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SOME WESTERN SPECIES OF LATHYRUS.

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In connection with economic investigations of species of *Lathyrus* it has been necessary to study some western species critically. Several of these species show wide variation in the characters of the leaflets, stipules and also of the tendrils, so that such differences do not justify the valuation which some botanists have placed upon them. Pubescence when present seems on the other hand to be a fairly stable characteristic, but now and then specimens occur which apparently are glabrous forms of species usually pubescent.

***Lathyrus ochropetalus*, n. sp.**

Perennial, wholly glabrous, slightly glaucous; stems slender, angled or very narrowly winged, 1-1.5 m. high; leaves with 3 to 10 mostly 8 leaflets and well developed tendrils; leaflets scattered, membranaceous, not flaccid, ovate-lanceolate, acute, cuspidate, green above, pale beneath, shortly petiolulate, 3-5 cm. long; stipules large, ovate, subentire; peduncles shorter than the leaves; racemes mostly 7-13 flowered; pedicels as long as the calyx-tube; calyx wholly glabrous, the tube 5 mm. long, the two upper teeth short and broadly triangular, the lateral ones oblong-lanceolate, acute, as long as the tube, the ventral lobe longer and narrower; corolla 15 mm. long, pale ochroleucous but drying darker; pods linear, nearly straight, 3 cm. long, pendent; seeds globose, bright brown, the linear hilum nearly as long as the diameter.

Specimens examined:

- Washington: Seattle, *Piper* No. 482 (type sheet 218,905 in U. S. National Herbarium); Olympia, *Henderson* No. 2348.
Oregon: Roseburg, *Cusick* No. 4159; Myrtle Point, *Holzinger* June 5, 1893; Antelope Creek, Jackson County, *Applegate* No. 2361.

This species occurs in open woodlands often with *L. polyphyllus* Nutt. It has been referred to both *L. sulphureus* Brewer and *L. ochroleucus*

Hook., but the former has coriaceous or subcoriaceous leaflets and ciliate calyx, while the latter has fewer leaflets always obtuse.

***Lathyrus ochropetalus holochlorus*, n. subsp.**

Leaflets very thin, green on both sides; flowers cream-colored.

Hills south of Corvallis, Oregon, *H. C. Gilbert* No. 115, May 2, 1916.
Type sheet No. 719,814 in U. S. National Herbarium.

***Lathyrus peckii*, n. sp.**

Loosely pubescent throughout; stems slender, prominently angled, 60-90 cm. high; leaves with 2 or 3 widely separated pairs of leaflets, and well developed tendrils; stipules ovate, sinuate-dentate, acute at each end, the lower lobe only one-fourth as long as the upper; leaflets elliptic-lanceolate to broadly lanceolate, cuspidately acute, subacute at base, membranaceous, pubescent on both sides, paler beneath, 10-15 mm. long; peduncles exceeding the leaves about 5-flowered; pedicels pubescent as long as the calyx; calyx glabrous except the ciliation, the 2 upper teeth short, broadly triangular, the lateral and ventral much longer, lanceolate; corolla apparently violet, 15-18 mm. long; ovary puberulent; full grown pods linear 3-3.5 cm. long.

In thickets, Harbor, Curry County, Oregon, *M. E. Peck* No. 4008, July 31, 1913.

Seemingly unconnected with any described form, but simulating closely *L. lanceolatus* Howell, from which it differs in its fewer leaflets, broad stipules and marked pubescence.

***Lathyrus coriaceus aridus*, n. subsp.**

Stems erect 20-30 cm. high, angled; stipules very narrow; leaflets linear to linear-lanceolate, 4-7 cm. long, finely puberulent on both sides; tendrils simple; flowers 9-12 mostly 10 mm. long; calyx puberulent or rarely glabrous.

The subspecies differs essentially from the species in its narrower leaflets, simple tendrils and smaller flowers.

Specimens have been examined as follows:

Washington: Falcon Valley, *Suksdorf* April 28, 1885.

