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New combinations in *Acmispon* (Leguminosae, Loteae)

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Seven new combinations in *Acmispon* Raf. are proposed. The diagnostic characters and tribal position of the genus are discussed. A complete list of accepted *Acmispon* species is presented. The genus comprises eight species belonging to two sections. Seven species occur in North America, with the center of diversity along the west coast, primarily in California. One species is endemic to Chile.

Key words: *Acmispon*, Leguminosae, Loteae, *Lotus*, taxonomy

INTRODUCTION

The tribe Loteae of the family Leguminosae (or Fabaceae) comprises about 300 species and has main centers of diversity in the Mediterranean region and California. The North American species form four natural groups, which greatly differ from each other (Isely 1981, Kramina & Sokoloff 1997). Although the majority of current authors include all North American species in the genus *Lotus* (Isely 1981, Polhill 1981, 1994, Wiersema *et al.* 1990, Kirkbride 1994, Wielgorskaya 1998), I consider that each of the four North American groups should be classified in a separate genus (Sokoloff 1998, 1999). These endemic New World genera are *Hosackia* Douglas ex Benth., *Ottleya* D.D.Sokoloff, *Acmispon* Raf., and *Syrmatium* Vogel.

The genus *Acmispon* was described by Rafinesque (1832), who included within it a single North American species, *Lotus sericeus* Pursh. The correct name for the species in the genus *Acmispon* is *A. americanus* (Nutt.) Rydb. A comparative morphological study of the species belonging to the tribe Loteae has revealed that it is reasonable to include eight species in *Acmispon* (Sokoloff 1998). The nomenclatural combinations have only been published, however, for two of these eight species. This paper aims to publish the nomenclatural combinations for the other species, to indicate the diagnostic features of *Acmispon*, and to discuss the tribal position of the genus.

MATERIAL

The herbarium material of New World and Old World Loteae was studied to establish the diagnostic features of *Acmispon*. The collections of

the Herbaria A, CAS, DS, E, G, GH, K, LE, LL, MHA, MW, P, PCU, TEX, US, and YALT were used. All New World and Old World genera of Loteae and all American species accepted by Wiggins (1980), Isely (1981), and Kirkbride (1994) were studied.

DIAGNOSTIC FEATURES AND TRIBAL POSITION OF *ACMISPON*

As defined here, *Acmispon* corresponds to *Lotus* section *Microlotus* Benth. of Ottley's (1944) classification and to *Lotus* group *Microlotus* of Isely's (1981) classification. The following features distinguish *Acmispon* from the Old World genus *Lotus s. str.*

1. In *Lotus*, the majority of species possess a very distinctive type of leaf structure. The leaf is sessile, generally pinnate, and bears five leaflets (there are a few exceptions), the two proximal leaflets often resembling stipules (the true stipules are reduced to very small glands). The leaves of *Acmispon*, in contrast with *Lotus*, often possess a short petiole and the lower leaflets never resemble stipules.
2. In *Lotus* (and in *Dorycnium*), the margins of the standard claw are usually thick or even possess distinct folds on the left and right inner sides. *Acmispon* usually possesses flat, thin claws with slender, unfolded margins.
3. In *Acmispon*, the stylodium surface is smooth, whereas *Lotus s. str.* has a papillose stylodium. The same feature is the basic distinction between the Old World genera *Lotus* and *Dorycnium*. It is very difficult to indicate any other constant diagnostic character for *Dorycnium*. In the *Coronilla* group, which is included now in Loteae (Lassen 1989, Polhill 1994), the genus *Coronilla* differs from the related *Securigera* in the papillose stylodium (Lassen 1989).
4. In *Acmispon*, the micropyles of the ovules are oriented towards the proximal side of the ovary (*micropylae inferae*). In *Lotus* (and in *Dorycnium*), the ovules are alternately oriented in the ovary, i.e. the micropyles of two nearest ovules are oriented in the opposite directions (*micropylae alternantes*).
5. With the exception of *Acmispon maritimus*, the genus differs from *Lotus s. str.* in the structure of the testa vascular system (see Arambarri 1994). Both *Acmispon* and *Lotus* seeds have pre-chalazal vascular bundles running from the hilum to chalaza in the inner testa layer. In *Acmispon* (except *A. maritimus*), there are also two recurrent vascular bundles that are connected to the pre-chalazal vascular bundle and are situated near the hilum. Recurrent vascular bundles are absent in Old World *Lotus* (Arambarri 1994).
6. Pollen grains have three apertures in *Lotus* and four in *Acmispon* (*see* Burkart *et al.* 1972, Crompton & Grant 1993, Díez & Ferguson 1994). More than 50 species of *Lotus* have been studied (Díez & Ferguson 1994), showing this distinction to be significant. The pollen of *Lotus* is indistinguishable from the pollen of *Dorycnium* and *Tetragonolobus* (Díez & Ferguson 1994).
7. Exine ornamentation is rugulate-fossulate or striate-rugulate in *Acmispon* and psilate-perforate in Old World *Lotus* (Díez & Ferguson 1994).

