History and Current Status of the Hart's-Tongue Fern in the South

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Abstract

Long considered one of the rarest ferns in North America, the Hart's Tongue was listed by the U.S. Fish and Wildlife Service in 1989 as both endangered and threatened. The fern was found growing in Tennessee in 1849 and growing in Alabama in 1978. The Tennessee populations seem to be gone and one of the two populations in Alabama appears healthy. Both Alabama locations are protected in that the pits are closed by the landowners and vertical rope skills are required to access the ferns.

Hart's-Tongue fern, *Phyllitis Scolopendrium, Asplenium scolopendrium* var. Americanum

Hart's tongue fern is one of the 26 species of ferns listed as endangered by the U.S. Fish and Wildlife Service. Two of the ferns on this list are also listed as threatened, the hart's tongue fern and the Alabama streak sorus fern. Both of these ferns are found in Alabama. The streak sorus only grows on a short stretch of the Sispy River in Bankhead National Forest.

Long known as one of the rarest ferns in North America, the hart's tongue has been reported from New Brunswick, Ontario, New York, Michigan, Tennessee, and Alabama.

The Hart's Tongue was first found in central New York in 1805-1807 and about 92% of the existing plants (3,500) still grow there.

In 1849 it was reported in Roan County, Tennessee, southwest of Knoxville, growing in a cave entrance. However by 1900 the entire population was gone, probably collected.

In 1878 it was found growing in a limestone sink in Marion County near South Pittsburg, there were hundreds there.

In 1898 it was reported as 200 plants there.

In 1900 the count was 110 plants.

In 1911 the count was down to 58.

Between 1911 and 1929 the south slope of the sink caved in.

In 1929 there were only six plants left and spores from plants in Ontario, Canada, were scattered in the sink.

In 1933 the count was five plants.

In 1935 the count was 26 plants with four mature plants and the other 21 theorized to be from the 1929 spores.

In 1981, when Dr A. Murrary Evans inventoried the plants there were, 17.

In 1998 when I first checked the location there were only three plants, one on the north wall which appeared to be a tiny mature plant, probably the European version, and one on the east side of the sink and one on the north side of the sink, both of these last two had only two leaves each and the fronds were only about an inch to inch and a half long.

At the time the sink was grown over with vegetation and the light level measured at the two smallest plants was only three to four foot candles.

On June 15 1998 there was a major event of Hall/Torosion on the vegetation over hanging the 40 foot sink and the light levels are now 12 to 150 foot candles for the plants which is in line with the light levels at the two known Alabama locations.

In September 1999 I visited the location and found that the east side plant was no longer there and the small plant on the south side looked the same as when I first saw it.(two fronds and 1 to 1.5 inches long.)

The plant on the north wall still appears to be a mature plant with five fronds from about three to four inches long. (Figure 1)

Figure 1

The soil chemistry has been checked and compares to the chemistry of the soil from the Alabama locations. The light levels have been adjusted. It's unknown why the exist-

ing plants don't thrive, the environment is very similar to the Alabama location where the fern is growing very well.

This location is on privately owned land and is a 40-foot pit which requires vertical rope work to access the ferns growing on a ledge about 30 feet down. A stream from a spring falls into the west side.

In October 1978 John Short reported the hart's tongue in a sink in Jackson County, Alabama. There were 20 plants with 8 adult plants.

In 1997, when I visited the Jackson County location, there were only two mature plants left. At this time we installed a U.S. Fish and Wildlife Service data logger by the plants to record light level, soil moisture, air temperature, and soil temperature. (Figure 2)

Figure 2

Periodic visits are still being made to this site to offload data from the data logger. The plants generate plenty of spores, which are released in the fall each year, but no new plants occur. In August 1998 I placed several plant starter trays in the vicinity of the two plants to capture spores.

In September 1999 I took the contents of two of the trays and introduced them to the soil around the plants and brought the other two trays home to observe.

This location is in Wheeler Wildlife Refuge and is protected. There is no on-site control but a permit is required to visit the location and it is closed from September to May to protect the grey bats. This location is at the bottom of a 50-foot sink and a handline is needed to access the ferns. This is the only southern location without an in-flowing stream.

In 1979 the hart's tongue was discovered in a sink in Morgan County, Alabama. In May 1980 John Short visited the location and recorded 53 plants with 20 adult plants and others from sporelings to almost adults. In 1997 there was a major rain and the stream into the pit washed away lots of soil from the ledge and left only 20 plants. By 1998 the fern had recovered so there were 150+ plants growing on the ledge. In 1998 a data logger was installed to monitor the environment. In September 1999 I counted 50+ plants with about one half of them mature plants. I have also had plant starter trays around the ferns for over a year. (Figure 3)

Figure 3

This location is privately owned and the landowner has closed the pit to everyone but allows us to access the data logger. This is an 80-foot pit with the ferns growing on a ledge 30 feet down and vertical rope skills are required to access the ferns. There is an inflowing stream.

In summary there are three locations for the hart's tongue in the south, the Marion County, Tennessee, location where the fern is barely hanging on and appears to be the European version; The Jackson County, Alabama, location with only two mature plants left that generate plenty of spores each year but no new plants occur; and the Morgan County, Alabama, location with a very healthy population that has shown it can recover after a disaster.

References

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