Oregon: Black Butte, Crook Co., *Cusick* No. 2814; type, sheet 444,540 in U. S. National Herbarium. Squaw Creek, *Cusick* No. 2659; Farewell Bend, *Leiberg* No. 433; the calyx of this specimen glabrous, but the leaves puberulent.

California: Big Trees, Stanislaus Forest, *Eggleston* No. 9212; Yosemite National Park, *Hall* No. 8883; Rochester, *Parish* May 28, 1891; Quincy, *Heller* No. 10851; Wood Canon, Grapevine Mts., *Coville & Funston* No. 1760.

The last named specimen was published as *L. palustris* in the Botany of the Death Valley Expedition, and has larger flowers than any other specimen, namely 12 mm. long. Hall's specimen is said to have the corolla white, but rose-veined on the standard, and is labeled *L. graminifolius*

(Wats.) White, but that species has glabrous leaflets and calyx and appears not to reach California. The other specimens were unnamed.

In the original description of *Lathyrus oregonensis* White, Bul. Torr. Bot. Cl. 21:456, 1894, two specimens were cited. The first of these, Cusick's No. 1372 from Union County, Oregon, differs from the type of *L. coriaceus* White, namely Watson's No. 297 from the Wasatch Mts., Utah, only in having narrowly lanceolate leaflets. In pubescence and in floral characters the two are indistinguishable. The slight difference in the width of the leaflets is of no significance as evidenced by numerous recent specimens which form a complete connecting series.

The second specimen cited under the original description of *L. oregonensis* is from Falcon Valley, Washington, collected by Suksdorf April 28, 1885. On the sheet are three specimens, one with narrowly linear leaflets, the other two with narrow lanceolate or linear-lanceolate leaflets. In all the tendrils are simple and the flowers only 9 mm. long, smaller than those of the Cusick specimen.

Inasmuch as Cusick's Oregon specimen is cited first and the specific name is derived therefrom, it seems necessary to regard it as the type of *L. oregonensis*, though the author of the name wrote "type" on both sheets. The Cusick specimen is certainly the same thing as *L. coriaceus* White. The Suksdorf plant is distinguished by its very narrow leaflets, simple tendrils and smaller flowers, and is to be classed with the California specimens.

***Lathyrus nuttallii lanceolatus*, n. comb.**

L. lanceolatus Howell Fl. N. W. America 158, 1898.

For the privilege of examining the type specimen collected at Glendale, Oregon, June 6, 1895, *Howell* No. 1923, I am indebted to Prof. A. R. Sweetser of the University of Oregon. In the original description Howell calls attention to the scattered dark glands on the stem. These glands are however not a specific character as they occur on most of the western species, even on *L. maritimus*. They may be found on any of the green parts but sometimes very sparingly. Each gland consists of an ellipsoid brown secreting cell borne on a shorter colorless stalk cell. In view of their general occurrence it is strange they have so generally been overlooked.

Howell's specimen is not exactly matched by any other examined. The outstanding features of the plant are the membranous oblong or oblong-lanceolate acute cuspidate leaflets and the sparse soft pubescence which occurs on the calyx, the upper part of the stem and on the under side of the leaflets; stipules lanceolate, subentire; ventral calyx tooth subulate not "setaceous"; corolla 15 mm. long.

In appearance the plant is closely matched by another Glendale specimen collected by M. E. Jones, June 19, 1902, but that is wholly glabrous except the ciliation of the calyx on which characters it would naturally be referred to *L. pauciflorus*.

Other specimens that closely approach Howell's type are the following, all referred to *L. nuttallii* Wats.:

Lake of the Woods, Oregon, *Coville & Leiberg* No. 48;

Klamath Valley, Oregon, *Cronkhite* No. 15;

Mount Rainier, Wash., *Flett* No. 1261;

Colby, Butte Co., Cal., *Mrs. R. M. Austin* No. 702.

On the whole we would consider *L. lanceolatus* at best a subspecies of *L. nuttallii*.

***Lathyrus pauciflorus* Fernald.**

Lathyrus pauciflorus, like some other species of the genus, has both broad and narrow leafed variations. The latter especially have been very puzzling to students as evidenced by the numerous names which appear on the labels of specimens. Along with the variation of the leaflets there is a corresponding variation in the stipules, so that broad leaflets are usually associated with broad stipules and narrow leaflets with narrow stipules.