The differences between *Acmispon* and *Lotus* exceed those between *Lotus* and *Dorycnium* (Sokoloff 1998). If *Acmispon* is to be treated as a section or a subgenus of *Lotus*, the genus *Dorycnium* cannot be distinguished from *Lotus*. *Dorycnium*, however, is traditionally accepted as a separate genus by Old World botanists (Gillett 1958, Ball 1968, Demiriz 1970, Greuter *et al.* 1989).

Acmispon can also be easily distinguished from its New World allies. The genus differs from *Hosackia* in the ovules with *micropylae inferae* (not *alternantes*), annual (not perennial) habit, tetracolporate (not tricolporate) pollen, and stipules reduced to black glands (not membranous). *Ottleya* differs from *Acmispon* in the ovules with *micropylae alternantes* (not *inferae*), asymmetric (not zygomorphic) corolla, long wings, and a collar of hairs on the stylodium just below the stigma. *Syrmatium* is characterized by a peculiar indehiscent fruit, whereas in *Acmispon*, the fruit is always dehiscent. In addition, *Syrmatium* usually has long, narrow seeds (see Arambarri 1994).

Ottley (1944) considered section *Microlotus* (= gen. *Acmispon*) to be related to section *Simpe-*

teria (= gen. *Ottleya*). She accepted subgenus *Acmispon* within the genus *Lotus* for these two sections. Lassen (1989) postulated that the subgenus should be treated as a separate genus, *Acmispon*, and published a new combination, *Acmispon* sect. *Simpeteria*. He also transferred an African species, *Lotus roudairei* Bonnet, to section *Simpeteria*. It has been shown, however, that section *Simpeteria* greatly differs from section *Microlotus* and from *L. roudairei* (Kramina & Sokoloff 1997). A new genus, *Ottleya*, has been described for the members of section *Simpeteria* (Sokoloff 1999). Neither section *Simpeteria* nor *L. roudairei* can be included in the genus *Acmispon*.

Comparative morphological study of New World Loteae revealed that *Acmispon* is related to *Syrmatium* rather than to *Ottleya* and *Hosackia*. Besides other features, similarity in micropyle orientation pattern seems to be significant.

There are only three genera in Loteae, which possess ovules with *micropylae inferae*, namely *Acmispon*, *Syrmatium*, and *Tripodion* (Sokoloff 1998). The monotypic Old World genus *Tripodion* greatly differs from *Acmispon* and *Syrmatium* in a number of significant characters. *Tripodion* has leaves with the terminal leaflet greatly exceeding the lateral ones, a calyx tube with distinctive comissural veins and inflated with fruit, a hirsute standard, a thin pericarp without a sclerenchyma layer, seeds with large papillae, pollen with three apertures, and a chromosome number of 2n = 16 (for review, *see* Tikhomirov & Sokoloff 1996). In *Acmispon* and *Syrmatium*, the leaflets are almost equal (or the distal leaflet slightly exceeds the lateral ones), the calyx tube is never greatly inflated, the standard is always glabrous, the pericarp always has a sclerenchyma layer, the seeds are without large papillae, pollen is 4- or 5-colporate, and the chromosome numbers are 2n = 14 or 2n = 12. Thus, it is difficult to assume a close phylogenetic relationship between *Tripodion* and *Acmispon*. However, a similarity between *Tripodion* and *Acmispon* can be noticed in some vegetative characters. The species of both genera are annuals. Besides, in *Tripodion* and some *Acmispon*, the leaf has a very flat rachis and irregularly arranged leaflets. One side of the rachis usually bears fewer leaflets than the other. Thus, the leaves as a whole usually are asymmetric.

