

THE CURIOUS DISTRIBUTION OF *ASCLEPIAS TOMENTOSA* (APOCYNACEAE)

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ABSTRACT

Herbarium and literature research confirms that the distribution of *Asclepias tomentosa* exhibits two gaps, one between the Carolinas and Florida, the second between Florida and Texas. This particular distribution pattern is unusual among coastal plain vascular plant taxa.

Asclepias tomentosa Ell. (Figure 1) was described "From specimens collected, I believe, by Dr. Baldwin near St. Mary's, Georgia" (Elliott 1817). St. Mary's is a port town in Camden County. This species inhabits xeric, acidic, sandy soils of sandhills, sand barrens, inland dunes, and ridges, often accompanied by shrub oaks, small tree oaks, and pines. In addition, it has been recorded from powerlines and roadsides. The distribution is most often given as North Carolina to Florida to Texas, but Woodson (1954) described it as "North Carolina to Florida; eastern Texas." Note Woodson's use of a semicolon; it implies a gap in distribution. This suggestion, coupled with my failure to encounter *A. tomentosa* while performing field surveys in the coastal plain of Georgia, Alabama, Mississippi, and Louisiana in the 1990s, led me to reassess the distribution of the species.



Figure 1. *Asclepias tomentosa*. Hoke Co., North Carolina. Photo by B.A. Sorrie.

Figure 2 displays the county distribution of *Asclepias tomentosa*, derived from verified specimens, cited specimens in journals, and floristic atlases. This map is closely similar to that of BONAP (2014) and corroborates the gap apparently suggested by Woodson's citation. State-by-state distribution from east to west is summarized following the map.

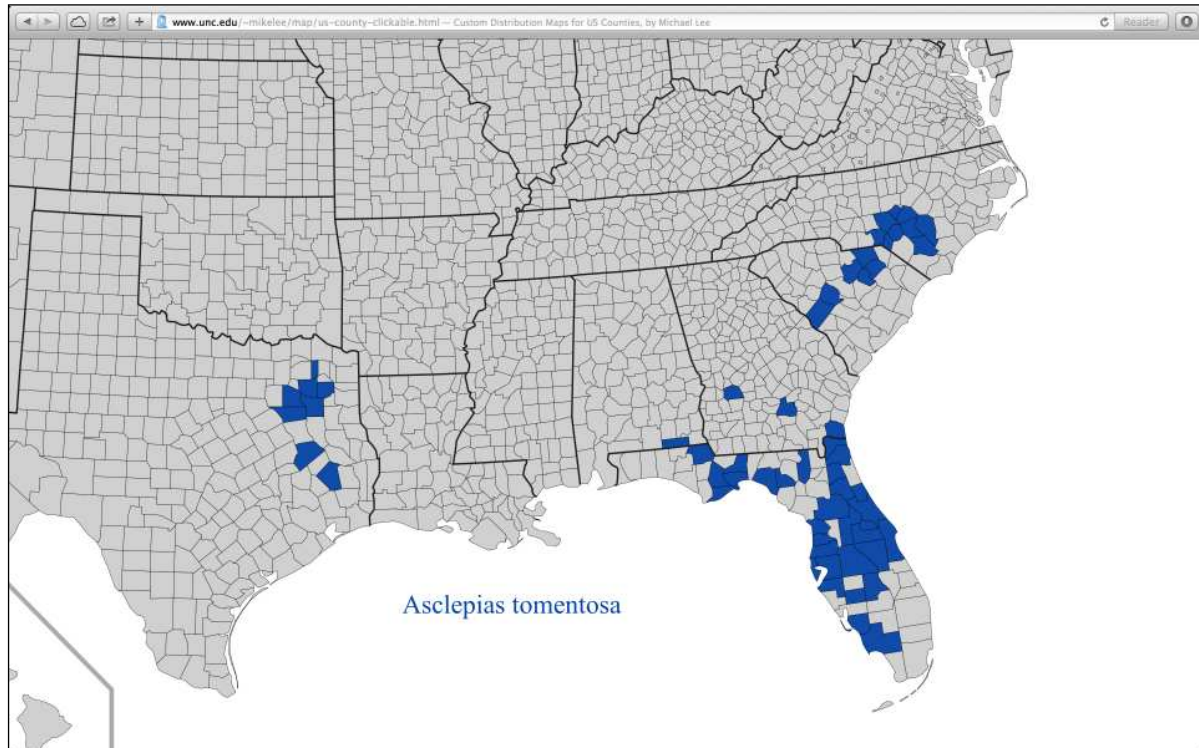


Figure 2. County distribution of *Asclepias tomentosa*.