There is also wide variation in the size of the flowers, depending in part on where the plant grew. In normal plants of *L. pauciflorus* in Eastern Washington the flowers are about 20 mm. long, but in starved specimens from arid situations they are only 15 mm. long. It is evident therefore that the size of the corolla is a character whose value can easily be exaggerated. In general, however, the Mexican and Arizonan forms of the species as here interpreted have for the most part smaller flowers than the northern forms.

From a study of the extensive series of material which has accumulated in the National Herbarium it seems most logical to consider *L. pauciflorus* a variable species and to include in it as subspecies the plants described under the names *L. parvifolius* Watson, *L. utahensis* Jones, *L. pauciflorus tenuior* Piper and *L. brownii* Eastw. The principal distinguishing characters are displayed in the following key:

Flowers usually 18-20 mm. long.

Leaflets linear to linear-lanceolate *L. pauciflorus tenuior*.

Leaflets broader.

Leaflets elliptic to ovate-lanceolate, acute *L. pauciflorus*.

Leaflets oval to ovate, obtuse *L. pauciflorus utahensis*.

Flowers 12-16 rarely 20 mm. long.

Leaflets oval, elliptic or ovate *L. pauciflorus schaffneri*.

Leaflets linear to narrowly-oblong *L. pauciflorus brownii*.

In the cases of *tenuior* and *utahensis* there is scarcely room to question their merely subspecific rank, as the differences are slight and the intergrades numerous.

As regards *schaffneri* the case is more complex, as there is wide variation both in the form of the leaflets and in the size of the flowers. Among Mexican specimens, Pringle's No. 8810 might well be referred to typical

pauciflorus both on account of the size of the flowers and the form of the leaflets, while Purpus No. 3893 has the leaflets, of *utahensis* and the flowers a mere trifle smaller. On geographical grounds alone it would seem most probable that these two plants are merely extreme forms of *schaffneri*, and not southern extensions of the northern forms they so closely simulate. In exactly the opposite way starved forms of *pauciflorus* in Oregon and Washington become indistinguishable from the normal form of *schaffneri* as it occurs in Arizona and California. *Lathyrus brownii* is more variable in leaf form than its larger-flowered analogue *tenuior*, but it intergrades completely into *schaffneri*.

It would seem clear therefore that we have to deal with a widespread species possessing definite variations but also subject according to the environment to fluctuating variations that closely simulate the real variations. Any other interpretation makes it necessary either to provide additional names for some of the forms discussed or else involves the acceptance of overlapping or inconsistent geographical distribution.

Lathyrus pauciflorus Fernald Bot. Gaz. 19:335. 1894.

L. bradfieldianus A. Nelson Bot., Gaz. 54:411. 1912.

The typical form of this species occurs mainly in Washington, Oregon and Idaho, but it extends to Colorado. Normally the leaves are subcoriaceous in texture, but in shade plants, especially from west of the Cascade Mountains, are merely firm membranaceous. The type specimen in the Gray Herbarium is Piper No. 1487, from near Almota, Wash.

Specimens examined:

- Washington: Wawawai, *Piper* May 1896;
 Almota, *Piper* No. 2797, *Elmer* No. 308;
 Waitsburg, *Horner* May 1, 1897;
 Blue Mts., *Horner* No. 152;
 Western Klickitat County, *Suksdorf* No. 854;
 Near Wenache, *Whited* Nos. 1266, 1106, the latter approaching *tenuior*;
 Without locality, *Vasey* No. 257;
 Upper Nesqually Valley, *Allen* No. 132;
 Port Townsend, *Wilkes Exped.*, with unusually thin leaves.
- Oregon: Blue Mts., *Howell* May 20, 1885;
 Glendale, *M. E. Jones* June 19, 1902;
 Trow, Wallowa Forest, *Jardine* No. 238, a form approaching *tenuior*.
- Idaho: Lower Clearwater River, *Sandberg, MacDougal & Heller*
 Nos. 74 and 74a, the latter approaching *tenuior*;
 Juliaetta, *Henderson* No. 2738;
 Silver City, *Macbride* No. 927, type collection of *L. bradfieldianus*.
- Colorado: Mountains east of Gunnison, *L. F. Ward* No. 295, cited in the original description of *L. utahensis* Jones.

