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SYNOPTICAL STUDY OF THE *ACACIA ANGUSTISSIMA* (MIMOSACEAE) COMPLEX

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ABSTRACT

A taxonomic study of the widespread North American species, *Acacia angustissima*, is rendered. It is recognized as having six intergrading morphogeographical infraspecific categories, as follows: 1.) var. *angustissima*, a shrub or small tree occurring in tropical and subtropical mesic habitats along both sides of México from the states of Jalisco and Nuevo León southwards to Panamá; 2.) var. *hirta*, a rhizomatous perennial herb with simple stems occurring in the southeastern and south-central U.S.A.; 3.) var. *suffruticosa*, a suffruticose herb or shrub occurring mostly in the Sonoran desert regions of northeastern México; 4.) var. *chisosiana*, a divaricately branched subtortuose shrublet or shrub of north-central México and closely adjacent U.S.A. (New Mexico and trans-Pecos Texas); 5.) var. ***leucothrix*** (Standl.) B.L. Turner, *comb. & var. nov.*, a divaricately branched shrublet or shrub of the Tamaulipan scrublands of northeastern México and closely adjacent U.S.A.; and 6.) var. ***oaxacana*** B.L. Turner, *var. nov.*, a shrub or shrublet of the xeric scrublands of southern Pueblo and northern Oaxaca, México. A key to the varieties and a map showing their distribution is provided.

KEY WORDS: Mimosaceae, *Acacia*, U.S.A., México

Acacia angustissima (Mill.) Kuntze is a widespread common species of North America. It has been the subject of three relatively detailed studies (Wiggins 1942; Isely 1969; McVaugh 1987). Isely especially clarified relationships in the complex in northern México and the U.S.A. with his recognition of six intergrading varieties: *angustissima, hirta* (Nutt.) B.L. Rob., *texensis* (Torrey & A. Gray) Isely, *chisosiana* Isely, *suffrutescens* (Rose) Isely, and *shrevei* (Britt. & Rose) Isely. Of these, I combine var. *texensis* with var. *hirta*, and var. *shrevei* with var. *suffruticosa*. I have also recognized two additional infraspecific taxa, var. *leucothrix* and var. *oaxacana*. A key and map (Figure 1) to these various taxa follows, along with justification for the treatment, including partial synonymies where pertinent. More detailed information *re*

nomenclature and typification can be found in the papers of Wiggins (1942), Isely (1969), and McVaugh (1987).

Except as otherwise noted, the map (Figure 1) is based upon the several hundred specimens of the complex on file at LL, TEX. All of these have been appropriately annotated, including those of an intergradant nature.

KEY TO VARIETIES OF *ACACIA ANGUSTISSIMA*

1. Leaves with mostly 10-20 pairs of pinnae; plants of south-central and southeastern U.S.A. or tropical and subtropical México to Central America. .....(2)
   2. Suffruticose herbs mostly 0.3-1.0 m high; south-central and southeastern U.S.A..... var. *hirta*
   2. Shrublets, shrubs, or small trees mostly 2-7 m high. ..... var. *angustissima*
1. Leaves with mostly 2-9(-10) pairs of pinnae; plants of more xeric montane or subdesert habitats, southwestern U.S.A., Sonoran and Chihuahuan deserts, Tamaulipan biotic province, and Puebla-Oaxacan shrublands.....(3)
   3. Pinnae mostly 1-2 cm long; much-branched subtortuous shrublets of Chihuahuan Desert and Tamaulipan shrublands.....(4)
      4. Older stems markedly striate with white to tan grooves; Chihuahuan Desert regions or north-central México, and closely adjacent New Mexico and Texas. ..... var. *chisosiana*
      4. Older stems only weakly striate if at all; Tamaulipan biome scrublands of northeasternmost México (Tamaulipas and Nuevo León) and closely adjacent Texas.....var. *leucothrix*
   3. Pinnae of well-developed leaves mostly 2-3 cm long; mostly straight-stemmed or weakly subtortuose suffruticose herbs or shrublets of the Sonoran Desert and Pacific slopes, or xeric montane habitats of southern Puebla and northern Oaxaca. .....(5)
      5. Pinnae mostly 2-4(-8) pairs; shrublets with subtortuous stems; southern Puebla and northern Oaxaca. .....var. *oaxacana*
      5. Pinnae mostly (4-)6-9(-10) pairs; suffruticose herbs to shrubs with mostly nontortuose stems; Sonoran Desert regions and Pacific slopes from Sonora to Nayarit and northern Jalisco.....var. *suffrutescens*

