LEGUMES OF THE UNITED STATES: I. NATIVE ACACIA[1]

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I have been concerned with a manual review of U.S.[2] legumes for several years. It is desirable that a partial accounting not be delayed until ultimate manual publication. Exposure of viewpoints to critical colleagues will facilitate the process of eliminating dross. Further, one needs to conduct nomenclatural transactions and present rationale for taxonomic decisions ere the manuscript is desiccated to manual format.

Opera prepared through the employment of classic taxonomic procedures (herbarium, field, library) do not solve all of the problems nor provide sophisticated evolutionary interpretations. Assuming such limitations, these treatments represent a stage in the improvement of knowledge and should facilitate the pathway of those following. And also, for the pragmatic present, it is hoped that interpretations are such that one can key a plant to a name.

These entries will include (1) keys: a summary view of delimitations, (2) distributional, habitat and phenological briefs, (3) nomenclatural reviews, and (4) taxonomic and nomenclatural commentary where pertinent. Publication of descriptions (except of genera and new taxa) and distributional maps is deferred.

With respect to nomenclature, I use the paragraph system for synonymy; names based on one type are included in one paragraph, and the "type-bearing" name is capitalized. An attempt has been made to account for all names based on U.S. types. However, the range of many of our species is largely outside of the United States (as most kinds of *Acacia*). Evaluation of tropical American as well as Old World binomials is largely limited to those of critical status.

Continued support from the Iowa Agricultural Experiment Station and the Sciences and Humanities Research Institute has rendered these investigations possible. I have used the facilities of a number of herbaria and have generously been accorded loans. Help and encouragement has been received from many individuals. I permit myself the luxury of mentioning two names: Rupert Barneby, long-standing friend and acroatic counselor; and John F. Reed, Head Curator of the New York Botanical Garden Library, and staff who have aided a sometimes confused bibliophile beyond the call of reason or duty.

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[2] The conterminous United States (Kuchler, 1964); i.e. Hawaii and Alaska are excluded.

For this entry, native *Acacia*, I have used all U.S. mimosoid material from the following herbaria: New York Botanical Garden (NY), Iowa State University (ISC), University of Texas (TEX), New Mexico State University (NMC), University of Arizona (ARIZ), University of Southwestern Louisiana (LAF), Mississippi State University (MISSA), Florida State University (FSU), and University of South Florida (USF). Selected materials and/or types have been studied courtesy of the following: Southern Methodist University (SMU), Gray Herbarium (GH), Missouri Botanical Garden (MBG), Lundell Herbarium (LL), U.S. National Museum (US), and the Philadelphia Academy of Natural Sciences (PH). My debt to these institutions is obvious; warmest thanks are tendered to the herbarium curators.

ACACIA Mill.

Trees or shrubs, rarely herbs, often spiny. Leaves bipinnate, or (introduced Australian species) reduced to simple phyllodia. Pinnae 1—many pairs; leaflets often small and numerous. Petiole and/or rachis usually gland-bearing. Plants with paired stipular spines or internodal prickles, or unarmed; stipules if not spiny, small and deciduous. Flowers in heads or spikes (less frequently, racemose), usually yellow. Perianth regular, 2-ranked, (3) 4—5 merous. Calyx campanulate, the sepals free only apically in most species. Corolla gamopetalous. Stamens well exerted, numerous, free. Ovary sessile to stipitate. Legume various: usually oblong to linear, compressed to turgid, membranous to woody, straight to curved, sometimes irregularly constricted to moniliform, dehiscent or indehiscent. Funiculus often conspicuous (especially in introduced species), frequently encircling the seed, or terminally arillate. Seeds several.

Basic chromosome number x = 13; determinations on ca 60 species (Darlington and Wylie, 1956).

Acacia constitutes an immense genus of possibly 600 species, represented primarily in Australia, tropical Africa, and tropical America. In Australia, it constitutes the largest genus of flowering plants. Our representatives include both native and introduced species.

The acacias native to the United States are mostly northern outliers of Mexican and Caribbean species. They extend across the southern extremity of the country (*A. angustissima* as far north as southern Missouri) from Florida to California; the greatest number is in Texas. One of them, *A. smallii* (*A. farnesiana* auct.), is abundantly planted as an ornamental.

Britton and Rose (1928) dissected the American acacias into several fragment-genera (primarily on the basis of pod variance). Posterity has in general rejected their interpretation and I am inclined to this viewpoint.

Acacia Mill. Gard. Dict. Abridg. ed. 4 (vol. 1). 1754! Type species: *A. nilotica* (L.) Delisle.

There has been some inconsistency in author citation for *Acacia*. The primary reason (Isely, 1957) was lack of agreement among botanists as to the propriety of accepting the fourth edition of Miller's Gardener's Dictionary

(1754) as a source of generic names. The status of Miller generic names is now unequivocal (Dandy, 1967; Stafleu, 1967).

The problem of a lectotype species for *Acacia* is ostensibly moot. Britton and Rose (1928) cite *A. nilotica* (L.) Willd; Hutchinson (1964) designates *A. arabica* Willd., and Index Nominum Genericorum specifies *Mimosa scorpioides* L.

Assuming a broad circumscription of a polymorphic species, all the preceding binomials refer to the same taxon. I concur with Hill (1940) that the proper designation is *A. nilotica* (L.) Delisle.

No nomenclatural necessity urges a review of the typification of *Acacia*, and I have not attempted such. Hutchinson (1964) tabulates extensive synonymy.

KEY TO SPECIES[3]

1. Flowers in spikes.
   2. Pinnae (4)6—10 pairs; Arizona. . . . . *A. millefolia*
   2. Pinnae 1—3(4) pairs; Texas—California.
      3. Pinnae usually 1 pair; spines paired, nodal; southern to western Texas. . . . . *A. rigidula*
      3. Pinnae (1)2—3 pairs; spines internodal, not paired; Texas—California. . . . . *A. greggii*
1. Flowers in globose to slightly elongated heads.
   4. Spines present, nodal, paired, straight, usually conspicuous, sometimes reduced to prickly, acicular stipules.
      5. Pinnae (4)5—10(17) pairs; foliar glands petiolar and usually also between uppermost pinnae, frequently elongate or somewhat elevated; rachis conspicuously puberulent or villosulous; southernmost Florida.
         6. Pinnae (8)10—17 pairs; leaflets not reticulate; leaf rachis openly canaliculate; petiolar gland often raised, circular, cupuliform. . . . . *A. macracantha*
         6. Pinnae (4)5—8 pairs; leaflets plainly reticulate; leaf rachis narrowly cananiculate; petiolar gland sessile, often elongate. *A. tortuosa*
      5. Pinnae 1—5(7) pairs; foliar glands, rachis pubescence and ranges various.
         7. Leaflets linear, ca 1 mm wide, widely spaced on rachis and usually distinctly alternate; local, Brewster Co., Texas. . *A. schottii*
         7. Leaflets not linear; range various.
            8. Peduncles bracteate about the middle (if bracts are gone, a nodal bump is evident).
               9. Pinnae 1—2(3); petiole-rachis axis 0.3—1.5 cm long; leaflets ovate, thick and often conspicuously glutinous, 1—2(3) mm long. . . . . *A. neovernicosa*
               9. Pinnae (3) 4—6 pairs; leaflets ovate to short-oblong, neither conspicuously thick nor glutinous, (1.5) 2—3 (4.0) mm long. . . . . *A. constricta*

[3] These are treated in alphabetical order in the text.

