

## NOTES ON *SPIRANTHES PARKSII* CORRELL (ORCHIDACEAE) IN DEEP EAST TEXAS

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### ABSTRACT

A new population of *Spiranthes parksii*, a federally listed endangered species, was found on the Angelina National Forest in Jasper County in 1996. This site extends the known habitat types for this Texas endemic. The status of this species in eastern Texas is discussed within a historical context.

**KEY WORDS:** *Spiranthes parksii*, Angelina National Forest, Texas, endangered species

Even after designation of a plant species as federally endangered, it is not unusual that almost nothing further is published about it in the formal literature. Instead, as in the case of *Spiranthes parksii* Correll (Navasota ladies'-tresses), a Texas endemic, a large body of "gray literature" often develops, which does not circulate. To prevent our observations, and those of others in the past (Bridges & Orzell 1989a; Orzell 1990) on this species being lost in the bureaucratic sink, we have decided to publish them.

*Spiranthes parksii* was described half a century ago by Correll (1947) from specimens collected in Brazos County in the post oak savanna region of east-central Texas. Efforts to relocate the species were unsuccessful until its rediscovery thirty years later in 1978 (Catling & McIntosh 1979). It has subsequently been found in an eight county area centered on College Station, Texas (Texas Natural Heritage Program 1995).



It was listed as federally endangered in 1982 (Poole & Riskind 1987), and two years later the US Fish and Wildlife Service issued a Recovery Plan (USFWS 1984). Although the information upon which the recovery plan is based is not widely available, because it consists of non-circulated reports and observations, this document serves not only as the primary source of basic biological information for *Spiranthes parksii* but also outlines management and recovery goals.

The primary objective stated in the 1984 Recovery Plan for protecting *Spiranthes parksii* was to establish and maintain "two safe sites" (p. i, 2, 21). According to the Plan, the safest and most desirable sites would be ones on Federal lands: "The Endangered Species Act is most effective in protecting populations on Federal lands. Protection of the species will require Federal involvement if the full protection of the ESA is to be obtained" (p. 25), the gist being that populations on Federal land can be protected and management guidelines can be implemented.

In 1986 a disjunct population of *Spiranthes parksii* was found at Black Branch Barrens on the Angelina National Forest in Jasper County about 170 km east of the populations described in the Recovery Plan (Bridges & Orzell 1989a; Orzell 1990). According to the Texas Natural Heritage Program Element Occurrence Record, the Jasper County population was found on 28 October 1986 by Steve Orzell and Edwin Bridges (S. Orzell, pers. comm.) and consisted of "six sterile plants [and] one flowering plant." The descriptive term "barrens" was later applied to this and closely related sites on the Angelina National Forest (Orzell 1990; Mohlenbrock 1993).

This find was significant for at least three reasons: 1) the site was on Federal land (Angelina National Forest), which, according to the Recovery Plan, was nearly ideal; 2) this was the only federally listed plant species on the National Forests and Grasslands in Texas, and 3) the Angelina National Forest is also the only Federal land on which *Spiranthes parksii* is known to occur.

During the fall of 1996 and 1997 surveys were conducted in all areas of known potential habitat for *Spiranthes parksii* on the Angelina National Forest, including the Bridges & Orzell site (1989a; Orzell 1990), and areas outside the National Forest that had Browndell soils (Neitsch 1982) and plant species similar to those found on the barrens. Although well within the piney-woods natural region (Arnold 1978; Gould *et al.* 1962), the survey areas were similar in appearance and composition to sites in and around College Station, Texas. The complex, variable, and locally rare vegetation of these Texas sites has been described in part elsewhere (Marietta & Nixon 1983, 1984).

On October 27, 1996, two flowering stems of *Spiranthes parksii* were located in an open, herb-dominated upland within Black Branch Barrens. Because there were only two stems, a single flower and bract were collected, preserved in alcohol, and sent to Charles Sheviak who confirmed our initial identification (letter dated 4 November 1996). Joe Liggio (pers. comm.), an expert on Texas orchids, examined the plants a few days after the discovery and also confirmed the initial identification. Since we did not collect the plants, voucher sheets were made using photographs taken by Joe Liggio and Jeff Reid, USFW (MacRoberts *et al.* 3290 [ASTC,TEX]). Each plant was permanently located by placing a stake one meter north of it. This small population was reconfirmed on November 5, 1997 when a single flowering stem was located; it is believed that this stem was one of the 1996 individuals reflowering. In



February 1998, orchid rosettes were observed at the permanently marked site. No flowering stems or rosettes were observed at the Bridges & Orzell site, which is about 500 meters NNW across a major state highway.

