckweed is sometimes used as animal feed.

HUMPED BLADDERWORT

Utricularia gibba



Other common names are creeping bladderwort and conespur bladderpod.

Range

Eastern and west coast United States, southeastern and west coast Canada

Description

This aquatic plant has $\frac{1}{4}$ inch long, alternate leaves that branch out from the base of the flower stalk. Carnivorous bladders are attached to the leaves. The bladders are pear-shaped and are usually closed, only opening when disturbed to trap aquatic invertebrates. Yellow flowers are $\frac{1}{4}$ inch across and bloom between late spring and late summer. The plant stems are under 4 inches long and either creep along the bottom or float. The plant has no roots.

Habitat and Culture

Humped bladderwort grows in shallow water along sunny shores of lakes, ponds and marshes. It requires water that is rich in microorganisms.

Other

The plant is sometimes eaten by waterfowl and muskrats, but is not their primary source of nutrition.

Humped bladderwort is a species of special concern or endangered in some states.

NORTHERN WATER-MEAL

Wolffia borealis (Lemnaceae family)



Other common names are dotted water-meal and flat water-meal.

Range

Water-meal has a wide range but is found mainly in the eastern U.S.

Description

Similar in appearance to Brazilian water-meal. The plant is a floating aquatic with no leaves, stems or roots. The body (“frond”) is rounded at one end and pointed at the other, and size is 0.4-1.2 cm. The surface of the frond is dark green and the underside is a transparent green. Flowers are extremely small, and the plant seldom flowers. The fruit is achene-like and contains a single seed.

Habitat and Culture

Northern water-meal is found in calm waters of lakes, ponds and rivers. It thrives in full sun and nutrient-rich waters. It is usually found with other plants in the Lemnaceae family. Reproduction is by division of the fronds. Water-meal can be spread to other water bodies by waterfowl.

Other

Water-meal is a food source for waterfowl.

RIBBONLEAF PONDWEED

Potamogeton epihydrus



Other common names not found.

Range

Most of the United States, except the southwest, and southern Canada

Description

Ribbonleaf pondweed has both submerged and floating leaves. The submerged leaves are alternate in arrangement, light green in color and have a center stripe. The floating leaves are opposite and have a long oval shape. The leaves are 1-2 inches long and have a leathery texture. The four-lobed flowers are on spikes above the water and are inconspicuous.

Habitat and Culture

The plant is found in lakes, ponds and slow streams. Propagation is from seeds.

Other

The plant's leaves, tubers and seeds provide food for aquatic animals.

SLENDER TINY PONDWEED

Potamogeton berchtoldii, *P. pusillus*



Another common name is small pondweed.

Range

United States and Canada

Description

Small slender pondweed has long, thin, grass-like leaves with a midrib. The leaves are submerged and alternate in arrangement. Leaf color is light to olive green and occasionally can be purplish. The stems which rise from rhizomes can be 4.5 – 9 feet long and have a round or somewhat compressed cross section. Small flowers 1-3 cm in size grow in whorls on spikes protruding from leaf axils and generally are somewhat submerged. The plant produces a small oval fruit having a pointed tip.

Habitat and Culture

The plant is found in quiet water up to about 9 feet in depth and can tolerate turbid conditions. Propagation is usually from rhizome tips and sometimes from seed.

Other

The plant is a food source for waterfowl, muskrat and beavers.

SPINELESS HORNWORT

Ceratophyllum echinatum



Other common names are spiny hornwort, prickly hornwort, spring hornwort, forked coontail

Range

Eastern, Central and Northwest U.S., Eastern and Northwestern Canada

Description

Forked coontail is an aquatic plant with no true roots and trailing stems up to 12 feet in length. The leaves are arranged in whorls and are dark green/brownish in color. The flowers are miniscule and bloom in the spring and summer.

Habitat and Culture

The plant is found in lakes, ponds and slow moving streams. It thrives in slightly acidic water and in depths of up to 7 feet.

Other

Forked coontail is often used in aquariums because of its release of oxygen and ability to reduce blue-green algae.

WATER CHESTNUT

Trapa natans



Another common name is water caltrop.

Range

This is a different species from the plant that is used in Asian cooking (*Eleocharis dulcis*). Water chestnut (*Trapa natans*) is native to Eurasia. In the United States it is found in the Northeast and is highly invasive.

Description

Water chestnut has both floating and submerged leaves. The triangular floating leaves have a toothed margin, are one to one and a half inches long and appear in a rosette form on the surface. The submerged leaves are feathery and wrap around the plant stem, which can be up to 16 feet long. Small white flowers bloom from the center of the rosette. A nut-like fruit with four sharp spines develops underwater.