8. Peduncles bractless or with bracts immediately subtending head.
10. Species of southern Florida only (infrequently eastern Florida to southernmost Georgia); leaflets evidently reticulate or leaves small (petiole-rachis usually not exceeding 3 cm in length; leaflets ca 2(3) mm long); glands petiolar; peduncles frequently 2—3 cm long.
11. Leaflets conspicuously reticulate beneath, 4—5(6) mm long; pod obtuse to acute, not beaked; stems not conspicuously zig-zag; thorns various. . . . . *A. farnesiana*
11. Leaflets not reticulate beneath, ca 2(3) mm long; pod sharply tapering or with a beak to 1 cm; stems zig-zag; thorns slender, usually about 1 cm long. . . . *A. pinetorum*
10. Species of western Florida Panhandle to California; plants not possessing above combinations of characters.
12. Pods stout, 3—6 cm long, scarcely constricted between seeds, glabrous, straight; foliar glands petiolar; leaflets scarcely reticulate beneath; peduncles largely 1.0—1.5(2.0) cm long, straight, stout, usually lacking reddish glands; western Florida to California. . . . . *A. smallii*
12. Pods slender, 8—15 cm long, irregularly moniliform; foliar glands located between lowermost or several pairs of pinnae; leaflets (when fully expanded) somewhat reticulate beneath; peduncles (1.3) 2.0—3.0 mm long, often curved, usually bearing tiny, deciduous gland-like structures; southern Texas only. . . . . *A. schaffneri*
4. Nodal spines not present; plants with internodal prickles or unarmed.
13. Plants unarmed, herbaceous or suffrutescent (locally suffrutescent-woody, Brewster Co., Texas and Cochise Co., Arizona); petiole-rachis eglandular; flowers conspicuously pedicellate. *A. angustissima*
13. Plants usually prickly, woody; petiole glandular; flowers scarcely pedicellate.
14. Pinnae 4—11 pairs; leaflets 15—35 pairs, 3—4 mm long; southern Texas west to Brewster Co. . . . . *A. berlandieri*
14. Pinnae 1—3 (4) pairs; leaflets 5—9 pairs, 4—9 mm long; central to western Texas. . . . . *A. roemeriana*

ACACIA ANGUSTISSIMA (Mill.) Ktze.

Southern United States: (Florida) Arkansas to Arizona, north to southern Missouri. Mexico and Central America. See varietal treatment.

Chromosome number 2n = 26 (Turner, 1959; as *A. texensis*).

Typical *Acacia angustissima* is a shrub or small tree of Mexico and Central America. It does not occur in the United States. My use of this binomial, rather than *A. hirta* for US forms, indicates that I am interpreting *A. angustissima* in a broad sense (likewise Woodson and Schery, 1950, and Standley and Steyermark, 1946). I have no firm convictions concerning the circumscription of *A. angustissima in toto*. On the basis of examination of numer-

ous *Acaciella* types of Britton and Rose I wonder if much of this genus might reasonably be placed within the confines of a single species, *A. angustissima.*

The delimitation of taxa within *A. angustissima* in the United States has previously been presented by Wiggins (1942), Benson (1943), Benson and Darrow (1944) and Turner (1959). These authors are not in accord. The problems relate both to the circumscription of *A. angustissima* and interpretation of subordinate taxa. My treatment more closely resembles that of Benson than those of the other authors.

KEY TO VARIETIES

1. Plants woody to suffrutescent; varieties (those of US) limited to western Texas and southern Arizona.
   2. Plants shrubs or small trees 2—5(10) m tall; pinnae to 20 pairs; leaflets without secondary venation; not found in United States. . . . . var *angustissima*
   2. Plants woody to suffrutescent 0.1—2.0(3) m tall; pinnae to 12 pairs.
      3. Robust plants of Huachuca Mts., Cochise Co., Arizona; leaflets with secondary nervation beneath; pinnae 9—10 pairs. . var *shrevei*
      3. Low, contorted form of Brewster Co., Texas; leaflets without secondary venation; pinnae (1) 2—4; some intermediacy with var *texensis* below. . . . . var *chisosiana*
1. Plants herbaceous to slightly suffrutescent; Florida to Arizona.
   4. Variety of Florida to western Texas; leaf petiole-rachis 6—10 cm long; pinnae 9—12 (15) pairs; leaflets 18—30 pairs; peduncles axillary and shorter than subtending leaves. . . . . var *hirta*
   4. Varieties of southern and western Texas to Arizona where overlapping in range with above; leaf petiole-rachis 2.5—7.0 cm long and pinnae or leaflets (or both) fewer than above (for intermediate material from Texas see *hirta*—(*texensis*) below).
      5. Varieties of western and southern Texas to eastern Arizona; inflorescences strictly axillary; leaves as follows.
         6. Petiole-rachises mostly (4) 5—7 cm long; pinnae 7—9 pairs; leaflets 12—20 pairs, western and southern Texas. . . . . var *hirta* (intergradient with *texensis*)
         6. Petiole-rachises mostly 2.5—4 cm long; pinnae (3) 4—6 pairs; leaflets 9—15 pairs; western Texas (rarely southern Texas), New Mexico and slightly into Arizona. . . . . var *texensis*
      5. Variety of central and southern Arizona; inflorescences usually terminally aggregated and exceeding leaves; petiole-rachises (4) 6—10 cm long; pinnae 6—9 (10) pairs; leaflets 15—25 pairs. var *suffrutescens*

Var ANGUSTISSIMA

Shrub or tree 2—5(10) m. Pinnae to 20 pairs. Heads often appearing in terminal panicles.

Mexico and Central America.

Var *angustissima* has been reported from Texas by Wiggins (1942), and I have seen specimens marked by him as var *typica.* I see no evidence that

they represent shrubby plants or that they are anything other than var *hirta*. Turner (1959) also excludes var *angustissima* from Texas.

Acacia angustissima (Mill.) Ktze. Rev. Gen. Pl. 3(2): 47. 1898! *Mimosa ANGUSTISSIMA* Mill. Gard. Dict. ed 8. Mimosa no. 19. 1768! Photo of type (BM) US! Houston, Vera Cruz, 1731. *Acaciella angustissima* (Mill.) Britt. & Rose N. Am. Fl. 28: 100. 1928!

Wiggins (1942) discusses the original material of *M. angustissima* Mill. Wiggins (1942) and Woodson and Schery (1950) present extra-US synonymy of *A. angustissima*.

Var. CHISOSIANA Isely

Low woody shrub. Leaves sparsely puberulent. Petiole-rachis length 0.8—2.0 (3.0) cm. Pinnae (1) 2—4 pairs. Leaflets 6—10 pairs. Heads with 4—8 (10) flowers.

Western Texas, Brewster, Presidio and El Paso Cos. Also Chihuahua and Coahuila. Grassy slopes north of Chisos Mts. and desert mountains; igneous soils at least in part. 3500—5000 ft(?). June—Aug.

I have not as yet seen this plant in the field. It is seemingly an intricately branched or contorted subshrub 2—4 dm high. It is ostensibly intergradient with var *texensis* (to which material has previously been referred). It is, in general, distinguishable from that taxon by its woody habit, pinnae, leaflets, and possibly flower number.

Acacia angustissima var. **chisosiana** var. nov.[4]

Suffrutices humiles 2—4 dm altae; foliorum pinnae (1) 2—4-jugae, foliola 6—10-juga; capitula 4—8-flora. Flores et legumina var. *texensis* similes. Type Warnock 20719. "Top of Divide (of Wilson) — Chisos Mts., July 27, 1937." (NY!)

