

## **Arenaria lanuginosa (Caryophyllaceae), Taxonomic Status and Distribution**

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## *ARENARIA LANUGINOSA* (CARYOPHYLLACEAE), TAXONOMIC STATUS AND DISTRIBUTION

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**Abstract:** The geographic and morphological parameters of the widespread *Arenaria lanuginosa* are explored with the conclusion that in North America the species consists of two, largely allopatric, intergrading varieties: *A. l.* var. *saxosa* of the southwestern USA and northwestern Mexico, and *A. l.* var. *lanuginosa* of southern Mexico and Central America, extending into South America, where it is widespread, the Caribbean Islands, and the southeastern USA (perhaps introduced). Leaf forms occur in both taxa, these often treated as distinct populational taxa. Additionally, the taxonomic reality of *A. gypsostrata*, related to the *A. lanuginosa* complex, is reconfirmed.

**Keywords:** Caryophyllaceae, *Arenaria lanuginosa*, *A. gypsostrata*, Mexico, South America, USA, *Arenaria*, *lanuginosa* complex.

*Arenaria lanuginosa* (Michx.) Rohrb. is a widespread highly variable taxon occurring throughout much of North America, the Caribbean Islands, and South America (where typified by a collection from Brazil).

In North America, recent workers (Hartman et al. 2005) have accepted two infraspecific categories: *Arenaria lanuginosa* var. *lanuginosa*, of the southeastern USA (where it is perhaps introduced, to judge from its coastal predilections) and *A. l.* var. *saxosa* of the southwestern USA (the type from southwestern New Mexico) and certainly native to that region and northwestern Mexico (Figs. 1, 2).

Hartman et al. (2005) distinguished the two taxa largely by habit, floral proliferation, and petal size, this called to the fore in their key to varieties. They rightfully note that the species is “in serious need of comprehensive study,” further adding that material from the southeastern USA was found to be indistinguishable from many Mexican specimens. This lack of distinc-

tiveness seems to be the case, indeed, *Arenaria lanuginosa* var. *saxosa* appears to grade into *A. l.* var. *lanuginosa* in north-central Mexico, both in habit, leaf shape and petal size.

Volponi (1995) studied the Mexican collections of *Arenaria lanuginosa* in some detail, concluding that 3 morphological leaf varieties (or forms?) occur within the latter: *A. l.* var. *lanuginosa* (blades ovate), *A. l.* var. *megalantha* Rohrb. (blades broadly ovate to oval) and *A. l.* var. *ensifolia* Rohrb. (blades linear-ovate [specimens from Guatemala having received the name, *A. guatemalensis*]); these several taxa would appear to be mostly leaf forms of a highly variable *A. l.* var. *lanuginosa*, leafy branches of each neatly sketched by Volponi (1995) in his Fig. 1.

*Arenaria lanuginosa* is also highly variable in Argentina where the same 3 populational entities (or leaf forms) were recognized by Volponi (2004). By Volponi's (1995) account, all occur in both northern Argentina and Mexico as noted above.

