Survey for *Hexalectris spicata*, the endangered Crested Coralroot Orchid

Grant Agreement #08-001W

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June-September 2007

Introduction

The state endangered crested coralroot orchid, *Hexalectris spicata*, is a rare plant that is known to occur in only a few isolated sites within the state of Illinois. The plant is entirely non-photosynthetic, instead gaining all its nutrients through a symbiotic relationship with fungus. Subsisting entirely underground for most of the year, a flower spike is sent up annually in the summer, with flowers lasting about a month from approximately early July to mid-August. It is when the orchids flower that they can be surveyed by a count of flower spikes.

This species is poorly studied and its needs are not well known. This makes management of *H. spicata* and its habitat problematic. The sites selected for this survey all feature well-preserved floral communities, including hill prairies and mature oak-hickory forest.

Materials and Methods

Sites were visited and surveyed for orchids at least twice, once in July and once in early August. Three sites were searched more often but no flower spikes were found. The only exception to this was Harry's Prairie, which was surveyed only once, in July. Areas were surveyed for flower spikes by visual inspection. Areas of concentrated surveying were identified by historical sightings dating from the 1970's and 1980's, which were provided by the Illinois Department of Natural Resources. Flower spikes that were found were recorded along with the condition, size, and estimated age of the flowers. In most areas, GPS coordinates could not be documented for individual flowers due to dense canopy cover that disabled the device. In the case of Prairie of the Rock and Harry Gravlin's property, coordinates were taken in the open hill prairie near the site of the flowers.

Results

H. spicata seemed to occur most frequently in microhabitats characterized by abundant leaf litter, in some cases more than 12 inches deep. Many of these sites bore past signs of standing water accumulation such as bleached leaf litter. Presumably, such damp, detritus laden areas provide havens for the fungus that the orchid depends upon. All orchids found were in forested areas with moderate to heavy shade, though since the orchids are not photosynthetic, this may be more a result of where the fungus is growing rather than an indication of photosensitive selection on the part of the plant.

Discussion

Historical data for the sites surveyed showed a greater number of plants in these areas in the past. Anecdotal reports assert that only a few years prior to this survey, there were over 80 flower spikes counted on Harry Gravlin's property.

Based on this survey, it would appear that the orchids are declining in numbers. The reason for this is unclear. The sites are protected and visitors are rare, so human interference is unlikely, and there were no signs of herbivorous degradation from

animals. Salt Lick Point and Fults Hill Prairie are two sites for which there are historic records of *H. spicata*, but no plants were found at these sites during this survey. Both of these sites are managed with prescribed burns and cutting of encroaching woody vegetation, but it is unclear what effect these practices might have on the orchid. It seems plausible that since the flowers are only visible for a brief time, cut vegetation may be unwittingly placed atop dormant plants and keep them from sprouting up in July. Fire may also pose a threat to the fungus that these plants depend upon, but given their association with prairie and glade habitats where fire is part of the natural cycle, such a trait seems incongruous with the habitat.

Brickey-Gonterman

July 29, 2007-No flower spikes found

August 8, 2007- No flower spikes found

Fults Hill Prairie

July 16, 2007-No flower spikes found

July 25, 2007-No flower spikes found

August 13, 2007-No flower spikes found

Prairie of the Rock

July 20, 2007- 11 total flower spikes

#1,2: Growing next to each other, one wilting, one in full bloom.
#3: Not yet blooming.
#4: Past blooming, found in sun spot in thick cedar grove near deadfall.
#5: Flower spike in full bloom on dear trail in heavy leaf litter.
#6: Flower spike ~2 meters east of #5, done blooming.
#7: Newly emerging spike, ~4" tall, no flowers
#8: Flower spike yellow rather than normal pink, mostly done blooming.
#9: Flower spike old and withered. Near #4.
#10, 11: Flower spikes in full bloom, north side at bottom of slope on trail in leaf litter near #4 and #9.

August 6, 2007-No new flower spikes found.

#7 had grown to approximately 10" tall but was still not blooming.

GPS Coordinates at flag pole in center of prairie: N 37°05.348'
W90°05.978'

Salt Lick Point

July 18, 2007- No flower spikes found

August 5, 2007- No flower spikes found

August 15, 2007-No flower spikes found

Harry's Prairie (Chalfin Bridge)

July 23, 2007-15 total flower spikes

- #1-blooming spike in dense undergrowth.
- #2-Dead blooms, approximately 15" tall, on rocky slope near deer trail. No leaf litter.
- #3-Very old, bent flower spike in open forest on gentle slope in leaf litter.
- #4-Full bloom, found in sun spot on forest floor, approx. 15" tall, at bottom of slope south of northernmost prairie.
- #5,6,7-3 flower spikes clustered, 1 very old and dried, 2 old and done blooming, on rocky slope amid young trees, with little leaf litter.
- #8-1 flower spike in full bloom, approx. 10" tall, in former prairie near cactus and sprawling oak tree.
- #9-Approx. 2 meters southeast of #8. Old, spent blooms. Approx. 8" tall.
- #10-Nearly spent blooms, approx. 12" tall.
- #11-1 flower spike done blooming, approx. 18" high.
- #12-Small, new flower spike, approx. 8" tall, heavy leaf litter, on slope in woods at bottom of prairie.
- #13-Full bloom, approx. 15" tall, heavy leaf litter, on slope in woods at bottom of prairie.
- #14,15-2 flower spikes in full bloom, approx. 12" tall, north of the prairie, coordinates: N 38°12.138', W 90°15.109'

Flower spikes #8, 9, 10, 11, and 12 all clustered around sprawling oak tree with coordinates: N 38°12.123'
W 90°15.096'

Coordinates of northernmost prairie: N 38°12.126'
W 90°15.109'

Project Objective

The objective of this project was to quantify known populations of *Hexalectris spicata* through visual searching at known sites, and cataloguing of GPS coordinates of individual plants. This provided solid data on the numbers and status of the plant where it was found. This project also sought to find new populations of the *H. spicata* in likely habitat.