Var. HIRTA (Nutt.) Robinson

Plants herbaceous to basally suffrutescent, ascending to decumbent; petiole-rachis (of upper leaves) (5)7—10 cm long; pinnae (7)9—12(15) pairs; leaflets (12)18—30 pairs. Leaflets not nerved beneath. Heads intercalary, rarely in a terminal raceme.

Texas to extreme southern Kansas and Missouri, northern Arkansas, Florida; Mexico. Eastern: open woodlands, glades, bluffs, limestone or shale, ledges and outcrops. Western: prairie grassland, roadsides, open woodlands, usually alkaline soils. May—July or (Florida) August—Sept.

This is the major phase of *A. angustissima* in the United States. It is sprawling, mildly suffrutescent, but the stems die back each year. I have usually seen it in grass in prairie remnants. In northern Arkansas, however, it is almost entirely limited to calcareous outcrops above streams, usually under shade.

My delimitation of *A. angustissima* var *hirta* circumscribes those forms of *A. angustissima* which range from Florida to western Texas where they blend into var *texensis*. This interpretation is at variance with that of Wiggins (1942), Benson (1943) and Benson and Darrow (1944) who extend var.

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[4] Latin transcriptions of diagnoses prepared by Rupert Barneby.

hirta into Arizona. Benson's treatment I find credible. After extracting var. *cuspidata* (var. *texensis* of the present treatment), he decided that the morphological differences between the Texas (var. *hirta*) and Arizona (my *suffrutescens*) forms did not warrant varietal segregation. I disagree for reasons given under treatment of the latter variety. Wiggins (1942) has *A. angustissima* var. *hirta*, subspecies *suffrutescens*, and *A. cuspidata* all roughly sympatric in Arizona; I am unable to interpret his treatment or satisfactorily apply it to material at hand.

Throughout most of its range, var. *hirta* possesses a petiole-rachis 6—10 cm long, (9) 10—12 (15) pairs of pinnae and 18—30 pairs of leaflets. But *hirta* blends with var. *texensis* at the western and southern extremities of its range; and one encounters numerous forms with smaller leaves, and fewer pinnae and leaflets. I have defined *texensis* in terms of its typical form (leaves 2.5—4 cm long with 3—6 pairs of pinnae); the intermediate forms I have associated with var. *hirta* as indicated in the key.

The status of Florida material referred to var. *hirta* is problematic. To my knowledge, these populations are disjunct by several hundred miles from the other forms of the species. Wiggins (1942) states that var. *hirta* occurs in scattered localities along the Gulf Coast from Texas to northern Florida, but he cites no such specimens and I have seen none. Possibly the apparent disjunction on the map may be due to a relative paucity of botanical collectors in Mississippi and Alabama. There seems no morphological differentiation except for the fact that most (but not all) of my rather limited Florida material represents the glabrate extreme of var. *hirta*.

Pubescence variance in this variety is conspicuous; the range is from hirsute-villous to inconspicuously puberulent. There is at least some regional patterning in the amount and kind of pubescence, but I have not studied it in detail.

Acacia angustissima var. *hirta* (Nutt.) Robinson Rhodora 10: 33. 1908! *Acacia HIRTA* Nutt. in Torr. & Gray Fl. N. Am. 1: 404. 1840! Type NY! Nuttall, Red River & Arkansas. *Acaciella hirta* (Nutt.) Britt. & Rose. N. Am. Fl. 23: 102. 1928!

As to concept:

A. filicioides auct. non *Mimosa FILICIOIDES* Cav. 1791 *fide* Wiggins (1942).

Var. SHREVEI (Rose) Isely

Plants suffrutescent shrubs, 1—2 m or more. Young stem and leaf rachises villous. Pinnae 9—10 pairs. Leaflets (4) 7—10 mm long with evident secondary venation. Heads usually fasiculate in terminal racemes, sometimes in leaf axils.

Southeastern Arizona (Huachuca Mts., Cochise Co.) and adjacent Sonora.

This variety merges somewhat with robust forms of var. *suffrutescens*. But plants possessing the above specified combination of characters (especially conspicuous nervation of leaflets) are apparently limited (in the U.S.) to the Huachuca mountains; these are var. *shrevei* as I have delimited it.

Acacia angustissima var. **shrevei** (Britt. & Rose) comb. nov. *Acaciella*

SHREVEI Britt. & Rose N. Am. Fl. 23: 105. 1928! Type NY! Isotype US! Shreve 5064. *A. hirta* var. *shrevei* (Britt. & Rose) Kearney and Peebles Jour. Wash. Acad. Sci. 29: 482. 1939!

Acacia LEMMONI Rose Contr. U.S. Natl. Herb. 12: 409. 1909! Type US! Isotype NY! Lemmon, Huachuca Mts., Sept. 1882. *Acaciella lemmoni* (Rose) Britt. & Rose N. Am. Fl. 23: 103. 1928! *Acacia angustissima* subsp *lemmoni* (Rose) Wiggins Contr. Dudl. Herb. 3: 230. 1942!

Var. SUFFRUTESCENS (Rose) Isely

Plant herbaceous to suffrutescent, of small stature to robust, puberulent to hirsute. Petiole-rachises (4)6—10 cm long; pinnae (5) 6—9 (10) pairs; leaflets 15—25 pairs (lowermost leaves often with fewer pinnae and leaflets), usually not nerved. Heads terminally aggregated in fascicled (2—3 per node) racemes and exceeding leaves.

Southern Arizona. Open dry, stony slopes, ledges, washes, canyons; desert grasslands, chaparral. 2400—6200 (7000) ft. (May) July—Sept.

There are several interpretations of the Arizona herbaceous *A. angustissima*. They are largely regarded as forms of var. *hirta* by Benson (1943), and Kearney and Peebles (1960). It is true that var. *suffrutescens* resembles var. *hirta* as to leaf characters more than it (var. *suffrutescens*) resembles typical var. *texensis*. But it is not the same taxon. It differs from var. *hirta* in fewer leaflets and pinnae, and the characteristic terminal aggregation of the heads. It is disjunct from var. *hirta* geographically, and very different ecologically.

Wiggins (1942) recognizes both subspecies *suffrutescens* and var. *hirta* in Arizona. As the above indicates, I am inclined to the viewpoint that the Arizona herbaceous material is largely one taxon; my var. *suffrutescens* includes Arizona material annotated by Wiggins as var. *hirta*, subspecies *suffrutescens* and *A. cuspidata*.

Acacia angustissima var. **suffrutescens** (Rose) comb. nov. *A. SUFFRUTESCENS* Rose Contr. U.S. Natl. Herb. 12: 409. 1909! Type US! Isotype NY! Pringle "Arizona; Santa Cruz Valley near Tucson: 1881." *Acaciella suffrutescens* (Rose) Britt. & Rose. N. Am. Fl. 23: 103. 1928! *A. hirta* var. *suffrutescens* (Rose) Kearney & Peebles Jour. Wash. Acad. Sci. 29: 482. 1939! *A. hirta* subsp. *suffrutescens* (Rose) Wiggins. Contrib. Dudley Herb. 3: 232. 1942!

Var. TEXENSIS (T. & G.) Isely

Plants herbaceous to suffrutescent. Leaves small, petiole-rachises mostly 2.5—4.0 cm long; pinnae (3) 4—6 pairs; leaflets 9—15 pairs. Inflorescences largely intercalary. Flowers usually 4—6.