Not only do the two sites appear to be functionally isolated from one another, they also differ in habitat. The 1996 site has been classified as Little Bluestem-Nuttall's Golden-rod Series (Diamond *et al.* 1987; Orzell 1990; Texas Natural Heritage Program 1993). This community, also known as sandstone outcrop (MacRoberts & MacRoberts 1993), is virtually treeless with rock outcrops and thin soils. These soils are developed on flat to slightly sloping exposures of the tuffaceous sandstone member of the Catahoula formation (Bridges & Orzell 1989a; Neitsch 1982). Abundant and characteristic species include *Aristida longispica* Poir., *Bigelowia nuttallii* L.C. Anders., *Schizachyrium scoparium* (Michx.) Nash, and *Sporobolus silveanus* Swallen (Marietta & Nixon 1984; Orzell & Bridges 1989b). Other characteristic species include *Anemone caroliniana* Walt., *Callirhoe papaver* (Cav.) A. Gray, *Chaetopappa asteroides* (Nutt.) DC., *Echinacea pallida* (Nutt.) Nutt., *Eurybia hemispherica* (E. Alexander) Nesom, *Evolvulus sericeus* Sw., *Fimbristylis puberula* (Michx.) Vahl *ex* Small & Brit., *Gratiola flava* Leavenworth, *Krameria lanceolata* Torr., *Lechea sansabeana* (Buckl.) Hodgdon, *Liatris mucronata* DC., *Marshallia caespitosa* Nutt. *ex* DC., *Saxifraga texana* Buckl., *Schoenolirion wrightii* Sherman, *Selaginella arenicola* Underwood subsp. *riddellii* (Van Eselt.) Tyson, *Symphyotrichum patens* (Ait.) Nesom, and *Talinum parviflorum* Nutt. Ground-living lichens are abundant (Marietta & Nixon 1984; Bridges & Orzell 1989a; Orzell 1990).

In contrast, the original *Spiranthes parksii* site reported by Bridges & Orzell (Bridges & Orzell 1989a; Orzell 1990) has been classified as Post Oak-Black Hickory Series (Diamond *et al.* 1987; Marietta & Nixon 1983). Most abundant and characteristic species include trees that do not occur at the 1996 site. More specifically, *S. parksii* was found "under a 50% canopy of *Quercus stellata* and *Carya texana*, in openings in a 30% cover shrub layer of *Vaccinium arboreum* and *Ilex vomitoria*. Herb layer associates include *Gelsemium sempervirens*, *Chasmanthium sessiliflorum*, and *Rhus copallina*, with 25% total cover" (Bridges & Orzell 1989a:45; see also Orzell 1990). This site is in a riparian setting along the active drainage channel of Black Branch, which is similar to *S. parksii* habitat in the College Station area (K. Kennedy, pers. comm.).

Our failure to relocate the 1986 population, and other observations made during this study, have led to several questions about management direction for this endangered species in east Texas. What had occurred in the decade between the Bridges & Orzell discovery and the 1996 rediscovery? Was the response of involved agencies during this period relative to *Spiranthes parksii* indicative of future management trends?

During this period relatively little interest was shown in the Angelina National Forest site. A few sporadic searches for *Spiranthes parksii* were made, but for the most part the Bridges & Orzell discovery was dismissed. Although the Forest Service recently has designated the site a "Special Management Area" because of its botanical significance (USDA Forest Service 1996), no consensus has been reached on type or intensity of management needed at the site. There has been no direct management for over 10 years, except for recent controversial attempts to control off-road vehicle use in the area. But is a "hands-off" management approach appropriate? The existing



Recovery Plan is largely silent on this question, apparently leaving any management decisions to the Forest Service. Furthermore, there is no indication that the U.S. Fish and Wildlife Service considers the Angelina National Forest to be a candidate safe site for *S. parksii*.

The critical issue for insuring the future of *Spiranthes parksii* in east Texas is to settle questions of whether or not active management of its habitat is necessary. Currently, Black Branch Barrens is protected from routine forest practices, including timber harvesting. However, recent observations aided by aerial photographs (C. Rudolph, pers. comm.) suggest that the 1986 site is being encroached by shrubs and is increasingly closed canopied, a strong indication that active management is needed.

Because the site is an inclusional community surrounded by a landscape dominated by pyrogenic vegetation, fire seems the obvious management tool. Since there is a very limited area of barrens habitat on the Angelina National Forest, all of it -- including Buck Branch Barrens, Rocky Branch Barrens, and other areas having Brownell soils -- should be managed for the unique community it represents in the east Texas landscape.

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