

龙胆科獐牙菜属新分类纲要*

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摘要: 獐牙菜属是龙胆科中的一个属, 广泛分布于亚洲、北美洲、欧洲和非洲。本文报道獐牙菜属下的两个新组 (sect. *Montana* 和 sect. *Echinulata*) 和七个新系 (ser. *Repentes*, ser. *Kilimandscharicae*, ser. *Corymbosae*, ser. *Japonicae*, ser. *Swertopsis*, ser. *Pumilae* 和 ser. *Abyssinicae*)。同时对獐牙菜属中的一些类群进行了分类修订, 本分类纲要将被獐牙菜属世界专著采用。

关键词: 分类纲要; 獐牙菜属; 龙胆科

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Nomenclatural Novelities in *Swertia* (Gentianaceae)

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Abstract: *Swertia* is one large genus of Gentianaceae with a wide distribution in Asia, North America, Europe and Africa. In this study, we reported two new sections (*Montana* and *Echinulata*) and seven new series (*Repentes*, *Kilimandscharicae*, *Corymbosae*, *Japonicae*, *Swertopsis*, *Pumilae*, and *Abyssinicae*). In addition, some species were reduced, recombined and newly established. These new taxonomic synopses will be used for a further worldwide monograph of this genus.

Key words: Taxonomic synopses; *Swertia*; Gentianaceae

Swertia is one of the large genera in the family Gentianaceae (Struwe and Albert, 2002). This genus occurs from Asia, Europe to Africa and North America (He *et al.*, 1994). In the past century, numerous new species were described under this genus or transferred from the other genera especially from China (He and Liu, 1980; He, 1988, 1994; He and Pringle, 1995). The circumscription of this genus is highly difficult because all phylogenetic analyses based on molecular data suggested that this genus is not monophyletic and some of the paralleling clades from the radiative diversification of some spe-

cies clustered with the multiple related genera (Yuan and Küpfer, 1995; Chassot *et al.*, 2001; Liu *et al.*, 2001; Hagen and Kadereit, 2002). This suggested that the traits, the rotate corolla and fringed nectaries, which were used to circumscribe the genus, may have derived from homoplastic evolutions due to the radiative diversifications or represented the ancestral states of the total family (Hagen and Kadereit, 2002). As inferred from molecular phylogenies (e. g. Yuan and Küpfer, 1995) and embryological studies (Xue *et al.*, 1999a, b), we found that sect. *Heteranthos* of this genus can be ex-

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cluded from the genus and elevated to a generic status based on its recognizable morphological distinctness; dimorphic plants and flowers and a cleistogamous pollination mode. However, up to now, morphological traits, which can be used to distinguish the other paralleling clades, need further examinations. Therefore, we tentatively follow the traditional generic circumscription of *Swertia* for the further infrageneric classification. Through examining thousands of specimens kept in the major herbaria within the past three decades, we recognized 168 species for this genus over the world. We classified these species into three subgenera, 11 sections and 11 series. Among them, sections *Montana* and *Echinulata*, and series *Repentes*, *Kilimandscharicae*, *Corymbosae*, *Japonicae*, *Swertopsis*, *Pumilae*, and *Abysinicae* were newly proposed for the first time. In addition, some taxonomic entities established previously for this genus or related genera were reduced or recombined. Although the currently circumscribed genus is still polyphyletic, these infrageneric entities seem to be monophyletic if assessed only based on the morphological similarity. Here we report these new taxonomic synopses established for *Swertia*. These taxa will be used for a further worldwide monograph, phylogenetic analyses and resource surveys related to this genus.

1 Subgen. *Swertia*

1.1 Sect. *Apterae* V. V. Pissjaukova

1.1.1 *Swertia cuneata* var. *asterocalyx* (T. N. He & S. W. Liu) T. N. He & S. W. Liu, comb. nov.

Swertia asterocalyx T. N. He & S. W. Liu, Acta Phytotax. Sin. **18** (1): 77, f. 2 (1980). Type: China, Xizang, Nyalam, 3 800–4 000 m, 5 Sept. 1972, Xizang Medic. Herb. Exped. 1825 (HNWP! —holotype; PE! —isotype).