Southern and western Texas and southwestern New Mexico. Rocky hillsides, canyons, outcrops, limestone to igneous or sandy soils, with pinyon-juniper and juniper-oak to creosote bush and grasses. ?—4500—6300 ft. May—Sept.

The blending of this form with var. *hirta* seems complete, but the tendency towards small leaves with fewer leaflets and pinnae has a distinct geographic orientation, albeit an apparently discontinuous range.

Since the line between the varieties *hirta* and *texensis* is foggy, the viewpoints and definitions of authors are various. Wiggins (1942) and Turner (1959) have treated var. *texensis* at the specific level (as *A. cuspidata* and *A. texensis* respectively); Kearney & Peebles (1960) doubt that it deserves recognition, and Benson (1943) has it as var. *cuspidata* of *A. angustissima*. I can compare my interpretation most easily with that of Wiggins re annotated sheets; my var. *texensis* consists of a melange of his *A. cuspidata* and *A. angustissima* var. *hirta*. Wiggins states, "It is often difficult to put into words the nearly intangible characteristics which make up the 'facies' of a particular plant. One recognizes a difference in two entities, but tries in vain to describe it." Contrariwise, despite its partially clinal nature, I find var. *texensis* relatively simple to define and recognize. I admit some uncertainty as to the ultimate virtue of the variety in terms of its apparently broken range and irregular patterns of morphological variance.

Acacia angustissima var. **texensis** (T. & G.) comb. nov. *A. TEXENSIS* T. & G. Fl. N. Am. 1: 404. 1840! Isotype NY! Drummond 155. *A. filicioides* var. *texensis* (T. & G.) Small Bull. N.Y. Bot. Gard. 2: 93. 1901! quoad nom. *Acaciella texensis* (T. & G.) Britt. & Rose N. Am. Fl. 23: 100. 1928!

A. CUSPIDATA Schlecht. Linnaea 12: 573. 1838! sensu Wiggins, 1940; non *A. cuspidata* Cunn. ex Benth. Lond. Jour. Bot. 1: 337. 1842! *A. angustissima* var. *cuspidata* (Schlecht.) Benson Amer. Jour. Bot. 30: 238. 1943!

Small's *A. filicioides texensis* (T. & G.) is not enumerated in the Gray cards nor cited by Britton & Rose (1928). Small employed this name to refer to glabrous forms of var. *hirta*; he took up *A. cuspidata* for the taxon herein under discussion. But the combination nomenclaturally must apply in the sense of T. & G.

ACACIA BERLANDIERI Benth.

Southern Texas, west to Brewster Co. Adjacent Mexico. Brush country on rocky hills, slopes or flats, limestone outcrops, often with mesquite-oak or cactus-mesquite. Locally abundant. March—May.

Chromosome number 2n = 26 (Turner, 1959)

Re distinctions from the related *A. roemeriana*: leaflets of *berlandieri* are considerably smaller and pinnae more numerous; the pod is coriaceous, not membranous. I have seen several specimens that putatively might be intermediate between *A. berlandieri* and *roemeriana*; all are from the area of range overlap. Among such material, I have rendered (possibly arbitrary) determinations on the basis of pod characters.

Gray's *A. tephroloba* is characterized "by its sparingly aculeate branches, glabrate foliage, and long, flat, stipitate pods." These are all characters in which *A. berlandieri* is quite variable. *A. emoryana* Benth. represents a glabrate or slightly pubescent form of this species with relatively few pinnae and leaflets and a somewhat spicate inflorescence. The original material cited by Bentham is Texas, Wright (uplands of the Leon River western Texas, June) and Emory Expedition no. 325. I have seen the latter collection. Several sheets fall into this descriptive category. There is some degree

of character correlation, and a subspecific unit may exist; I am not sure it can be dismissed as easily as Turner (1959) has done. The problem may be: do these forms represent intermediates with *A. roemeriana*, or are they best regarded as variants within *A. berlandieri*? Presently I am inclined towards the latter viewpoint.

Acacia berlandieri is possibly the most common and conspicuous acacia in southern Texas. One may easily observe areas of hundreds (thousands?) of acres on which it is codominant with mesquite, or almost entirely dominant.

Acacia BERLANDIERI Benth. Lond. Jour. Bot. 1: 522. 1842! Isotype GH! Berlandier 132, Monterey (Nouveau Leon), Janvier, 1828. *Senegalia berlandieri* (Benth.) Britt. & Rose N. Am. Fl. 23: 109. 1928!

Acacia TEPHROLOBA Gray Pl. Wright. 1: 65. 1852! Syntypes GH! Wright 175 & 176.

A. EMORYANA Benth. Trans. Linn. Soc. Lond. 30: 522. 1875! Isosyntype NY! US! Emory Expedition No. 325. *Senegalia emoryana* (Benth.) Britt. & Rose N. Am. Fl. 23: 109. 1928!

Bentham's description of *Acacia berlandieri* (loc. cit.) cites "Berlandier, Monterey, Texas." It is my assumption that GH sheet marked as above indicated represents this collection.

ACACIA CONSTRICTA Benth.

Trans-Pecos Texas (introduced further east?) to southeastern Arizona, (north to Gila Co.), possibly introduced in California. Rocky arid slopes, among talus, flood plains and washes, canyons; with pinyon-juniper, creosote-grass, mesquite on washes and flood plains, local or abundant; infrequently in cultivation. Ca 2000—6500 ft. (April) May—Sept. (Nov.)

Chromosome number 2n = 52 (Turner, 1959)

The distribution of *A. constricta* (to my knowledge) is entirely trans-Pecos and west except for disjunct collections from Martin and Starr Cos., Texas. Records east and south of the trans-Pecos largely prove to be *A. smallii*.

The delineation of *A. constricta* with respect to *A. neovernicosa* is briefly discussed under the latter. Var. *paucispina* Standl. per the author's diagnosis refers to a larger tree (not a thicket forming shrub) with fewer spines, and less glandular leaves; the type is a specimen lacking spines. It is said to grow at a higher altitude than var. *constricta*, distribution Arizona and possibly New Mexico.

Perhaps Standley's concept represents certain distinct ecotypes; or perhaps it is nothing at all. Herbarium specimens lead to no decision. The degree of spine development is variable; I do not find the correlation with other characters of which Standley speaks.

Acacia CONSTRICTA Benth. in Gray Pl. Wright. 1: 66. 1852! Isotype GH! US! Wright. 162. *Acaciopsis constricta* (Benth.) Britt. & Rose. N. Am. Fl. 23: 96. 1928!

A. constricta var. *PAUCISPINA* Wooton & Standl. Bull. Torr. Club 36: 105. 1909! Type US! Metcalfe 1123.

Bentham's concept and cited material (most of which I have seen, GH and US) of *Acacia constricta* included both *A. constricta* and *neovernicosa* as herein delineated, viz. "pinnis 2—7 jugis," and "most of the numerous flowering specimens gathered by Mr. Wright during the past year have not only the branchlets but the foliage glutinous, so that they adhere to the paper in which they were dried." Standley (1919), in characterizing *A. vernicosa* (*neovernicosa* of present treatment; Standley's name was a later homonym) excluded (from *A. constricta*) those elements properly associated with *A. vernicosa*. Among cited material representing the original *A. constricta*, he chose as a type a specimen representing "the form with numerous pinnae": Wright 162(US).[5]

ACACIA FARNESIANA (L.) Willd.

