



Natural Heritage & Endangered Species Program

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Dwarf Rattlesnake-plantain

Goodyera repens (L.) R. Br.

State Status: Endangered

Federal Status: None



Dwarf Rattlesnake-plantain showing the evergreen leaves patterned around the midvein and the leafless flower stalk with a one-sided appearing loose spiral of flowers. The insets show the enlarged individual flower with its pronounced pouch and the round rostellum with its tiny, diagnostic beaks. Illustration: Elizabeth Farnsworth.

Description: Dwarf Rattlesnake-plantain is a small white orchid (family Orchidaceae) of shady conifer or mixed hardwood-conifer forests. The striking dark green leaves, which are variegated with white or pale green markings along the veins, are much more conspicuous than the small white flowers. The leaves are evergreen, oval-shaped, about 2.5 cm (1 inch) long, and arranged in a dense basal rosette. The flower stalks are leafless, grow singly from the centers of the rosettes, and are usually about 15 cm (6 inches) tall. Numerous small flowers about 4 mm long are arranged in a loose spiral around the stem but are typically twisted to the side such that on most plants the spikes of flowers appear one-sided. Plants spread by underground horizontal stems and are often found growing in small clonal patches of several plants.

Aids to identification: Identification of Dwarf Rattlesnake-plantain requires the evaluation of several characters, and careful, precise measurements. Plants with the following characteristics can be identified as Dwarf Rattlesnake-plantain with a high degree of confidence, but some plants will fall somewhat outside these conservative specifications and will need further investigation (see "Similar species" below). This species blooms in midsummer.

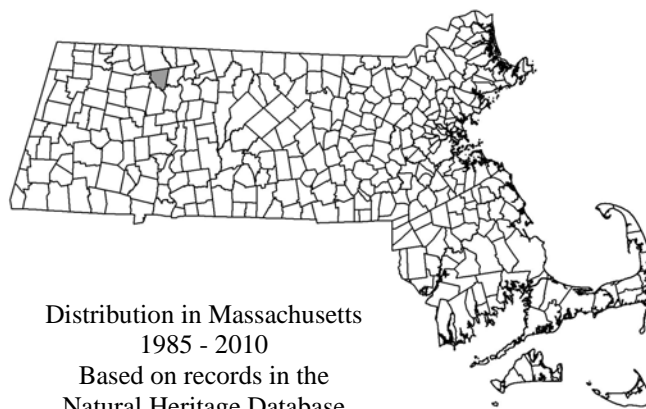
- Largest leaves, including petioles, 3 cm (1 ¼ inches) or less long.
- Flowers, excluding their stout green stalks, 4 mm or less long.
- Pouch of the lower flower-lip pronounced and about as deep as it is long.

Similar species: Three rattlesnake-plantain species occur in Massachusetts. The Downy Rattlesnake-plantain (*G. pubescens*) is easily differentiated from Dwarf Rattlesnake-plantain by its densely flowered, cylindrical flower spikes (i.e., not appearing one-sided) and leaves with a broad

white stripe along the mid-vein as well as along the lateral veins (Dwarf Rattlesnake-plantain has white or pale green markings along secondary veins, but never along the mid-vein). The Checkered Rattlesnake-plantain (*G. tessellata*), a common Massachusetts species, is a hybrid of Giant Rattlesnake-plantain (*G. oblongifolia*), a species that is not known from Massachusetts, and Dwarf Rattlesnake-plantain. There is overlap in most of the diagnostic characteristics used to separate Dwarf Rattlesnake-plantain from Checkered Rattlesnake-plantain and some individuals cannot be easily placed with either species.

The best characteristic for diagnosing problematic plants is the length of the rostellar beaks; they are 0.2 to 0.6 mm, and shorter than the body of the stigma in Dwarf Rattlesnake-plantain, and 0.6 to 1.7 mm, and equal to or longer than the body of the stigma in Checkered Rattlesnake-plantain. The rostellum is a lobe of the stigma, circular to elliptical in outline, found at the top of the column (complexly fused and modified reproductive parts) in the center of the flower. The beaks are a pair of lobes at the top of the rostellum. Using this diagnostic characteristic requires familiarity with the orchid flower morphology and experience with conducting fine botanical measurements. A professional botanist should be consulted to verify the identification of this species.

Range: Dwarf Rattlesnake-plantain has a range that circles the globe in the north-temperate zone. It is transcontinental in Canada with northern limits in Alaska, the Yukon, and Newfoundland, and southern limits in British Columbia, New Mexico, South Dakota, Tennessee, and North Carolina.



Population status: Dwarf Rattlesnake-plantain 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. One current population is known from Franklin County; others are historically recorded from Berkshire, Essex, Franklin, Hampshire, Norfolk, and Worcester Counties

Diagnostic table for Dwarf Rattlesnake-plantain and Checkered Rattlesnake-plantain

	Dwarf Rattlesnake-plantain	Checkered Rattlesnake-plantain
Stems	Typical: 15 cm Range: 3–18 cm	Typical: 20 cm Range: 6–23 cm
Leaf length including Petiole	Typical: 1–3 cm Range: 1–3 cm	Typical: About 4 cm Range: 1.4–5.5 cm
Flower spike length	Typical: About 4.5 cm Range: 2.5–6 cm	Typical: About 6 cm Range: Up to 10 cm
Perianth (flower parts) length	Typical: 4 mm Range: 3–5.5 mm	Typical: 5mm Range: 3.8–7.1 mm
Lip	With pronounced pouch, nearly as deep as long	With shallow pouch, obviously longer than deep
Rostellar beak length	0.2–0.6 mm	0.6–1.7 mm

Flowering time in Massachusetts

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

Habitat in Massachusetts: There are few Massachusetts records for Dwarf Rattlesnake-plantain and most are from historic collections lacking habitat notes. Records from “pine woods,” “under hemlock,” “spruce woods,” and “hemlock swamp” are in keeping with published habitat preferences for the species (shady coniferous or mixed forests). Two Massachusetts records from “mid-successional hardwood forest” and “rich woods” seem atypical.

Threats/management recommendations:

The single extant Massachusetts population (as of 2010) is on conservation land and has no known threats or management needs. 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.

For more information:

Fernald, M. L. 1899. The rattlesnake plantains of New England. *Rhodora* 1: 2–7. [Note: Prior to this publication, what we now know as *G. tessellata* would have been ascribed to *G. repens* or *G. Menziesii* (= *G. oblongifolia*).]

Kallunki, J. A. 1976. Population studies in *Goodyera* (Orchidaceae) with emphasis on the hybrid origin of *G. tessellata*. *Brittonia* 28: 53–75.

Kallunki, J. A. 1981. Reproductive biology of mixed-species populations of *Goodyera* (Orchidaceae) in northern Michigan. *Brittonia* 33: 137–155.

Kallunki, J. A.. 2002. *Goodyera*. Pages 514–517 in Flora of North America Editorial Committee (Editors). Flora of North America North of Mexico. Volume 26: Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, New York, New York, USA.

St. Hilaire, Lisa R. 2002. *Goodyera oblongifolia* Raf. (Giant Rattlesnake-plantain) Conservation and Research Plan for New England. New England Wild Flower Society, Framingham, Massachusetts, USA.