Var. *asterocalyx* is distinguished from var. *cuneata* by flowers large; corolla 20–30 mm in diam., lobes 15–20 mm. Var. *cuneata* has small flowers; corolla 8–10 mm in diam., lobes 7.5–10(–12) mm. The species *Swertia cuneata* is characterized by calyx lobes

oblong-spathulate to elliptic, base narrowed, apex round and nectaries linear-oblong, radially elongated.

Distribution: China (SW Xizang).

2 Subgen. *Poephila* C. B. Clarke

2.1 Sect. *Frasera* (Walter) Knoblauch

2.1.1 *Swertia albicaulis* var. *modocensis* (St. John) T. N. He, comb. nov.

Swertia modocensis St. John, Amer. Midl. Naturalist **26**: 18 (1941). Type: United States, California, Lassen County, Madeline, gentle northeast facing slope, in rocky volcanic soil, among *Artemisia* and scattered *Juniperus occidentalis*, 4 500 ft., 8 June 1936, E. B. Babcock & G. L. Stebbins 1790 (UC! —holotype; GH! —isotype). Paratypes: California, Modoc County, in 1907, M. H. Manning (UC!), Shasta County, 17 May 1923, E. Bethel (SF, not seen); Oregon, July 1898, R. M. Austin & Bruce 2153 (UC!), Southern Oregon, between Merrill and Cottonwood, June 1901, H. W. Furlong, W. B. Greeley, M. Wilson et al. s. n. (UC!).

Swertia modocensis var. *adglabra* St. John, Amer. Midl. Naturalist **26**: 19 (1941). Type: United States, Oregon, Klamath County, June 1901, H. W. Furlong, W. B. Greeley, M. Wilson et al. s. n. (UC! —holotype).

Swertia sierrae St. John, Amer. Midl. Naturalist **26**: 16 (1941). Type: United States, California, Lassen County, Madeline, about two miles north of, gentle northeast facing slope, in rocky volcanic soil, among *Artemisia* and scattered *Juniperus occidentalis*, 4 500 ft., 8 June 1936, E. B. Babcock & G. L. Stebbins 1790 (GH!, UC! —isotypes). Paratypes: United States, N California, Willow Creek, Devils Garden, July 1898, R. M. Austin 418 (US!); Dry Lake, Modoc County, 31 May, 1897, E. I. Applegate 877 (US!); Oregon: Thomas Creek Ranger Station, Lake County, 1 570 m, June 29–30, 1911, W. W. Eggleston 5098 (NY!, US!); Stein's Mountain, 1 June, 1885, J. T. Howell (US!); near Warm Range, 1 500 m, Lake County, 26 July, 1896, F. V. Coville & J. B.

Leiberg 53 (US!).

Swertia shastaensis St. John, Amer. Midl. Naturalist **26**: 19 (1941). Type: United States, California, Mount Shasta, near Sheep Rock, 5 000 ft., June 1903, H. M. Hall & E. B. Babcock 4113 (UC! —holotype).

Frasera albicaulis var. *modocensis* (St. John) N. Holmgren in A. Cronquist et al., Intermountain Fl., Vasc. Pl. Intermountain West, U. S. A., **4**: 22 (1984).

Swertia modocensis and its variety var. *adglabra* are close to species group *S. albicaulis*, which includes six varieties, in having opposite stem leaves with white membranous margin, a narrow interrupted spike-like panicle, and oblong boat-shaped shortly fimbriate nectaries. Especially it is more similar to var. *albicaulis* and var. *cusickii*, but differs from both in corolla pale lavender, with dark purple streak, and also from the former in coronal scales entire to shallowly lacerate (in var. *albicaulis* corolla pale blue, usually not darker mottled; coronal scales deeply lacinate to near base into numerous setae), from the latter in whole plants puberulent and coronal scales short, 1.5–2.5 mm (in var. *cusickii* plants glabrous except for leaves puberulent at base and sometimes along midvein of abaxial surface; coronal scales long, 3–4 mm; corolla pure pale blue). However, the coronal scales (crown scales) of *S. albicaulis* group are deltoid to linearoblong, margin extremely variable from entire to deeply lacinate. Hence *Swertia modocensis* and var. *adglabra* are not necessary to maintain as a distinct species but as a variety.