Southern peninsular Florida and Keys; sporadically eastern Florida to southernmost Georgia (introduced). West Indies to northern South America. Pinelands, hammocks, roadsides and other disturbed areas, locally common; in cultivation and escaped into disturbed areas. March—April or (extreme south) all year.

Chromosome number 2n = 52 (Darlington and Wylie, 1956)

Acacia farnesiana (L.) Willd. in the traditional sense is the most widely distributed species of *Acacia*. It ranges from South America to the extreme southern United States, is present also in southern Europe in cultivation and in tropical Asia and Australia independent of cultivation. Whether the range is bihemispheric prior to dissemination by man is moot; Old World botanists appear to believe it to be native.

I suggest the likelihood that *A. farnesiana* is a middle American species (to northern South America); its characters so indicate. Old World material seems much less variable than that of the American tropics; perhaps populations have been derived from relatively few phenotypes introduced at an admittedly early date. *A. farnesiana* is also credited to extratropical South America and names as *A. adenopa* Hook & Arn., *A. cavenia* (Molina) Hook & Arn., and *A. acicularis* Willd. assigned to *A. farnesiana*. I have not seen the types. However, I have examined a suite of specimens representing the South American members of this complex. Largely designated *A. cavenia*, they are certainly allied to *A. farnesiana* but probably not of that species as I have delimited it.

Small (1933) considered the U.S. representatives of *A. farnesiana* (as *Vachellia*) in the broad sense to represent 4 species. I agree with Small's basic position but find his circumscriptions unsatisfactory. I break the complex into three groups which I can only designate as species (*A. farnesiana*, *pinetorum*, and *smallii*.[6]

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[5] Technically, one supposes, the gatherings designated Wright 162 at US (Standley!) and GH (Isely!) represent isotypes. The sheet to be designated as the lectotype should be at K.

[6] One is aware of implicit taxonomic and nomenclatural dangers which beset the worker attempting revisionary efforts working with but a small segment of a cosmopolitan complex. Obviously a study of *A. farnesiana* (sens. lat.) on a world-wide basis is required.

A farnesiana and *pinetorum* are sympatric in southern Florida but differ in several features, most conspicuously in leaflet venation and size and in pod shape. *A smallii is* largely a species of more arid climates; it is primarily of southern Texas and south into Mexico and west to California.

Acacia farnesiana (L.) Willd. Sp. Pl. 4: 1083. 1806! *Mimosa FARNESIANA* L. Sp. Pl. 521. 1753! *Vachellia farnesiana* (L.) Wight & Arn. Prodr. 272. 1834!

I have seen no previous reference to the typification of *Mimosa farnesiana* L. With only a provincial knowledge of *A. farnesiana* and its relatives, the following should be regarded as commentary concerning probabilities rather than critical typification.

There is no specimen in the Linnaean herbarium (Savage, 1945). The Linnaean description scarcely identifies the species; "partialibus octojugatis" is descriptive of leaves with more pinnae than our forms.

Linnaean citations: "Hort Ups. 146; Ald. farnes. 2; Ray. Hist. 977." Hortus Upsaliensis (loc. cit., 1748) provides a characterization from which the Linnaean 1753 entry is a synopsis. Here Linnaeus indicates habitat "Domingo," and the pod description "Legumina teretia, crassa, utrinque angustiora, obtusa" suggests the probability that his concept represented a member of the *A. farnesiana* complex rather than such West Indies relatives as *A. tortuosa* or *A. macracantha.*

Aldinus' (loc. cit., 1625) plate illustrates fruit almost certainly of the *A. farnesiana* complex, although his material presumably came from India. This plate is probably the source of Linnaeus' statement that the leaves have eight pairs of pinnae. Ray's characterization (loc. cit., 1686) is a summary of the Aldinus diagnosis.

In light of the above, I am taking up *A. farnesiana* in the sense of a West Indies species which has pods of the type described by Linnaeus and illustrated per Linnaean citation by Aldinus.

Since I have recognized three species within the US portion of the range of the *A. farnesiana* complex, it is next necessary to decide to which of these, if any, the name, *A. farnesiana*, properly has reference. *A. farnesiana* as above delimited is the predominant representative of the *A. farnesiana* complex in the West Indies. Among a considerable suite of specimens examined (NY), I find only 2—3 which may represent another member of the group. It would appear reasonable that the Linnaean concept included the species common in the West Indies which extends northward into Florida. Thus, I am using *Acacia farnesiana* in the same sense as Small's (1933) *Vachellia farnesiana* (he does not indicate the basis for his nomenclatural interpretation). Britton and Rose (1928) also employ the binomial *Vachellia farnesiana*, but in the sense of *A. farnesiana*, *pinetorum* and *smallii* of my circumscriptions.

ACACIA GREGGII Gray

Southern Texas to southern California, Mexico. See varietal treatment. Cat-claw.

Acacia greggii and *wrightii* have been recognized as separate species since their description by Gray. I have broadened the circumscription of *A. greggii* to include the type of *A. wrightii* and am treating the two entities at the varietal level. I have done this because I cannot consistently distinguish between the two, because *A. wrightii* (southern to western Texas) lies largely within the range of the more widespread *A. greggii*, and because I have not observed evidence of ecological isolation.

KEY TO VARIETIES

1. Seed circular in outline; pod usually strongly constricted, often twisted, subcoriaceous, 1.0—1.5 cm wide; leaflets 3—5 (6) mm long; racemes 2—5 cm long; flowering mostly March—May; Texas to California.
   2. Leaflets glabrous or slightly puberulent; west to trans-Pecos Texas . . . . . var. *greggii*
   2. Leaflets pubescent; Trans-Pecos Texas to California . var. *arizonica*
1. Seed ovate in outline; pod straight-margined or somewhat constricted, not twisted, heavily papery, 1.5—2.5 cm wide; leaflets 5—9 mm long; racemes often exceeding 5 cm; often flowering May—July; southern to western Texas. . . . . var. *wrightii*

Var. ARIZONICA Isely

Leaflets, rachis and petioles villous with mostly straight trichomes 0.2—0.3 mm long; leaflets slightly or conspicuously cinereous, mostly 4—5 (8) mm long, often thick.

Trans-Pecos Texas to southern California. Desert slopes, canyons, road cuts; rocky sandy to clay soil; with *Prosopis*, *Carnegiea*, *Celtis*, *Cercidium*, *Larrea*; occasional to codominant. 2300—5000 ft. April—June.

Var. *arizonica* differs but slightly from var. *greggii* but is neatly circumscribed by range. The two overlap in Trans-Pecos Texas but with apparently little intermediacy.

Acacia greggii var. **arizonica** var. nov.

Foliorum petiolus, rachis necnon foliola pilis plerumque rectis 0.2—0.3 mm longis villosi; foliola subcinerea vel valde cinerea, saepe carnosula, 4—5(8) mm long; caeteris var. *greggii* similis.

Type ISC! Schroeder 114. Arizona, Yavapai Co. Montezuma Well, near Camp Verde. Altitude 3550 ft. July 18, 1948.

Var. GREGGII

Southern Texas to southern California. Adjacent Mexico. Rocky limestone slopes to bottom flood plains with mesquite and grass, washes, roadsides, sandy to igneous soils; often common. March—May (July). ca 500—6000 ft.

The typical, southern and central Texas form of this species has thin, green, glabrous leaves contrasting to the more xerophytic somewhat cinerous types to the west.

