

**Proposed "New Additions" during 6th ed. development,
but instead postponed until after 6th ed.**

***Astragalus tephrodes* Gray var. *brachylobus* (Gray) Barneby**

"pink desert milk-vetch?"

Family: Fabaceae **RPSAC Region:** SL(DES)
CNPS List: 3 **RED Code:** 3-1-1 **Current RPP Opinion:**
Distrib.: SBD, AZ, NM, NV
Jep. Man.: "se DMoj (near Needles, San Bernardino Co.); to sw UT, AZ"
Quads: 172C, 172D

Habitats: ?
Elevation: 150-150 meters
Life Form: Perennial herb
Blooming: Apr-May

Known in CA only from one collection near Needles; possibly a waif in CA. See Proceedings of the American Academy of Arts and Sciences 13:367 (1878) for original description, and American Midland Naturalist 37:466 (1947) for revised nomenclature.

NOTE: SL(DES): No decision.

G. Clifton (2/6/96): "The plant that was called this in UT, Barneby named *A. holmgreniorum*. It may not be a waif in CA, because it is fairly common near Chloride, AZ, which is not too far away."

S. Boyd (2/11/99): "Only CA collection we have at RSA is an early M.E. Jones specimen from near Needles."

D. Silverman (SDNHM herbarium search): "No CA records, 2 AZ but one is suspect."

J. Rebman (7/19/99): "AZ only."

AARON E. SIMS, 22 NOVEMBER 2019

CBR: NOT NATIVE: HISTORICALLY OCCURRED IN CA AS A WAIF FROM AZ

NO ADDITIONAL RECORDS OR OBSERVATIONS OF THIS TAXON IN CCH, CALIFLORA,
CAN ALWAYS RE-EVALUATE IF EVER FOUND IN CA AGAIN.

Asclepias nyctaginifolia

No new locs

Aster pauciflorus

We have none.

Astragalus lentiginosus var. *albiflorus*

One only, KRN

Astragalus tephrodes var. *brachylobus* ?

AZ only — AZ

Baileya multiradiata var. *m.*

earlier reply quoted.

Boerhavia coulteri

We have from both N and S Baja

Bouteloua eriopoda

Have one from Chihuahua

Brickellia arguta var. *odontolepis*

earlier reply quoted

Calochortus kennedyi var. *munzii*

Confirm listing AZ; can't tell flower color from specimen

Camissonia arenaria

No new locs.

Camissonia boothii ssp. *intermedia*

No new locs.

**Camissonia claviformis* ssp. *funeria*

One of our 3 INY sheets says collected at Owens Valley. It's annotated by Raven saying he doubts the locality.

**Camissonia claviformis* ssp. *yumae*

We have none from SDG; a couple each from SO and BA; we have a bloom date of Feb.

Camissonia pterosperma

No new locs.

Caulanthus crassicaulis var. *glaber*

LOCALITY LIST: ASTRAGALUS TEPHRODES VAR. BRACHYLOBUS

LOCALITY	COUNTY	NDDB QUAD	DWR QUAD
near Needles, (JM 1993)	SED ✓	3411475	172D ¹ + 172C ✓

STANDARD LITERATURE REVIEW FOR NEW ADDITIONS: ASTRAGALUS TEPHRODES VAR. BRACHYLOBUS

STANDARD FLORAS:

Jepson Manual (1993)	p. 604
Munz - Southern California (1974)	p. 435 (as var. <i>remulus</i>)
Munz - California (1959)	p. 873 (no var. <i>brachylobus</i>)
Abrams (1923-1960)	—
Jepson Flora (1907-1979)	—
Jepson Manual (1925)	—

REGIONAL FLORAS:

AZ Flora p. 459	
NV Flora p. 674-675	
Intermtn. Flora 3B: 128 ^{12F}	referred to under <i>A. holmgreniorum</i>

OTHER LITERATURE:

^{we have!} Mem. NY Bot. Gard. 20: 639-641 (1964)	Barneby treatment
^{we have} Amer Mid. Naturalist 37: 466 (1947)	revised nomen
^{No+At} ^{UCB/UCD} Proc. Amer. Acad 13: 367 (1878)	orig desc

New Addition Data Entry Sheet

Sciname ASTRAGALUS TEPHRODES VAR. BRACHYLOBUS

Com_name

Family Fabaceae

Genus Astragalus

Sp_epith tephrodes

Author1 A. Gray

Ssp_var var.

Sub_epith brachylobus

Author2 (Gray) Barneby

List 3

Red_code

Counties

SBD, UT, AZ, NV, NM

(JM: "se DMoj (near Needles, SBD Co.); to sw UT, AZ.")

Quads

Legal_stat

Yr_seen

Elm_code

Status_rep N

Why_new

In_inv4_a1 N

Natcoms

Elev_low 150m

Elev_high 150m

Life_form

Blooming

Phenology Apr, may

Duration per

Gro_form herb

Herb_form

Leaf_cond

Spec_hab

Nutrition

Notes

Known in CA only ^{one collection} from near Needles; possibly a waif in CA.
Is UT a mis-ID?

no more than a sporadic adaptation. . . .
at, but until this can be proved exper-
mentally, it seems preferable for
differences systematically.

PANGUICENSIS (Jones) Jones

Mont. W. Bot. 10:62, tab. 4. 1902; Barney,
1944. *A. Chamaeleuce* Gray var. *panguic-*
is. *argophyllus* Nutt. var. *panguicensis* (Jones)
Barney, Astrag. 207, Pl. 47. 1923.
Barney, Fl. 24:320. 1929. *Astragalus sabinarum*
Pursh, Sci. IV, 25:150. 1944.

erect or with several developed, prostrate
stems from the divisions of a branched, suffu-
tose sericeous with appressed and ascending
basifixed hairs; stipules loosely imbricated,
1.5-2.4 mm. long; leaves ascending, 1.5-5
cm. long, feebly persistent petioles about equal-
ling to elliptic, acutish to obtuse, 2-8 mm. long,
petioles shorter than or equalling the leaf
length, mostly (3) 6-8-flowered, 1 cm. long or less,
with light or some dark hairs, the cylindrical
tubercle 1-2 mm. long; corolla ochroleucous, the wings
of the narrow banner 14-16 mm., the wings
1-2 cm. long; pod lance-acuminate, obtuse at base,
5-6 mm. in greatest diameter, obovate,
triangular, laterally compressed beak, sulcate,
with both sutures, the valves leathery, reticulate,
with strigose hairs; mature seeds not seen.

Utah; collected by M. E. Jones in 1894
in the pine forest in the mountains about the
headwaters.

Panguitch Lake, Jones No. 6023f (PO, comb.
prosp. Cow Puncher Creek, Aquarius Plateau,
Wasatch Plateau, Eastwood & Howell No. 691 (CAS).
New York, 660 (NY, type of *Batidophaca sabinarum*).
New York, No. 4822 (CAS).

panguicensis was based on two specimens
from Utah. The first mentioned by Jones is appar-
ently from Utah; it has not been found elsewhere; the other
specimens surely belonging to it, has been the subject of
Barney (1944, l. c.). The species is evidently a near
relative of *Astragalus* in its small flowers and narrow, arcuate
leaves, which it resembles in habit and habitat.
The presence of basifixed hairs. Rydberg, who
first referred the name to the synonymy of
Astragalus (Barney, Bot. Cl. 52:229. 1925), a variety of

It is somewhat embarrassing to recall that in the very paper in which I dis-
cussed some aspects of *A. panguicensis* I also transferred *Batidophaca sabinar-*
um to *Astragalus* with the accolade "clearly . . . a good species." That I stood
in greater awe of Rydberg's sagacity than I do today may be explanatory but
is no excuse for adding another useless binomial to the immense synonymy of
the genus. The type of *B. sabinarum* is in advanced fruit, and the fissured
calyx, expanded and spread out around the base of the pod, appears to have
been campanulate. As a *Batidophaca*, with campanulate calyx and (presum-
ably; the flower is lacking) shortly clawed petals, *A. sabinarum* appeared fully
distinct. It is now realized that appearances were deceptive, and that there is
nothing in Garrett's specimens from the western slope of the Parowan Range
which does not agree with our material of *A. panguicensis* from the headwaters
of the Sevier immediately to the east.

12. ASTRAGALUS TEPHRODES Gray

Subcaulescent, the leaves and scapiform peduncles tufted on the multicipi-
tal root-crown, or with several prostrate stems up to 12 cm. long rising directly
from the taproot or from the woody divisions of a shortly branched caudex;
pubescence of the herbage and calyx basifixed, very variable in quality, density
and distribution, either appressed-silky, thinly strigose with straight or incur-
vate hairs, villous, hirsutulous or shortly pilose; stipules loosely imbricated to
shortly discrete, ovate-deltoid, acute, shortly acuminate or sometimes obtuse,
3-10 mm. long, at first herbaceous with scarios margins, at length scarios
throughout; leaves spreading, 5-15 (20) cm. long, the deciduous petioles equal-
ling or somewhat shorter than the rachis; leaflets 11-35, narrowly elliptic or
obovate to broadly oblong or obovate, acute, obtuse or emarginate, commonly
bicolored and brighter green (even when pubescent) above, (2) 4-15 (20)
mm. long, either equally pubescent on both faces or variously glabrescent
(particularly along the midrib) to quite glabrous above, and then often with
a prominently white-ciliate margin; peduncles (4.5) 7-25 (40) cm. long, equal-
ling or far surpassing (very rarely shorter than) the leaves, rather stout, reclinate
and commonly arcuate in age; racemes (3) 8-15 (17)-flowered, rather
loose, (1.5) 3-10 (15) cm. long in fruit; calyx-tube deeply campanulate to
cylindric, 3.5-10 mm. long, the subulate to deltoid teeth 1-2.5 (3.5) mm. long;
corolla rather dull purple, the claws pale, the extremities of the petals all more
deeply colored; petals not strongly graduated, the keel usually not more than
2 mm. shorter than the broad, little retroarcuate banner; pod obliquely ovoid,
lance-ovoid or oblong, very obtuse or truncate at base, nearly straight to
arcuate through half a circle, obcompressed through the lower half or three
quarters and thence passing into a shortly triangular or triangular-acuminate,
laterally compressed beak, 1-4 cm. long and one half to one quarter as broad,
the valves coriaceous to strongly woody, strigose-canescens with either straight
or incurvate hairs, or rarely hirsutulous, villosulous or glabrate; seeds olive-
or mahogany-brown, nearly smooth, often pitted, sometimes spotted with
purple, (2) 2.3-3 mm. long.

Astragalus tephrodes, in the inclusive sense adopted here, is the southern
counterpart of the Great Basin *A. argophyllus*, to which the form and texture

of the pod ally it closely. Separable from *A. argophyllus*, as a rule, by its longer, coarser peduncles, and by a tendency to glabrescence on the upper side of the usually bicolored leaflets, there are phases of it in which both these characters fail. A densely pubescent form, which has been described as *A. pephragmenus*, can be as silvery as typical *argophyllus*, and in depauperate individuals the raceme may be surpassed by the leaves. The exceptional cases in which both criteria are invalidated are still separable from *A. argophyllus* by their distinctive flower with but slightly graduated petals, by their looser fruiting racemes, and by their southern occurrence, while every representative collection from a given station shows some passage towards the diagnostic characters.

The species is not only highly polymorphic, embracing numerous minor races, and plastic in relation to its environment, but also quite variable within the compass of a single population, and it is uncommon to find two individuals quite alike in stature, size of flower and pod, and in pubescence. Several specific names have been applied to aspects of the species, and it would be convenient to maintain these superficially disparate plants as at least infraspecific entities; but all attempts to segregate the extant material into anything like definable morphological or geographic races have proved abortive. On the basis of vesture it is possible to classify several forms; at first thought the green and strigose "*chloridae*," the crisply villous "*lenophyllus*," the appressed-silky *tephrodes* proper, and the hirsute-villous "*pephragmenus*" appear readily distinguishable. The types of pubescence, however, not only pass one into another through a series of intermediate states, but also occur in plants with large and small flowers, with few or many leaflets, with longer or shorter pods, and promiscuously here and there almost throughout the species-range. In general there is a progression westwards from the relatively slender, small-flowered, sericeous *tephrodes* with leathery pods prevalent in southern New Mexico and adjacent Texas, through insensibly intergradient phases to the giant, large-flowered strigose extreme with woody pods of northwestern Arizona (*A. chloridae*) and a similarly robust but canescent plant in southern Nevada. A line of division between an eastern and a western variety, as attempted below, is arbitrary, and the geographic segregation is incomplete. Despite its imperfections and possible over-simplification, the present arrangement is thought to be the most realistic and useful solution of a perplexing problem. An alternative treatment, in which the criteria employed to distinguish the already named segregates of the *tephrodes* alliance are considered significant, would call for the description of at least half a dozen minor forms.

KEY TO THE VARIETIES OF *A. TEPHRODES*

- Flowers relatively small, the calyx-tube (3.5) 4.5-7 (8) mm. long, the banner 11-17 mm., the keel 10-14 (15) mm. long; leaflets commonly conduplicate, always glabrescent above, at least along the midrib; pod relatively short, 1.5 cm. long or less, or, if longer, not more than leathery, the valves not rigid when dry; plants of western Texas to central New Mexico, northern Sonora and occasional in Arizona var. *typicus*
- Flowers relatively large, the calyx-tube (7) 8-9 (10) mm. long, the banner 17-22 mm., the keel (14) 16-19 mm. long; leaflets flat, either glabrous or pubescent

above; pod commonly longer, over 1.5 cm. long, the valves woody and rigid when dry; plants of southeastern, central and northwestern Arizona to adjacent New Mexico, Utah and Nevada var. *brachylobus*

12a. var. *typicus*, nom. nov.