Isely (1981), following Ottley (1923), divided (in the key for species) his "Group *Microlotus*" into two subdivisions. The first subdivision included the species with flowers subsessile in leaf axes. Morphological study revealed that each flower belongs to a reduced axillary 1-flowered umbel with a shortened peduncle. The subdivision was first described as a genus, *Anisolotus* Bernh. (*see* Schlechtendal 1838).

The second subdivision included the species with one- to several-flowered axillary partial inflorescences (umbels) on elongated peduncles. In contrast to the first subdivision, the foliage leaf is inserted at the top of the peduncle, just below the umbel. This leaf is usually described as a bract, but never possesses a flower in the axil (*see* Kramina & Sokoloff 1997). The type species of *Acmispon* belongs to this subdivision.

I accept the subdivisions as two sections named *Anisolotus* and *Acmispon*. The sections differ from each other not only in the flower arrangement pattern, but also in the combination of significant taxonomic characters (Table 1).

The section *Anisolotus* is undoubtedly a natural group. In the section *Acmispon*, *A. maritimus* differs from the two other species (*A. americanus* and *A. parviflorus*), and resembles section *Anisolotus* in some features.

Acmispon maritimus, in contrast with other *Acmispon*, usually has more than one flower in the umbel, at least at the upper umbels. On the other hand, some of the lower umbels can be 1-flowered and even situated on shortened peduncles. This particular case resembles the inflorescences of section *Anisolotus*. The rachis is flat in *A. maritimus* and in section *Anisolotus*, while it is not or only slightly flat in *A. parviflorus* and *A. americanus*. The pollen grains of *A. parviflorus* and *A. americanus* are slightly smaller in size than those of sect. *Anisolotus* and *A. maritimus* (*see* Díez & Ferguson 1994). *Acmispon americanus* and *A. parviflorus* also differ from *A. maritimus* in the shape of the foliage leaf on the peduncle. Finally, *A. maritimus* differs from the rest of the genus in the absence of testa recurrent vascular bundles, the often inconspicuous radicular lobe of the seed (Arambarri 1994), and the obtuse keel. Perhaps the species should be included in a separate section or subsection.

TAXONOMIC TREATMENT

The nomenclature of the genus, brief morphological description of *Acmispon*, and a complete list of the species with proposed new combinations are given below.

Genus *Acmispon* Raf.

Atlantic J.: 144. 1832; Lassen, 1986, Willdenowia 16: 107, *p.p.* — *Lotus* subgen. *Acmispon* (Raf.) Ottley, Univ. California Publ. Bot. 10: 197. 1923, *p.p.* — *Hosackia* subgen. *Acmispon* (Raf.) Abrams, Ill. Fl. Pac. States 2: 538. 1944. — Type: *Acmispon sericeus* Raf., Atlantic J.: 145. 1832, *nom. illeg.* (*A. americanus* (Nutt.) Rydb.).

Hosackia Douglas ex Benth. in Lindl., Edward's Bot. Reg. 15: tab. 1257. 1829, *p.p., excl. lectotypo.*

Lotus subgen. *Anisolotus* (Bernh.) Ottley in Jeps., Manual Flow. Pl. Calif.: 550. 1925, *p.p.* — *Hosackia* subgen. *Anisolotus* (Bernh.) Abrams, Ill. Fl. Pac. States, 2: 538. 1944, *p.p.*

Lotus Group VI. *Microlotus* Isely, Mem. New York Bot. Garden 25: 133. 1981.

Lotus subgen. *Deflectostylus* Callen, Can. J. Bot. 37: 164. 1959, *nom. illeg., p.p., excl. typo.*

Trigonella auct. p.p. non L.: Nutt., 1818, Gen. N. Amer. Pl. 2: 120.

Lotus auct. p. min. p. non L.: Greene, 1890, Pittonia 2: 137; Polhill, 1981, Adv. Leg. Syst. 1: 374.

