



Natural Heritage & Endangered Species Program

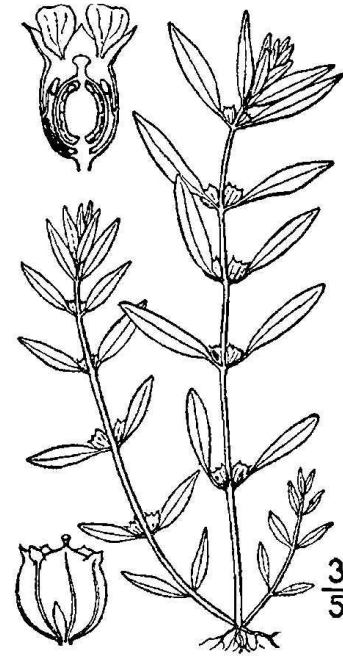
www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

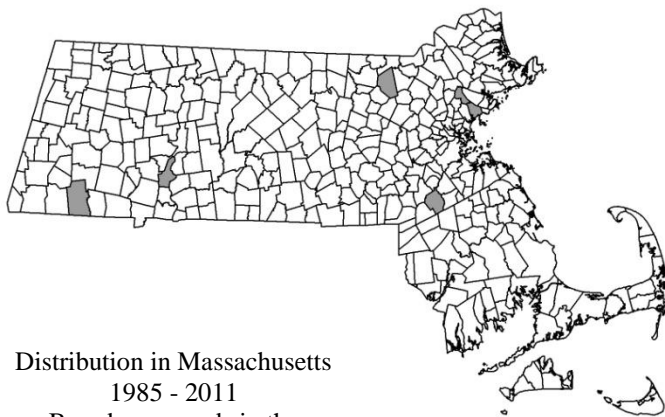
Toothcup *Rotala ramosior* (L.) Koehne

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: Toothcup is a small, wetland herb belonging to the Loosestrife family and is the only species of the genus *Rotala* found in the Northeast. This delicate, inconspicuous annual is smooth, diffusely branched, and only 6 inches high, with upright stems that become semi-reclining later in the season. The closely spaced, oppositely paired leaves are narrowly lance-shaped or linear, smooth-edged, and taper at the base to short petioles (leafstalks) without stipules (small, leaf-like growths). Leaf dimensions average 1-3 cm (2/5-1 1/5 in.) long and 1-6 mm (up to 1/4 in.) broad, but inland and in the West larger-leaved forms are more common. In late summer, from the majority of the leaf axils appears a single, tiny (about 2 mm), stalkless (sessile) flower, which blooms for only a brief period, but nevertheless is distinctive. The flower parts are minute and attached to the rim of a hemispherical or squarish floral tube (hypanthium). There are four translucent, crumpled, pinkish white petals, four slightly smaller, tooth-like lobes of the calyx (the outer, commonly green parts of the flower), and between the



USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 2: 579.



Distribution in Massachusetts
1985 - 2011
Based on records in the
Natural Heritage Database

calyx lobes, four similar, but more triangular green appendages. Two bracteoles (small, modified leaves) on opposite sides of the base of the floral tube are also diagnostic of Toothcup. The fruit is a many-seeded, four-chambered capsule, 2-4 mm by 2 mm, enclosed by the floral tube at maturity. In early autumn, the stems and capsules turn bright deep red and are very conspicuous, even long after the leaves have completely dropped. This is when Toothcup inventories are most effective.

SIMILAR SPECIES: When not in fruit, Toothcup may be easily overlooked due to its small size and inconspicuous appearance. There is, however, only one

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

1 Rabbit Hill Rd., Westborough, MA; tel: 508-389-6300; fax: 508-389-7890; www.mass.gov/dfw

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.

www.mass.gov/nhesp

species in Massachusetts which bears a superficial resemblance to Toothcup, *Ludwigia palustris* (Water Purslane), which differs by the absence of appendages between the calyx teeth, by fusion of the calyx tube to the ovary, and by much broader, elliptical leaves. Furthermore, Water Purslane normally grows prostrate.

RANGE: Toothcup is found over a wide geographical range that extends from its northeastern limit in Massachusetts, south to Florida and continuing to the West Indies, Central and South America. Inland, it reaches to Minnesota, Arkansas, Oklahoma and Texas. Another distribution center occurs in the Pacific Northwest from British Columbia to northern Mexico. Toothcup has apparently suffered a decline or was always scarce in the northern part of its range. It is listed as rare by 17 states, including Massachusetts.

HABITAT: In Massachusetts, Toothcup historically occurred on the exposed shores of freshwater lakes and ponds similar to Coastal Plain ponds. At one of its six current Massachusetts site, it is abundant at natural ponds and pondlets dissected by dikes and maintained as a water supply. The plants are interspersed among gravel or cobble stones in the sandy to peaty substrate of the mid-shore zone where it experiences changing water levels from seasonal flooding. This may indicate that at some stage of its life cycle, it requires a draw-down of the water table to dry out the substrate.

Associated with Toothcup are *Panicum rigidulum* (Stiff Panic-grass), *Agrostis scabra* (Ticklegrass), *Leeria oryzoides* (Rice Cutgrass), *Fimbristylis autumnalis* (Autumn Fimbry), *Juncus pelocarpus* (Pondshore Rush), *Cyperus dentatus* (Bulblet Umbrella-Sedge), *Lindernia dubia* (False Pimpernel), and *Hemicarpha micrantha*, a rare sedge. Many of these are Coastal Plain Pondshore species. In other states, habitat for Toothcup is more varied: moist meadows and weedy fields; wet open swales, pools, ditches, and tanks; and in Michigan, dried-out, recently burned-over marshes.

POPULATION STATUS IN MASSACHUSETTS:

Toothcup is listed in Massachusetts as an Endangered species, with only six current sites in the state. In some states, it has only recently been discovered for the first time and continued searches for Toothcup in new areas throughout its range are expected to uncover new populations. In Massachusetts, on the other hand, historic occurrences of Toothcup are well documented, indicating that earlier botanists were aware of its presence and actively searched for it. Recent searches at its historic sites have shown this species to be extirpated from much of its former habitat and other potentially suitable habitats do not seem to support this species, either. In most cases, its decline in Massachusetts is clearly a result of recreational, commercial, and residential development.

Updated 2015

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Please allow the Natural Heritage & Endangered Species Program to continue to conserve the biodiversity of Massachusetts with a contribution for 'endangered wildlife conservation' on your state income tax form, as these donations comprise a significant portion of our operating budget.