Astragalus tephrodes Gray var. *typicus* Barneby, nom. nov. *A. tephrodes* Gray, Pl. Wright. 2:45. 1853; Proc. Amer. Acad. 6:222. 1863; Torr., Bot. Mex. Bound. Surv. 56. 1859; Woot. & Standl., Cont. U. S. Nat. Herb. 19:369. 1915; Jones, Rev. Astrag. 205, Pl. 48, 49. 1923; Tidestr. & Kitt., Fl. Ariz. & N. Mex. 202. 1941. *Tragacantha tephrodes* (Gray). O. Kze., Rev. Gen. 948. 1891. *Xylophacos tephrodes* (Gray) Rydb., Bull. Torr. Bot. Cl. 52:156. 1925; N. Amer. Fl. 24:298. 1929.

A. glareosus sensu Torr., Bot. Mex. Bound. Surv. 56. 1859; Hemsl., Biol. Centr.-Amer., Bot. 1:264. 1880; non Dougl.

A. remulcus sensu Woot. & Standl., Cont. U. S. Nat. Herb. 19:369. 1915; Jones, Cont. W. Bot. 17:27. 1930, quoad pl. cit.; non Jones, alibi.

Pubescence strigose-sericeous or villosulous, the hairs straight, incurved or sinuous; leaflets 11-31, usually small, 1 cm. long or less, more or less conduplicate, glabrous above or with a glabrescent area along the midrib; peduncles 4.5-10 (15) cm. long; racemes in fruit 1.5-5 cm. long; calyx silky-strigose, sometimes loosely so or villosulous, the tube (3.5) 4.5-7 (8) mm. long; banner 11-17 mm., wings 13-16 mm., keel 10-14 (15) mm. long; pod ovoid-oblong, usually less than 1.5 cm. long, the valves thin-leathery (when sometimes up to 2.3 cm. long) or woody (when small), loosely strigose-canescens to glabrate.

Type-locality.—Plains at the base of the Organ Mountains, New Mexico; collected by Charles Wright in April, 1852.

Distribution.—Dry gravelly hillsides and clearings in open pinewoods, southern and central New Mexico, adjacent Texas (? and Sonora), and occasional westward to central Arizona.

Exsiccata.—ARIZONA. Greenlee Co.: Clifton, Rusby in 1881 (G). Yavapai Co.: Fort Verde, Dr. Mearns No. 345 (NY). Fort Verde Valley, W. W. Jones No. 43 (G). Seligman, Eastwood No. 5935 (CAS). NEW MEXICO. Catron Co.: Beaverhead, Eggleston No. 20389 (G). Doña Ana Co.: "Base of the Organ Mts.," Wright in 1852 (G, type). Organ Mts., Wootton in 1891 (PO), in 1893 (NY), No. 9 (M, in part, mixed with *A. sonorae* Gray), No. 10 (M). Grant Co.: Silver City, Eggleston No. 19947 (NY), No. 19952 (NY), No. 19953 (G, NY), No. 19955 (NY). Jones No. 26182 (CAS, G, PO), Ripley & Barneby No. 3043. Mimbres, Mex. Bound. Surv. No. 265 (NY), Thurber No. 198 (G), Eggleston No. 16371 (NY). Mangas Springs, Rusby No. 90½ (G, NY, PO). W. of Tyrone, Cory No. 3092 (G). San Miguel Co.: Kingman, Vasey in 1881 (G). Santa Fe (or Bernalillo) Co.: Between Albuquerque and Los Cerrillos, McKelvey No. 2373 (G). Socorro Co.: Socorro, Vasey in 1881 (G). West fork, Gila River, Eggleston No. 16065 (NY). Gila Forest, No. 16955 (NY). Black Canyon, No. 17001 (NY). SONORA. Guadalupe Pass (fide Torr., Bot. Mex. Bound. l. c.). TEXAS. Hudspeth (or El Paso?) Co.: Hueco Mts., Thurber No. 142 (G), 144 (G, in part).

The type of *A. tephrodes* is fragmentary and depauperate, with especially small flowers and pods, but it is unquestionably conspecific with Wootton's more robust topotypes and with the Thurber collection cited in the Mexican Boundary Survey. The pod, in the type, is rather thin-walled, the vesture of

the herbage and calyx loosely sericeous, and the leaflets 15-19, small, obtuse, conduplicate, bicolored and glabrescent along the midrib above. The collections which match it precisely are few. The copious material from Silver City, New Mexico, is variable in flower-size, ranging from nearly as small as in Wright's original gathering to nearly as large as in var. *brachylobus*; and the pods, though still short, are of a more woody texture. Nearby, in the Burro Mountains, occurs a plant (Cory No. 3092) otherwise similar, but with a thin-walled pod up to 2.3 cm. long. In Eggleston No. 20389, also with small flowers and pods, the leaflets are 23-31 to the leaf, glabrous above and conspicuously white-ciliate. Without further examples it will be seen that var. *typicus* is a remarkably inconstant entity. In attempting to extricate it from the more robust western phases of the species, I have referred to it all plants with either thin-walled pod (irrespective of size) or small pod (irrespective of texture) where found in combination with small flowers and small, conduplicate leaflets. The occurrence in western Arizona, in the heartland of var. *brachylobus*, of individuals with the required characters of var. *typicus* is puzzling, and gives weight to my suspicion that variation in *A. tephrodes*, however great it may be, is as well explained by edaphic response as by genetic instability. One specimen from this area (Eastwood No. 5935) is remarkable for its close resemblance in vesture, stature and habit to strictly typical *tephrodes*, but its pod is woody, with strong sutures and virtually glabrous valves, precisely similar, on a reduced scale, to that of the type of *A. remulcus* which, on account of its flat leaflets and longer corolla, is here reduced to var. *brachylobus*. While I feel that my definition of var. *typicus* is justified on grounds of convenience, I doubt that it is a truly natural entity.

Astragalus tephrodes has up till now been almost confined to the type-collection. Both Rydberg and Jones made much of the texture of the pod, but since the thin-walled state is not constantly combined with any other morphological character, and moreover intergrades completely with the rigidly woody state, it cannot be considered diagnostic of a natural species. Much of the material here regarded as belonging to var. *typicus* was referred by Jones to his *A. remulcus*, and by Rydberg, whose understanding of relationships in this group was scarcely more than rudimentary, to *Xylophacos remulcus* (the Wootton topotype in NY, Eggleston No. 19953, etc.), *X. cyaneus* (Eggleston No. 17001, etc.), *X. brachylobus* (Eggleston No. 19953, 19955, etc.) and *X. pephragmenus* (Eggleston No. 19947, Mex. Bound. Surv. No. 260). This last from the Boundary Survey, named "*A. glareosus*?" in Torrey's hand, lacks locality-data, but presumably is the Bigelow plant from "near the Copper Mines" mentioned by Torrey (l. c.) under that name. The dubious *A. glareosus* was also reported by Torrey from Guadalupe Pass, Sonora. No corresponding specimen has been seen, but the occurrence of *A. tephrodes* in the mountains south of the New Mexican border is extremely probable.

12b. var. *brachylobus* (Gray), comb. nov. *ong dex*

Astragalus tephrodes Gray var. *brachylobus* (Gray) Barneby, comb. nov. *A. Shortianus* Nutt. var. *brachylobus* Gray, Proc. Amer. Acad. 13:367. 1878. *A. amphioxys* var. *brachylobus* Gray ex Jones, Rev. Astrag., Index, in syn., nom nud. *Xylophacos*

notes: Amer. Mid. Naturalist 37: 466 (1947)

brachylobus (Gray) Rydb., Bull. Torr. Bot. Cl. 52:154. 1925, quoad basynym., exclus. typ. et descr. pro max. parte; N. Amer. Fl. 24:297. 1929, quoad nomen; non *A. brachylobus* DC., 1825. *A. curttilobus* Tidestr., Proc. Biol. Soc. Wash. 48:40. 1935, quoad basynym. *A. curttilobus* Tidestr., op. cit. 50:20. 1937, quoad basynym.

A. pephragmenus Jones, Zoë 4:267. 1893; Sheld., Minn. Bot. Stud. 1:146. 1894; Tidestr. & Kitt., Fl. Ariz. & N. Mex. 201. 1941; Kearn. & Peeb., Fl. Pl. Ariz. 478. 1942. *A. argophyllus* Nutt. var. *pephragmenus* (Jones) Jones, Rev. Astrag. 208, Pl. 47. 1923. *Xylophacos pephragmenus* (Jones) Rydb., Bull. Torr. Bot. Cl. 52:151. 1925, pro max. parte; N. Amer. Fl. 24:295. 1929.

A. remulcus Jones, Proc. Calif. Acad. Sci. II, 5:658. 1895; Rev. Astrag. 209, Pl. 48. 1923; Tidestr. & Kitt., Fl. Ariz. & N. Mex. 201. 1941; Kearn. & Peeb., Fl. Pl. Ariz. 479. 1942. *Xylophacos remulcus* (Jones) Rydb., Bull. Torr. Bot. Cl. 52:153. 1925; N. Amer. Fl. 24:296. 1929.

A. intermedius Jones, Proc. Calif. Acad. Sci. II, 5:656. 1895, pro parte; non *A. intermedius* Kar. & Kir. *A. Phoenicis* Jones, Cont. W. Bot. 8:12. 1898; Rev. Astrag. 232, exclus. Pl. 59. 1923.

Xylophacos lenophyllus Rydb., Fl. Rocky Mts., ed. 2, 1126. 1922.

Astragalus remulcus var. *chloridae* Jones (as *Chloridae*), Rev. Astrag. 210, Pl. 48. 1923. *Xylophacos chloridae* (Jones) Rydb., Bull. Torr. Bot. Cl. 52:153. 1925; N. Amer. Fl. 24:296. 1929. *Astragalus chloridae* (Jones) Tidestr., Proc. Biol. Soc. Wash. 48:40. 1935. *A. chloridae* (Jones) Tidestr., op. cit. 50:20. 1937; Tidestr. & Kitt., Fl. Ariz. & N. Mex. 201. 1941; Kearn. & Peeb., Fl. Pl. Ariz. 479. 1942.

Pubescence sparse or copious, the herbage thus green to densely canescent, the hairs (in either case) straight and appressed, or spreading, incumbent or villosulous; leaflets 11-35, flat (very rarely conduplicate in youth), (2) 5-20 mm. long, obtuse or acute, equally pubescent on both faces or glabrous to glabrescent above; peduncles (4.5) 10-40 cm. long; racemes in fruit (1.5) 4-15 cm. long; calyx strigose to villous, sometimes with dark hairs, the tube (7) 8-9 (10) mm. long; banner 17-22 mm., wings 16-20.5 mm., keel (14) 16-19 (20) mm. long; pod ovoid, ovoid-lanceolate or oblong 1.5-4 cm. long, nearly straight to arcuate through half a circle, with both sutures very thick and prominent, the woody valves shortly hirsute, villosulous, strigose, strigulose or glabrate, sometimes narrowly inflexed dorsally as an obscure partition less than 1 mm. high.

Type-locality:—"Arizona," actually Prescott and Cottonwood, Yavapai Co.⁸; collected by Edward Palmer in 1876.

Distribution.—Desert mountains, in oak-brush or in xeric pine-forest, Sonoran to Arid Transition, southeastern Nevada and southern Utah, where very rare, and across Arizona from Mohave County southeastward, chiefly along the Mogollon Plateau, to southwestern New Mexico.

⁷ Possibly this name refers to Phoenix, Arizona, in which case it should be decapitalized.

⁸ For information as to the whereabouts of Cottonwood I am indebted to Dr. T. H. Kearney who informs me (in litt.) that the locality is in the Verde River valley near Clarkdale.

NV
UT
AZ
NM

Exsiccata (selecta).—ARIZONA. Coconino Co.: Grand Canyon, MacDougal No. 199 (G, in part, NY, PO). Flagstaff, No. 27 (NY, type of *X. lenophyllus*, G, PO). Coconino, Ripley & Barneby No. 5236 (CAS, NY). SW. of Frazier's Wells, No. 5224. Gila Co.: Crest of Pinals on road to Tonto Basin, Jones in 1890 (PO, type of *A. pephragmenus*, G). Alder Creek, Mazatzal Mts., A. & R. Nelson No. 1959 (G, NY). Oxbow Hill, Eastwood No. 17516 (CAS). Sierra Ancha, 15 miles N. of Salt River bridge, Peebles & Smith No. 13261 (NY). 21 miles from Globe, on Springerville Road, Foster & Arnold No. 257 (G). Graham Co.: Fry Creek, Mt. Graham, Eggleston No. 19904 (G, NY). Greenlee Co.: 36 miles N. of Clifton, Ripley & Barneby No. 3106. Maricopa Co.: Camp Creek to Ashdale, Peebles No. 11612 (CAS, PO). Mohave Co.: Chloride, Jones in 1903 (PO, type of *A. remulcus* var. *chloridae*, G, NY), Ripley & Barneby No. 3377 (CAS). Cerbat Mts., Lemmon No. 3354 (G). Hualpai Mt., Jones in 1903 (PO). Navajo Co.: Showlow, Foster & Arnold No. 287 (G). Yavapai Co.: Prescott, Palmer No. 102 in 1876 (G, cotype of *A. Shortianus* var. *brachylobus*, NY), Eastwood No. 8830 (CAS). Cottonwood, Palmer No. 115 in 1876 (G, cotype of var. *brachylobus*, NY). Banghart's Ranch, Rusby No. 576 (NY, isotype of *A. remulcus*). Skull Valley, Jones in 1903 (NY, PO). NEVADA. Lincoln Co.: Needle Mts., NE. of Caliente, Ripley & Barneby No. 6359 (CAS, G, NY), No. 6416 (CAS). NEW MEXICO. Grant Co.: Fort Bayard watershed, Blumer No. 167 (NY). UTAH. Washington Co.: Springdale, Jones in 1894 (PO).