ACACIA ANGUSTISSIMA (Mill.) Kuntze var. *ANGUSTISSIMA*

Acacia angustissima (Mill.) Kuntze, *Rev. Gen. Pl.* 3:47. 1896. *Mimosa angustissima* Mill., *Gard. Dict.* ed. 8. *Mimosa* no. 19. 1768. TYPE: MEXICO. Veracruz: 1731, *Houston s.n.* (BM), according to McVaugh (1987)

This is the most widespread and frequently encountered variety of the *Acacia angustissima* complex, occurring in tropical and subtropical habitats from northeastern Nuevo León, México and extending down the Gulf Coastal slopes to Panamá; on the Pacific slopes it occurs from southern Durango and probably closely adjacent Sinaloa to Panamá (Figure 1). The taxon is readily recognized by its large habit (2-8 m),

elongate nontortuose stems, and large leaves with numerous pinnae (mostly 10-20 pairs).

Wiggins (1942) provided a partial list of synonyms for the taxon (including *Acacia angustissima* subsp. *smithii* [Britt. & Rose] Wiggins, which I cannot recognize), as did McVaugh (1987). Additional synonyms are likely to be disinterred from among the numerous names proposed for the North American elements of *Acacia*. The type of *A. angustissima* was obtained from Veracruz, México by Houston in 1731 and is discussed in more detail by Wiggins (1942).

ACACIA ANGUSTISSIMA (Mill.) Kuntze var. *CHISOSIANA* Isely

Acacia angustissima (Mill.) Kuntze var. *chisosiana* Isely, Sida 3:370. 1969.

Isely, although not having examined living plants, recognized the distinctiveness of this taxon. Turner (1959) erroneously included most such material in his concept of *Acacia texensis* Torrey & A. Gray. The latter name is typified by material from near New Braunfels, Texas, and is nothing more than forms of var. *hirta*, having somewhat fewer pinnae.

The var. *chisosiana* is largely confined to the Chihuahuan Desert regions of trans-Pecos Texas, New Mexico, and north-central México (Figure 1). It appears to intergrade but slightly into var. *hirta* in the eastern portion of its range and perhaps into var. *suffrutescens* in the western parts of its range. Indeed, it is possible that future workers might consider it specifically distinct; if so, this would perhaps necessitate the elevation of varieties *leucothrix* and *oaxacana*, this triad being superficially similar among themselves, but unlikely to represent a monophyletic element, to judge from their distributions.

ACACIA ANGUSTISSIMA (Mill.) Kuntze var. *HIRTA* (Nutt.) B.L. Rob.

Acacia hirta Nutt., *in* Torr. & Gray, *Fl. N. Amer.* 1:404. 1840. *Acacia angustissima* (Mill.) Kuntze var. *hirta* (Nutt.) B.L. Rob., Rhodora 10:33. 1908. Type collected by Nuttall in eastern Oklahoma or closely adjacent Arkansas.

Acacia texensis Torr. & Gray, *Fl. N. Amer.* 1:404. 1840. *Acacia angustissima* (Mill.) Kuntze var. *texensis* (Torr. & Gray) Isely, Sida 3:372. 1969. Type collected by Lindheimer in central Texas, vicinity of New Braunfels, Comal Co.

