



Natural Heritage & Endangered Species Program

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Long's Bitter-cess

Cardamine longii Fernald

State Status: Endangered

Federal Status: None

Description: Long's Bitter-cess (*Cardamine longii*) is a small (15–58 cm; 6–24 in.), globally rare perennial wetland herb of muddy, typically tidal, river and creeks shores. This species is a member of the mustard family (Brassicaceae); unlike many other species of this family, Long's Bitter-cess lacks a rosette of leaves at the base of the plant. Its leaves, which are borne on petioles, are primarily simple, with small (0.5–2 cm; [<1 in.]) kidney-shaped to rounded blades, and smooth to wavy margins. Some leaves may be pinnate, having up to one pair of lateral leaflets, but these are much smaller than the terminal leaflet. Long's Bitter-cess has very small (<6 mm), inconspicuous flowers arranged in racemes borne from the side of branches. It produces dehiscent, many-seeded fruits, or siliques, that are linear, narrow, and short (5–10 mm \times 1.5 mm). The fruits are spreading to ascending on short and stout pedicels.

Aids to identification: Long's Bitter-cess has a number of key characteristics that differentiate it from other bitter-cess species. Particularly diagnostic are the chiefly simple leaves, petal-less flowers, and relatively short fruits (≤ 10 mm) on short (≤ 2 mm) widely spreading stalks.

Similar Species: Bitter-cesses and toothworts (i.e., *Cardamine* spp.) are a ubiquitous group of plants typically thriving in moist or wet habitats with eight species (six native) known to occur in Massachusetts. Species are generally small, annual or perennial, herbs with mostly pinnately-lobed leaves, small whitish flowers, and relatively long and slender fruits.

There are a few similar mustard species that could be found in Long's Bitter-cess habitat and that could cause confusion. The young, sterile rosettes of water-cesses (*Nasturtium* spp.) can be very similar to those of Long's Bitter-cess; however these species root at



Long's Bitter-cess in its muddy habitat showing simple leaves and lack of basal rosette. The furthest left of the fruiting stems retains a silique, the others have fallen from the short pedicels.

Photo: B.A. Sorrie, NHESP.

the stem nodes whereas Long's Bitter-cess does not. In reproductive condition, the yellow flower color and fruit shape (round in cross-section) of water-cesses allow for easier differentiation. Common Bitter-cess (*Cardamine pensylvanica*) is distinguished from Long's Bitter-cess by its larger (4–10 cm [~ 1.6 –4 in.]), shallowly toothed or toothless pinnate leaves with 5 to 11 broadly elliptical leaflets, white flowers, longer fruiting pedicels (5–10 mm), and longer (2–3 cm [0.8–1.2 in.]) slender fruits. Like Long's Bitter-cess, Spring-cess (*Cardamine bulbosa*) also has simple leaves, but differs from Long's Bitter-cess with its large white flowers (petals >7 mm), longer fruits (>2 cm),

and bulbiferous rhizomes. Lastly, Yellow Water-cress (*Rorippa palustris*) is easily distinguished from Long's Bitter-cress by its bright yellow flowers, greater height (plants 3–10 dm [1 –~3 ft.]), often hairy stems and leaves, and longer (6–20 cm [2.3–~8 in.]) irregularly serrate pinnate leaves.

Habitat: Long's Bitter-cress is known primarily from sandy shores or mudflats of freshwater tidal rivers and marshes in coastal areas, though two records are known from nontidal streams. In tidal rivers and creeks, plants often occur along portions of higher stream banks, shaded under overhanging vegetation, where individuals may be submerged under high tide conditions and exposed during low tides. Plants found in association with Long's Bitter-cress in Massachusetts include Wild Rice (*Zizania aquatica*), Pickerelweed (*Pontederia cordata*), Narrow-leaved Cat-tail (*Typha angustifolia*), Rigid Bulrush (*Schoenoplectus acutus*), and the two rare species Parker's Pipewort (*Eriocaulon parkeri*; Endangered) and Estuary Beggar-ticks (*Bidens hyperborea*; Endangered).

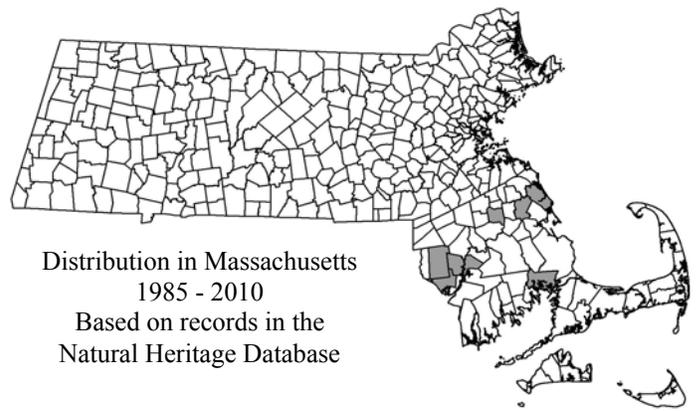
Flowering time in Massachusetts

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

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Population Status in Massachusetts: Long's Bitter-cress is listed under the Massachusetts Endangered Species Act as Endangered. All listed species are protected from killing, collecting, possessing, or sale and from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors. This species is currently known from Bristol and Plymouth Counties, and is historically known from Hampshire, Norfolk, and Worcester Counties.



Distribution in Massachusetts
1985 - 2010
Based on records in the
Natural Heritage Database

Range: Long's Bitter-cress has a narrow coastal distribution, with a range extending from southern Maine south through the Atlantic Seaboard states to North Carolina.

Management Recommendations: As for many rare species, exact needs for management of Long's Bitter-cress are not known. However, because this plant occurs in freshwater tidal marshes and stream banks, presumably any alteration in the hydrologic regime or increased sedimentation due to changes in adjacent land use could impact the species. Competition from invasive wetland species could also reduce the available habitat of Long's Bitter-cress. All active management of state-listed plant populations (including invasive species removal) is subject to review under the Massachusetts Endangered Species Act, and should be planned in close consultation with the Massachusetts Natural Heritage & Endangered Species Program.

For More Information See:

Padgett, D.J., L. Cook, L. Horky, J. Noris and K. Vale. 2004. Seed production and germination in Long's Bitter-cress (*Cardamine longii*) of Massachusetts. *Northeastern Naturalist* 11:49-56.