The two collections from which Gray drew the original character of *A. Shortianus* var. *brachylobus* are fortunately representative of the commonest phase of their species, that prevailing throughout the mountains of central and northwestern Arizona. Here the pubescence is appressed, and composed of nearly straight hairs, but the ample material also demonstrates the characteristic variability of its kind in other directions, and includes plants with relatively short and much elongated peduncles (up to 2.5 dm. long), and with leaflets either glabrous or canescent-strigose above. The long-peduncled individuals closely approach the giant *A. remulcus* var. *chloridae*, known in exactly typical form only from the Cerbat Mts. in northwestern Arizona. The type of the latter is distinguished by its robust habit, green and sparingly strigose herbage, stout peduncles, loose racemes, partially dark-hairy calyx with relatively long teeth and strongly arcuate legume. But in topotypes collected by Ripley and the writer most of these characters are obscured; the calyx-teeth are no longer than in var. *brachylobus*, the peduncles and racemes no longer, and the vesture quite as copious. Elsewhere in the region the critical characters of *chloridae* are combined in various ways with those of true *brachylobus*, so that it seems impossible to regard it as more than the extreme state in a sequence of variation. Inconstancy in the length of peduncle and in the distribution of vesture occurs so generally in *A. tephrodes*, that it may be regarded as characteristic of the species. Often the lower leaves will be glabrous above, while the upper are pubescent; or the two states will be found in plants growing side by side, the peduncles being in either case long or short.

The most perplexing variation in *A. tephrodes* var. *brachylobus* is encountered in the quality of the pubescence, elsewhere in the *Argophylli* and generally throughout the genus a reliable and pretty constant specific character. Here, apart from their quantity, distribution or, on the calyx, color, the hairs fluctuate in length, orientation and texture to a quite remarkable degree. They may be straight and appressed, straight and loosely ascending, incurved, sinuous or spreading and curly. Some of these conditions correspond with named entities, others are nameless, but all pass one into another by gradual blurring

of their distinctive facies. In the state known as *A. pephragmenus* the herbage is densely silvery-hirsute with ascending, straightish hairs and the pods are shortly villous-hirsute. But even in part of the type of this (G) the leaflets are glabrescent above, in other similar material the pod is merely strigose, and in either the calyx may be either shaggy with soft, dark villi or white silky-strigose. In another extreme, which more or less agrees with the type of *Xylophacos lenophyllus*, both the leaves and pods are villous with fine, tangled and curly hairs. In the Nevadan plant, which in stature approaches *chloridae* (except for its yet larger pod), the vesture is silky, appressed but somewhat tangled. Occasionally, combined with the strigose herbage of *brachylobus*, the pod is nearly glabrous or truly so at maturity, thus becoming exactly *A. remulcus* Jones. From the evidence available these phases seem to be in no way segregated geographically. The state corresponding more or less closely with Palmer's original *brachylobus* is common along the foothills of the Mogollon Escarpment, and the silvery *pephragmenus* is occasional in the same range. The curly-villous *lenophyllus* is perhaps confined to the *ponderosa* pine-forests of the Mogollon Rim, but both the preceding occur also in that environment. Critical field-studies may yet uncover significant ecological factors which will assist in the definition of these and other races; but for the present a more elaborate classification than that proposed here seems unjustified.

The difficulties encountered in the *A. tephrodes* complex by former students of the genus is reflected in the synonymy and literature. The situation is puzzling enough of itself, and has been further involved by the persistence of avoidable errors. The identity of *A. Shortianus* var. *brachylobus*, the basonym of our *A. tephrodes* var. *brachylobus*, has been completely lost sight of in a series of misinterpretations. Gray's brief diagnosis, which immediately follows his extrication of *A. amphioxys* from *A. missouriensis* and *A. Shortianus*, reads: "A marked variety of it (var. *brachylobus*, recently collected by Dr. Palmer in Arizona) has a shorter pod with an obtuse apex." From the text it is not altogether clear to which species, whether *A. Shortianus* or *A. amphioxys*, Gray intended his variety to be subordinated, but any ambiguity is cleared up by the annotated type in the Gray Herbarium. Nevertheless Sheldon, without explanation and certainly without authority, adopted the combination "*A. amphioxys* var. *brachylobus* Gray," and used it freely in annotating specimens, whence it was taken up by Jones and referred by him to the synonymy of his own *A. remulcus*. Obviously it is a *nomen nudum*.

The identity of the type of var. *brachylobus* has also afforded opportunity for error. Rydberg, basing his *Xylophacos brachylobus* on Gray's variety, claimed (Bull. Torr. Bot. Cl. 52:154) that the latter was founded on Palmer's No. 102, collected in 1877, supposedly "the only specimens Dr. Gray had before him at the time." Among the exsiccata listed as *X. brachylobus* in the same paper Rydberg included, however, a Palmer collection from Arizona, his No. 115 collected in 1876, which no doubt had already reached Gray at that time. In fact there are in the Gray Herbarium no less than three sheets actually named in Gray's hand "*A. Shortianus* var. *brachylobus*," viz. Palmer No. 115 in 1876 (from Cottonwood, Ariz.), Palmer No. 102 (from Prescott, Ariz.),

and a third, unnumbered, which seems to contain a mixture of the surplus material which (after sharing the collections with Dr. Torrey) could not be mounted on the other two. There can be no question that these specimens, which represent the species here treated as *A. tephrodes* var. *brachylobus*, are those Gray had in mind. The No. 102 of Palmer's 1877 collection, which Rydberg claimed as the type of var. *brachylobus*, is also represented at Harvard, and is nothing more than an ordinary, if imperfect, specimen of *A. amphioxys*. There is no vestige of evidence that Gray considered this even conspecific, let alone typical, of his *A. Shortianus* var. *brachylobus*.

What then is *X. brachylobus* Rydb., which has entered the literature as *A. curtilobus* Tidestrom? Since Rydberg's lectotype is merely a specimen of *A. amphioxys*, the name (excluding the basynymic element) becomes a synonym of that species, but his concept was clearly something else. Neither his choice of lectotype nor his description of *X. brachylobus* offers a certain clue to his intentions, but from the material cited in his revision of *Xylophacos* (1925) some hints may be gathered. *Xylophacos brachylobus* is no more than the name suggests, a *Xylophacos* with short calyx-lobes or, perhaps more exactly, any *Xylophacos* with short calyx-teeth. Among the collections referred by the author to his species is found an astonishing mixture of unrelated and dissimilar plants, either with dolabriform (e. g. Fendler No. 149, *A. missouriensis*; Palmer No. 102 in 1877, *A. amphioxys*) or basifixed pubescence (e. g. Palmer 115 in 1876, type of *brachylobus*) and even Jones' collection from the Pinal Mts., Arizona, the type-collection of a species, *A. pephragmenus*, which Rydberg himself recognized as distinct in the same paper. *Xylophacos brachylobus* was a chimera, both nomenclaturally and taxonomically, and the *A. curtilobus* based upon it must be suppressed. The latter name has been applied to a short-lived, small-fruited form of *A. amphioxys* (q. v. supra), which is not even precisely like the Palmer plant which Rydberg claimed as the type.

The remaining synonyms of var. *brachylobus* require little comment. *Astragalus remulcus* was recognized by Jones himself as being the equivalent of "*A. amphioxys* var. *brachylobus*," from which the type differs only in having an eventually glabrate pod. Contrary to Rydberg's claim (sub *X. remulco*), the legume is not truly glabrous, for in the isotype which I have seen a few scattered hairs are readily visible along the ventral suture. Nevertheless it seems to be a rare and unusual form. No other mature specimen with the pod as nearly glabrous has been examined, and all those so named by Rydberg in the New York Botanical Garden are (conveniently) in flower only. *Astragalus pephragmenus*, the canescent extreme discussed above, was reduced by Jones to a variety of *A. argophyllus*, which it resembles in vesture only, and not in general facies, shape of pod, or proportion of petals, all of which ally it firmly to the *tephrodes* group. *Astragalus intermedius*, a later homonym for which Jones later substituted *A. phoenicis*, is said by Rydberg (Bull. Torr. Bot. Cl. 52:151) to have been based on a mixture of *A. pephragmenus* collected also by Palmer in Arizona and some loose, bilocular pods of another species. I have not seen the type, in the National Herbarium, but since Jones

distributed under the name *A. phoenicis* his collection of *A. tephrodes* var. *brachylobus* from Skull Valley, it is likely that Rydberg was right. If not, and *A. phoenicis* is a distinct species, it would in any case be excluded, by the form of the legume, from the *Argophylli*.

13. *Astragalus iodopetalus* Greene, nom. nov.

Astragalus iodopetalus Greene, nom. nov.; Jones, Rev. Astrag., Index, 1923, in syn.; Rydb., Bull. Torr. Bot. Cl. 52:152. 1925, in syn. *Xylophacos iodopetalus* (Greene) Rydb., l. c. 1925; N. Amer. Fl. 24:296. 1929.

Xylophacos stipularis (Jones) Rydb., Fl. Rocky Mts. 504, 1063. 1917, pro max. parte; non *A. arietinus* var. *stipularis* Jones.

Astragalus jemensis A. Nels., Amer. Journ. Bot. 21:574. 1934, pro parte.

A. Shortianus sensu Jones, Rev. Astrag. 205. 1923, pro parte; non Nutt.

Caulescent, with numerous coarse green prostrate striate and sparsely hirsute-strigose stems radiating from the crown of a thick, multicapital taproot, forming circular matlike plants 1-3 dm. in diameter; herbage prevailing green, but the leaves thinly (rarely canescently) hirsute-silky below with long hairs; stipules conspicuous, broadly ovate-acuminate, adnate to the petiole, pale green becoming membranous, many-nerved, sparsely hirsute and ciliate, 6-12 mm. long; leaves ample, (4) 9-18 cm. long, the wholly deciduous petioles 4-8 cm. long; leaflets 17-27, conspicuously diminishing up the rachis, obovate to oblanceolate, rounded at apex, 7-18 mm. long, thin, green, glabrous above or with a few hairs near the long-ciliate margin; racemes 14-25-flowered, dense at first, but elongating and in fruit 3-8 cm. long, on stout at length reclinate peduncles (4) 6-9 cm. long; calyx submembranous, loosely hirsutulous with white hairs, the tube 7.5-10 mm., the subulate teeth 3-4 mm. long; corolla reddish-violet, drying bluish, the banner 18-22 mm., the wings 16-20 mm., the keel 13-15 mm. long, the blades of the latter abruptly arcuate through a little more than a rightangle to the obtuse apex; pod obliquely ovoid, oblong or lance-oblong, obtuse at base, strongly obcompressed and but little arcuate except at the incurved, deltoid or deltoid-acuminate, compressed, proriform beak, 1.7-2.7 cm. long, 8-10 mm. broad and about 4 mm. high, both sutures, but especially the ventral, prominent and depressed-sulcate, sometimes so deeply as almost to divide the pod into two chambers, the dorsal also sometimes narrowly introverted and forming a partial septum 1 mm. or less deep, the valves green and fleshy becoming coriaceous, castaneous or straw-colored and about 1 mm. thick, glabrous, reticulate and somewhat rugose; seeds very dark brown, smooth and shining, 2-2.3 mm. long.

Type-locality.—Arboles, Colorado; collected by C. F. Baker in 1899.

Distribution.—Mountainsides and canyons, often among oak-brush, along the Gunnison and tributaries of the San Juan rivers in southwestern Colorado, and in adjacent New Mexico.

Exsiccata.—COLORADO. Archuleta Co.: Arboles, Baker No. 415 (NY, type, G). Gunnison Co.: Sapinero, No. 184 (G, NY). Cebolla, N. L. T. Nelson No. 23 (NY).

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Astragalus tephrodes
var. *brachylobus*

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beak stout, sharp; chambers ± 2 . $2n=22(24?)$. UNCOMMON. Open, dry, alkaline gravelly-clay soil, gen with sagebrush or pinyon; 1500–2250 m. W&I, n DMtns (Inyo Co.); NV.

A. shevockii Barneby (p. 607) SHEVOCK'S MILKVETCH Per, wiry, open; hairs sparse. ST decumbent to ascending, 1–3.5 dm, slender; hairs at base spreading, those above appressed. LF 2.5–6.5 cm; lowest stipules fused around st into sheath; lflets 9–17, well separated, 2–10 mm, \pm elliptic. INFL: fls 2–13, well separated, ascending. FL: petals \pm cream-colored, banner 9–9.8 mm, recurved $\pm 75^\circ$, keel 9–9.8 mm. FR ascending, 13–31 mm, 3–4 mm wide, tapered at both ends, incurved, ± 3 -sided near base, papery, hairy; upper suture a low keel, lower suture a keel near tip, depressed in a wide groove in lower half; chamber 1. RARE. Granitic sand in Jeffrey-pine forest; 1900 m. s SNH (se Tulare Co.).

A. subvestitus (Jepson) Barneby (p. 607) KERN COUNTY MILKVETCH Per, cespitose or matted, leafy; herbage hairs gen 0.7–1.2 mm, dense, woolly, \pm curly, grayish. ST prostrate, 1–8 cm. LF 1.5–6.5 cm; lflets 7–13, 2–9 mm, \pm elliptic or obovate. INFL among lvs, short; fls 3–8. FL: petals whitish, with some lilac, keel pink-tipped, banner 11–13.3 mm, recurved $\pm 40^\circ$, keel 9.5–10.7 mm. FR ascending, 8–15 mm, 4–7 mm wide, \pm ovoid, compressed from top-to-bottom in lower half, stiffly papery; hairs dense, gen < 1 mm, curly; beak erect or incurved, triangular, compressed side-to-side; chamber 1; immature seeds 11–14. UNCOMMON. Gravelly, sandy areas, with sagebrush; 2450–2750 m. s SNH (Tulare, Kern cos.).