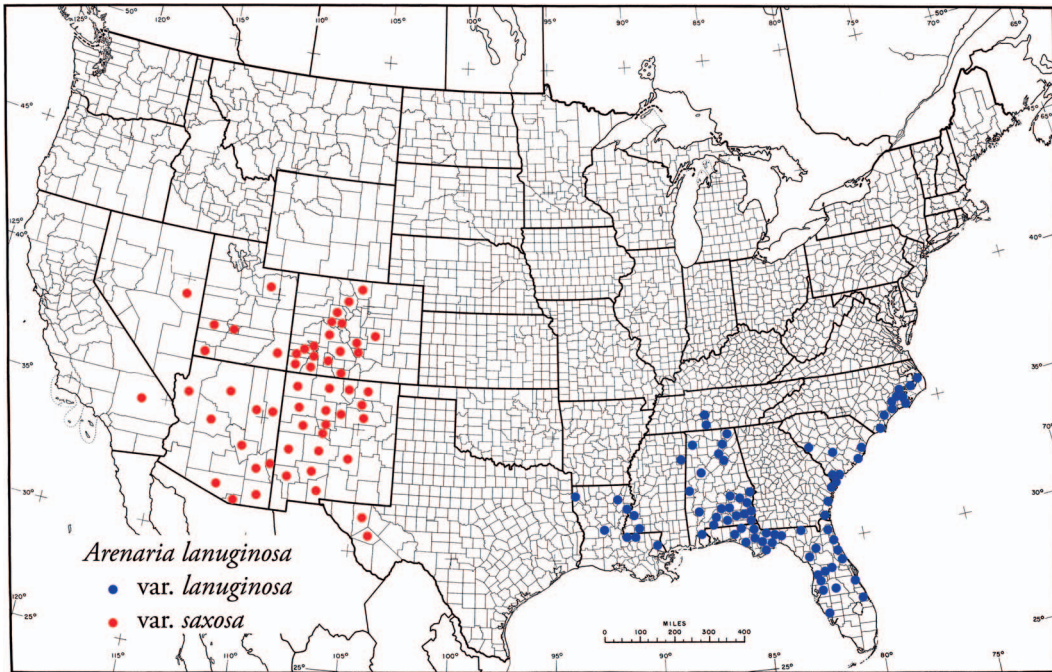


FIG. 1. County-level distribution of the two varieties of *Arenaria lanuginosa* in the United States, based on data from specimens at TEX-LL, supplemented with data from the Plants Database (U.S.D.A., N.R.C.S., 2016) and the Biota of North America Program (Kartesz, 2015).

KEY TO VARIETIES OF *ARENARIA LANUGINOSA* (LARGELY ADAPTED FROM HARTMAN ET AL., 2005)

1. Stems mostly 1-10, prostrate or trailing; flowers mostly solitary, axillary; petals mostly 0.5-1.5 times as long as sepals (or absent) ..... *A. l.* var. *lanuginosa*
1. Stems mostly more numerous, somewhat ascending; flowers mostly numerous in congested cymes; petals mostly 1-2 times as long as sepals ..... *A. l.* var. *saxosa*

*Arenaria lanuginosa* (Michx.) Rohrb. Fl. Bras. [Martius] 14: 274. 1872.

*Arenaria lanuginosa* var. *lanuginosa*  
*Arenaria alsinoides* var. *ovatifolia* Donn.Sm.

*Arenaria guatemalensis* Standl. & Steyer.

*Arenaria lanuginosa* var. *diffusa* (Elliott) Mackloskie

*Arenaria lanuginosa* var. *ensifolia* Rohrb.

*Arenaria lanuginosa* var. *longipedunculata* W.H.Duncan

*Arenaria lanuginosa* var. *megalantha* Rohrb.

*Arenaria lanuginosa* subsp. *guatemalensis* (Standl. & Steyer.) J.A.Duke

*Arenaria megalantha* (Rohrb.) F.N.Williams

*Spergulastrum lanuginosum* Michx.

As noted above, *Arenaria lanuginosa* is typified by material collected in Brazil and occurs throughout most of South America, as well as the Caribbean Islands. It is exceedingly variable and could with some justification be treated as a widespread variable species, as might be inferred from the studies of Volponi (1995, 2005). Indeed, the several stem-leaf patterns found in South America are also found in Mexico. I have maintained *Arenaria lanuginosa* var. *saxosa* because it appears to be largely confined to the southwestern USA and northwestern Mexico (Figs. 1, 2) and allopatric with the more southeastern populations of *A. l.* var. *lanuginosa* in Mexico, the two taxa intergrading in the states of Michoacán, Mexico and Morelia (pers. obs.). Forms of the latter with large petals occur in Puebla and Oaxaca