Isely (1969) recognized *Acacia texensis* as varietally distinct, distinguishing it from var. *hirta* by its purportedly smaller leaves with fewer pinnae (mostly 4-6 pairs vs. 9-15 pairs), ignoring intermediates between these. I view Isely's var. *texensis* to be but sporadic leaf forms of the widespread var. *hirta*, the smaller leaves usually occurring on secondary shoots which arise from cutover or browsed plants, although some such plants must represent intermediates between var. *chisosiana* and var. *hirta* along their regions of contact.

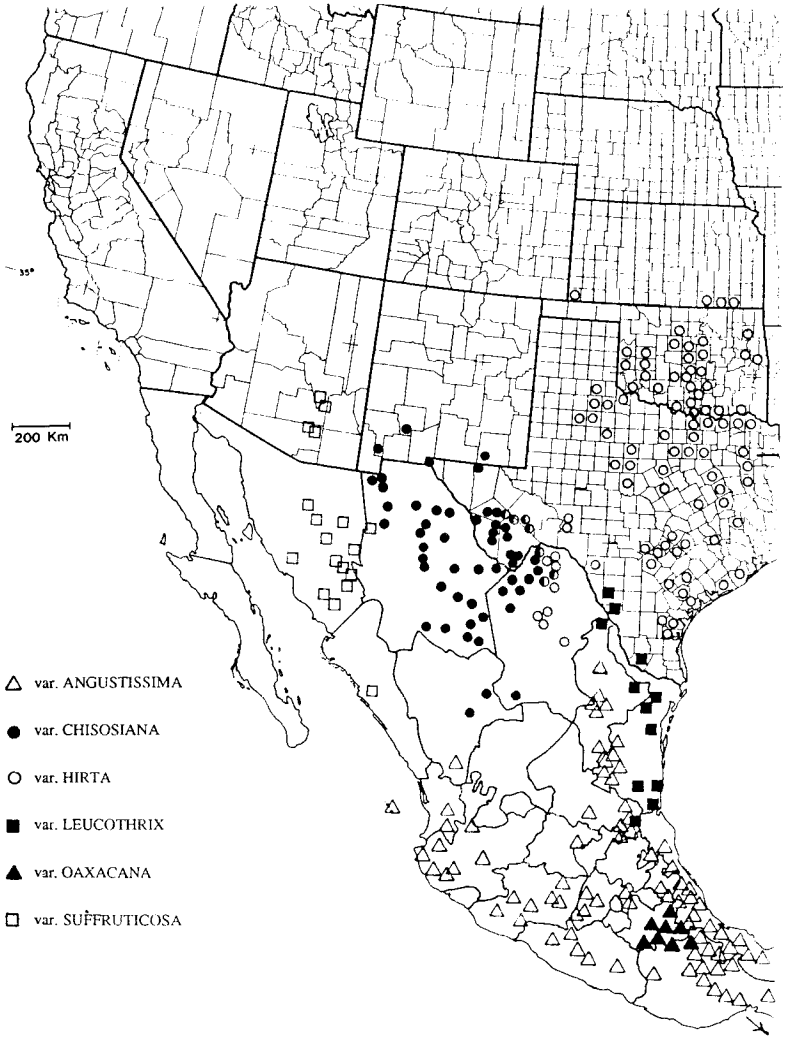

Figure 1. Distribution of the infraspecific categories of *Acacia angustissima*. All of these apparently intergrade to some extent in areas of close proximity, but only the half-closed circles documented this for var. *chisosiana* and var. *hirta* is shown on the map. Arrows show extension of the taxa to regions outside of the bounds of the map area. The map is based largely upon specimens at LL, TEX, except for most of the open circles in Oklahoma and Nebraska, these having been extracted from the map portrayed in Barkley (1977).

ACACIA ANGUSTISSIMA (Mill.) Kuntze var. ***LEUCOTHRIX*** (Standl.) B.L. Turner, *stat. & comb. nov.* BASIONYM: *Acacia leucothrix* Standl., Contr. U.S. Natl. Herb. 20:185. 1919. The type was collected in easternmost San Luis Potosí, México (at San Dieguito) in 1904 by Palmer. (Paratypes examined: *Pringle 9717* [3 sheets, LL, TEX]).