A. tener A. Gray Ann, delicate, \pm sparsely strigose to \pm glabrous. ST erect or ascending, 2–30 cm. LF 2–9 cm; lflets 7–17, \pm well separated, 3–16 mm, lanceolate to obovate, glabrous on upper surface, tip notched or pointed. INFL dense; fls 2–12, spreading. FL: petals pink-purple, banner 5.2–11.8 mm, recurved 35–40°, keel 3.4–6.4 mm. FR reflexed, 6–50 mm, 1.7–3.5 mm wide, \pm narrowly lanceolate, straight or curved, openly grooved on lower side, stiffly papery, glabrous, base \pm stalk-like or not; chambers ± 2 . SEEDS smooth. Open, moist areas, coastal bluffs; < 60 m. GV, CCo, SnFrB, SCo.

1. Banner 5.2–6 mm; immature seeds 5–11; mostly coastal
..... var. *titi*
- 1' Banner 7.8–11.8 mm; immature seeds 8–16; mostly inland
2. Fr 2.7–5 cm, strongly incurved, base \pm stalk-like,
3–5 mm var. *ferrisiae*
- 2' Fr 1–2.5 cm, \pm incurved, base round, not stalk-like
..... var. *tener*

var. *ferrisiae* A. Liston FERRIS' MILKVETCH ST 6–26 cm. LF 2–6 cm; lflets 7–15. INFL: fls 3–12. FL: banner 7.8–9.6 mm; keel 4.2–5.1 mm. FR 2.7–5 cm, strongly incurved; base \pm stalk-like, 3–5 mm; immature seeds 10–16. PRESUMED EXTINCT. Alkaline flats, vernal-moist meadows; < 60 m. n ScV. Possibly extinct.

var. *tener* (p. 607) ALKALI MILKVETCH ST 4–30 cm. LF 2–9 cm; lflets 7–17. INFL: fls 3–12. FL: banner 8.2–11.8 mm; keel 4.7–6.4 mm. FR 10–25 mm, \pm incurved; base round, not stalk-like; immature seeds 8–14. RARE. Alkaline flats, vernal-moist meadows; < 60 m. s ScV, n SnJV, e SnFrB (where mostly extirpated).

var. *titi* (Eastw.) Barneby COASTAL DUNES MILKVETCH ST 2–12 cm. LF 2–7 cm; lflets 7–13. INFL: fls 2–7. FL: banner 5.2–6 mm; keel 3.4–3.9 mm. FR 6–14 mm, straight or outcurved; base round, not stalk-like; immature seeds 5–11. ENDANGERED CA. Moist sandy depressions near coast, coastal bluffs, dunes; < 20 m. c CCo (Monterey Co.), SCo (where possibly extirpated). Threatened by urbanization, recreation, alien pls.

A. tephrodes A. Gray var. *brachylobus* (Gray) Barneby (p. 607) Per, tufted, coarse, greenish gray to silvery-silky; hairs appressed or \pm ascending. ST prostrate, 0–8 cm. LF 4–16 cm; lflets 11–31, 4–17 mm, widely \pm obovate. INFL: fls 10–35, ascending. FL: petals \pm pink-purple, banner 14–24 mm, recurved $\pm 45^\circ$, keel 14.7–21 mm. FR ascending, 17–30 mm, 6–10 mm wide, plumply lanceolate, stiffly leathery; hairs appressed or \pm spreading, rarely 0; chamber 1. Open, dry ground; 150 m. se DMoj (near Needles, San Bernardino Co.); to sw UT, AZ. Possibly a waif in CA.

A. tudestromii (Rydb.) Clokey (p. 607) Per (or fl 1st year and appearing ann), tufted; hairs dense, \pm stiff, often curly, entangled, shaggy. ST 0 or \pm prostrate, < 7 cm. LF 3–15 cm; lflets 7–19, 4–17 mm, widely obovate. INFL: fls 5–16, well separated, spreading-ascending. FL: petals whitish, tinged with dull purple, wings, keel tipped dark purple, banner 12–17.7 mm, recurved $\pm 40^\circ$, keel 10–12 mm. FR ascending, 15–55 mm, 6–16 mm wide, \pm lanceolate, curved 1/4–5/4 circle, ± 4 -sided, compressed side-to-side at both ends, from top-to-bottom in middle, stiffly leathery, minutely strigose; beak long, narrowly triangular; chamber 1. Open, calcareous gravel; 600–1500 m. DMoj (extreme e-c DMtns and mouth of Cushman Canyon near n edge SnBr); s NV.

A. traskiae Eastw. (p. 607) TRASK'S MILKVETCH Per, open and widely branched, leafy; hairs dense, grayish. ST \pm ascending, 1–4 dm. LF 4–10 cm; lflets 21–29, 5–15 mm, \pm obovate or ovate. INFL: fls 12–30, well separated, ascending or spreading. FL: petals cream-colored, banner 14.2–17.5 mm, recurved 30–40°, keel 10.2–12.9 mm. FR pendent or ascending; body 8–16 mm, 3–5.5 mm wide, \pm half-elliptic in side view, ± 3 -sided (lower grooved), thinly fleshy, then leathery; hairs minute, wavy; stalk-like base 4–9 mm; chambers ± 2 . RARE CA. Sandy coastal bluffs, dunes; < 60 m. s ChI (San Nicolas, Santa Barbara islands). Threatened by military activity on San Nicolas Island.

A. tricarinatus A. Gray (p. 607) TRIPLE-RIBBED MILKVETCH Per, loosely tufted, finely strigose. ST \pm erect, 5–25 cm, stiff. LF 7–20 cm; lflets 17–27, well separated, 3–12 mm, narrowly \pm obovate, silvery-strigose on upper surface, greenish on lower. INFL: fls 5–15, well separated, spreading-ascending. FL: calyx 6.1–7.6 mm, tube 4.1–5 mm; petals cream-colored, banner 12.6–15.7 mm, recurved $\pm 45^\circ$, keel 9.7–11 mm. FR ascending; body 24–42 mm, 3.5–5.5 mm wide, \pm linear, 3-sided, thinly papery, glabrous; stalk-like base 1–2.5 mm, stout, jointed at top; upper suture a narrow ridge; chambers 2. RARE. Exposed rocky slopes, canyon walls; 450–550 (1250) m. e SnBr (Whitewater, Morongo Valley), adjacent edges D.

A. trichopodus (Nutt.) A. Gray Per, robust, bushy-branched, \pm minutely strigose, gen also spreading-hairy. ST \pm erect, 2–10 dm. LF 2.5–20 cm; lower stipules rarely fused around st into sheath; lflets 15–39, 2–25 mm, \pm lanceolate. INFL: fls 10–50, spreading or reflexed. FL: calyx 5–8.7 mm, tube 3.6–5.4 mm; petals \pm cream-colored, sometimes faintly lilac-blushed or -lined, banner 11.3–19 mm, recurved 40–45°, keel 8.6–13.7 mm. FR pendent; body 13–45 mm, 4.8–21 mm wide, linear-elliptic and compressed side-to-side to ovate and bladderly, persistent, thinly papery; hairs minute, sparse; dehiscence from tip, along top suture; stalk-like base 5–17 mm, slender, strigose or \pm glabrous, joint between body base and stalk 0; chamber 1; immature seeds 10–30. Open, grassy areas, bluffs, rocky sites; 0–1220 m. SCoRO, s SCoRI, SCo, ChI, WTR, w PR. Like *A. asymmetricus*, *A. curtipes*, *A. oxyphus*, but note calyx length; stalk length, hairs, position of joint; ovule number.

1. Fr compressed side-to-side, sides \pm flat or low-convex
..... var. *phoxus*
- 1' Fr bladderly or \pm compressed side-to-side but sides very convex
2. Fr 8–21 mm wide, hairy n of San Diego, sometimes glabrous s, upper suture much less convex than lower
..... var. *lonchus*
- 2' Fr 5–13 mm wide, glabrous, upper and lower sutures \pm equally convex var. *trichopodus*

var. *lonchus* (M.E. Jones) Barneby (p. 607) INFL: fls 12–36. FL: banner 11.3–19 mm; keel 8.6–13 mm. FR: body 17–45 mm, 8–21 mm wide, bladderly, with very convex sides, hairy n of San Diego, sometimes glabrous s; upper suture much less convex than lower. $2n=22$. Coastal bluffs, fields; < 300 m. SCo, n ChI; Baja CA. [*A. leucopsis* (Torrey) Torrey & A. Gray]

var. *phoxus* (M.E. Jones) Barneby INFL: fls 10–50. FL: banner 11.4–16.7 mm; keel 9.3–12.7 mm. FR: body 15–36 mm, 5–9 mm wide, compressed side-to-side, with \pm flat or low-convex sides, glabrous or rarely minutely strigose. Gen inland, grassy or shrubby hillsides; 50–1220 m. s SCoR, n SCo (Santa Barbara, Ventura cos.), WTR, w edge DMoj. [*A. aniselli* A. Gray]

150m elev.

note 5

SBD, UT, AZ +

47. **A. pycnostachyus** Gray var. **lanosissimus** (Rydb.) Munz & McBurney. [*Phaca l.* Rydb.] Plate 44, Fig. C. Stout perennial, the herbage densely white silky-tomentose; stems several, erect, 4–9 dm. long; lowest stipules connate; lvs. 3–15 cm. long, with 25–41 narrowly oblong lfts. 5–30 mm. long; peduncles 2–4 cm. long; fls. numerous, dense, declined; calyx-tube 4–5 mm., the teeth 1.5 mm. long; petals ochroleucous, the banner 7–10 mm. long; pod 8–11 mm. long, thinly strigulose, the valves papery, not inflexed.—Coastal Marshes, Ventura and Los Angeles cos., if surviving at all.

48. **A. sabulonum** Gray. Winter annual, rarely apparently perennial, silky-hirsute or villosulous, stems decumbent and ascending, to 2.5 dm. long; stipules small, free; lvs. 1.5–6.5 cm. long, with 9–15 oblong to obovate-cuneate lfts. 4–13 mm. long; peduncles 1–3.5 cm. long; fls. 2–6, at length declined; calyx-tube 1.5–2.5 mm., teeth 2–3.5 mm. long; petals purplish, banner 5–7 mm. long; pod horizontal or declined, sessile, obliquely oblong-ovoid, 9–15 mm. long, with a short incurved beak, 1-locular, openly grooved dorsally.—Sandy valleys below 500 ft.; Creosote Bush Scrub; Colo. Desert; to Son., Utah. Feb.–May.

49. **A. serenoii** (Kuntze) Sheld. Sparsely leafy bushy-branched perennial, thinly strigulose; stems erect, 1.5–4.5 dm. long; stipules free, reflexed; lvs. 2–15 cm. long, with 5–11 remote linear lfts. 5–30 mm. long; peduncles stout, to 2.5 dm. long; fls. 5–25; calyx-tube 9–13 mm., teeth 2.5–4 mm. long; petals purple with white wing-tips, banner 17–26 mm. long; pod erect, sessile, broadly oblong, 17–30 mm. long, nearly straight, the valves glabrous, woody, with a partial septum; $2n=22$ (Trelease & Beath, 1949) 24? (Ledingham & Fahselt, 1964).—Bare places, 5000–7500 ft.; Pinyon-Juniper Wd.; Inyo, Grapevine, Cottonwood mts.; to Mono Co., w. Nev. May–July.

50. **A. tener** Gray var. **titi** (Eastw.) Barneby. [*A. t.* Eastw.] Annual, with stems to 2.5 dm. long; lfts. 7–17, broad, cuneate-obovate, 5–16 mm. long; fls. 3–12, in subcapitate racemes; petals purple, the banner 5–6 mm. long; pod 6–14 mm. long, spreading, sessile, flattened and grooved dorsally, the valves firmly papery, strigulose, inflexed as a complete septum.—Sandy places near the coast; Coastal Strand; near San Diego, Monterey Bay, Los Angeles. April–May.

51. **A. tephrodes** Gray var. **remulus** (Gray) Barneby. [*A. r.* Jones.] Habit of *A. tidesstromii*, but less densely pubescent, the hairs sometimes straight; calyx commonly strigulose; pod oblong, straight or nearly so, truncate-obtuse at base, obcompressed except for the deltoid laterally compressed beak, 2–2.5 cm. long, the valves leathery, strigulose.—Once collected supposedly at Needles; Ariz. and adjacent states. April–May.

52. **A. tidesstromii** (Rydb.) Clokey. [*A. marcus-jonesii* Munz, in part.] Subcaulescent tufted perennial, villous-tomentulose with curly hairs; stems rarely up to 7 cm. long; stipules free, 3–7 mm. long; lvs. 4–15 cm. long, with 7–19 roundish lfts. 4–13 mm. long; peduncles 3–12 cm. long, reclinate in fr.; fls. 5–13; calyx-tube 5–8 mm. long, teeth 1–2 mm.; petals sordid, the keel purple-tipped, banner ochroleucous or purplish, 13–16 mm. long; pod spreading, sessile, oblong-ellipsoid, incurved, obcompressed except at base and apex, 2.5–5 cm. long, 2-carinate with the prominent sutures, 1-locular, strigulose.—Sandy or gravelly washes and fans, 1000–3000 ft.; Creosote Bush Scrub; New York, Clark mts., n. base of San Bernardino Mts.; s. Nev. April–May.

53. **A. traskiae** Eastw. Diffuse perennial, white villose-tomentose; stems leafy, 1.5–2 dm. long; stipules free; lvs. 5–10 cm. long, with 21–29 ovate-elliptic lfts. 5–15 mm. long; peduncles 4–14 cm. long; fls. 12–30, 2.5–3 cm. long in fr.; calyx-tube 5–6 mm., teeth 2.5–3.5 mm. long; petals ochroleucous, the banner 14–17 mm. long; pod pendulous, stipitate, the stipe 4–8 mm. long, the body obliquely oval-oblong in outline, gently incurved, abruptly acuminate into a narrow beak, 8–16 mm. long, triquetrously compressed, fully 2-locular, short-tomentose.—Dunes and sandy places below 700 ft.; Coastal Strand, Coastal Sage Scrub; San Nicolas and Santa Barbara ids. March–July.