Erect to prostrate annuals. Leaves pinnate, with short petiole or, less often, almost sessile. Leaflets 1–7. Stipules reduced to small glands. Umbels 1-flowered or (in *A. maritimus*) several-flowered. Peduncle elongated with foliage leaf just below umbel or shortened without any foliage leaf. Bracts reduced to small glands resembling stipules of foliage leaves. Bracteoles absent. Hypanthium shorter than the calyx tube. Calyx tube not inflated, teeth acute, almost equaling or much exceeding tube. Corolla zygomorphic, yellow to red or pink. Petals glabrous. Standard with a distinct, thin claw. Keel rostrate or, less often, obtuse. Wings almost equaling the keel. Ovules with micropyles oriented towards proximal side of ovary. Stylodium smooth, without ventral or dorsal tooth. Fruit dehiscent, straight, pubescent or almost glabrous. Pericarp with a sclerenchyma layer consisting of oblique fibres and without brown cells in endocarp. Seeds without large papillae, usually with distinct recurrent vascular bundles at testa inner layer. Pollen with 4 apertures, with exine ornamentation rugulate-fossulate or striate-rugulate. 2n = 12,14.

Section *Acmispon*

Type: *Acmispon sericeus* Raf. (generitype).

Lotus sect. *Microlotus* Benth., Trans. Linn. Soc. London 17: 367. 1837, *p.p.* — Lectotype (designated here): *Lotus micranthus* Benth., Trans. Linn. Soc. London 17: 367. 1837 (*Acmispon parviflorus* (Benth.) D.D.Sokoloff, *comb. nova*).

Hosackia subgen. *Psychopsis* Nutt. ex Torr. & A.Gray, Fl. N. Amer. 1: 327. 1838. — *Psychopsis* Nutt. *in sched., p.p.* — Lectotype (designated here): *Hosackia purshiana* Benth. in Lindl., Edward's Bot. Reg. 15: *sub tab.* 1257. 1829 (*Acmispon americanus* (Nutt.) Rydb.).

Table 1. Diagnostic characters of the sections of *Acmispon.*

Characters	Sections	
	Acmispon	*Anisolotus*
Leaves greatly asymmetric	Usually not	Usually yes
Peduncles of partial inflorescences	Usually elongated	Shortened
Foliage leaf at the peduncles of upper partial inflorescences	Present	Absent
The processes of the keel and wings, that join these petals (*see* Ottley 1923 for discussion and illustrations)	Small, obtuse	Large, nearly triangular
Fruit width	1–2 mm	2–4 mm
Seeds	Globose to oblong, not flattened	Variable in shape, from almost round to angular, asymmetric, flattened
Exine ornamentation (according to Díez & Ferguson 1994)	Rugulate-fossulate	Striate-rugulate
Chromosome number (according to Grant 1995, 1997)	2n = 14	2n = 12

1. Acmispon maritimus (Nutt.) D.D. Sokoloff, *comb. nova*

Basionym: *Hosackia maritima* Nutt. in Torr. & A. Gray, Fl. N. Amer. 1: 326. 1838. — *Lotus salsuginosus* Greene, Pittonia 2: 140. 1890. — *Anisolotus maritimus* (Nutt.) A. Heller, Muhlenbergia 8: 48. 1912. — Protologue: Clayey soils and on broken declivities near the sea, St. Barbara, March. Lectotype (designated here; *see* also Isely 1981: 244): [U.S.A.,] N. Calif[ornia]. *Nuttall s. n.* (K!).

Lotus humilis Greene, Pittonia 2: 140. 1890. — *Hosackia humilis* (Greene) Abrams, Ill. Fl. Pac. States 2: 545. 1944.

Distribution. U.S.A. (California, Arizona), Northern Mexico.

2. *Acmispon parviflorus* (Benth.) D.D. Sokoloff, *comb. nova*

Basionym: *Hosackia parviflora* Benth. in Lindl., Edward's Bot. Reg. 15: *sub tab.* 1257. 1829. — *Lotus micranthus* Benth., Trans. Linn. Soc. London 17: 367. 1837. — *Anisolotus parviflorus* (Benth.) A. Heller, Muhlenbergia 3: 100. 1907. — Protologue: [U.S.A.] Northwest coast of America. Lectotype (designated here): "Common on soils when wood has been destroyed by fair. Fl. white. May-July. Columbia river", *D.D[ouglas]. s. n.* (K!).

Distribution. U.S.A. (California, Oregon, Washington, Nevada), Canada (British Columbia).