***Lathyrus pauciflorus utahensis*, n. comb.**

L. utahensis Jones Proc. Cal. Acad. Sci. n. ser. 2:678. 1895.

Apparently the only character to separate this from the species is that the leaflets are broader and obtuse, but mucronate as in typical *pauciflorus*.

The following specimens are in the National Herbarium:

- Utah: Ireland's Ranch, *Jones* No. 5441 1 (Duplicate type);
 City Creek Canon, *Jones* No. 1740;
 Red Rock Canon near Salt Lake City, *Rydberg* No. 6110;
 Manti National Forest, *J. A. Willey*, June 6, 1912;
 Near Salt Lake City, *Garrett* No. 229. This and the preceding are thin-leaved apparently shade plants.
- Arizona: Northern end of Carrizo Mts. *Standley* Nos. 7383, 7409; the specimens in fruit.
- Colorado: Parrott, *Baker, Earle & Tracy* No. 616;
 Lone Mesa, Montezuma Co., *Cary* No. 196;
- Oregon: Mountains near North Pine Creek, *Cusick* No. 2538;
 Union County, *Cusick* No. 756, distributed as *L. bolanderi* Wats.
- Washington: Walla Walla, *Shear* No. 1614.

In the original description, Jones cited Ward's No. 295 from mountains east of Gunnison, Colo., but the specimen of this number in the National Herbarium seems clearly typical *L. pauciflorus*. *Cusick's* No. 2538 was cited under the original description of *L. bradfieldianus* A. Nels.

***Lathyrus pauciflorus tenuior* Piper Contr. U. S. Nat. Herb. 11:378. 1906.**

L. parvifolius tenuior Piper Fl. Palouse Region 108. 1901.

L. tenuior Rydb. Fl. Rocky Mts. 528. 1917.

This subspecies has linear or lance-linear leaflets, but a complete series of forms connects it with the species. Here belong the following specimens:

- Washington: Almota, *Elmer* No. 52 (type);
 Wenas, *Griffiths & Cotton* No. 86;
 Wenache Mts., *Griffiths & Cotton* No. 129;
 Horse Lake west of Wenache, *Whited* No. 1107;
 Without locality, *G. R. Vasey* No. 258.
- Oregon: Blue Mts., *Sheldon* No. 153;
 Lost Prairie, Wallowa County, *Cusick* No. 2408;
 Cottonwood Creek, Lake County, *Eggleston* No. 7108;
 Rock Creek, Morrow County, *Leiberg* No. 77;
 Ochoco National Forest, *Ingram* May 10, 1912.
- Idaho: Little Potlatch River, *Sandberg, Heller & MacDougal* No. 383.

***Lathyrus pauciflorus schaffneri*, n. comb.**

L. parvifolius Wats. Proc. Am. Acad. 17:345. 1882. Not Roth 1797.

L. schaffneri Rydb. Mem. N. Y. Bot. Gard. 1:258. 1900.

The original specimen on which *L. parvifolius* Wats. is based was col-

lected in the San Miguelito Mts., San Luis Potosi, Mexico, by Schaffner. There are 10 sheets from Mexico in the National Herbarium which agree closely with the original description. The Mexican specimens are all rather tall plants with well developed tendrils, oval to ovate, acute or obtuse leaflets, and resemble *L. pauciflorus* very closely, but the flowers are nearly always slightly smaller, namely 12-18 mm. long, except in Pringle's specimen from Melepec, which has flowers 20 mm. long. Most of the Arizona and California specimens are dwarfed, being usually 15-25 cm. high with the leaflets mostly oval usually acute and the flowers 12-15 mm. long. Similar dwarfed specimens from as far north as Oregon, Klamath Falls, *Applegate* No. 2050, and Washington, Wenache Mts., *Cotton* No. 1275, agree well with the Arizona plants, but there seems every reason to believe that they are merely starved plants of *L. pauciflorus*, as dwarfing in other species also affects the size of the corolla. In the absence of any other distinguishing character, it seems most logical to reduce *L. schaffneri* to subspecific rank.