Acacia GREGGII Gray Pl. Wright. 1: 65. 1852! Type GH! "Dr. Gregg. West of Patos (dry valley) April 10/47. Small tree (+10 to 20)." *Senegalia greggii* (Gray) Britt. & Rose N. Am. Fl. 23: 110. 1928!

A. DURANDIANA Buckl. Proc. Acad. Phil. 1861: 453. 1862! Type PH! Buck-

ley. near Fort Belknap, Texas. June, 1861.

Gray (original description) states of *A. greggii*: "glabra" and "A small tree, 10 or 20 ft. high. . . ." He cites a Wright collection of 1851 and a Gregg specimen "west of Patos. . . ."

The "type sheet" of *A. greggii* includes material from three gatherings. One of these is the collection I have taken as type and cited per herbarium ticket; the leaflets are glabrous, consistent with the descriptive "glabra." Gray obviously obtained his statement as to height of the plant from the herbarium label of this collection. The other two specimens are Wright collections dated 1851 from west Texas or New Mexico; they are mildly pubescent and are herewith excluded.

Var. WRIGHTII (Benth.) Isely

Southern to western Texas. Rocky slopes to flood plains or washes; mesquite scrub; sandy to caliche soils. (April) June—August.

It is possible (or probable) that var. *wrightii* represents an independent species as previous workers have considered it. If so, satisfactory diagnostic characters are needed. Var. *wrightii* contrasts to *greggii* in leaflet size, length of racemes, pod texture and width, degree of constriction and twisting; and shape of the seeds. There is a tendency for these characters to coincide as indicated in the key, but correlation is inconsistent, and except for seed shape, all seem quantitative. I have used seed shape as a "basic character." But not enough material has seeds to allow a reasonable test of the hypothesis, and designation of some flowering material is uncertain. I believe, per specimens, that var. *wrightii* usually flowers later than *greggii* but there is overlap and inconsistency.

Acacia greggii var. **wrightii** (Benth.) comb. nov. *A. WRIGHTII* Benth. in Gray Pl. Wright. 1: 64. 1852! Isosyntype GH! Wright 302, 1849 collection. "Hills of Rio Grande and east to San Antonio" *Senegalia wrightii* (Benth.) Britt. & Rose. N. Am. Fl. 23: 110. 1928!

Bentham cites three gatherings, two of Wright and one of Gregg. The Gray herbarium "isotype" represents more than one Wright collection. One of these is designated as above quoted. Bentham's citation was "Prairies west of San Antonio and on the Rio Grande, Texas"—number and year not given. I take Wright 302 as a duplicate of one of the gatherings seen by Bentham. The US! "type" specimen is "Wright 173 . . . 1849." It is *A. wrightii* plus extraneous material, possibly *A. berlandieri.*

Since *A. greggii* and *wrightii* were published simultaneously and since neither has previously been subordinated to the other, an arbitrary choice is necessary. Var. *greggii* is the more widely distributed form; I have thus maintained it as the "typical" variety.

ACACIA MACRACANTHA Willd.

Southern Florida and Keys, local. (Only 3 U.S. specimens seen). Sand ridges, mangrove swamps, hammocks. West Indies and northern South America.

A. macracantha is a tropical American complex of uncertain delimitation

and scarcely studied internal patterning. It was first reported from the United States by Ward (1967). Britton and Rose (1928) took up *Poponax macracanthoides* for West Indies material, limiting, apparently, *A. macracantha* to South American members of the complex. I have examined suites of specimens (NY & US) ranging from the Antilles to South America. I find the northern material considerably less pubescent than that from South America, but observed no sharp delineation on this or other characters, although there is much variance in pinnae number, pod shape and thorn architecture. My arbitrary interpretation of *A. macracantha* is then in the broad sense.

Florida material of *A. macracantha* differs somewhat from West Indies gatherings which typically have (10)15—25(30) pairs of pinnae and ca 30 pairs leaflets. Perhaps our Florida populations deserve varietal status, but I do not know enough about the species to draw conclusions.

Acacia MACRACANTHA H. & B. ex Willd. Sp. Pl. 4: 1080. 1806!

Mimosa LUTEA Mill. Gard. Dict. ed. 8, no. 17. 1768! Photo of type US! Houston Jamaica, 1731. *Acacia lutea* (Mill.) Hitch. Rep. Mo. Bot. Gard. 4: 83. 1893! *Acacia lutea* (Mill.) Britt. Bull. Torr. Bot. Club 16: 327. 1889! *Poponax lutea* (Mill.) Britt. & Rose N. Am. Fl. 23: 90. 1928! Non *A. lutea* Leavenw. 1824!

A. MACRACANTHOIDES Bert. ex DC. Prod. 2: 463. 1825! *Poponax macracanthoides* (DC.) Britt. & Rose N. Am. Fl. 23: 89. 1928!

Bentham (1875) examined the Humboldt and Bonpland material typifying this species. He cites additional synonyms.

ACACIA MILLEFOLIA Wats.

Southern Arizona. Mexico. Ledges, desert grassland, open rocky slopes, foothills. Locally abundant. 4000—5000 ft. July—August.

Acacia MILLEFOLIA Wats. Proc. Amer. Acad. 21: 427. 1886! Type GH! Isotype US! Palmer 45 "Chihuahua, Hacienda San Jose, Aug. 1885." *Senegalia millefolia* (Wats.) Britt. & Rose N. Am. Fl. 23: 111. 1928!

Watson cites two collections, one each of Palmer and Pringle. I have seen both and take the Palmer specimen as lectotype.

ACACIA NEOVERNICOSA Isely

Western Texas to adjacent New Mexico, slightly to southeastern Arizona. Desert plains, stream-beds, canyons, rocky calcareous hills with juniper and/or with *Larrea*; locally codominant. Ca 3000—5000 ft. April—Aug.

Chromosome number 2n = 26 (Turner, 1959).

Acacia neovernicosa falls within the range of *A. constricta* or extends slightly further to the east, but is more limited in distribution. Since it and *A. constricta* are not separated geographically, nor apparently ecologically, one looks for a compatibility barrier. Such a barrier seems made to order in chromosome number reports: *A. neovernicosa* a diploid and *constricta* a tetraploid (Turner, 1959).

Per herbarium sheets, *A. neovernicosa* and *A. constricta* are sufficiently similar that much material is confused. Standley (1919), and Benson (1943)

reduced *A. neovernicosa* (as *vernicosa*) to varietal status. Turner (1959) maintained both species and remarked on phenological and ploidy differences between *A. neovernicosa* and *A. constricta*. I recognize *A. neovernicosa* on the pragmatic basis that I find little evidence of intermediacy between it and *A. constricta*; in the evolutionary sense, I presume it may be the ancestral form from which the more successful tetraploid, *A. constricta*, was derived.

Acacia **neovernicosa** Isely nom. nov. *A. VERNICOSA* Standl. Contr. U.S. Natl. Herb. 20: 187. 1919! Type US! Isotype NY! and GH! Palmer 385. *Acaciopis vernicosa* Britt. & Rose. N. Am. Fl. 23: 96. 1928! *Acacia constricta* var. *vernicosa* Benson Amer. Jour. Bot. 30: 238. 1943! Non *A. vernicosa* Fitz. 1904.

My thanks to Dr. Velva Rudd who directed me to an earlier homonym of Standley's *A. vernicosa*. The Benson, and Britton and Rose names were published as new combinations. As their basionym was illegitimate, they can only be taken up as new names.

ACACIA PINETORUM Hermann

Southern peninsular Florida (Lee Co. south) and Keys. Infrequent in West Indies. Pinelands, scrub adjacent to ocean, clearings in hammocks. March—April or all year.