3. Acmispon americanus (Nutt.) Rydb.

Bull. Torrey Bot. Club 40: 45. 1913. — *Lotus sericeus* Pursh, Fl. Am. Sept. 2: 489. 1814, *non* Moench, 1802, *nec* DC., 1813. — *Trigonella americana* Nutt., Gen. N. Amer. Pl. 2: 120. 1818. — *Hosackia purshiana* Benth. in Lindl., Edward's Bot. Reg. 15: *sub tab.* 1257. 1829, *nom. illeg.* — *Acmispon sericeus* Raf., Atlantic J. 144. 1832, *nom. illeg.* — *Lotus americanus* (Nutt.) Bisch., Linnaea 14 (App.): 132. 1840, *non* Vell. 1825. — Protologue: [U.S.A.] on the banks of the Missouri.

Hosackia unifoliolata Hook., Fl. Bor. Amer. 1: 135. 1833. — *Lotus unifoliolatus* (Hook.) Benth., Trans. Linn. Soc. London 17: 368. 1837; Kartesz & Gandhi, 1991, Phytologia 71: 95.

Hosackia elata Nutt. in Torr. & A. Gray, Fl. N. Amer. 1: 327. 1838. — *Acmispon elatus* (Nutt.) Rydb., Bull. Torrey Bot. Club 40: 46. 1913.

Hosackia floribunda Nutt. in Torr. & A. Gray, Fl. N. Amer. 1: 327. 1838. — *Acmispon floribundus* (Nutt.) A.Heller, Cat. N. Amer. Pl. ed. 3: 205. 1914 (*non vidi*).

Hosackia mollis Nutt. in Torr. & A. Gray, Fl. N. Amer. 1: 327. 1838. — *Acmispon mollis* (Nutt.) A.Heller, Muhlenbergia 9: 62. 1913.

Hosackia pilosa Nutt. in Torr. & A. Gray, Fl. N. Amer. 1: 327. 1838. — *Acmispon pilosus* (Nutt.) A.Heller, Muhlenbergia 9: 64. 1913.

Lotus helleri Britton, Bull. Torrey Bot. Club 17: 312. 1890. — *Acmispon helleri* (Britton) A.Heller, Cat. N. Amer. Pl. ed. 3: 205. 1914 (*non vidi*).

Acmispon aestivalis A.Heller, Muhlenbergia 9: 63. 1913.

A. glabratus A.Heller, Muhlenbergia 9: 65. 1913.

A. gracilis A.Heller, Muhlenbergia 9: 61. 1913.

A. sparsiflorus A.Heller, Muhlenbergia 9: 63. 1913.

Lotus purshianus Clem. & E.G. Clem., Rocky Mt. Flowers: 183. 1914 (*non vidi*); Isely, 1981, Mem. New York Bot. Garden 25: 182 (as *Lotus purshianus* (Benth.) Clem. & E.G. Clem.).

Distribution. U.S.A. (from Pacific to Atlantic States), Northern Mexico, Southern Canada.

The nomenclature of this species in the genera *Lotus* and *Hosackia* was discussed by Isely (1981) and Kartesz and Gandhi (1991).

Section ***Anisolotus*** (Bernh.) D.D. Sokoloff, *comb. nova*

Basionym: *Anisolotus* Bernh., Sem. Hort. Erf.: *sine pag.* 1837 (*non vidi*); Schltdl. 1838, Linnaea 12, Litt: 75. — Lectotype (designated by Ottley 1944): *Anisolotus anthylloides* Bernh., Sem. Hort. Erf.: *sine pag.* 1837, *nom. illeg.* (*Acmispon subpinnatus* (Lag.) D.D. Sokoloff, *comb. nova*).

Anthyllis sect. *Cornicina* DC., Prodr. 2: 170. 1825, *p. min. p., excl. typo.*

Lotus sect. *Microlotus* Benth., Trans. Linn. Soc. London 17: 367. 1837, *p.p., excl. lectotypo.*

4. Acmispon wrangelianus (Fisch. & C.A. Mey.) D.D. Sokoloff

Taxon 48: 58. 1999. — *Lotus wrangelianus* Fisch. & C.A. Mey., Index Sec. Sem. Hort. Petrop.: 41. 1836. — *Anisolotus wrangeliana* (Fisch. & C.A. Mey.) Bernh., Sem. Hort. Erf.: *sine pag.* 1837 (*non vidi*); Schltdl. 1838, Linnaea, 12, Litt: 75. — *Hosackia wrangeliana* (Fisch. & C.A. Mey.) Torr. & A. Gray, Fl. N. Amer. 1: 326. 1838. — *Lotus subpinnatus* Lag. var. *wrangelianus* (Fisch. & C.A. Mey.) Jeps., Fl. W. Mid. Calif., ed. 1.: 303. 1901 (*non vidi*). — Lectotype (designated by Sokoloff 1999): [U.S.A.,] in California prope coloniam Ross[icam], 1834, *Wrangel 2173* (LE!).