This taxon is well-represented at LL, TEX. Dr. M.C. Johnston was perhaps the first to recognize its affinity, at least by annotations on several sheets at LL, TEX. Standley in his protologue compared his new taxon with *Acacia cuspidata* Schlecht., but the latter presumably does not belong to the *A. angustissima* complex if we are to believe that the leaf petiole is glandular, as given in its type description.

ACACIA ANGUSTISSIMA (Mill.) Kuntze var. ***OAXACANA*** B.L. Turner, *var. nov.* TYPE: MEXICO. Oaxaca: 5 km al SE de Cuicatlán, por la desviación a San Pedro Ocotipac, Selva Baja Caducifolia, ca. 760 m, 27 Aug 1980, *F.G. Madrano, et al. F-1568* (HOLOTYPE: TEX!).

Similis *A. angustissimae* (Mill.) Kuntze var. *leucothrix* (Standl.) B.L. Turner sed habens folia majora cum pinnis longioribus (2-3 cm vice 1-2 cm) et caules minus tortos.

ADDITIONAL SPECIMENS EXAMINED (9 sheets): MEXICO. Puebla: *Salinas T. & Dorando R. F-3097* (TEX); *Sousa 9390* (TEX); *Tenorio L. 8014* (TEX); *Tenorio L. 14158* (TEX). Oaxaca: *Magallanes 53, 196* (TEX); *Salinas T. 4635, 4846, 4861* (TEX).

This taxon is superficially similar to var. *leucothrix* but has mostly larger leaves with longer pinnae (2-3 cm long vs. 1-2 cm long) and less tortuose stems. The collections by Magallanes (cited above) differ from most of the other collections in having mostly 4-8 pairs of pinnae, otherwise the plants are scarcely distinguishable.

ACACIA ANGUSTISSIMA (Mill.) Kuntze var. *SUFFRUTESCENS* (Rose) Isely

Acacia suffrutescens Rose, Contr. U.S. Natl. Herb. 12:409. 1909. *Acacia angustissima* (Mill.) Kuntze var. *suffrutescens* (Rose) Isely, Sida 3:372. 1969. The type was collected in Santa Cruz Valley, near Tucson, Arizona, U.S.A.

Acacia lemmonii Rose, Contr. U.S. Natl. Herb. 12:409. 1909. *Acacia angustissima* (Mill.) Kuntze subsp. *lemmonii* (Rose) Wiggins, Contr. Dudley Herb. 3:230. 1842. The type was collected by Lemmon in the Huachuca Mts., Cochise Co., Arizona, U.S.A.

Acaciella shrevei Britt. & Rose, N. Amer. Fl. 23:105. 1928. *Acacia angustissima* (Mill.) Kuntze var. *shrevei* (Britt. & Rose) Isely, Sida 3:371. 1969. The type was collected by Shreve in the Huachuca Mts., Cochise Co., Arizona, U.S.A.

As noted in the above synonymy, Isely (1969) recognized a var. *shrevei* from among this complex, largely distinguished by its purportedly shrubby habit and more

venose leaflets. I cannot see that such habitat forms might be meaningfully segregated, nor does leaflet venation serve to mark the Huachuca Mt. specimens as distinct, there being much sporadic variation of this character, especially in México. Indeed, McVaugh (1987) calls attention to similar venose forms in western México, he called such material var. *texensis* (Torr. & Gray) Isely. It is likely, however, that the plants concerned are southern elements of my concept of var. *suffrutescens*, the latter presumably intergrading into var. *angustissima* in this region.

It should also be noted here that *Acaciella painteri* Britt. & Rose, discussed by McVaugh (1987, p. 125) presumably belongs to the var. *suffruticosa* complex. The limits of the latter taxon in Sinaloa, Durango, Zacatecas, Nayarit, and Jalisco is in much need of additional study, especially populational investigations.

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