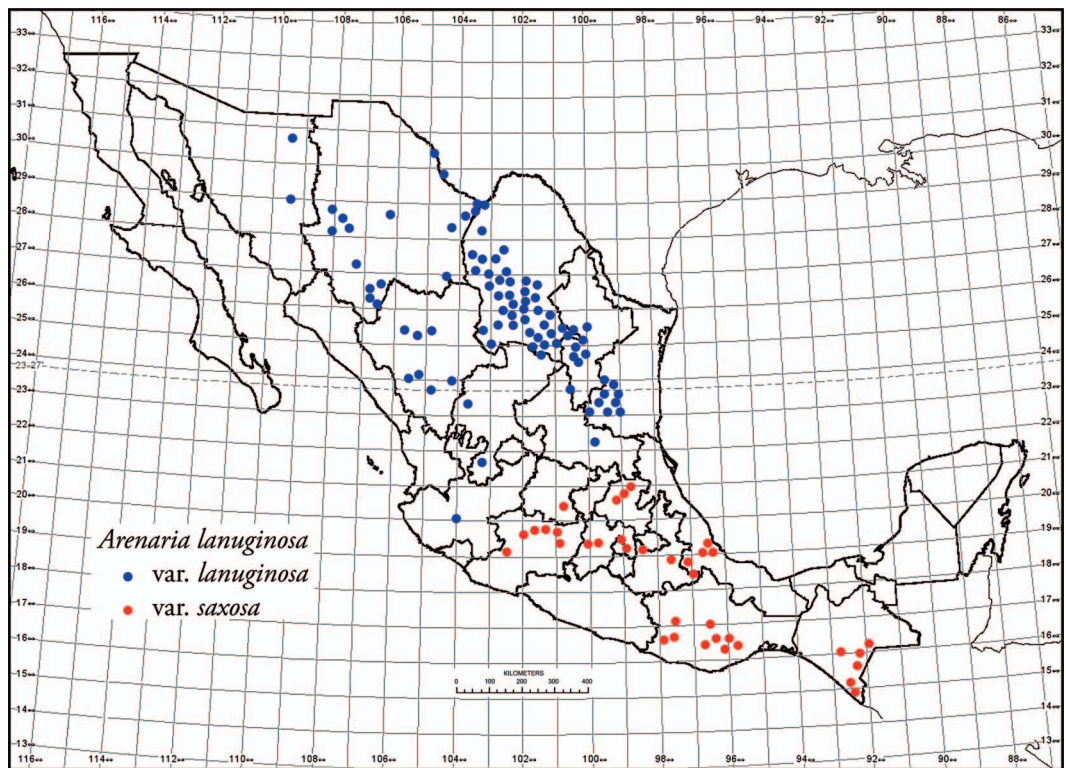


FIG. 2. Distribution of the two varieties of *Arenaria lanuginosa* in Mexico, based on specimens examined by the author, mainly at TEX-LL.

(LL-TEX) and, sporadically, southwards into Central America. Additionally, large leafed stem forms seem to occur at higher elevations, both in *A. l.* var. *lanuginosa* and *A. l.* var. *saxosa*. Indeed, peculiar large-leaved forms (or populations) from Guatemala (e.g., Vulcan de Fuego, ca. 3500 m, *Beaman* 4043 (TEX) was recognized by Standley and Steyermark in their treatment of *Arenaria* (1946; Fl. Guat. 24: 218-223.) and given the name "*A. megalantha*," with a type from South America. The Guatemalan populations, so identified, mostly from high elevation volcanic peaks, might prove worthy of specific recognition since the plants concerned are markedly pubescent with leaves broadly ovate, sessile and with very acute apices. Equally noteworthy is the observation that occasional collections from Central America and the Caribbean Islands

appear very similar to those of *A. l.* var. *saxosa*, at least in habit.

I think it likely that *Arenaria lanuginosa* var. *lanuginosa* was introduced into the USA at an early time, including the single collection known from the panhandle region of Tamaulipas, Mexico, this from near Laredo, Texas, (Map 2), the variety not collected in Texas as yet, but it does occur in Louisiana, along the border with Texas, as noted in Map 1.

