



Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries & Wildlife
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Threadfoot

Podostemum ceratophyllum Michaux

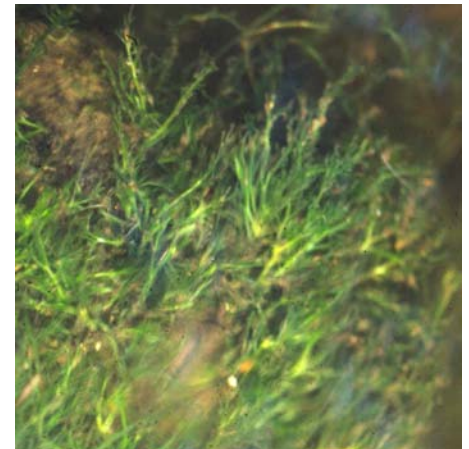
State Status: **None**

Federal Status: **None**

Description: Threadfoot (*Podostemum ceratophyllum*) is an inconspicuous and peculiar aquatic perennial of swift-moving waters. It is the only eastern North American member of the chiefly tropical threadfoot family, Podostemaceae. Its slender ascending stems (2–10 cm; ~0.8–4 in. long) grow from a prostrate axis, tightly appressed to rocks and boulders, and bear many narrow olive-green leaves. Leaves are repeatedly forked into linear, flattened segments and have a pair of stipules at their base. Flowers are small, inconspicuous (without petals and sepals), produced singly along the stems within a membranous spathe, and protrude above the water surface. Fruit capsules are small (1–4 mm) and ribbed, splitting into two valves, on pedicels up to 1 cm long.

Aids to identification: Threadfoot's masses of threadlike foliage and stems have an unusual rubbery, seaweed-like, texture and are easy to identify. Submerged beneath the flowing water, the creeping stems are firmly attached to rocks and stones by unique expanded fleshy disks. The alternate, highly dissected leaves can be long and lax or sometimes more rigid. Flowering occurs when previously submersed plants are seasonally exposed as water levels go down. Once fruits have dehisced, only one of the two valves is persistent.

Similar species: When neither flowering nor fruiting, Threadfoot can be mistaken superficially for an aquatic moss or macro-alga. Otherwise, no other flowering plant shares the unique rock-adhering form of Threadfoot and few species occupy its highly specialized habitat. Species of pondweeds (*Potamogeton* spp.), however, can occasionally occur in nearby gravel between boulders. Pondweeds can be distinguished from Threadfoot by the presence of roots for anchorage, dense many-flowered or -fruited spikes, and mostly flattened ribbon-like leaves.



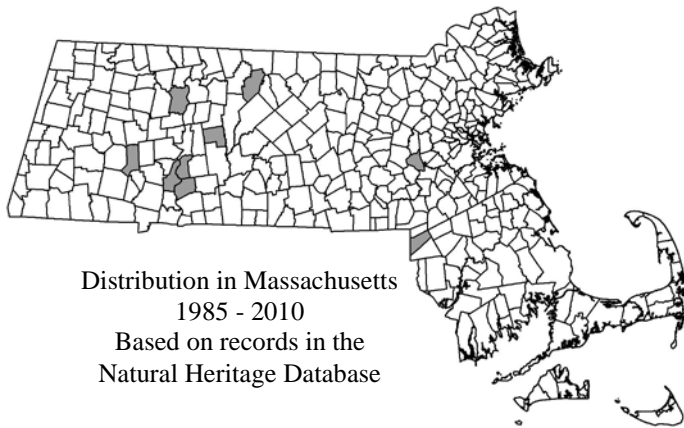
Podostemum ceratophyllum illustrations:

Drawing: USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 2: 205.

Photo: Threadfoot in the water, Bruce A. Sorrie, NHESP.

Range: Threadfoot can be found in North America from Nova Scotia, New Brunswick, and Quebec south through Maine to Georgia, Louisiana, Arkansas and Oklahoma. This species is also documented from the Dominican Republic and Honduras.

Habitat: Threadfoot occurs in an ecologically harsh habitat for a flowering plant. It grows submersed on rocks in the rapids and waterfalls of fast-flowing rivers or streams. Plants occur in areas of direct sunlight and well aerated waters with a seasonal high and low water level cycle. Plants found in association with Threadfoot in Massachusetts include aquatic mosses, pondweeds (*Potamogeton* spp.), Variable Water-starwort (*Callitriche heterophylla*), and Duck's Meat Duckweed (*Lemna minor*), as well as the macro-alga Muskgrass (*Chara*).



Flowering time in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Fruiting time in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Population status in Massachusetts: Threadfoot is not listed as a rare species in Massachusetts. This species is currently known from Bristol, Franklin, Hampden, Hampshire, Middlesex, and Worcester Counties.

Management recommendations: The exact needs for management of Threadfoot are not known. The habitat of Threadfoot is ecologically sensitive. Any activities in or around the riverine habitat that could result in water quality deterioration, substrate alteration, and water flow changes should be avoided. Negative effects on Threadfoot are known to be caused by river flow manipulation, siltation, specific pollutants, and increased water depth.

Reference: C. T. Philbrick. 1984. Aspects of Floral Biology, Breeding System, and Seed and Seedling Biology in *Podostemum ceratophyllum* (Podostemaceae). *Systematic Botany* 9: 166-174.

Updated March 2012