This species is, I presume, a local derivative of *A. farnesiana*. It is easily discernible from the latter by its small leaves with tiny veinless leaflets and its sharply tapering or beaked pods. Spines are consistently present—they are almost invariably slender, never thickened at the base as frequently in *A. farnesiana*.

Acacia pinetorum Hermann Jour. Wash. Acad. 38: 237. 1948! *Vachellia PENINSULARIS* Small Man. Se. Fl. 654, 1505. 1933! Syntypes NY! Small and Carter 2975, Hammocks, Long Key (Everglades); Small and Wilson 1778, in Pinelands, Long Key. Neque *Senegalia peninsularis* Britt. & Rose. 1928! neque *A. peninsularis* (Britt. & Rose) Standl. 1936!

Vachellia INSULARIS Small Man. Se. Fl. 655, 1505. 1933! Syntypes NY! Small and Mosier 6018, pinelands, Big Pine Key, Monroe Co., Florida; Small et al 3549, pinelands, Big Pine Key. Non *A. insularis* A. Rich. 1845!

As to concept:

A. farnesiana auct. plur. non L. 1753.

See *A. farnesiana* for consideration of the Linnaean *A. farnesiana*. Hermann's epithet is a substitute for *peninsularis* of Small and he cites only that name. I have added *V. insularis* to the synonymy on taxonomic grounds. Were that name available, it would take precedence over *A. pinetorum*, but it also is preoccupied.

ACACIA RIGIDULA Benth.

Southern to western Texas and adjacent Mexico. Thorny brush country, rocky slopes, limestone bluffs, fence rows; with mesquite, live oak, etc.; sandy silt to clay soils; locally common. (Feb.) March—April.

Chromosome number 2n = 26 (Turner, 1959)

It may be that *A. rigidula* is conspecific with *A. amentacea* DC. as per Standley (1922). Mexican *A. amentacea* which I have examined appears almost identical except for fewer leaflets. Viewpoints regarding differences between *A. rigidula* and *A. amentacea* are expressed by Turner (1959) and Britton and Rose (1928). I have presently adopted Turner's delimitation.

Acacia RIGIDULA Benth. Lond. Jour. Bot. 1: 504. 1842! *Acaciopsis rigidula* (Benth.) Britt. & Rose. N. Am. Fl. 23: 94. 1928!

Among Texas species, Bentham's description could hardly apply to any other.

ACACIA ROEMERIANA Scheele

Central to western Texas. Adjacent Mexico. Rocky limestone soils, creek banks in "brush country" with juniper, live oak, thorn, etc.; roadsides; sporadic or frequent. (March) April (May).

As to material seen, the U.S. range of *A. roemeriana* is a compact triangle from Presidio Co., Texas, to Taylor Co. and Bexar Co. (except: a disjunct collection from the Lower Rio Grande Valley, Starr Co., Texas; and one from southern Eddy Co., New Mexico). The related *A. berlandieri* lies primarily to the south and east. Putative intermediates between the two species come primarily from the overlap area. Pod width in *A. roemeriana* is diverse; the broad (2.5—3.5 cm) and narrow (1.0—1.5 cm) extremes appearing very different.

Standley (1922) takes up not only *A. roemeriana* but *A. micrantha* and *A. malacophylla*. I have seen types of both of the latter and am assigning them to *A. roemeriana*. The Wright collection on which *A. malacophylla* was based seems to be *A. roemeriana* except that it is pubescent. Turner (1959) was unable to find any material resembling *A. malacophylla* from the area of the type locality in Uvalde Co., Texas. Certain Palmer collections from Uvalde Co. (MBG), however, seem to represent the subject populations. They differ from "typical" *A. roemeriana*, not only in their velutinous pubescence, but rather narrow pods, 1.0—1.5 cm wide. Possibly they represent a local biotype of varietal status.

Acacia ROEMERIANA Scheele Linnaea 21: 456. 1848! *Senegalia roemeriana* (Scheele) Britt. & Rose. N. Am. Fl. 23: 115. 1928!

A. MALACOPHYLLA Benth. in Gray Plant Wright. 1: 64. 1852! Photo of type NY! Wright 172. *Senegalia malacophylla* (Gray) Britt. & Rose. N. Am. Fl. 115. 1928!

A. MICRANTHA Benth. Trans. Linn. Soc. 30: 526. 1875! Isotype NY! Berlandier 3148. Non *A. micrantha* Desv. ex Hamilton 1825!

A. PALMERI Wats. Proc. Amer. Acad. Arts Sci. 17:350. 1882! Type GH! Palmer 298, Sierra Madre so of Saltillo. *Senegalia palmeri* (Wats.) Britt. & Rose. N. Am. Fl. 23: 115. 1928!

I have not seen Scheele's specimen of *A. roemeriana*. His description indicates probable identity of the material with the present concept of *A. roemeriana*.

ACACIA SCHAFFNERI (Wats.) Hermann

See varietal treatment.

A. schaffneri and *A. tortuosa* represent American complexes allied to *A. farnesiana, smallii*, etc. Woodson and Schery (1950) have questioned whether *A. tortuosa* is distinct from *A. farnesiana* in the broad sense. I have seen limited evidence of such an issue; the pods of *A. tortuosa* and *schaffneri* are quite different from those of *A. farnesiana* and *smallii*. The taxonomic problems instead are whether *A. schaffneri* of northern Mexico should be considered to fall within the specific limits of *A. tortuosa* of the West Indies and southernmost Florida, and with which of these entities (if either) the southern Texas material is most closely associated.

Precedent goes in several directions. *Poponax schaffneri* (Wats.) Britt. & Rose was taken up by Britton and Rose (1928) for both the southern Texas and Mexican elements, *A. tortuosa* being limited to the West Indies. Rzedowski's (1963) circumscription is similar; he limits *A. schaffneri* to the "Altiplano de Mexico y algunas zonas adyacentes." Turner (1959) has asserted that *A. schaffneri* and *tortuosa* are separate species, but that the Texas representatives are *tortuosa*.

Typical *A. schaffneri* (Mexico) and our Texas populations contrast with *A. tortuosa* of Florida and West Indies in several features (pods, petiole-rachis glands, degree of reticulation of leaflets, pubescence), and I am disinclined to designate both Florida and Texas material as *A. tortuosa*. My *pro tem.* delimitation of *A. tortuosa* restricts it to the Antilles (from whence comes the type) and Florida.

Acacia schaffneri as represented in Mexico is certainly allied to the taxon of southern Texas (*A. tortuosa* of Turner), and the two are geographically contiguous. Members of the complex vary conspicuously in length of the pods, number of pinnae, length and diameter of flowering peduncles, and thickness of flowering twigs. In southern Mexico there is further variance and perhaps intermediacy (as per Woodson and Schery suggestion) with certain elements of the *A. farnesiana* complex. I believe there are two (or more?) taxa at least at the varietal level.

My interpretation:

1. Twigs of flowering branches stout, 4—6 mm in diameter; pinnae 3—5(6); flowering peduncles stout, various in length but often less than 1.5 cm long. . . . . var. *schaffneri*

1. Twigs of flowering branches slender, 2—4 mm in diameter; pinnae 2—3(4); flowering peduncles slender, often curved, (1.3)2—3 mm long. . . . . var. *bravoensis*

Var. SCHAFFNERI

Not in United States.

Acacia schaffneri (Wats.) Hermann Jour. Wash. Acad. Sci. 38: 236. 1948!