Distribution: W United States (Oregon and California).

2.2 Sect. *Montana* T. N. He & S. W. Liu, sect. nov.

Herba perennis. Radix leviter carosa usque semilignosa, vel caulis inferior radices adventitias emittens. Flores 5-, raro 4-meri. Nectarium 1 in unoquoque lobo corollae. Stylus brevis usque absens. Semina longitudinaliter, dense et tenuiter corrugata vel corrugato-porcata. Pollinis granula admodum striata (sparse et tenuiter striata, striato-perfora-

ta, striato-microreticulata usque striato-reticulata).

Perennials, with slightly fleshy to semiwoody tap-root and some rootlets, or tap-root absent but stems trailing or stoloniferous with adventitious roots. Flowers 5-, rarely 4-merous. Nectary 1 per corolla lobe. Style short to absent. Seeds either many corrugate and wingless, with longitudinal, thin and dense corrugations or many corrugate and ridged, with irregular narrow membranous reticulate ridges. Pollen grains are subspheroidal, rarely prolate or subprolate; medium-, rarely small- or large-sized, size range 23.3–43.8 × 19.0–33.7 μm; colpi long or medium. The sexine ornamentation is essentially striate, varying from thinly, undulately striate & perforate to imperforate. The lina width is 0.17–0.30 μm. Chromosome number 2n=26, rarely 2n=20.

This section is characterized by perennials, with slightly fleshy to semiwoody tap-root or with adventitious roots from nodes of trailing or stoloniferous stems, nectary 1 per corolla lobe so that it conforms to the essential features of subgen. *Poephila*. In this subgenus it is similar to sect. *Poephila*, but differs by having seeds longitudinally densely and minutely corrugate-ridged and flowers usually 5-merous whereas the latter having seed coats almost smooth and sometimes winged at one or both end, flowers always 4-merous. Pissjaukova (1979) put some species of this section (*S. volkensis*, *S. subnivalis*, *S. scandens*, *S. macrosepala* and *S. keniensis*) in sect. *Apterae* of subgen. *Swertia*. However, sect. *Aptera* is very different from sect. *Montana* by having an abbreviated rhizome, 2 nectaries per corolla lobe, and seeds longitudinally few (8–12) corrugate-ridged with high irregular membranous and reticulate ridges.

Type species: *Swertia volkensis* Gilg

Distribution: from North Africa to Northeast and Tropical Africa.

10 species, may be divided into 2 series.

2.2.1 ser. *Repentes* T. N. He & S. W. Liu, ser. nov.

Caulis repens vel stoloniformis, radices adventitias emittens. Flores solitarii vel in inflorescentiam parco-florigeram dispositi. Nectarium planum, mac-

uliforme, absque marginibus et fimbriis.

Stems trailing or stoloniferous with adventitious roots. Basal leaves crowded into a rosette. Flowers 5-merous (but 4-merous in *S. subnivalis* and *S. sarmentosa*), solitary on long terminal pedicels or in few-flowered terminal cymes. Nectary reduced into a flat gland patch without raised margin and fimbriae.

Type species: *Swertia volkensii* Gilg

Distribution: East and Central Africa.

5 species.

2. 2. 1. 1 *Swertia sarmentosa* T. N. He & S. W. Liu, nom. nov.

Swertia scandens T. C. E. Fries, Notizbl. Bot. Gart. Berlin **8**: 516, 3c (1923), non Léveillé (1913). Syntypes: W Kenya, in rain forest, ca. 2 350 m, 3 Jan. 1922, E. A. Robinson & Th. C. E. Fries 691 (BM!, K!, S!, UPS!); same locality, 30 Jan. 1922, E. A. Robinson & Th. C. E. Fries 1277 (K!). Lectotype: Rob. E. & Th. C. E. Fries 691 (UPS! —lectotype; BM!, K!, S! —isolectotypes; designated here).

Distribution: East Africa (Kenya).

2. 2. 2 Ser. *Kilimandscharicae* T. N. He & S. W. Liu, ser. nov.

Monobothrium Hochstetter, Flora **27**: 27 (1844).