54. **A. tricarinatus** Gray. Perennial forming loose bushy plants, greenish except for the silvery upper surface of the lfts.; stems 1–2.5 dm. long; stipules free, reflexed; lvs. 7–20 cm. long, with 17–27 elliptic or obovate lfts. 3–12 mm. long, deciduous from the

(not var. *brachylobus*)
but must be a synonym

distrib.

AZ+

phen.

in fr.; racemes loosely 5-13-flid., 2.5-6 cm. long in fr.; calyx-tube subcylindric, 5-8 mm., the teeth 1-2 mm. long; petals sordid, the keel dull purple-tipped, the ochroleucous or lurid-purple banner 13-16 mm. long; pod spreading, sessile, oblong-ellipsoid incurved through half to more than a complete circle, laterally compressed at base and in the acuminate beak, elsewhere obcompressed, 2.5-5 cm. long, 8-15 mm. in diam., 2-carinate by the prominent sutures, 1-locular, the fleshy strigulose valves becoming stiffly leathery and rugulose on the angles.—Sandy or gravelly washes and desert fans, mostly on limestone, 1000-3000 ft.; Creosote Bush Scrub; e. Mojave Desert (New York and Clark mts.), e. slope of San Bernardino Mts. (Cushenbury Canyon); s. Nev. April-May.

38. *A. tephrodes* Gray var. *brachylöbus* (Gray) Barneby. [*A. remulcus* Jones.] Habit of the preceding, but less densely pubescent, the hairs sometimes straight; calyx commonly strigulose; pod oblong, straight or nearly so, truncate-obtuse at base, obcompressed except for the deltoid laterally compressed beak, 2-2.5 cm. long, the leathery valves strigulose.—Widespread and variable sp. of Ariz. and adjoining states, usually of Pinyon-Juniper Wd., Yellow Pine Forest, once collected on the Colo. R. near Needles, perhaps a waif. April-May. in AZ, etc.?

(must be a
synonym of
var. *brachylöbus*)

39. *A. Newberryi* Gray. [*A. N.* var. *castoreus* Jones.] Low acaulescent tufted perennial, appressed silky, except the pod, or with some hirsute hairs on the petioles, which persist as a thatch on the heavy root-crown; stipules free, imbricated, 5-9 mm. long; lvs. 2-13 cm. long, with 3-13 ovate-elliptic obtuse lfts. 4-15 cm. long; peduncles scapose, shorter than the lvs.; racemes shortly 3-8-flid.; calyx-tube cylindric, 10-11 mm., the teeth 2-5 mm. long; petals pink-purple, sometimes pale, the banner 22-27 mm. long; pod spreading, sessile, ovoid and incurved into a stiff deltoid laterally compressed beak, obcompressed below, 1.5-2.5 cm. long, 8-10 mm. in diam., 1-locular, the leathery valves concealed by a dense hirsute-tomentose vesture about 2 mm. thick.—Dry stony hills, mostly above 4000 ft.; Sagebrush Scrub, Pinyon-Juniper Wd.; e. Mojave Desert (New York and Providence mts.) to Death V., the Inyo and White mts.; to e. Ore., s. Ida., n. Ariz. and nw. New Mex. April-June.

40. *A. coccineus* Bdg. [*A. grandiflorus* Wats., not L. *A. Purshii* var. *c.* Parry.] Habitally similar to the last, but the dense pubescence more tangled and tomentose; lfts. 7-15; calyx-tube reddish, 12-16 mm. long; petals narrow, nearly erect, scarlet drying crimson, of equal length, 3.5-4 cm. long; pod ovoid-acuminate or fusiform, 2.5-4 cm. long, 9-12 mm. in diam., gently incurved, somewhat obcompressed, 1-locular, silky-villous and tomentose with hairs 2-3 mm. long.—Gravelly ridges and canyons of desert-bordering mts., 2100-7000 ft., occasionally lower on outwash fans; mostly Pinyon-Juniper Wd.; Owens V. to Death V., s. along the edge of the deserts to n. Lower Calif.; sw. Ariz. March-May.

42. *A. Purshii* Dougl. Low acaulescent or shortly caulescent tufted or matted perennials, similar to the last 3 in habit; pubescence arachnoid-villous or tomentose with fine tortuous hairs; stipules membranous, often attenuate; racemes subcapitately 2-10-flid.; pod obliquely ovoid to ovoid-acuminate, variably incurved into a stiff deltoid, laterally compressed beak, the fleshy valves becoming leathery, concealed by the dense shaggy vesture of silky or cottony usually entangled hairs 2-5 mm. long, not or little inflexed; $2n = 22$ (Head, 1957).

- a. Fls. large, the calyx-tube and teeth together 10-15 mm., the keel 14-19 mm. long or, if smaller, the lfts. less than 9 in most lvs.
 - b. Petals ochroleucous, only the keel purple-tipped a. var. *Purshii*
 - b. Petals pink or bright purple.
 - c. Lfts. mostly 7-11; peduncles shorter than the lvs. b. var. *tinctus*
 - c. Lfts. mostly 11-17; peduncles equaling or longer than the lvs. c. var. *longilobus*
- a. Fls. smaller, the calyx-tube and teeth together 6-9 mm., the keel 8-12 mm. long.
 - b. Pod moderately arched, 24-32-ovulate, the ventral suture nearly straight below, the beak incurved d. var. *lectulus*
 - b. Pod strongly incurved throughout, usually through over half a circle, 14-20-ovulate e. var. *lagopinus*

a. Var. *Purshii*. [*A. P.* var. *incurvus* (Rydb.) Jeps. *A. i.* Abrams, not Desf.] Dry plains and hillsides, 3500-7000 ft.; Sagebrush Scrub, Yellow Pine F.; ne. Calif. (Sierra to Trinity, Siskiyou, and Modoc cos.); to s. B.C., s. Alta., n. Colo. April-June.

b. Var. *tinctus* Jones. [*A. candelarius* Sheld. *Xylophacos subvillosus* Rydb. *A. Purshii* var. *gavisus* Jeps.] Dry hillsides, mostly 3000-8000 ft., but descending w. down the

A. amphioxys in the larger flowers (banner 22 to 28 mm. long) and in the more exerted claws of the keel. A variant characterized by very slender stems, petioles, and peduncles, broad stipules, thin, sparsely strigose leaflets, and large flowers is known only from the Grand Canyon (*Eastwood* 5711, 5712).

15. *Astragalus tephrodes* Gray (*Xylophacos tephrodes* Rydb.). Apache County to Mohave County, south to Graham, Gila, and eastern Maricopa counties, 3,500 to 8,000 feet, mostly in pine forest, April to July. Western Texas to southern Nevada, Arizona, and northern Mexico.

Var. *typicus* Barneby is rare in Arizona, being known only from a few collections in Greenlee and Yavapai counties. It has relatively small flowers (calyx tube 3.5 to 8 mm. long, banner 11 to 17 mm. long), relatively thin-walled, short pods (seldom more than 15 mm. long), and commonly conduplicate leaflets. Much more common and widely distributed in the state is var. *brachylobus* (Gray) Barneby (*A. pephragmenus* Jones, *A. intermedius* Jones, *A. phoenicis* Jones, *A. remulcus* Jones, *A. remulcus* var. *chloridae* Jones, *A. chloridae* Tidestrom, *Xylophacos pephragmenus* etc. Rydb.). This variety has the calyx tube 7 to 10 mm. long, the banner 17 to 22 mm. long, the pod commonly more than 15 mm. long, with rigid, woody valves when dry, and the leaflets flat. The type of *A. pephragmenus* came from the Pinal Mountains (Jones in 1890), that of *A. remulcus* from Bangharts (Del Rio), Yavapai County (*Rusby* 576), that of *A. intermedius* (and *A. phoenicis*) from "Arizona" (*Palmer*), and that of *A. remulcus* var. *chloridae* from Chloride, Mohave County (Jones in 1903). The last-mentioned is typically an extreme variant, with inflorescences greatly surpassing the leaves, the peduncles 15 to 25 cm. long, and the relatively sparse hairs of the herbage and pods straighter and more appressed than in other forms of *A. tephrodes*. Specimens from the Mazatzal Mountains are of more or less intermediate character. Var. *brachylobus* as a whole is extremely diverse in the quantity and quality of the pubescence, the hairs of the leaves and pods varying from straight and closely appressed to incurved or curly and more or less spreading.

For a further account of the synonymy and of the variation in *A. tephrodes*, especially in var. *brachylobus*, see Barneby (153 VII, pp. 463-471).

16. *Astragalus castaneaeformis* Wats. (*Xylophacos castaneaeformis* Rydb.). Coconino and northern Gila counties, 6,000 to 8,000 feet, among pines, often in rocky places, May, type from Williams (*Lemmon* in 1884). Known only from Arizona and Utah.

Distinguished from most of the related acaulescent species by its short, broad pods. There is, however, considerable variation in the shape and size of the pods. An extreme form, with pods only half as wide as long and rather strongly curved, should perhaps be distinguished as a variety. The species is represented in Arizona by var. *typicus* Barneby and in Utah by var. *conso-brinus* Barneby.

17. *Astragalus Newberryi* Gray (*Xylophacos Newberryi* Rydb.). Apache County to Mohave, Gila, and Yavapai counties, 2,000 to 7,000 feet, dry, stony mesas, March and April, type from northern Arizona (*Newberry* in 1858). Idaho and Oregon to New Mexico, Arizona, and southeastern California.

Az

Valley and the Needle Mts., LINCOLN CO. Gullied knolls on sandy soil with pinyon-juniper to *Artemisia* to yellow pine. The Nevada material is represented by the typical variety but differing from the normal expression by having hairy stems and foliage, which are densely and canescently villosulous, with sinuous or curly sub-appressed hairs, mixed with longer, incurved, ascending ones. Our plants, probably represent nothing more than an arid ecotype. 6,000-9,000 ft. May-September. UT, NV and AZ.

84. *Astragalus tenellus*. Pursh, Fl. Amer. Sept., 2:473. 1814. [*Homalobus strigulosus* Rydb., type locality from the East Humboldt Mts., ELKO CO.; *A. t.* var. *strigulosus* (Rydb.) F.J. Herm.] PULSE MILKVETCH. Known from northcentral and eastern Nevada, from the Monarch Mine and west side of Spruce Mt., ELKO CO.; to Wheeler Peak area, Snake Range, WHITE PINE CO.; through the Monitor Range (Charnic Basin) EUREKA CO.; Toiyabe Range, divide between Big Creek and Kingston Creek, LANDER CO.; west to New Pass at the southeast end of the New Pass Range, CHURCHILL CO.; south to Danville Canyon, Monitor Range and San Juan Creek, Toiyabe Range, NYE CO. Dry, rocky slopes with pinyon-juniper, to spruce-fir communities. This species is characterized by having stipitate, laterally flattened pods, arranged in very loose, occasionally paired but always very shortly-pedunculate, racemes. The expression known as *A. tenellus* var. *strigulosus* (Rydb.) Macbr., Contr. Gray Herb., f. 5:34. 1922., based on *Homalobus s.* Rydb., with the type from the East Humboldt Mts., ELKO CO., differs only by having pubescent pods but is quite variable, thus not considered to be taxonomically distinct in Nevada. 6,300-10,500 ft. May-August. MN, NB, MAN, BC to ID, MT, WY, UT, NV, NM and CO.

85. *Astragalus tephrodes*. Gray, Proc. Amer. Acad., 13:369. 1878. ASHEN MILKVETCH. Known from southern Nevada only, extending north to Hot Creek Valley, 24 km. northeast of Warm Springs, NYE CO.; south to the Needle Mts., northeast of Caliente, LINCOLN CO.; south to Nay Canyon, Virgin Mts., CLARK CO. Hillsides, sandy or gravelly washes, saddles and along gullied draws on low, alkaline, sandy, clay hillsides and weathered, pink sandstone with *Larrea* to pinyon-juniper. The Nevada material is divisible into var. *brachylobus* (Gray) Barneby, Amer. Mid. Nat., 37:466. 1947.; var. *chloridae* (M.E. Jones) Barneby, Mem. N.Y. Bot. Gard., 13:643. 1964. and var. *eurylobus* Barneby, Mem. N.Y.B.G. 13:11. 643. 1964. and are separated as follows:

Pod 2.5-4 cm. long, 1-1.6 cm. in diameter;
 ovules 34-35; seeds 3-3.6 mm. long; plants
 from LINCOLN CO. var. *eurylobus*.

Pod 1.7-3.4 cm. long, 6-10 (12) mm. in diameter;
 ovules 24-36; seeds 1.8-3 mm. long.
 Peduncles (4) 5-15 cm. long; racemes
 relatively short; the axis (1.5) 2-8 cm.
 long in fruit. var. *brachylobus*.
 Peduncles very stout and elongate, 1.3-4 dm.
 long; racemes elongate; fruiting axis
 7-20 cm. long. var. *chloridae*.

