

Does *Asclepias verticillata* occur at Devils Tower National Monument?

Hollis Marriott; September 30, 2013

In 1981, I collected a milkweed in ponderosa pine forest below the northeast side of Devils Tower (Marriott 889, RM), and identified it as *Asclepias pumila*, which is common in the area. In 1988, Robert Dorn annotated it as *A. verticillata*, making it the only known record of that species in Wyoming. I felt that while Marriott 889 may differ in general appearance from typical *A. pumila*, it did not clearly fit descriptions of *A. verticillata*, especially with regard to leaf arrangement. The leaves are not *mostly* whorled; many are alternate or spirally arranged.

On July 14, 2013, I relocated the site of my 1981 collection. In that project I mapped each collection on a 1:4800 topographic map (Figure 1). The 2013 site is very close to the mapped location. Figures 2 and 3 include photos of the collection site.

The 1981 specimen consists of two individuals. In 2013, I collected twelve individuals to show range of variation (Marriott 12575). I also collected eight individuals from a second population located below the south side of Devils Tower (Marriott 12576). At the Rocky Mountain Herbarium, I compared my collections and similar ones from the Wyoming Black Hills to keys and descriptions in applicable floras (Tables 1 and 2).

Size and leaf arrangement are consistently used to separate *A. pumila* and *A. verticillata*. The latter is larger, with mostly whorled leaves. In *A. pumila*, leaves are alternate, though often in spirals suggestive of whorls. Stem number is sometimes used as well, with *A. verticillata* having fewer stems per plant.

Material collected in 2013 varies from “typical” *A. pumila* to individuals similar to Marriott 889, all within the same population. These groups of plants occurred within areas of roughly 100 sq m, and the two sites were separated by ca 0.5 mi.

Table 1. Comparison of diagnostic characters for *Asclepias pumila* and *Asclepias verticillata*.

	<i>Asclepias pumila</i>	<i>Asclepias verticillata</i>
Height	mostly < 2 dm (Dorn 2001); usually < 2 dm (Van Bruggen 1985); 1-3 (4) dm (GPFA 1986); to 30 cm (Kaul et al. 2012)	mostly > 2 dm (Dorn 2001); often > 2 dm (Van Bruggen 1985); 1-6 (10) dm (GPFA 1986); to 60 cm (Kaul et al. 2012)
Stems	several from base (Dorn 2001); clustered from base (Van Bruggen 1985); 1-several from branched base (GPFA 1986); strongly colonial, stems solitary or 2-4 (Kaul et al. 2012)	1 or several from base (Dorn 2001); sparingly branched at most (Van Bruggen 1985); 1-few (GPFA 1986); branched from base (Kaul et al. 2012)
Leaves	spirally arranged (Dorn 2001); numerous (Van Bruggen 1985); alternate in tight spiral or whorled near base of stem (GPFA 1986); numerous, somewhat crowded, alternate (Kaul et al. 2012)	mostly whorled (Dorn 2001); numerous, in whorls of 3-5 (Van Bruggen 1985); mostly verticillate [whorled] to subverticillate, mostly 3-6 per node (GPFA 1986); mostly whorled (Kaul et al. 2012)

Table 2. *Asclepias pumila/verticillata* specimens from Wyoming Black Hills (RM).

Specimen	Height	Stems	Leaves	Notes
<i>Marriott 889</i> (Devils Tower NM, 1981)	to 2.5 dm	2 (including old broken stems)	variable -- alternate to spiral to clearly whorled	
<i>Marriott 12575</i> (Devils Tower NM, 2013)	to 2.2 dm	2-5, some also branching near base of stem	variable -- alternate to spiral to clearly whorled	collected 12 individuals representing range of variation in stand
<i>Marriott 12576</i> (Devils Tower NM, 2013)	to 2.4 dm	2-8, some also branching near base of stem	mostly alternate though sometimes tightly so (spiral) or even whorled	collected 8 individuals representing range of variation in stand
<i>Marriott 5176</i> (Redwater Cr, 1983)	2.5 dm	6, also branching near base of stem	alternate, spiral, sometimes whorled	
<i>Marriott 8329</i> (W Plum Cr, 1984)	to 2.8 dm	1-4	alternate, spiral, sometimes whorled	
<i>Hartman 16516</i> (Beaver Cr NNW of Alva, 1983)	to 2 dm	1-3, some also branching near base of stem	alternate, spiral, sometimes whorled	

In conclusion, while some specimens from the Wyoming Black Hills are outside our concept of typical *A. pumila*, they do not fit convincingly within *A. verticillata*. Of these only Marriott 889 has been called *A. verticillata*. At Devils Tower National Monument I found that range in morphology within populations includes more typical *A. pumila* as well as larger individuals suggestive of *A. verticillata*. Given this situation, I would not call this material *A. verticillata*.