North Carolina. Nine counties, seven of them within the Sandhills Physiographic Province and two on the middle Coastal Plain.

South Carolina. Six counties, all within the Sandhills Physiographic Province. Aiken Co. is newly reported here: *Ravenel s.n.* (GH).

Georgia. Three counties: Camden (cited by Elliott 1817), Coffee (Norris 1319, VSC), and Sumter (BONAP 2014). The extreme rarity of *A. tomentosa* in Georgia creates a gap in distribution between the Carolinas and Florida, a phytogeographic pattern previously discussed by Sorrie et al. (1997). A number of such plants are disjunct from the Gulf Coastal Plain to the Sandhills of the Carolinas [e.g., *Rhynchospora macra* (C.B. Clarke) Small and *Xyris scabrifolia* Harper]; others are disjunct to the Outer Coastal Plain from a distribution that centers on peninsular Florida [e.g., *Rhynchospora galeana* Naczi, W. Knapp, & G. Moore and *Crocantemum nashii* (Britt.) Barnhart].

Florida. This state clearly is the center of the species' distribution in terms of numbers of county occurrences. Wunderlin and Hansen (2011) described it as "occasional." Clewell (1985) reported it also from Jackson Co.

Alabama. There is no record in Mohr (1901), BONAP (2014), or the Alabama Plant Atlas (2016). Here I report a collection from Geneva Co.: *Kral 32543* (FSU).

Mississippi. There is no record in Lowe (1921), BONAP (2014), or in specimen searches at MISS, MISSA, and USMS. A recent survey of a large sandhill ecosystem in Wayne Co. (McNair et al. 2016) did not locate any *A. tomentosa*.

Louisiana. There is no record in Thomas and Allen (1996), BONAP (2014), or in specimen searches at LSU and NLU.

Texas. Turner et al. (2003) mapped it in six counties in east Texas in Post Oak Savannah and Pineywoods vegetational regions. In addition, specimens have been collected in Smith Co. (*Reverchon s.n.*, MO) and Upshur Co. (*Shinners 30278*, BRIT) in these same vegetational regions.

Double disjunction

The double disjunction shown by *Asclepias tomentosa* is very unusual, perhaps unique, and is not matched by other species of the coastal plain. The distance between Aiken Co., South Carolina and Coffee Co., Georgia is 270 km and between Geneva Co., Alabama and Polk Co., Texas is 860 km. The recently described orchid *Spiranthes sylvatica* P.M. Brown (Brown 2001) comes close to duplicating the distribution of *A. tomentosa*, occurring in southeastern Virginia to northeastern South Carolina, southwestern Georgia to central Florida, and central Louisiana to southeastern Texas. The apparently sporadic distribution of *S. sylvatica*, however, may reflect an incomplete knowledge of a "new" species. Several other species show a single disjunction across Alabama, Mississippi, and eastern Louisiana; e.g., *Lyonia mariana* (L.) D. Don, *Litsea aestivalis* (L.) Fern., and *Spartina bakeri* Merr. *Berlandiera pumila* (Michx.) Nutt. also is similar in distribution to *A. tomentosa*, but with a smaller gap through Georgia, more records in Alabama, and occurrences in western Louisiana.

One might ask whether the disjunctions shown by *Asclepias tomentosa* are artifacts of a scarcity of xeric habitats in Alabama, Georgia, Louisiana, and Mississippi, or of collecting. I think not. First, many other xerophiles occur in these gap states, as evidenced by online and published plant atlases. In addition, MacRoberts et al. (2002) discussed the occurrences of endemic taxa of xeric soils of the West Gulf Coastal Plain. These xerophiles are well distributed within the physiographic regions of these states where one would expect *A. tomentosa* to occur. Second, dozens of botanists have collected thousands of specimens over the past 150 years in these states while yielding very few collections of *A. tomentosa*. It appears that the gaps in distribution are real, but understanding the cause remains a challenge. It seems likely to relate to a past fragmentation of suitable habitats, leading to the extirpation of *A. tomentosa* in intervening areas and its failure to recolonize those areas.

Rarity

State ranks of *Asclepias tomentosa* from NatureServe (2016) are these: Alabama (State Not Ranked), Florida (State Not Ranked), Georgia (State Unrankable), North Carolina (S3), South Carolina (State Not Ranked), and Texas (S3). It is likely that Alabama and Georgia left *A. tomentosa* unranked due to a paucity of records. I here suggest updated ranks for each state of occurrence: Alabama-SH, Florida-S4, Georgia-SH, North Carolina-S3, South Carolina-S2, and Texas-S3.

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