Habitat and Culture

Water chestnut is found in ponds and slow moving streams in water depths up to 16 feet. The plant reproduces from the ripened nut after it sinks to the bottom. The seed from a nut can produce 10 – 15 rosettes, and each rosette, in turn, can yield 10 – 20 new seeds, so reproduction rates can be prolific.

Other

The floating leaves form dense mats on the surface and can have a significant environmental impact shading and crowding out native plant species and lowering dissolved oxygen levels. The plant has limited nutritional or habitat benefit for wildlife.

WATER LILY

Nymphaea odorata



Other common names are American white water lily, fragrant white water lily, white water lily, fragrant water lily.

Range

Originally water lily was native to eastern North America and was later introduced in other parts of the country. The plant is now found in most states.

Description

Water lily is a floating aquatic plant with circular leaves ranging from 4 – 12 inches in diameter. The leaves are green on the surface side and purple underneath with a single slit from one edge running to the center of the leaf. The leaves and stems have a leather-like texture. The golden stems are attached to the center of the leaf and grow from large rhizomes on the lake bottom. Water lily flowers are white with numerous golden stamens in the center. The flowers open in the morning and close in the afternoon. After the flowers have bloomed, the head droops underwater where seeds develop and are released to float on the surface.

Habitat and Culture

Water lilies need clear water up to 8 feet deep and sunny conditions. They can be found in ponds, shallow portions of lakes and in slow moving streams. Reproduction is from rhizomes and seeds.

Other

Water lily leaves and rhizomes are eaten by beavers and muskrats, and seeds are consumed by waterfowl. Submerged parts of the plant provide habitat for invertebrates.

A similar looking plant which is found among water lilies at Fitzgerald Lake is watershield.

WATER PURSLANE

Ludwigia palustris



Other common names are creeping primrose, Hampshire purslane, marsh seedbox, marsh ludwigia and false loosestrife.

Range

Water purslane is a perennial and is native to North America, Central America, Caribbean, northern South America, parts of Africa and Western Asia

Description

Leaves are opposite, about 1.5 inches long, and green to red green in color. They have a lanceolate to ovate shape with smooth margins. Flowers are located at the leaf axils. Plant stems can range from 3-18 inches in length.

Habitat and Culture

The plant is found in clear, shallow water, usually in full sun. Plant stems may be either submerged or with upper stems and leaves above the water surface. If portions of the plant are out of water, the stems and leaves may run across the ground. Also, the stems may form mats in mud.

WATERSHIELD

Brasenia schreberi



Other common name: dollar bonnet

Range

Southern Canada to Florida.

Description

Watershield is a floating plant with 2-3" long oval smooth-edged leaves. Leaves are green on top and red/rust colored on the bottom. The undersides of the leaves and the stems are coated with a gelatinous substance. The stems are attached to the center of the leaves. In June – August, the plant produces small red flowers that protrude above the water.

Watershield is similar in appearance to water lilies, which also are abundant in Fitzgerald Lake, but is smaller and its leaves do not have a slit running from the leaf margin to the center.

Habitat and Culture

Watershield is found in oligotrophic and mesotrophic ponds having soft water. The plant grows in water depths between 2-5 feet.

Other

The underwater parts of the plant provide habitat for macro and microinvertebrates. The seeds are eaten by waterfowl and muskrats feed on the stems and roots.

Watershield reproduces from both its seeds and rhizomes.

Aquatic plants seen at Fitzgerald Lake, Northampton

July 12, 2012

Observations by Matt Hickler

Latin Name	Common Name	Notes
<i>Ceratophyllum echinatum</i>	forked coontail	County record - double check ID; a voucher specimen should be collected
<i>Eleocharis palustris</i>	creeping spike-rush	
<i>Ludwigia palustris</i>	water purslane	
<i>Nymphaea odorata</i>	fragrant water-lily	
<i>Potamogeton berchtoldii</i>	slender tiny pondweed	
<i>Potamogeton epiphydrous</i>	ribbon-leaf pondweed	
<i>Sagittaria latifolia</i>	common arrowhead	
<i>Spirodella polyrrhiza</i>	greater duckweed	
<i>Typha latifolia</i>	common cat-tail	
<i>Utricularia gibba</i>	humped bladderwort	County record - voucher should be collected
<i>Wolffia brasiliensis</i>	psillste water-meal	
<i>Wolffia borealis</i>	northern water-meal	State Watch-list and County record - ID should be carefully checked and voucher collected

General Notes

The Lake is generally shallow and muddy with high biomass of aquatic plants. It appears to be rather eutrophic (with a strong supply of nutrients). Species richness is relatively low, with 12 species of true aquatic plants (excluding those limited to bordering wetlands). Three of the species have not been documented from Hampshire County according to the most recent edition of the Massachusetts County Checklist and should probably be double-checked for correct ID and have specimens deposited at the UMASS herbarium.