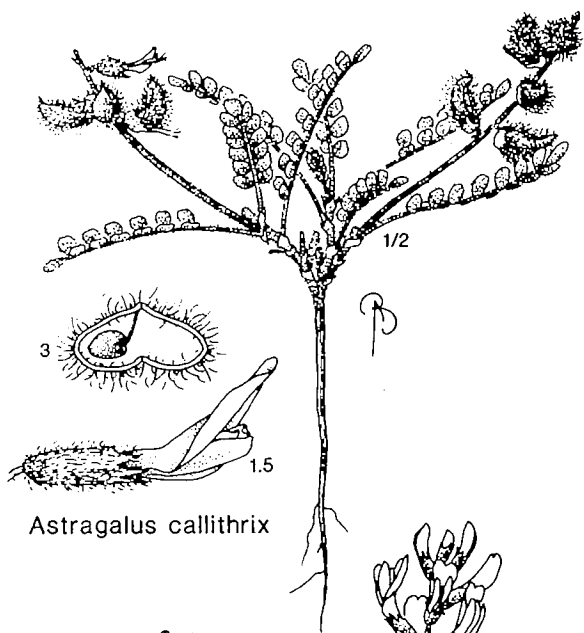
Variety *brachylobus* is rare and restricted to extreme
 southeastern Nevada, just northeast of Virgin Peak, Virgin
 Mts., CLARK CO. It occurs on open hillsides and stony
 flats at 3,000-6,500 ft. April-June. Variety *chloridae* is
 the most common expression in Nevada, extending from north
 of Hot Creek Valley, 24 km. northeast of Warm Springs, NYE
 CO.; south to Newberry Mts., southern CLARK CO. at 3,000-
 4,500 ft. March-May. Variety *eurylobus* is a very rare
 Nevada endemic, restricted to low, alkaline, sandy, clay
 hills of eastern LINCOLN CO. at Needle Mts., east of Peck
 Station (the type collection), and along Hwy. 20, between
 Duckwater and Eureka, northeastern NYE CO. at 4,600-5,000
 ft. It is quite distinct from our other expressions and
 perhaps should be given full species status. April-June.
 CA, UT, NV, AZ and NM. *— distrib. of all vars.*

NV

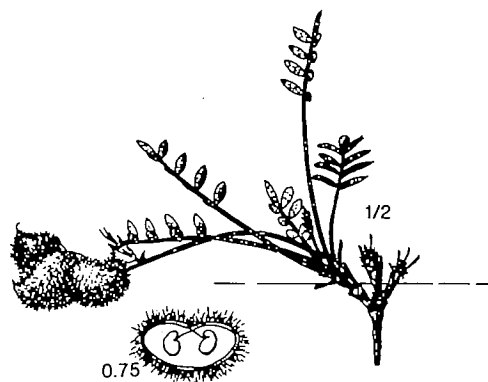
86. *Astragalus tetrapterus*. Gray, Proc. Amer. Acad.,
 13. 369. 1878. [A. t. var. *capricornus* M.E. Jones, type
 locality from Cobre, ELKO CO.; A. t. var. *cinerascens*
 (Rydb.) Barneby.] FOURWING MILKVETCH. Common along our
 eastern counties, north of Cobre, ELKO CO.; northwest to
 Virgin Valley, of SNWR and Little Humboldt River, HUMBOLDT
 CO.; to northcentral Nevada at Antelope Valley, Shoshone
 Mts., LANDER CO.; west to Stewart Valley, MINERAL CO.;
 south to Strawberry Wash Road, Toquima Range, NYE CO.; and
 6 miles east of Pony Springs, Wilson Creek Range, LINCOLN
 CO. Gullied bluffs, barren knolls and open valleys on dry,
 exposed areas but sometimes sheltered by *Artemisia* and
Salvia on calcareous, light gray to white, tuffaceous,
 sedimentary material, of sandy texture, most common with
 pinyon-juniper and *Artemisia*. This species is extremely
 variable in flower color, pubescence and leaflet
 development with each population or certainly most
 appearing to be unique. It is considered to be toxic to
 livestock and produces a condition commonly referred to as
 locoism. 3,500-6,500 ft. April-July. OR, UT, NV and AZ.

87. *Astragalus tidestromii*. (Rydb.) Clokey, Madrono,
 6:214. 1942. TIDESTROM MILKVETCH. Locally common from
 southern Stewart Valley and the NTS at the Specter Range,
 West Spotted Range and Ranger Mountains to dolomite hills
 of the Eleana Range, NYE CO.; south to north-south axis of
 the Spotted Range, to Wilson Ranch and Kyle Canyon, Spring

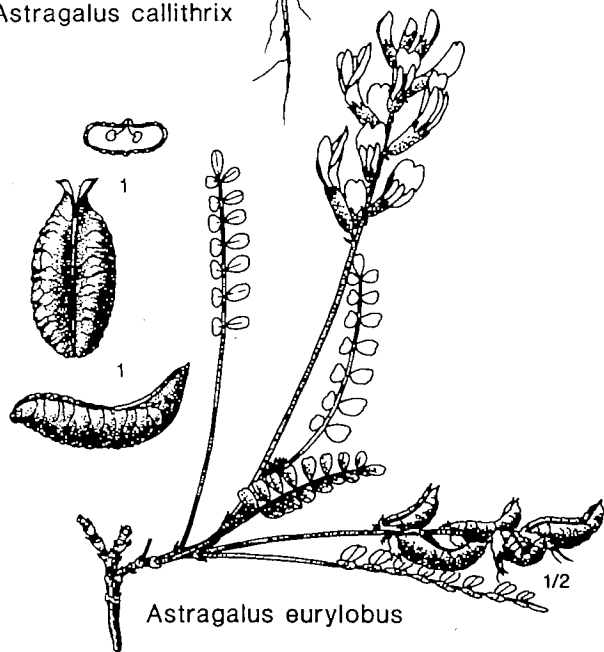
ASTRAGALUS



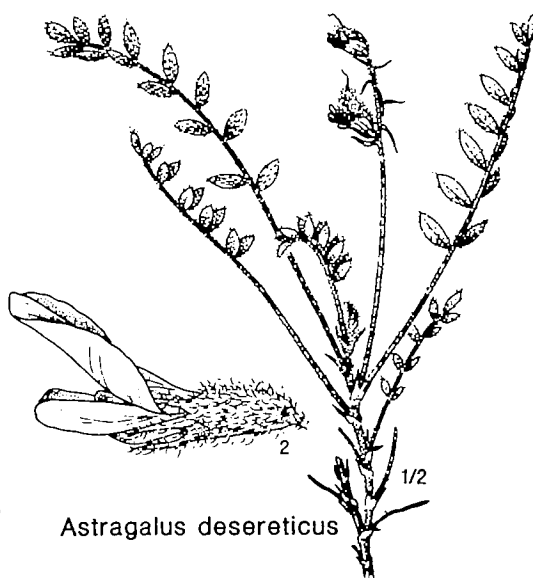
Astragalus callithrix



Astragalus piutensis



Astragalus eurylobus



Astragalus desereticus

Gravel-washes and gullied hills in shadscale desert and arid grassland, 1300-1900 m; local within and near our s. border between ne. Nye Co., Nev. (nc. of Warm Springs; n. of Duckwater) and w. Dixie-Corridor in extreme nw. Ariz. (sw. of Fredonia). Late Apr-early July.

This species was first described from a population notable for extremely large pods and was distinguished from closely related *A. tephrodes* A. Gray, which occurs only to the south of the Colorado River, by this one feature. As material has accumulated it is disclosed that all plants from northwest of Grand Canyon that have been identified as *A. tephrodes* sensu lato in fact differ from that species by a well developed septum in the pod. It seems proper therefore to reevaluate *A. eurylobus* as an independent, vicariant species.

see next page

99. *Astragalus holmgreniorum* Barneby

Astragalus holmgreniorum Barneby, Brittonia 32: 24. 1980. (N. Holmgren, P. Holmgren & Barneby 9175, Mokiah Wash, 13.5 km s. of St. George, Utah, Mohave Co., Ariz.; holotype at NY!; isotypes at BRY!, US!, UTC!)

Paradox milkvetch.

Dwarf, tufted, strictly acaulescent, perennial herbs, except for yellowish-green upper face of leaflets, stip-

ules, and pods pilose throughout with fine, spreading, basifixed hairs; stipules imbricate on root-crown, petiolar-cauline, free, the lanceolate or lance-attenuate free blades membranous, becoming papery, 3-8 mm long; leaves mostly appressed to ground, 4-13 (15) cm long; leaflets (5) 9-15 (17), broadly obovate-emarginate to obcordate, up to 8-16 mm long; peduncles scapiform, 2-8.5 cm long, early procumbent; racemes shortly (4) 6-16-flowered, the flowers widely ascending, the axis in fruit 0.4-3.5 cm long; fruiting pedicels persistent; calyx 10.5-12.5 mm long, white-pilose, the cylindrical tube 8-9.5 mm long, the broadly subulate teeth 2-3 mm long; petals purple, the gently recurved banner 21.5-23.5 mm long, the wings 3-4 mm shorter, the obtuse keel 16.5-18 mm long; ovary glabrous; ovules 30-34; pod ascending, humistrate, disjoining from receptacle, in profile shallowly lunate-elliptic, (25) 30-50 (55) × 6.5-9 mm, abruptly obtuse at base, contracted distally into a triangular-acuminulate, unilocular beak, otherwise trigonously compressed, carinate

by the gently concave, ventral suture, openly sulcate dorsally, the lateral faces low-convex or almost plane, the lateral angles obtuse, the lustrous, green or purplish-brown, thinly fleshy valves becoming coriaceous, stramineous, inflexed as a complete septum 3–4 mm wide; dehiscence both apical and basal, after falling, the valves gaping to release the seeds.

Draws in gravelly clay hills at the upper edge of the *Larrea* zone, 820–850 m; locally plentiful in the valley of Virgin River s. of St. George, astride the boundary between Washington Co., Utah and Mohave Co., Ariz.; late Apr–May.

This is our only truly stemless astragalus with trigonously compressed, bilocular pod that disjoints from the receptacle prior to dehiscence. At early anthesis it suggests a congested or depauperate *Astragalus* var. *brachylobus* (A. Gray) Barneby, and has been mistaken for it, giving rise to an erroneous report of *A. tephrodes* in Utah.

The specific epithet commemorates Drs. Noel and Patricia Kern Holmgren, nicknamed by C. Leo Hitchcock, on the occasion of their marriage, the Paradox (pair o'docs). From this I contrived the vernacular name.

VT is
mis-ID
for
brachylobus.
YES
?100. *Astragalus newberryi* A. Gray

Astragalus eriocarpus S. Wats. in King, Rep. Geol. Explor. 40th Parallel 5: 71. 1871; not DC. 1802. *Tragacantha watsoniana* Kuntze, Revisio Gen. Pl. 2: 942. 1891. *A. suturalis* E. Sheldon, Minnesota Bot. Stud. 1: 23. 1894. *A. watsonianus* E. Sheldon, Minnesota Bot. Stud. 1: 144. 1894. *A. newberryi* var. *eriocarpus* M. E. Jones, Proc. Calif. Acad. Sci. II. 5: 676. 1895. *A. newberryi* var. *watsonianus* M. E. Jones, Contr. W. Bot. 10: 68. 1902. *Xylophacos watsonianus* Rydb. Bull. Torrey Bot. Club 40: 49. 1913. (*Watson 273*, Coyote Mts., Pershing Co., Nev.; lectotype by Barneby, Amer. Midl. Naturalist 37: 478. 1947, at US!; isoelectotypes at GH!, YU!) = var. *castoreus*.

A. newberryi A. Gray, Proc. Amer. Acad. Arts 12: 55. 1876. *Xylophacos newberryi* Rydb. Bull. Torrey Bot. Club 32: 662. 1905 [1906]. (*Newberry s.n.*, Ives Expedition Camp 74, near Laguna Lake in Hualpai Indian Reservation, nw. Coconino Co., Ariz., 16 Apr 1858; holotype at GH!; isotypes at NY!, US!)

A. newberryi var. *castoreus* M. E. Jones, Proc. Calif. Acad. Sci. II. 5: 658. 1895. (*Jones 5006*, Copper Mine, 18 mi w. of St. George, Washington Co., Utah; holotype at POM!; isotypes at NY!, US!)

A. purshii × *newberryi* M. E. Jones, Rev. N.-Amer. Astragalus 216. 1923. (*Jones 5338e*, Marysvale, Piute Co., Utah; lectotype by Barneby, 1964, p. 665, at POM!) = var. *castoreus*.

A. purshii × *watsonianus* M. E. Jones, Rev. N.-Amer. Astragalus 216. 1923. (*Jones s.n.*, Aurum, White Pine Co., Nev., May 1893; lectotype by Barneby, 1964, p. 665, at POM!; isoelectotype at NY!) = var. *castoreus*.

Xylophacos blyae Rose ex Rydb. N. Amer. Fl. 24(5): 303. 1929. *A. blyae* Tidestrom, Proc. Biol. Soc. Wash. 50: 20. 1937. *A. newberryi* var. *blyae* Barneby, Amer. Midl. Naturalist 37: 480. 1947. (*Mrs. Charles Bly s.n.*, 1.5 mi nw. of Kingman, Mohave Co., Ariz., in 1927; holotype at US!; isotype at NY!) = var. *blyae*, extralimital.

Astragalus newberryi var. *escalantinus* Barneby, var. nov. Ab aliis specie varietatibus foliis 2–3-jugis anguste ellipticis acutis 2.5–5 (6)-plo longioribus quam latioribus, ulterius statura parva necnon distributione geographica diversa. TYPE UNITED STATES. UTAH. Kane Co., 36 road mi s. of Escalante, 5 May 1965 (fl. old fr.), *A. Cronquist 10028* (HOLOTYPE: NY!; ISOTYPE: BRY!)

Newberry's milkvetch.