The following specimens are in the National Herbarium:

- Mexico: Cerro Verde, Oaxaca, *Purpus* No. 3226;
 Melepec, Hidalgo, *Pringle* No. 8818;
 Pachuca, Hidalgo, *Pringle* No. 7640;
 San Luis Potosi, *J. G. Schaffner* No. 608; *Parry & Palmer* No. 197;
 Chuichupa, Chihuahua, *Barber & Townsend*, July 17, 1899;
 State of Durango, *Rose* No. 2335;
 El Oro to Guanacevi, Durango, *Nelson* No. 4742;
 Cerro de Chicamole, Puebla, *Purpus* No. 3893;
 Alvarez, San Luis Potosi, *Palmer* No. 66.
 The last three specimens have the leaflets broad and obtuse, thus resembling *utahensis*.
- Arizona: Massatzal Mts., *Dr. Smart* No. 175;
 San Francisco Mts., *MacDougal*, June 1891;
 Without locality, *Palmer* in 1869.
- New Mexico: Carrizo Mts., *Dr. W. Matthews* in 1892.
- Colorado: Without locality, *Eastwood* No. 4;
 Clear Creek, *Wolf* No. 187.
- California: Oro Fino, Sisyou Co., *Butler* No. 1212;
 Water Canon, Tehachapi Mts., Kern Co., *Abrams & McGregor* No. 443, both narrow, and broad-leaved forms on same sheet; the narrow-leaved plants match well the type collection of *L. brownii*.
- Lower California: Without locality, *Palmer* No. 89 in 1888.

***Lathyrus pauciflorus brownii*, n. comb.**

L. brownii Eastw. Bul. Torr. Bot. Cl. 30: 491. 1903.

This plant closely simulates *tenuior*, but the flowers are smaller and the leaflets even more variable. On small plants, as some of those of the type collection, the tendrils are simple and much reduced.

Specimens Examined:

California: Mt. Shasta, *Brown* No. 391 (type collection). Plants 15-30 cm. high, Leaflets narrowly oblong to linear, 2-3 cm. long, 2-5 mm. wide.

Mt. Eddy, *Heller* No. 12096. Plant 60 cm. high; leaflets 2-4 cm. long, 2-7 mm. wide.

Water Canyon, Tehachapi Mts., *Abrams & McGregor* No. 443; both narrow and broad-leafed forms on the same sheet, the latter referred to *schaffneri*. The narrow-leafed forms match exactly some of the plants of the type collection of *brownii*.

Castella, *Piper* No. 6367;

Butte Co., *Mrs. R. M. Austin* No. 1169;

Greenhorn Mts., Siskyou Co., *G. D. Butler* No. 1346.

The last three specimens have narrowly linear leaflets, 2-6 cm. long and 1.5-2 mm. wide. The pods on *Piper* No. 6367 and *Austin* No. 1169 are broadest above the middle as also in *Abrams & McGregor* No. 443. This character may be of deeper significance, which only good complete material will disclose.

Oregon: Swan Lake Valley, *Applegate* No. 147;

Klamath River, *Applegate* No. 2073;

Friend, Wasco Co., *C. E. Hill* June 29, 1917.

All the Oregon specimens have narrowly linear leaflets 2-5 cm. long, 2-4 mm. wide.

Arizona: China Valley, *Toumey* No. 550;

Oracle, *M. E. Jones* Aug. 28, 1903;

Flagstaff, *MacDougal* No. 41;

Black Mesa Forest Reserve, on Apache-Verde road, *Corville* No. 1073.

These Arizona specimens were labelled *L. arizonicus* Britt. and *L. graminifolius* White. The leaflets are from 5-7 cm. long and 1.5-3 mm. wide.



Piper, Charles V. 1918. "Some western species of *Lathyrus*." *Proceedings of the Biological Society of Washington* 31, 189–196.

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