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LOBELIA CARDINALIS X L. SIPHILITICA IN ILLINOIS

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ABSTRACT

A population of *Lobelia cardinalis* X *L. siphilitica* was recently found growing in Coles County, Illinois. The members of this population are intermediate in their characteristics between the two parent species. Though no pollen is produced in the hybrids, some seed set was observed. These seeds proved to be viable, and produced individuals which are intermediate between the F_1 hybrids and *L. siphilitica.*

The hybrid between *Lobelia cardinalia* L. and *L. siphilitica* L. was first described by Schneck (1876), who discovered a few individuals in a low, moist woods in Wabash County, Illinois. He mentioned that these individuals are nearly as pubescent as those of *L. siphilitica*, have flowers with slender tubes and the aspect of *L. cardinalis*, but the flowers are broader at the mouth and have more conspicuous folds in the throat. These hybrids also have the reflexed calyx sinuses of *L. siphilitica*, but they are very short. He further mentions that the bracts are intermediate, as is the flower color, which is deep reddish or crimson-purple. Schnecks' specimen was examined by Gray (1876) who considered it of hybrid origin. The only other Illinois report of this hybrid is by Robertson (1928) who found it growing within 10 miles of Carlinville, Macoupin County, Illinois.

Recently a hybrid population consisting of five individuals was found about 1 mile northwest of Hutton, Coles County, Illinois. These individuals were growing in a disturbed, grassy area near a large pond, close to a population of *Lobelia siphilitica*. *Lobelia cardinalis* does not presently occur at this site, though a few populations have been found within one mile of the area.

Lobelia cardinalis and *L. siphilitica* are similar in their vegetative characteristics. Both are coarse perennials with usually simple stems to 1.5 m tall. Their leaves are lanceolate to narrowly ovate with irregularly serrate margins. In *L. siphilitica* the stem is usually sparsely hisute on the angles while in *L. cardinalis* the stem is usually glabrous, though occasionally individuals are found with puberulent stems. Also,

most of the specimens of *L. siphilitica* examined have leaves that are hirsute on the veins beneath and usually strigose above, while in *L. cardinalis* the leaves are usually glabrous.

Though similar in their vegetative characteristics, the two species are strikingly different in their floral and inflorescence characteristics (Table 1). In *L. cardinalis* the bracts are relatively small and glabrous, the sepals are long and narrow and lack auricles, while the corolla lobes are bright red, relatively long and narrow, and usually glabrous. *Lobelia siphilitica*, in contrast, has much larger bracts, the sepals are relatively short and broad with well developed basal auricles, while the light blue corolla lobes are relatively short, broad, and hirsute. As can be seen from Table 1, the F_1 hybrid of these two species is intermediate in most of these characteristics. This is particularly true in the size of the bracts, the sepal width, the size of the basal auricals, and the length and width of the corolla lobes.

In all of the hybrids examined no pollen was produced, and in most cases the anthers aborted and did not develop. However, some seeds were produced in the developed capsules. In ten fruits examined there was an average of 62.7 seeds (ranged from 27 to 104) per capsule. These seeds were well formed and when planted about 75% germinated. All of the individuals produced were intermediate between the original F_1 and *Lobelia siphilitica*. These individuals also did not produce viable pollen, but did produce some seeds when crossed with *L. siphilitica*.

Specimens examined:

Coles County: Open, grassy area near Hunt's pond, 1 mile NW of Hutton, IL (Sec 9 T11N R10E), J.E. Ebinger 19879, 22 August 1980 (EIU); J.E. Ebinger 20401, 12 October 1980 (EIU); J.E. Ebinger 20832, 24 September 1981 (EIU, ISM).

Cass County: River bottom, NW part of county, R.T. Rexroat 10473, 20 August 1967 (ISM).

LITERATURE CITED

Gray, A. 1878. Bot. Gaz. 3:36.

Robertson, C. 1928. Flowers and insects. List of visitors of four hundred and fifty-three flowers. The Science Press Printing Company, Lancaster, PA.

Schneck, J. 1878. More about Lobelias. Bot. Gaz. 3:35-36.

Table 1. Flower, pedicel, and bract characteristics of *Lobelia cardinalis*, *L. siphilitica*, and their hybrids. Measurements and observations were made on 20 mature flowers from the five hybrid specimens, and from randomly selected individuals in populations of the species. For all measurements (mm) the maximum and minimum is given while the averages are shown in parentheses.

Character	*L. cardinalis*	*L. cardinalis* X *L. siphilitica*	*L. siphilitica*
Bract — length	12.5-24.5 (17.6)	18.6-25.0 (21.7)	21.0-38.0 (27.2)
— width	1.1-2.6 (1.7)	3.5-6.6 (4.8)	5.9-14.0 (8.9)
— pubescence	glabrous	glabrous	hirsute
Gland position on pedicel	basal	medial	apex
Pedicel — length	4.2-9.1 (6.9)	6.0-9.5 (7.9)	4.0-8.0 (5.0)
— pubescence	puberulent	hirsute	hirsute
Sepals — length	12.6-16.0 (14.3)	14.0-17.5 (15.5)	9.7-13.6 (11.6)
— width	1.0-1.4 (1.2)	3.5-4.8 (4.0)	3.2-7.2 (5.0)
— pubescence	glabrous	hirsute	hirsute
Auricles — length	absent	0.6-1.2 (.8)	.8-4.0 (2.9)
Upper corolla lobes — length	16.0-20.0 (17.7)	12.0-16.5 (14.9)	9.3-15.1 (11.8)
— width	0.9-1.4 (1.1)	1.6-2.0 (1.8)	2.4-5.4 (3.3)
— pubescence	glabrous	hirsute	hirsute
Lower mediam corolla lobes — length	13.2-19.0 (15.4)	11.5-17.2 (13.3)	4.3-11.6 (7.7)
— width	2.0-3.5 (2.7)	3.2-4.2 (3.6)	2.6-5.5 (4.0)
— pubescence	glabrous	hirsute	hirsute