Densely tufted acaulescent herbs, perennial but sometimes flowering the first season, the 1 to several rosettes of leaves clustered on a superficial root-crown or caespitose caudex early thatched with stout, recurving, long-persistent leaf-stalks, the foliage silky-pilose or -strigose (and often also more shortly tomentulose) with basifixed hairs, cinereous or silvery, the inflorescence often black-pilosulous; stipules imbricate, ovate-

lanceolate, obtuse or acuminate, (2.5) 4–11 mm long, semiamplexicaul, free; leaves (1.5) 2–13 (15) cm long; leaflets (1) 3–13, mostly obovate, obtuse, or retuse, sometimes rhombic-elliptic, oblanceolate, acute, or suborbicular, (3) 5–16 (20) mm long; peduncles scapiform, (0.5) 1–10 cm long, usually shorter than the leaves, arcuately recurved in fruit; racemes shortly or subumbellately (2) 3–8-flowered, the flowers ascending, the axis usually less than 2 cm long in fruit; fruiting pedicels thickened, persistent; calyx (8) 9–20 mm long, either white- or (commonly) black-pilose, the cylindrical or rarely deep-campanulate tube (8) 9.5–14 mm long, the subulate or lanceolate teeth (1.5) 2–6.5 mm long; petals vivid pink-purple except for pale striate eye of banner, pale pink, or whitish, pink-tipped or -margined, the suberect banner (14) 17–32 mm long, the wings a little shorter, the obtuse keel (13.5) 17–26 mm long; ovary densely pilose; ovules 27–46; pod humistrately spreading-ascending, sessile on and readily deciduous from receptacle, obliquely ovoid or ovoid-acuminate, (13) 17–28 × 7–13 mm, broadly cuneate or rounded-truncate at base, obcompressed proximally, contracted beyond middle into an incurved or backwardly hooked, laterally compressed, deltate or triangular-acuminate beak, the carnosulous valves becoming leathery, both tomentulose with short, curly hairs and densely villous-hirsute with longer, lustrous, spirally twisted, spreading-ascending, straight hairs up to (2) 2.5–4.5 mm long, the surface usually concealed by vestiture, sometimes visible between the long villi, the dorsal suture sometimes internally raised but the valves themselves not inflexed; dehiscence through the gaping beak, after falling; $2n = 22$.

Plains, foothills, bluffs, and badlands, mostly in sagebrush and pinyon-juniper woodland, southward entering the edge of ponderosa pine forest, mesquite-grassland, and desert shrub communities; widely dispersed from transmontane Oregon and extreme s. Idaho over much of the Great Basin and s. into the e. Mojave Desert in Calif., thence e. through n. and c. Ariz. to the San Juan and middle Rio Grande valleys in N.M. and feebly ne. into the Colorado Plateau of e. Utah, the range given in greater detail in the varietal key. (Late Mar) April–early July.

Astragalus newberryi and the five species next following form a critical group of which the common denominator is strict acaulescence, the leaves and scapiform peduncles arising in a tuft from eventually turbinate thickened divisions of a caudex thatched with marcescent leaf-stalks. Among these kindred species *A. newberryi* is recognized by its basifixed pubescence and an almost always densely tomentulose as well as long silky-pilose pod resembling that of *A. purshii*. The species is genetically variable in stature, flower-size, and number of leaflets and, while these features are subject to seasonal variation which can mask their true nature or their full potential, there is little practical difficulty in defining four geographic varieties, three of which occur in our range.

- 1 Leaflets variable in number but always proportionately broad, ovate or elliptic-obovate, ± 1.5–2.5 times as long as wide; range of the species except the Utah Canyonlands.
- 2 Leaflets of larger leaves 3 or 5, rarely only 1 or 3; discontinuously widespread, mostly in pinyon-juniper woodland but marginally in desert shrub, yucca-grassland, and mesquite-grassland communities, (650) 1300–1950 m; over plateaus of n. and c. Ariz. and nw. N.M.; entering the Intermountain region on the Grand Canyon Plateaus in Mohave and Coconino cos. and extending weakly n. to Kaiparowits Plateau and Circle Cliffs in e. Kane and Garfield cos., Utah var. *newberryi*
- 2 Leaflets of larger leaves 7–11 (13); allopatric except in extreme nw. Ariz.
- 3 Flowers larger, the calyx mostly 12–20 mm long, the banner 21–32 mm long; characteristic of sagebrush and pinyon-juniper communities of the Great Basin, (1025, in

series. For this reason var. *brachylobus* of my earlier revision is here further broken up into three coordinate varieties. The following key does not pretend to account for states intermediate between the foci of variation.

Key to the Varieties of *A. tephrodes*

1. Pod 1.3–3.4 cm. long, 5–10 mm. in diameter; *ovules* 24–36; *seeds* 1.8–3 mm. long; widespread from s. New Mexico across Arizona to the Colorado River near Needles, California, and to the Virgin Valley in s.-w. Utah (2)
2. Flower and pod relatively small: *calyx-tube* mostly 4.5–6.8 mm., the teeth 1.2–2.2 mm. long; *banner* 11–17.5 mm., keel (9.2) 10.2–14.6 mm. long; *pod* 1–2 (2.3) cm. long, the walls thinly leathery; *leaflets* mostly conduplicate; s. New Mexico and adjoining Mexico, w. across Arizona approximately to the Verde Valley —
197b. var. *tephrodes*
2. Flower and pod larger: *calyx-tube* 7.1–10.2 mm., the teeth 1.7–3.8 mm. long; *banner* (14) 16–24 mm., keel 14.7–20.1 mm. long; *pod* (1.7) 2–3.4 cm. long, 6–10 mm. in diameter, stiffly leathery or woody; *leaflets* mostly flat; Arizona, and extending feebly into s. Nevada, s.-w. Utah, and extreme s.-e. California, passing e.-ward along the upper Gila River into the preceding (3)
3. Peduncles (4) 5–15 cm. long; *racemes* relatively short, the axis (1.5) 2–8 cm. long in fruit; widespread in the range given above, mostly above 4300 ft. elevation —
197a. var. *brachylobus*
3. Peduncles very stout and elongate, 1.3–4 dm. long; *racemes* elongate, the fruiting axis 7–20 cm. long; local in n.-w. Arizona and extreme s. Nevada, 3000–4500 ft. elevation —
197c. var. *chloridae*
1. Pod 2.5–4 cm. long, 1–1.6 cm. in diameter; *ovules* 34–45; *seeds* 3–3.6 mm. long; Lincoln County, Nevada —
197d. var. *eurylobus*

197a. *ASTRAGALUS TEPHRODES* VAR. *BRACHYLOBUS* ♂

Variable in habit within the limits given below; *herbage* greenish-cinereous to silvery-silky, the hairs varying from straight to incurved or sinuous, and from strictly appressed to loosely ascending or partly spreading, the longest up to 0.4–0.9 mm. long, the leaflets equally pubescent on both sides or nearly glabrous above; *stems* 0–8 cm. long; *stipules* 2.5–11 mm. long, villosulous, sparsely strigulose, or nearly glabrous dorsally; *leaves* 4–16 cm. long, with 11–27 (31) obovate-cuneate, oblanceolate, or rhombic-elliptic, rarely suborbicular, obtuse, acute, or emarginate leaflets (3) 4–17 mm. long; *peduncles* (4) 5–15 cm. long, shorter to much longer than the leaf; *racemes* 10–25 (35)-flowered, the axis (1.5) 2–8 cm. long in fruit; *calyx* 8.8–12.7 mm. long, pilosulous to loosely strigulose, more rarely villosulous, with mixed black and white hairs up to 0.5–0.85 (1.1) mm. long, the tube 7.1–10 mm. long, 3.4–4.8 mm. in diameter, the teeth 1.7–2.8 mm. long; *banner* (14) 18–24 mm., wings 15.4–22.7 mm., keel 14.7–20.1 mm. long; *pod* oblong-ellipsoid to lance-ellipsoid, more rarely ovoid-acuminate, 1.7–3 cm. long, 6–10 mm. in diameter, the stiffly leathery or subligeous valves strigulose, pilosulous, or exceptionally glabrous; *ovules* 24–35.—Collections: 25 (viii); representative: Ripley & Barneby 5236 (CAS, NY, RSA); A. & R. Nelson 1959 (GH, NY); Barneby 12,626, 12,652 (CAS, RSA); Peebles 11,612 (CAS, POM).

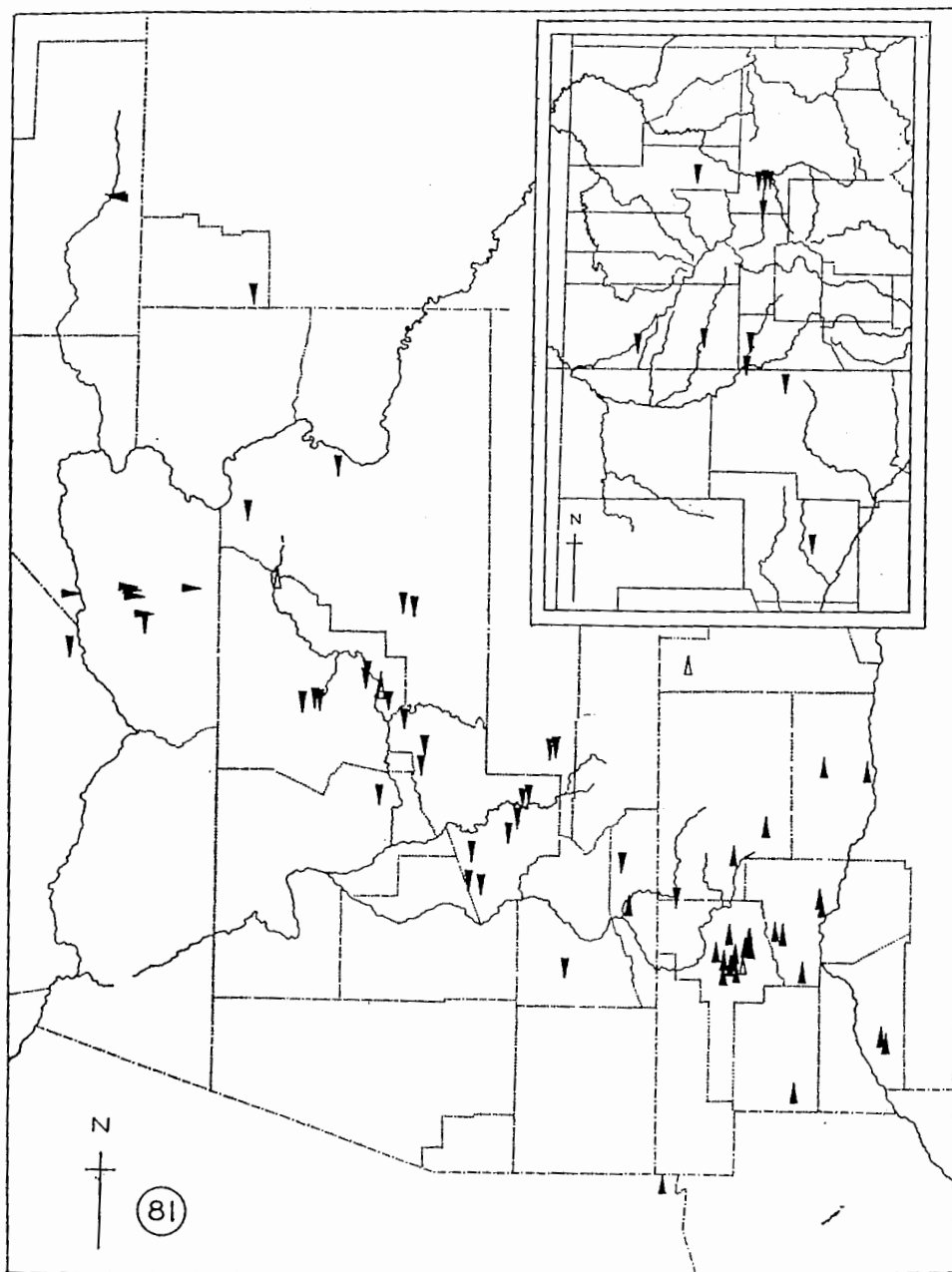
Open hillsides and stony flats in oak-chaparral, in juniper or yellow pine forest, or in arid grassland, on volcanic, granitic, or rarely sedimentary bedrock, mostly between 4300 and 6450 feet, but descending westward down to 3400 feet (and possibly lower along the Colorado River), common and locally abundant along the crest of the Mogollon Escarpment and through the hill-country immediately to the south, extending thence less commonly north to the south slope of the Kaibab Plateau (and to an isolated station in the Virgin Valley in Washington County, Utah); west to the Colorado River at Needles, California, and southeast around the edge of the Gila Basin to extreme westcentral New Mexico, there passing insensibly into var. *tephrodes*.—Map No. 81.—April to June, rarely later.

mis-ID
acc.
Internat
Flora

only
CA
occ.

NM

ASTRAGALUS TEPHRODES var. BRACHYLOBUS (Gray) Barneby in Amer. Midl. Nat. 37: 466. 1947, based on *A. Shortianus* var. *brachylobus* (with short pod, by comparison with that of *A. Shortianus*, inapposite in the present context) Gray in Proc. Amer. Acad. 13: 367. 1878.—“Arizona.”—Lectotypi (Barneby, op. cit. 467, 469), *E. Palmer 115*, in 1876, from Cottonwood, Arizona, and 102, from Prescott, Arizona, GH! isotypi, K (No. 102), NY! *A. amphioxys* var. *brachylobus* “Gray” ex Jones, Rev. Astrag., Index, in syn., nom. nud. *Xylophacos brachylobus*



Map No. 81. Arizona and southwestern New Mexico. Range of *A. tephrodes*: ▲ var. *tephrodes*; △ var. *tephrodes* intermediate to var. *brachylobus*; ▼ var. *brachylobus*; ◆ var. *chloridae*; and ♣ var. *eurylobus*. Inset, southwestern Colorado and adjoining New Mexico. Range of *A. iodopetalus*.

(Gray) Rydb. in Bull. Torr. Club 52: 154. 1925 (excluding the supposed "type," *Palmer 102* in 1877). *Astragalus curtislobus* (with short calyx-lobes, a mistranslation of *brachylobus*) Tidest. in Proc. Biol. Soc. Wash. 48: 40. 1935, and op. cit. 50: 20. 1937, a legitimate substitute (non *A. brachylobus* DC., 1825).

Astragalus pephragmenus (enclosed or girt, perhaps in allusion to the salient engirdling sutures of the pod) Jones in Zoë 4: 268. 1893.—"... on the summit of the Pinal Mountains, Arizona, May 26, 1890."—Holotypus, labeled "crest of the Pinals on road to Tonto Basin," POM! isotypi, GH, TEX, US!—*A. argophyllus* var. *pephragmenus* (Jones) Jones, Rev. Astrag. 208, Pl. 47. 1923. *Xylophacos pephragmenus* (Jones) Rydb. in Bull. Torr. Club 52: 151. 1925.

