# The Genus Listera (Twayblades) in New Brunswick

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Cody, William J. and Derek Munro. 1980. The genus *Listera* (Twayblades) in New Brunswick. Canadian Field-Naturalist 94(4): 443-446.

The occurrence and habitats of four species and one putative hybrid of the genus *Listera* (Twayblades) in the province of New Brunswick are documented. *Listera australis* is reported as new to the province.

Key Words: Listera, Twayblades, New Brunswick, geographical distribution, new records, habitat, hybrids.

The discovery of Listera australis, Southern Twayblade, new to the province of New Brunswick, while we were conducting a survey of the vascular plants of Kouchibouguac National Park, led us to examine other members of the genus. Four species, L. auriculata, L. australis, L. convallarioides, and L. cordata, and one hybrid,  $L \times veltmanii$  are now known to occur in the province. Of these, the putative hybrid is known from 2 sites, L. australis is known



from 1, *L. auriculata* from 9, *L. convallarioides* from 15, and *L. cordata* from 20.

# **Species of Listera**

Listera auriculata, Auricled Twayblade (Figure 1A)

Known from Gloucester, Madawaska, Restigouche, Victoria, and York counties (Figure 1B). This is a northeastern North American species which is found in Canada from Newfoundland to Thunder Bay District, Ontario, and Manitoba (Singush Lake, 51° 36'N, 100° 48'W, *Rowe 668* (DAO)), south in the United States to New England, New York, Michigan, Wisconsin, and Minnesota (Fernald 1950). A map of the Canadian distribution which does not show any collections from New Brunswick, is given by Whiting and Catling (1977). This species occurs mainly in the northern and western parts of the province where it is found on flood plains of streams, in alder (*Alnus* sp.) thickets, hardwood and softwood stands.



FIGURE 1A, Listera auriculata. 1B, Distribution of Listera auriculata in New Brunswick.



Listera australis, Southern Twayblade (Figure 2A)

Known from Kent County only: Kouchibouguac National Park, along the periphery of Kelly's Bog, D. M. Wood, 27 June 1977 (DAO) (Figure 2B). New to New Brunswick. This is an eastern North American species which is found from eastern Texas and Florida north to New Brunswick, Cape Breton Island, Nova Scotia (Whiting 1971), New Brunswick, southern Quebec (Greenwood 1962; Mousley 1940), and southern Ontario (Whiting and Bobbette 1974). A map of the known Canadian distribution was given by Whiting and Bobbette (1974). The species is very rare in New Brunswick where at its only known locality it grows in flat moist sphagnum with Three-leaved False Soloman's Seal (Smilacina trifolia) and stunted Black Spruce (Picea mariana) at the edge of a bog.

Listera convallarioides, Broad-leaved Twayblade (Figure 3A)

Known from Gloucester, Kent, Madawaska, Restigouche, St. John, Victoria, and York counties (Figure



FIGURE 2A, Listera australis. 2B, Distribution of Listera australis in New Brunswick.

3B). This is a boreal North American species which is found across Canada from Newfoundland to British Columbia, thence southward in New England and in the west at higher elevations to Arizona (Luer 1975). Widespread over the province, but nowhere common. At Kouchibouguac National Park this species was found in wet usually organic soils under the medium shade of White Cedar (*Thuja occidentalis*); elsewhere in the province it occurs in a variety of habitats: damp sphagnum at the edge of cedar bogs, conifer woods, hardwood and softwood floodplains and bottomland, and damp mossy woods.

#### Listera cordata, Heart-leaved Twayblade (Figure 4A)

Known from Carleton, Charlotte, Gloucester, Kent, Madawaska, Northumberland, Restigouche, Victoria, Westmorland, and York counties (Figure 4B). This is a circumboreal species which in North America is found across Canada from Newfoundland and Labrador to British Columbia, southwestern District of Mackenzie, and southern Alaska, in the east southward to western North Carolina, and in the west southward in the mountains to northern California and northern New Mexico (Luer 1975). In Kouchibouguac National Park this species was locally common in White Cedar bogs and infrequent elsewhere in moss in wet bottomland. It is the most frequently found species of *Listera* in the province and may be found in mossy soil in hard- and soft-woods to damp sphagnum in Balsam Fir (Abies balsamea), Spruce (Picea sp.), and White Cedar woods.

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Listera × veltmanii (L. convallarioides × auriculata) Hybrid (Figure 5),

Known from Madawaska County. This putative hybrid could be anticipated wherever the two parents might occur adjacent to each other. Luer (1975) knew it only from the type locality in Alger County, Michigan. Catling (1976) reported it from 10 widely separated sites in Newfoundland, New Brunswick, Quebec, Ontario, and Michigan and we have seen a specimen from Coos County, New Hampshire (UNB). Catling (1976) mapped a specimen (A. A. Eaton, July 11, 1904, Mountain back of Claire, New Brunswick (AMES)) in Kent County, which however, in our opinion, was collected in Madawaska County. Another specimen (Cunningham & Loucks, July 22, 1960, 21/2 mi W of Summit Depot, Madawaska County (DAO)), was, in Catling's opinion, atypical, and perhaps represented a backcross with L. convallarioides.



FIGURE 3A, Listera convallarioides. 3B, Distribution of Listera convallarioides in New Brunswick. The hybrid L. × veltmanii is shown as ×.

#### **Identification Key**

This key will help with the identification of the species of *Listera* found in New Brunswick.

Column of the flower no more than 1.0 mm long; lip deeply cleft into pointed linear-lanceolate lobes Lip with a tooth on each side at the base; rachis and pedicels glabrous ..... L. cordata (Figure 4) Lip auricled at the base; rachis and pedicels glandular ..... L. australis (Figure 2) Column of the flower more than 1.5 mm long; lip pear-shaped or oblong, shallowly notched or cleft no more than onethird its length Lip with a short claw, without basal auricles extending beyond the column Base of lip with an indistinct auricle on each side; lip shallowly notched ..... L. convallarioides (Figure 3) Base of lip with a distinct auricle on each side; lip deeply cleft  $\dots L. \times$ veltmanii (Figure 5) Lip sessile with basal auricles extending beyond the column ..... L. auriculata (Figure 1) The distribution maps are based on specimens from the following herbaria: CAN, DAO, UNB.

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FIGURE 5. Lip of Listera × veltmanii.



FIGURE 4A, Listera cordata. 4B, Distribution of Listera cordata in New Brunswick.

## Acknowledgments

Special thanks are given to Brenda Brookes for the preparation of the fine line-drawings which accompany this paper. The loans of specimens from the National Museum of Natural Sciences, Ottawa, and the University of New Brunswick, Fredericton, are much appreciated. Also, locality data provided by Paul Catling was most helpful.

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Received 15 February 1980 Accepted 29 April 1980



Cody, William J. and Munro, Derek B. 1980. "The genus Listera (Twayblades) in New Brunswick." *The Canadian field-naturalist* 94(4), 443–446. <u>https://doi.org/10.5962/p.347137</u>.

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