**Armoracia lacustris** (Gray) Al-Shehbaz & Bates

**lake cress**

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**Status:** State threatened

**Global and state rank:** G4?/S2

**Other common names:** lake-cress

**Family:** Brassicaceae (mustard family), also known as the Cruciferae

**Synonyms:** Armoracia aquatica (Eaton) Weig.; Cochlearia armoracea L. var. aquatica; C. aquatica (Eaton) Eaton; Nasturtium lacustre A. Gray; N. natans de Candolle var. americanum A. Gray; Neobeckia aquatica (Eaton) Greene; Radicula aquatica (Eaton) B.L. Robinson; Rorippa aquatica (Eaton) E.J. Palmer & Steyermark; Rorippa americana (A. Gray) Britton (Flora of North America 2010).

**Taxonomy:** Long known within the genus Armoracia, and often placed within other genera including Neobeckia, Nasturtium, and Radicula, lake cress is now recognized as Rorippa aquatica according to the contemporary treatment in the Flora of North America (2010).

**Range:** Lake cress occurs from Quebec west to Minnesota, ranging south to Florida and Texas, and is often reported to be rare and local throughout much of its range. It is considered rare in Alabama, Georgia, Illinois, Indiana, Kansas, Kentuck, Maryland, Mississippi, Missouri, New York, Ontario, Ohio, Oklahoma, Quebec, Tennessee, Texas, Vermont, and Wisconsin, and is known only from historical records in Iowa, Maine, New Jersey, and Virginia (NatureServe 2009). A notable decline in the abundance of this species has been reported in Illinois (Swink and Wilhelm 1994, Mohlenbrock and Ladd 1978) and elsewhere, citing the degradation of habitat.

**State distribution:** This rare aquatic species has been documented from 23 localities ranging from the western and eastern Upper Peninsula through northern Lower Michigan to central and southeastern Lower Michigan. According to currently available information, only a small percentage of these records to date is known to be extant, with many occurrences known only from pre-1950 collections. However, an extensive Michigan status survey was conducted within the last several years by B. Sabine and W. Martinus et al., reportedly resulting in the confirmation of several historical occurrences as extant. It is anticipated that these results will available in the near future as well as a published status report of this comprehensive inventory in a botanical journal.

**Recognition:** Lake cress is an aquatic perennial arising from fibrous roots, with the stems usually submersed,
Lake cress is a perennial species, blooming in mid-summer and producing, in August and September, scant quantities of its ovoid fruits (silicles) which are thought to seldom ripen in northern latitudes (LaRue 1943). Vegetative reproduction is common, comprising the principal way in which this species propagates and disperses. When mature, the leaves – particularly the dissected submerged ones – readily detach, as observed by botanists who have attempted the collection of plant specimens from the water (Voss 1985). Once detached, the leaves are able to disperse and can subsequently establish new plants in suitable habitat by rooting from their base. These floating propagules may be produced in vast quantities that cover the water’s surface. Some root on mucky banks and others sink to the bottom to overwinter, rising again in the spring to continue dispersing. Even damaged or mutilated leaf, stem and root fragments are capable of regenerating buds and roots within a matter of days (LaRue 1943). Philbrick and Les (1996) note that in lake cress even very tiny, minute fragments of leaf, stem, or root less than 0.5 mm in size have the ability to produce new individual plants through vegetative propagation. The leaves of this species are also known for their high degree of variability depending on water level fluctuations, displaying differences in the degree of leaf dissection depending on both water depth and the length of time submerged or above the water (Godfrey and
Wooten 1981). Leaves submerged for long periods are characteristically much more dissected, whereas leaves less exposed to submersion range in form from pinnatifid to coarsely-toothed to nearly entire.

Conservation/management: Although lake cress is not a boreal species, it persists in Michigan principally in the northern counties, where much less development has occurred and the quality of stream and lake water has experienced much less degradation in general water quality and regime change than in the south, where the species has not been collected since ca. 1900. The protection of water quality and natural hydrology are critical to the conservation and long-term perpetuation of this species. Excessive siltation, pollution, channelization, artificial flooding, chemical run-off, overuse of aquatic herbicides, oil spills, and the like remain highly detrimental to lake cress and its habitats. One location for lake cress is known to occur within an extensive private tract managed as a preserve.

Research needs: Although much research has been conducted on the systematics and taxonomy of this species, and a good deal is known about reproduction and the breeding system, little appears to be known about population structure and genetic diversity, and thus studies in these areas coupled with additional life history investigations may be desirable to assist in prioritizing populations and sites for conservation.

Related abstracts: Floodplain forest, Blanding’s turtle, box turtle, cerulean warbler, red-shouldered hawk, smallmouth salamander, yellow-throated warbler, American beak grass, heart-leaved plantain, pumpkin ash, purple turtlehead, red mulberry, snow trillium, Virginia bluebells, Virginia water-horehound.

Selected references:


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