



Natural Heritage & Endangered Species Program

www.mass.gov/nhesp

Massachusetts Division of Fisheries & Wildlife

Lion's Foot *Nabalus serpentarius* (Pursh) Hooker

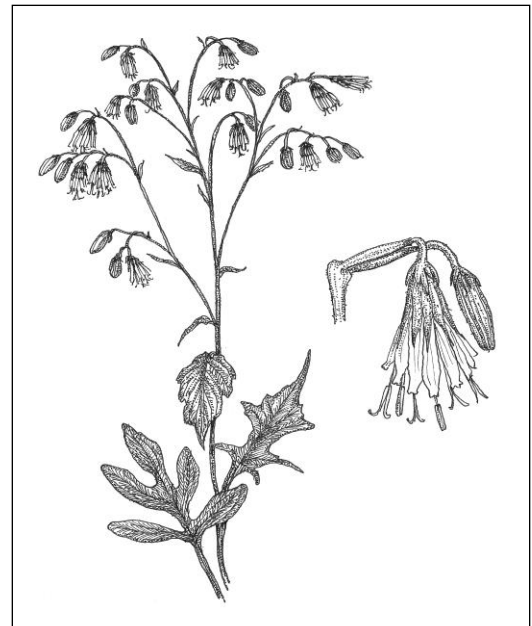
State Status: **Endangered**
Federal Status: **None**

SPECIES DESCRIPTION: Lion's Foot is a robust perennial in the Aster family (Asteraceae) that grows to 1.9 m (6 ft.) tall. Its principal habitats are sandplain grasslands and heathlands, and it may also occur on rocky slopes, along roadsides, and in other disturbed habitats. The coarse stems usually have some purple coloration and exude a milky sap when damaged. Leaves are alternate and variable in shape, with some that are deeply and irregularly lobed (particularly on the lower portion of the stem). The upper quarter or third of the plant is a branched inflorescence with flower heads arranged in small clusters near the branch tips. The flower heads (capitulae) in the Aster family consist of bundles of tiny flowers subtended by the involucre, a structure composed of small bracts. In Lion's Foot, the capitulae have 8 to 14 flowers with yellow to cream-colored corollas (sometimes with pink or green undertones). Individual flowers are 8 to 14 mm long with the lower half fused into a tube. Each flower produces a single achene (a dry, one-seeded fruit) topped by a pappus (a tuft of long, unbranched bristles) that aids in wind dispersal. The involucre consists of two whorls of green bracts. The inner whorl is comprised of approximately eight lance-shaped bracts, 8 to 14.5 mm long; the outer whorl has five to nine much shorter (1.5–3 mm) bracts.

POPULATION STATUS IN MASSACHUSETTS:

Lion's Foot 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. Lion's Foot is currently known from Dukes, Nantucket, Hampden, Middlesex, and Norfolk Counties, and was documented historically in all counties in Massachusetts except Suffolk County. Most of the historic inland populations were lost during the 20th century and the few remaining extant populations

are concentrated on Martha's Vineyard and Nantucket. Massachusetts populations tend to be small (< 20 plants) and sparse (widely scattered rather than dense patches). Vegetative reproduction has not been convincingly documented and it is likely that local spread and maintenance of populations is dependent on reproduction from seed.



The leaves of Nabalus species are highly variable in shape and degree of lobing. Flower heads in Lion's Foot have 8 to 14 cream-colored flowers, with hairy involucre bracts. Illustration by Elizabeth Farnsworth.

AIDS TO IDENTIFICATION: A technical manual should be consulted to confirm the identification of Lion's Foot. The following characters are useful (see Table 1):

- Hairy involucre bracts
- Achenes round or angled in cross-section
- 8-14 flowers per capitulum

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

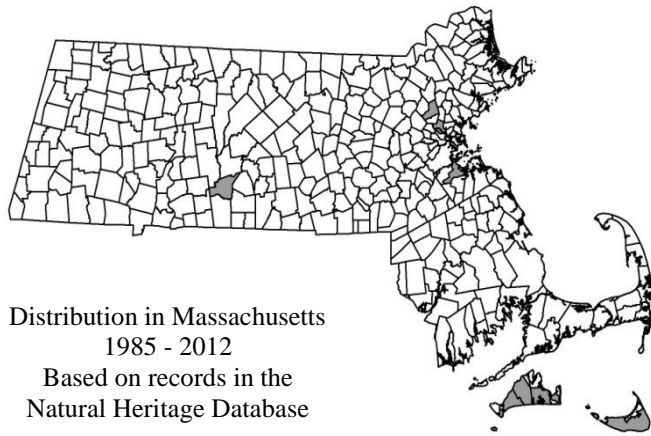
Massachusetts Division of Fisheries & Wildlife

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

SIMILAR SPECIES: Wild lettuce species (*Lactuca* spp.) share some features with Lion's Foot, including large size, lobed leaves, and milky sap. The wild lettuces differ in having flattened achenes. Additionally, common Yellow Wild Lettuce (*L. canadensis*) has upright flower heads. Yellow-flowered forms of Blue Lettuce (*L. biennis*) have more than 15 flowers per capitulum. Lion's Foot is the only *Nabalus* species in Massachusetts that commonly has hairy involucre bracts. However, some botanists assert that the hairs are sometimes absent. Leaves in *Nabalus* species are highly variable in shape and amount of lobing (if any) and are not diagnostic. Caution is needed to distinguish Lion's Foot from *N. trifoliolatus* at sites where both species occur.



RANGE: Lion's Foot occurs from Florida west to Mississippi, Tennessee, Kentucky, and Ohio, north to New Hampshire.

HABITAT: Lion's Foot generally occurs in dry soils on sites with a history of fire or other disturbance. Most extant populations are in open habitats in coastal sand barrens; some populations occur in open-canopy woodlands. Inland records are often associated with roadsides, trail edges, utility rights-of-way, railroad grades, and dry, sandy fields.

THREATS AND RECOMMENDATIONS: Open, upland habitat suitable for Lion's Foot is created and maintained by disturbance. The historical decline documented for this species is probably related to fire suppression and reforestation following agricultural

abandonment. Some historical stations have been lost to development. Remaining populations are generally threatened by succession and some populations are managed by mowing and controlled burning. Heavy deer browsing has been noted in some populations and exclosures could be beneficial in areas with large deer populations. All active management of rare 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.

Table 1. Some diagnostic characteristics of the four Massachusetts *Nabalus* species.

	<i>Nabalus serpentarius</i>	<i>Nabalus trifoliolatus</i>	<i>Nabalus altissimus</i>	<i>Nabalus albus</i>
Involucre bracts	Hairy (sometimes inconspicuously so); larger inner bracts about 8 in number; small outer bracts rarely over 2 mm long	Hairless; larger inner bracts about 8 in number; small outer bracts often longer than 2 mm	Hairless; larger inner bracts 4 – 6 (usually 5) in number	Hairless; larger inner bracts about 8 in number
Pappus	Straw-colored to light brown	Straw-colored to light brown	White to cream-colored	Reddish brown
Flowers per capitulum	8–14	9–13	5–6	9–11

FLOWERING IN MASSACHUSETTS

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

REFERENCES:

Everett, M., and D. Lepley. 2002. *Nabalus serpentarius* Pursh (Lion's Foot) Conservation and Research Plan for New England. New England Wild Flower Society, Framingham, MA.

Haines, A. 2011. *Flora Novae Angliae – A Manual for the Identification of Native and Naturalized Higher Vascular Plants of New England*. New England Wildflower Society. Yale Univ. Press, New Haven, CT.

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.