Astragalus remulcus (tow-rope, the allusion obscure) Jones in Proc. Calif. Acad. Sci. II, 5: 658. 1895.—"Rusby, no. 576, Bangharte's Ranch, Arizona, May, 1883..."—Holotypus, US! isotypus, NY!—*Xylophacos remulcus* (Jones) Rydb. in Bull. Torr. Club 52: 153. 1925.

Astragalus intermedius (intermediate, supposedly between *A. amphioxys* and *A. Bigelovii*) Jones in Proc. Calif. Acad. Sci. II, 5: 656. 1895.—"Arizona, Palmer. Type in National Herbarium."—Lectotypus, the flowering element of the type-sheet, US! The pods in a package associated with the holotypus represent *Oxytropis Lambertii* var. *Bigelovii*—*A. phoenicis* (of Phoenix, Arizona) Jones, Contrib. West. Bot. 8: 12. 1897 ("*Phoenicis*"), a legitimate substitute (non *A. intermedius* Kar. & Kir., 1842).

Xylophacos lenophyllus (soft-leaved) Rydb., Fl. Rocky Mts., Ed. 2. 1126. 1922.—"Type collected in the vicinity of Flagstaff, Ariz., MacDougal 27."—Holotypus, NY! isotypi, GH, POM!

The ashen milk-vetch, *A. tephrodes*, is the commonest member of its section in Arizona, and over the central mountainous portion of the state the var. *brachylobus* is the characteristic astragalus of its type. At its northern limit the range of the variety slightly overlaps that of the related *A. argophyllus*, from which it may be distinguished by its slightly more numerous pairs of usually bicolored leaflets and by the longer and looser racemes. The pubescence-phases of var. *brachylobus*, however striking at first encounter, are no more than minor variants. The main types are as follows:

M. v. 1. Hairs all straight and appressed (var. *brachylobus*, sens. str.). Range of the variety.

M. v. 2. Hairs as in var. *brachylobus*, but the pod glabrous or early glabrate (*A. remulcus*). Yavapai County, Arizona, especially in the upper Verde Valley; the flowers sometimes of exceptionally brilliant purple (*Barneby 12,660*, RSA).

M. v. 3. Hairs spreading, largely straight, the calyx villous, the pod \pm hirsutulous (*A. pephragmenus*). Gila County, Arizona, and vicinity. The herbage varies in the same colony from greenish-cinereous to silvery.

M. v. 4. Hairs spreading and incurved-ascending, fine and \pm sinuous (*X. lenophyllus*). In pine forest, southern Coconino County, Arizona.

197b. ASTRAGALUS TEPHRODES var. TEPHRODES

Low and often relatively slender, the herbage pilosulous with ascending or incurved hairs up to (0.4) 0.5–0.75 mm. long, the leaflets glabrous or medially glabrescent above; stems 1–12 (15) cm. long; stipules 2–7 mm. long; leaves 4.5–10 (19) cm. long, with (11) 17–27 (31) obovate-cuneate or oblanceolate, obtuse, emarginate, or subacute, nearly always loosely folded leaflets 3–16 mm. long; peduncles 4–14 (17) cm. long; racemes (9) 11–20-flowered, the axis 2–6 (8.5) cm. long in fruit; calyx (5) 6.4–8.5 (9.2) mm. long, the tube (3.5) 4.5–6.8 (8) mm. long, 3.2–3.9 mm. in diameter, the teeth 1.2–2.2 mm. long; banner 11.8–17.5 mm., wings 11.8–17.5 mm., keel 10.2–14.5 mm. long; pod obliquely ovoid-acuminate, 1.3–2 cm. long, 5–8 mm. in diameter, the beak 3–6 mm. long, the valves thinly leathery, hardly rigid, not rugulose, densely pilosulous; ovules 26–31; seeds 1.8–2.2 mm. long.—Collections: 43 (v); representative: *Wootton in 1891* (NMC, POM), *in 1893* (NY), approximate topotypi; *Jones 26,182* (CAS, GH, POM); *Barneby 11,175* (CAS, RSA); *Rusby 90½* (GH, NY, POM); *Eggleston 19,947, 19,952, 19,953, 19,955* (NY).

Open stony hillsides, sandy gullied bluffs, and rolling plains, in oak brush, among junipers, in yucca-grassland, and ascending into the lower edge of the yellow pine forest, on granitic or volcanic bedrock, 4700–7000 feet, locally plentiful about the foothills of the Mogollon and Piños Altos Mountains in southwestern

INV6 Proposed Changes Review by Glen Clifton (2/6/96)

Astragalus lentiginosus var. *salinus*

The plants that were from Lassen County were the var. *chartaceus*, so delete LAS. Have only seen this taxon from Sis County. Have not seen *floribundus* come together with *salinus* in the lakes region of Oregon as stated by Barneby in the Intermountain Flora. This taxon is very easy to tell from the var. *floribundus* (fruiting inflorescence much longer than subtending leaf and the plant has very many stems, when in fruit the fruit is the dominate part of the plant) in that the fruiting inflorescence is much shorter than the subtending leaf, has only a few stems and when in fruit the fruit is not the dominate part of the plant. 729D Should be list 2. In Munz the key has the two vars. switched, in Abrams the picture that is of *salinus* is that of *floribundus*, and in the Jepson the pictures are switched (according to the picture in the Intermountain Flora and what I have found out to be true out on the ground). Sometimes the fruiting inflorescence of *salinus* becomes longer than the subtending leaf but the general appearance of the plant remains the same. There are plants in east Plumas Co that appear to be close to this taxon but the mature fruit is very small compared to the size that it should be. I believe that the plants that they believe to be crosses may be their own var.

Astragalus oophorous var. *oophorous*

431C

Astragalus tephrodes var. *brachylobus*

The plant that were called this in Utah, Barneby named *A. holmgreniorum*. It may not be a waif in Calif. because it is fairly common near Chloride, Az. which is not too far away. However it does grow in the oak belt at Chloride and I am not sure if it grows in a desert type habitat.

AZ

Astragalus whitneyi var. *lenophyllus*

Seems to be fairly common on high mountain ridges

Atriplex argentea var. *argentea*

May be limited to Mono County

Atriplex argentea var. *hillmanii*

Said to be n SNH (don't know where) e&s MP. I have only seen it in one place 587D. Most likely there must be some collections from Surprise Valley in Modoc

Balsamorhiza hookeri var. *lanata*

Known only from Shasta Valley and some plants just n of Alturas appear to be this taxon.

Balsamorhiza serrata

Not very common

Bulbostylis capillaris

Add BUT, PLU. 575A, 625D.

Steve Boyd 2/11/99

annotated

by Wells, this is the common form of *A. glandulosa* within Santa Ana Mtns and is fairly common in the Santa Ynez, Santa Lucia, San Rafael, San Gabriel, Palomar, Cuyamaca ranges, and Otay Mtn. Probably fairly common in northwest Baja California. Need to add Riverside and San Luis Obispo cos. I think this is way too common to consider for listing.

ARCTOSTAPHYLOS PARRYANA SSP. PARRYANA – In the RSA holdings we have specimens from the San Jacinto and Santa Rosa mtns, Riverside Co. (where apparently uncommon?), San Gabriel, Liebre (rare), Tehachapi, and Mt Pinos ranges. I suspect this taxon is too common.

ASTRAGALUS LENTIGINOSUS VAR. ALBIFOLIUS – Most of the RSA collections which I would view as being reliably identified are from the Lancaster area and adjacent western Mojave region to the north (Los Angeles, Kern, & Inyo Cos.). Anything limited to this region is certainly threatened in all or part of its range. We had no recent collections from the Antelope Valley.

ASTRAGALUS TEPHRODES VAR. BRACHYLOBUS – The only California collection we have at RSA is an early M. E. Jones specimen from ~~near Needles~~ ^(near) (too vague?)

ASTRAGALUS TRICHOPODUS VAR. LONCHUS (= *Astragalus trichopodus* ssp. *leucopsis*) –

RSA specimens from Baja California are from the northwestern coastal slope from the border southward to the vicinity of El Rosario and inland in the north as far as Valle de las Palmas. I suspect that this taxon ranges southward along the coast as far as Guerrero Negros. In California we have specimens from coastal San Diego Co., inland to Escondido, Fallbrook, Otay Lake, and Jamul; coastal Orange Co., including the coastal slope of the Santa Ana Mtns and Santa Ana Cyn; coastal Los Angeles Co., including the San Pedro Hills, Palos Verdes Peninsula, and Santa Monica Mtns; coastal Ventura Co.; Santa Barbara Co., including Cuyama River and Santa Maria. I think that List 4 is ok with RED of 1-2-2.

ABUTILON PALMERI – There are 3 collections at RSA which seem like native records. 1 is from the vicinity of Corn Springs, Chuckwalla Mtns, Riverside County, the other two from near Vallecitos. This may be one which should be kept on list 3 at this time until there is more information about natural vs. adventive occurrences.

ABUTILON PARVULUM – In addition to collections near Bonanza King Mine, we have a collection from near the visitor center at Mitchell's Caverns in the Providence Mountains. RED of 3-1-1 is probably appropriate.

CAMISSONIA ARENARIA – At RSA, the latest California collection is on by Raven in 1958. This taxon is quite similar, and occurs with, *C. cardiophylla*. I have not had time to pour over the RSA holdings of the later taxon, but I suspect that there may be specimens referable to *C. arenaria* among the *C. cardiophylla*

two other NV specimens from the Snake Range

Arenaria lanuginosa - no CA records, AZ(2), MX(2)

Calystegia macrostegia ssp cyclostegia - 11 CA records

- Jepson separates ssp cyclostegia from other small bractlet ssp by bractlet shape (acute or obtuse). ssp cyclostegia specimens at SDNHM show both shapes; perhaps this taxa can be geographically separated.

Calystegia macrostegia ssp macrostegia - 20 CA records

Calystegia macrostegia ssp arida - 3 CA records

Cleomella bevipes - 2 CA records

Mortonia utahensis - 8 CA records

Marah macrocarpus var major - 14 CA records

Chamaesyce abramsiana - no CA records, AZ(2), SON(2)

- locally common after summer thunderstorms in desert flats of AZ.

Chamaesyce parryi - 2 CA records, AZ(1)

Shepherdia argentea - 2 CA records, NV(1), UT(1)

- one ex-hort and one misID (two uncharacteristic leaves from SDG Co) were not included

Arctostaphylos parryana - 7 CA records

Arctostaphylos glandulosa ssp adamsii - 30 CA records, BA(11)

Chamaesyce revoluta - no specimens available

- Probably limited to ranges that receive monsoon rains. Probably under-collected due to season and stature. In Arizona, it is locally abundant (as in the Black Mtns NE of Needles) after summer rain with numerous dainty, short-lived individuals on slopes or scattered, larger individuals in washes.

Chamaesyce vallis-mortae - 1 CA records

- one of the local specialties from my area; an interesting member of the Chamaesyce group - the leaves are succulent and very tomentose. They are at their best in deep, coarse, decomposed granite gravels that accumulate at the base of weathering outcrops. A characteristic population occurs among the granitic crags northwest of Backus Pt, in the southeast corner of the Owens Pk wilderness. ca. 3500'. Less robust plants are more common and occur in more microhabitats such as washes and slope bottoms. Usually occurring in Mojave Mixed Woody Scrub. Common in Indian Wells and Short Canyons. Old records from Brown (Inyokern - upper bajada east of these canyons) This is a good candidate for the watch list.

Astragalus bicristatus - 5 CA records

Astragalus tephrodes var brachylobis - no CA records, AZ(2)-one of these suspect

Astragalus trichopodus var lonchus - 53 CA records, BA (33); Counties: SD(38), LAX(5), SBD(9), and San Luis Obispo (1).

- Apparently widespread in coastal areas, obviously some localities under pressure; how well can this taxa colonize disturbances? I have one other site following, at Tecolote Cyn in SD Co., that occurs under disclimax conditions.

- no label copies (per our previous discussion), see notes for #s, phenology, general locality and collection date.

Cercidium microphyllum - 2 CA records, AZ(3), BA(19)

- I have another site in the Whipple Mtns in the canyon west of Monument Pk, a small group of

David Silverman
6th cl. herb.
research
(SDNHM)

RPSAC Regional Group Final Recommendation (new addition):

Date: June 14, 1999 RPSAC Region: Southlands - Desert subregion

A. Include in 6th edition:

CNPS List: _____ R-E-D Code: _____

B. Reject from 6th edition:

- Too common
- Taxonomic reasons (elaborate) _____
- Not in California _____
- Not published yet _____
- Other (elaborate) _____

* postpone until
after 6th ed.

C. Other (elaborate):

D. Defer to other regional group _____

Astragalus tephrodes Gray var. *brachylobus* (Gray) Barneby

"pink desert milk-vetch?"

Family: Fabaceae

RPSAC Region: SL(DES)

CNPS List: 3

RED Code: 3-1-1

Current RPP Opinion:

Distrib.: SBD, AZ, NM, NV

Jep. Man.: "se DMoj (near Needles, San Bernardino Co.); to sw UT, AZ"

Quads: 172C, 172D

Habitats: ?

Elevation: 150-150 meters

Life Form: Perennial herb

Blooming: Apr-May

Known in CA only from one collection near Needles; possibly a waif in CA. See Proceedings of the American Academy of Arts and Sciences 13:367 (1878) for original description, and American Midland Naturalist 37:466 (1947) for revised nomenclature.

NOTE: G. Clifton (2/6/96): "The plant that was called this in UT, Barneby named *A. holmgreniorum*. It may not be a waif in CA, because it is fairly common near Chloride, AZ, which is not too far away."
S. Boyd (2/11/99): "Only CA collection we have at RSA is an early M.E. Jones specimen from near Needles."

D. Silverman (SDNHM herbarium search): "No CA records, 2 AZ but one is suspect."