Pithecellobium SCHAFFNERI Wats. Proc. Amer. Acad. 17: 352. 1882! Type GH! Parry and Palmer 219. *Poponax schaffneri* (Wats.) Britt. & Rose. N. Am. Fl. 23: 89. 1928!

Acacia SUBTORTUOSA Shafer in Britt. & Shafer. N. Am. Trees 524. 1908!
Syntypes MBG! and US! Palmer 11 & 510, Durango, Mexico.

Watson's *Pithecellobium schaffneri* was a mixture both as to description ("filaments united at base") and material. He cited three specimens. Two of them are a species of *Pithecellobium*; the third (above cited) is of the entity under consideration. Rzedowski (1963) typified the binomial on the basis of the Parry and Palmer gathering so that its traditional application could be maintained. I have also seen the subject material and concur with his decision.

Var. BRAVOENSIS Isely

Southern Texas and adjacent Mexico. Loam to clay calcareous soils; usually with other brush, especially mesquite; roadsides; locally abundant. Feb.—March (April).

The majority of herbarium specimens of *Acacia schaffneri* var. *bravoensis* and *A. smallii* lack fruit and are frequently confused. They may be distinguished on basis of flowering peduncles, location of foliar glands, and reticulation (or lack of it) of the leaflets as defined in the key.

Acacia schaffneri var. **bravoensis** var. nov.

Ramuli ramorum florigerorum graciles 2—4 mm diam. Pinnae 2—3(4)-jugae. Pedunculi graciles saepe incurvi (1.3) 2—3 mm longi. Caetera var. *schaffneri*. Type SMU! F.B. Jones 100. Texas, San Patricio Co.: 7 miles south of Taft in clay loam soil. March 29, 1950.

As to concept:

Acacia subtortuosa Shafer in Britt. & Shafer. N. Am. Trees. 524. 1908! quoad descriptio non typus.

A. tortuosa sensu Turner Leg. Tex. 36. 1959! Non *Mimosa tortuosa* L. 1759.

Acacia subtortuosa Shafer, as to description, is our plant. Further, Shafer gives it the common name, "Rio Grande Acacia" and refers to its occurrence in Texas (here he says southwestern rather than southern Texas; this I presume to be an error; there is no *Acacia* resembling his *A. subtortuosa* in western Texas). His types (Palmer 11 and 510; perhaps chosen at a later date) unfortunately are of typical *A. schaffneri*; from Durango, they are well outside of the range of the Rio Grande Acacia. So I take up Shafer's appropriate common name.

ACACIA SCHOTTII Torr.

Texas, Brewster Co., and presumably adjacent Mexico. Sandy washes along Rio Grande and lower desert slopes, Chisos mountains. Local. April—July.

Possibly *A. schottii* is a local derivative of *A. neovernicosa*. If so, it represents a distinctive series of populations which, within their limited range, are apparently quite successful: "The species is locally abundant, often dominating the community in which it occurs." (Turner, 1959).

Acacia SCHOTTII Torr. Bot. Mex. Bound. Surv. 62. 1859! Type NY! Isotype GH! Parry, Comanche Crossing, near San Carlos. *Acaciopsis schottii* (Torr.) Britt. & Rose. N. Am. Fl. 23: 96. 1928!

ACACIA SMALLII Isely

Western Florida panhandle to western Texas, sporadically to southern California; Mexico. Open disturbed areas, roadsides, woodland margins; grassland to cactus-mesquite flats, sandy-loam or clay soils. Cultivated as ornamental. (Jan.) March—May.

Material of *Acacia smallii* has usually been assigned to *A. farnesiana* in the past. The relationship of *A. smallii* to its immediate congeners (*A. farnesiana* and *A. pinetorum*) is discussed under *A. farnesiana*. In the United States, it differs easily from *A. farnesiana* in features such as leaflet venation, pod shape, and usual peduncle length. I am not sure that these distinctions are equally valid in southern Mexico.

A smallii is more widely distributed in the United States than either of its evolutionary neighbors (*A. farnesiana* or *pinetorum*); it occupies a greater variety of climatic regimes; and it is somewhat more variable morphologically. It is, in the United States at least, entirely disjunct from the above named species.

I have seen *Acacia smallii* as far east as Pensacola, Florida; it is yet well disjunct from *A. farnesiana* which is from the lower peninsula and the eastern margin. But Gulf Coast *A. smallii* is infrequent; it comes into its own only in southern Texas. Its western range is given some continuity by its use in cultivation. Its native range is apparently discontinuous (at least in U.S.). It "plays out" in western Texas; the only undoubtedly native *A. smallii* I have seen from Arizona is limited to the Baboquivari Mts. *A. smallii* of Arizona and California seems essentially identical to that of Texas except that the leaflets are usually strongly hirsutulous and may possess weak venation.

Acacia smallii is extremely variable as to spine development. Strongly spiny and unarmed plants may be found in the same colony.

Acacia **smallii** nom. nov. *Vachellia DENSIFLORA* Alexander ex Small Man. Se. Fl. 655, 1505. 1933! Syntypes NY! Isosyntypes US! Small & Alexander, April 16, 1931 and Aug. 1931. Both "along Bayou La Fourche near cut-off, Louisiana." *A. densiflora* (Small) Cory Rhodora 38: 406. 1936! Non *A. densiflora* Morrison. 1912!

As to concept:

A. farnesiana auct. plur. non L. 1753.

J. K. Small was the first to recognize that the traditional United States *A. farnesiana* consisted of more than one taxon; the proposed name then seems especially fitting.

ACACIA TORTUOSA (L.) Willd.

Southern Florida and West Indies. Shell mounds and roadsides. Local. April—June and possibly all year.

Acacia tortuosa represents a West Indies or West Indies-Mexican-Central American complex of uncertain delimitation. I refer Mexican-Texas material which has been called *A. tortuosa* to *A. schaffneri* (see discussion under that

species). *A. tortuosa* as it occurs in Florida is in general similar to that of the West Indies (whence comes the type).

Although I have seen several sheets of *Acacia tortuosa* from southern-most Florida, most of them come from a few localities; the species is apparently at best occasional. Its nativity in Florida is problematic (Ward, 1968).

Acacia tortuosa has much the aspect of the more common *A. farnesiana*, and matches that species in possessing reticulate leaflets. It differs in averaging more pinnae; the leaves are shorter petioled with the usually large, elongate gland tending to be distally located; the comparatively slender pod tends to be moniliform. In U.S. material at least, there is much less thorn variance than in *A. farnesiana*; the thorns are always well developed and almost never white.

Acacia tortuosa (L) Willd. Sp. Pl. 4: 1083. 1806! *Mimosa TORTUOSA* L. Syst. Nat. ed. 10. 1312. 1759! Microfiche of Linnaean material! (Savage catalogue 1228: 27).

Willdenow cites L. Sp. Pl. 1505. This is the correct pagination for ed. 2. 1763. The description is an expansion of *M. tortuosa*, 1759, cited above.

The Linnaean specimen marked *Mimosa tortuosa* (in Linnaeus' handwriting) is a Patrick Browne gathering from Jamaica. Linnaeus bought the Browne herbarium in 1758. I believe it reasonable to presume it to be the basis of the Linnaean diagnoses (1759 and, slightly expanded, 1763). Unfortunately, important critical characters of the gathering are not discernible from the microfiche.

Tropical American synonymy for *A. tortuosa* is enumerated by Bentham (1875) and Britton and Rose (1928).

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