Lotus subpinnatus auct. non Lag.: Ottley, 1923, Univ. California Publ. Bot. 10: 222, *quoad pl. Calif.*

Distribution. U.S.A. (California).

5. Acmispon brachycarpus (Benth.) D.D. Sokoloff*, comb. nova*

Basionym: *Hosackia brachycarpa* Benth., Pl. Hartw.: 306. 1848. — *Lotus humistratus* Greene, Pittonia 2: 139. 1890. — *Anisolotus brachycarpus* (Benth.) Rydb., Bull. Torrey Bot. Club 33: 144. 1906. — Type: [U.S.A.] California, *Hartweg 1703* (isotypes LE!, GH No. 61023!, K!).

Lotus trispermus Greene, Erythea 1: 258. 1893. — *Anisolotus trispermus* (Greene) Wooton & Standl. Contr. U.S. Nat. Herb. 16: 135. 1913.

Distribution. U.S.A. (California, Oregon, Nevada, Arizona, Utah, New Mexico, Idaho), Northern Mexico.

6. Acmispon subpinnatus (Lag.) D.D. Sokoloff, *comb. nova*

Basionym: *Lotus subpinnatus* Lag., Gen. Sp. Pl.: 23. 1816. — *Anisolotus anthylloides* Bernh., Sem. Hort. Erf.: *sine pag.* 1837 (*non vidi*); Schltdl., 1838, Linnaea 12, Litt: 75. — *Hosackia subpinnata* (Lag.) Torr. & A. Gray, Fl. N. Amer. 1: 326. 1838. — *Anisolotus subpinnatus* (Lag.) Lassen, Svensk Bot. Tidskr. 91: 249. 1998. — Protologue: Talcahuano, Chile. Type in MA(?).

Anthyllis chilensis DC., Prodr. 2: 171. 1825.

Anisolotus poeppigiana Bernh., Sem. Hort. Erf.: *sine pag.* 1837; Schltdl., 1838, Linnaea 12, Litt: 75. — *Dorycnium ambiguum* Poepp. ex Bernh., Sem. Hort. Erf.: *sine pag.* 1837, *nom. altern.*; Schltdl., 1838, Linnaea 12, Litt: 75: 76.

Dorycnium hirtum Poepp. ex Bernh., Sem. Hort. Erf.: *sine pag.* 1837; Schltdl., 1838, Linnaea 12, Litt: 75: 76.

Lotus macraei Benth., Trans. Linn. Soc. London 17: 367. 1837.

Distribution. Chile.

7. Acmispon rubriflorus (Sharsm.) D.D. Sokoloff, *comb. nova*

Basionym: *Lotus rubriflorus* Sharsm., Madroño 6: 56. 1941. — Type: [U.S.A., California,] Sparse grassland in open stand of *Quercus Douglasii*, associated with *Lotus subpinnatus*, *L. humistratus*, *Orthocarpus attenuatus*, *Microseris linearifolia*, *Pentachaeta exilis* and other vernal annuals. Rolling hills at north end of Adobe Valley, Stanislaus County, Mount Hamilton Range, altitude 1 600 feet, April 22, 1936 *A. M. Carter & H. K. Sharsmith 3544* (holotype UC, fragment of type US No. 1827202; isotypes DS No. 292310!, K!).

Distribution. U.S.A. (California). A rare species.

8. Acmispon denticulatus (Drew) D.D. Sokoloff, *comb. nova*

Basionym: *Hosackia denticulata* Drew, Bull. Torrey Bot. Club 16: 151. 1889. — *Lotus denticulatus* (Drew) Greene, Pittonia 2: 139. 1890. — *Anisolotus denticulatus* (Drew) A. Heller, Muhlenbergia 7: 139. 1912. — Type: [U.S.A., California,] Humboldt Co., Bank of Mad River, 1888, *Chesnut & Drew* (UC, isotype NY).

Distribution. U.S.A. (California, Oregon, Washington, Idaho, Utah), Canada (British Columbia).

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