Sources

Dorn, RD. 2001. Vascular Plants of Wyoming, 3rd ed. Mountain West Publishing, Cheyenne, WY.

Great Plains Flora Association. 1986. Flora of the Great Plains. Univ. Kansas Press, Lawrence, KS.

Kaul, RB, Sutherland, D, and Rolfsmeier, S. 2012. The Flora of Nebraska 2nd ed. University of Nebraska, Lincoln.

Van Bruggen, T. 1985. Vascular plants of South Dakota, 2nd ed. Iowa State Press, Ames, IA.

Figure 1. Collection site for Marriott 889, 1981. From “Devils Tower National Monument, Wyo.” topographic map; USGS 1949; scale 1:4800.

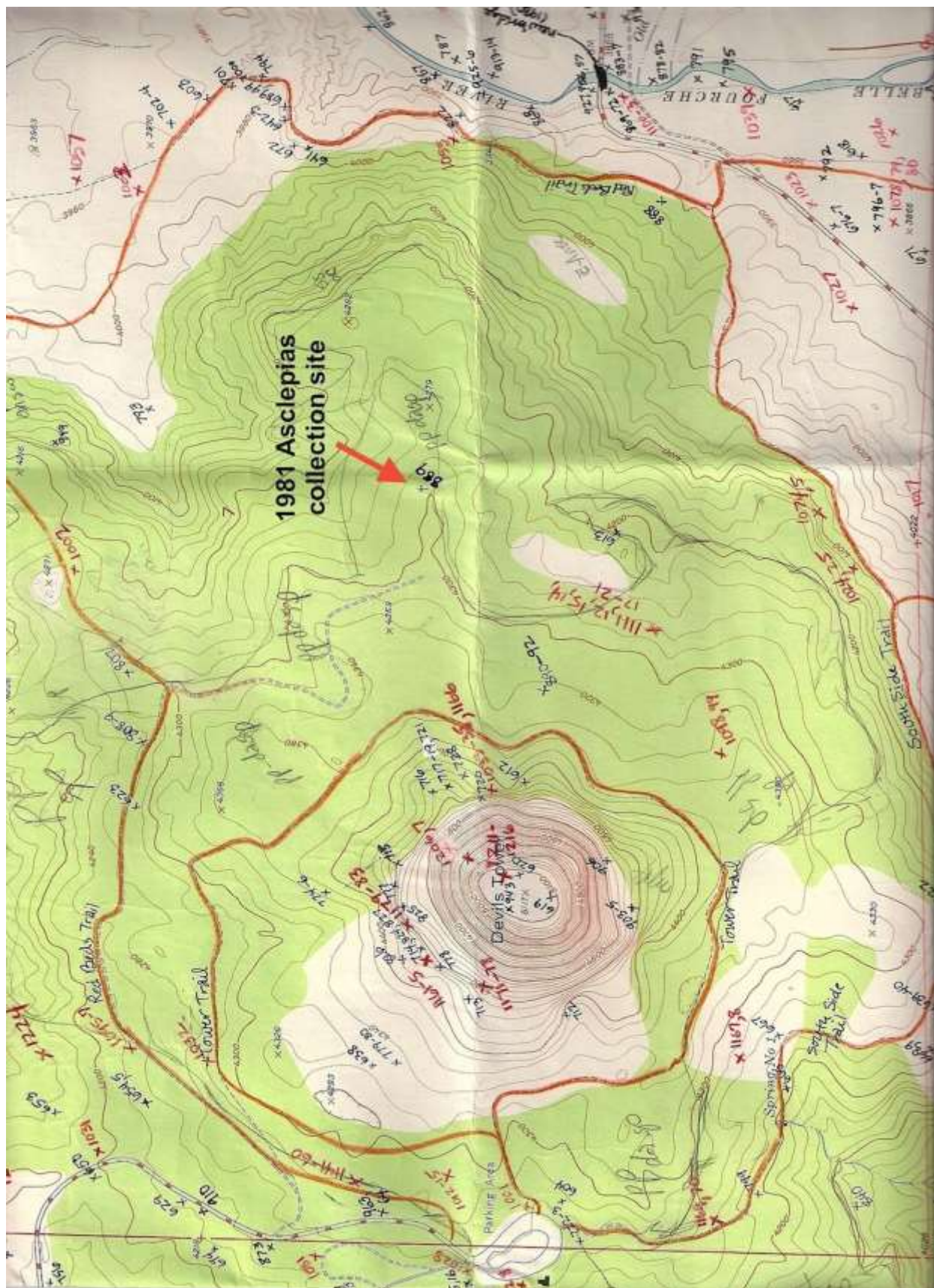


Figure 2. *Asclepias* collection site (Marriott 889 in 1981, Marriott 12575 in 2013); white heads are *Asclepias*. Looking east.



Figure 3. *Asclepias* collection site (Marriott 889 in 1981, Marriott 12575 in 2013). Looking west.

