



Natural Heritage & Endangered Species Program

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Massachusetts Division of Fisheries & Wildlife

Lily-leaf Twayblade *Liparis liliifolia* (L.) L.C. Rich ex Lindley

State Status: **Threatened**

Federal Status: **None**

DESCRIPTION: Lily-leaf Twayblade is a small (10–30 cm tall) member of the Orchid family (Orchidaceae) found in dry to moist, maturing forests. The name *Liparis* is derived from the Greek word for “greasy” or “oily” and refers to the appearance of the leaves of species in this genus; the species epithet “*liliifolia*” refers to the lily-shaped leaves. Two basal leaves (one in sterile plants) grow from a pseudobulb, and a scape (naked flowering-stalk) has 5 to 30 pale-purple flowers. The brownish-purple labellum (lip) of the flower has a network of reddish-purple veins attractive to flies of decaying vegetable and animal matter. Cross-pollination with different plants is needed for seeds to be viable. Capsules are mature in August and have seeds that are dust-like, numbering in the tens of thousands. Seeds are known to be viable for at least four years. Plants reach reproductive maturity in 4 to 15 years. Lily-leaf Twayblade has a specific fungal associate important for plant growth and seed germination.

AIDS TO IDENTIFICATION: Lily-leaf Twayblade has elliptic to ovate basal leaves that are 4 to 18 cm long and 2 to 8.5 cm wide, growing from an underground, daughter pseudobulb. Dried stalks and leaves from the previous year may persist on the parent pseudobulb. The flowers are arranged in a raceme. Each flower is borne on a long (8–15 mm), purplish pedicel and subtended by a small bract. The flowers are 8 to 12 mm long and 6 to 10 mm wide. Two lateral petals are narrow to filiform and curved. The labellum is obovate, with an apiculate tip and erose margins. The two narrow lateral sepals project forward, and sometimes cross under and can be seen through the translucent labellum. The third sepal is in an upward position. The winged column (united filaments and style) is 3 to 4 mm long. The capsules are ellipsoid, approximately 15 mm long and 5 mm wide, with slight wings along the veins. The pedicels are longer than the capsules.



The flowers of Lily-leaf Twayblade have a distinctive labellum with reddish-purple veins. Photo by Jennifer Garrett.

SIMILAR SPECIES: Lily-leaf Twayblade can be differentiated from Green Twayblade (*L. loeselii*) by flower color, overall size, and habitat. Green Twayblade has green flowers with a shorter column (2–3 mm), and pedicels shorter than the fruit. It is found in cool, moist habitats such as bogs, fens, and peaty or sandy edges of wetlands.

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

Massachusetts Division of Fisheries & Wildlife

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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.

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POPULATION STATUS IN MASSACHUSETTS:

Lily-leaf Twayblade is listed under the Massachusetts Endangered Species Act as Threatened. It occurs in Franklin, Hampden, and Hampshire Counties, and was found historically in Berkshire, Essex, Middlesex, Norfolk, and Plymouth Counties. Of 19 populations documented historically in Massachusetts, 8 are current and 11 are considered historical or extirpated. 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.

RANGE: Lily-leaf Twayblade occurs from New Hampshire and Vermont west to Ontario, and south to Georgia, Arkansas, and Oklahoma. It is a species of special concern in most states at the edges of its range, and is more common in some midwestern states. It is Endangered or Threatened in New York, Connecticut, Massachusetts, Rhode Island, and Vermont.

HABITAT: Lily-leaf Twayblade grows in young to maturing woodlands with filtered light, often on gentle, east to southeast-facing slopes. It is often associated with intermittent or vernal seeps, on soils of varied pH. Several populations occur on sites with basaltic bedrock, in oak-hickory-hop hornbeam woodlands with relatively open canopies, few shrubs, and abundant herbaceous cover. Woody associates are Chestnut Oak (*Quercus montana*), Red Oak (*Q. rubra*), Black Oak (*Q. velutina*), hickories (*Carya* spp.), White Ash (*Fraxinus americana*), Sugar Maple (*Acer saccharum*), and Hop Hornbeam (*Ostrya virginiana*). Herbaceous associates include Pennsylvania Sedge (*Carex pensylvanica*), Ebony Spleenwort (*Asplenium platyneuron*), Rue-anemone (*Thalictrum thalictroides*), Early Saxifrage (*Micranthes virginensis*), and Wand Bush-clover (*Lespedeza violacea*). Associated rare species include Glaucous Sedge (*Carex glaucoidea*), Green Rock-creep (*Boechera missouriensis*), and Violet Wood-sorrel (*Oxalis violacea*). Populations also occur in mesic forests with Sugar Maple, White Pine (*Pinus strobus*), Yellow Birch (*Betula alleghaniensis*), Pink Lady Slipper (*Cypripedium acaule*), and Sharp-leaved Goldenrod (*Solidago arguta*).

THREATS AND MANAGEMENT

RECOMMENDATIONS: Lily-leaf Twayblade appears to thrive on sites with somewhat open canopies, and increased shade from forest succession may threaten populations. This species has self-incompatible pollination, and small populations may result in inbreeding and poor seed viability. To prevent loss from browsing by deer or small mammals, exclosures or cages around individual plants may be needed. Where populations occur near active recreational trails, trails should be re-routed to avoid trampling. Rapid growth of weedy species after disturbance may contribute to the decline of some populations and may prevent new colonies from becoming established. Several invasive species occur near known populations of Lily-leaf Twayblade (e.g., Morrow's Honeysuckle, *Lonicera morrowii*; Swallowwort, *Cynanchum* spp.; Oriental Bittersweet, *Celastrus orbiculatus*; Burning Bush, *Euonymus alatus*; and Japanese Barberry, *Berberis thunbergii*). Removal of invasive species may reduce competition and provide habitat for germination and establishment of Lily-leaf Twayblade. Caution and monitoring are needed, however, to ensure that invasive species removal is successful and that these species do not re-establish and threaten populations of rare species. 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.

Flowering in Massachusetts

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

REFERENCES:

Magrath, L.K. 2002. *Liparis*. In: Flora of North America Editorial Committee, eds. *Flora of North America North of Mexico*, Vol. 26. Oxford University Press, NY.
 Mattrick, C. 2004. *Liparis liliifolia* (L.) L.C. Rich. ex Lindley (Lily-leaved twayblade) Conservation and Research Plan for New England. New England Wild Flower Society, Framingham, MA.

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