***Arenaria lanuginosa* var. *saxosa* (A. Gray)**  
Zarucchi, R.L.Hartman & Rabeler,  
Sida 21: 753. 2004.

*Arenaria confusa* Rydb.

*Arenaria lanuginosa* var. *cinerascens*  
(B.L.Rob.) Shinnars

*Arenaria lanuginosa* subsp. *saxosa*  
(A.Gray) Maguire

*Arenaria mearnsii* Wootton & Standl.

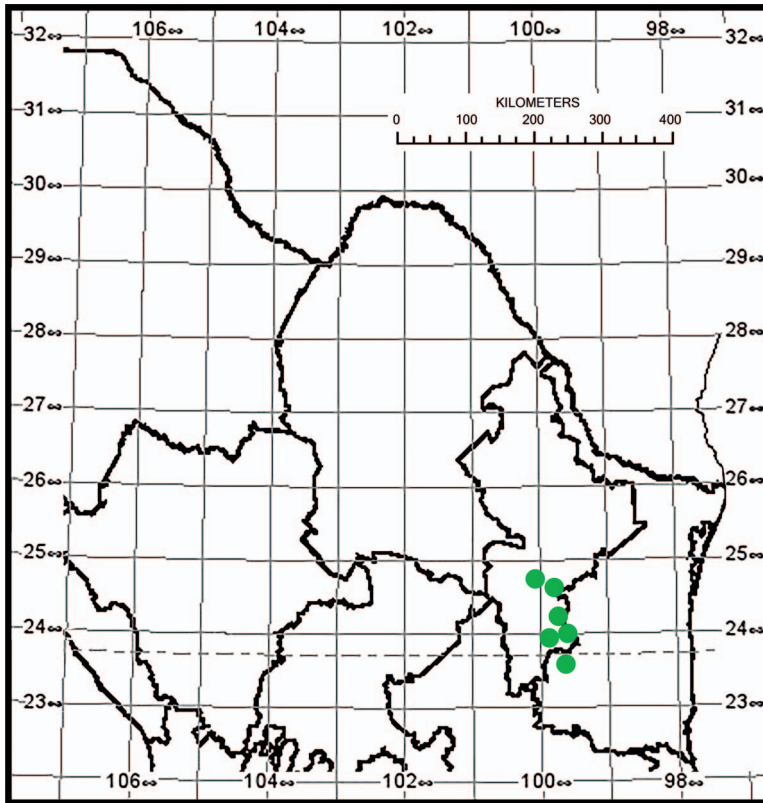


FIG. 3. Distribution of *Arenaria gypsostrata* in Mexico, based on specimens examined by the author, mainly at TEX-LL.

*Arenaria saxosa* A.Gray

*Arenaria saxosa* var. *cinerascens* B.L.Rob.

*Arenaria saxosa* var. *mearnsii* (Wootton & Standl.) Kearney & Peebles

As noted above, this variety is closely allopatric with *Arenaria lanuginosa* var. *lanuginosa* and intergrades with the latter in areas of near contact. Occasional specimens of both broad and narrow leafed plants occur among its midst, as might be expected, the populations occupying a broad range of local habitats.

Finally, it should be noted that Hartman et al. (2005) call into question the veracity of my novelty, *Arenaria gypsostrata*, pointing out that it belongs to the *A. lanuginosa* complex, which indeed it does, as well noted in my account of the taxon (Turner 1993a, b). It is clearly a slender leafed, small flowered, tap-rooted perennial having rela-

tively short ascending stems. Further, it is a locally isolated gypsophile (Fig. 3), occurring only in gypsum soils, along with other such edaphic endemics. It is represented in the LL-TEX herbarium by 8 sheets, these all very similar and allopatric with *A. lanuginosa* var. *saxosa*, differing from the latter by the several characters called to the fore in my original description. No intergradation between the two has been detected.

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I am grateful for the editorial input of Jana Kos, George Yatskievych, and to LL-TEX for permitting study of the numerous sheets of the complex concerned. Distribution maps are mostly based upon plants on file at LL-TEX and records provided by the USDA (web accounts).

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