Type: *M. schimperi* Hochstetter

Caules erecti, absque stolinibus et radicibus adventitiis. Cymae in inflorescentiam paniculatam dispositae. Nectarium V-forme, fimbriatum.

Stems erect, without stolons and adventitious roots. Inflorescences a many-flowered panicle of cymes. Nectary V-shaped, fimbriate.

Type species: *Swertia kilimandscharica* Engler

Distribution: from North Africa to Northeast and Tropical Africa.

5 species.

3 Subgen. *Ophelia* (D. Don ex Grisebach) C. B. Clarke

3.1 Sect. *Ophelia* (D. Don ex Grisebach) Bentham et Hooker f. ex Gilg

3.1.1 Ser. *Corymbosae* T. N. He & S. W. Liu, ser. nov.

Inflorescentia corymbosa. Nectarium 1 in unoquoque lobo corollae, prope basin lobi corollae, parvum, patelliforme, breviter elevata squama et longe papillosis marginalibus fimbriisque instructum vel sacciforme, orbiculari obtegeni squama et breviter papillosis apicalibus fimbriisque instructum. Semina tenuiter verrucata, raro corrugata.

Inflorescences corymblike. Nectaries 1 per corolla lobe, near the base of corolla lobe, smaller, orbicular to suborbicular, dish-shaped without or with short raised scale, the bound with many long papillose fimbriae round margin, or watch-pocket-shaped with an orbicular covered scale and many short papillose fimbriae round opening margin at apex of pocket. Seed coats finely warty, rarely thinly corrugate.

This series is similar to ser. *Kilimandscharicae* by fimbriate nectaries, but differs by corymblike inflorescences as well as nectaries smaller, near the base of corolla lobe, orbicular to suborbicular.

Type species: *Swertia corymbosa* (Grisebach) C. B. Clarke

Distribution: Restricted to S India and Sri Lanka.

3.2 Sect. *Swertopsis* (Makino) Satake

3.2.1 Ser. *Japonicae* T. N. He & S. W. Liu (subgen. *Ophelia* sect. *Swertopsis*), ser. nov.

Herba annua. Inflorescentia cymoso-panicula. Flores 5-, minus 4-meri. Nectaria 2, raro 1 in unoquoque lobo corollae, oblongum, naviculare vel sacciforme. Semina tenuiter reticulata.

Annuals. Inflorescences a panicle of cymes. Flowers 5-, less 4-merous. Nectaries 2, rarely 1 per corolla lobe, oblong, boat-shaped, or pocket-shaped. Seed coats finely reticulate.

This series is somewhat similar to sect. *Ophelia* ser. *Ramosae* in annuals, with inflorescences a panicle of cymes, but conspicuously distinguished by having nectaries 2, rarely 1 per corolla lobe and seed coats finely reticulate.

Type species: *Swertia japonica* (Schultes) Makino

Distribution: Much Asia except West Asia, main in Central and East Asia. Mongolia, Russia, Kashmir, W Pakistan, Himalaya, India, Nepal, Sik-

kim, Bhutan, Bengal, almost throughout China, Myanmar, Thailand, Korea, Japan, and E New Guinea.

31 species.

3.2.1.1 *Swertia tetrapetala* Pallas

1a. Leaves linear to oblong, 10–20(–30) × (2–)3–5(–10) mm. Apex of corolla lobes obtuse, rarely acuminate

..... **109a. var. *tetrapetala***

1b. Leaves ovate-triangular, 20–35 × (12–)15–20(–23) mm. Apex of corolla lobes acute and mucronate

..... **109b. var. *wilfordii***

109a. var. *tetrapetala*

Distribution: E Russia (Sachalin, Kamchatka), Korea, and Japan. Meadows; 100–670 m.

109b. var. *wilfordii* (Kerner) T. N. He, comb. nov.

Swertia wilfordii Kerner, Ber. Naturw. Ver. Innsbruck. **1**: 102 (1870). Type: China, Northeast Region (Mandschuria), 44°–45° N, July–Aug. 1859, C. Wilford (K! —holotype; GH!, P! —isotypes).

Ophelia wilfordii Kerner, Ber. Naturw. Ver. Innsbruck, **1**: 102 (1870).

Swertia anomala Nakai, Bot. Mag., Tokyo **28**: 331 (1914). Type: NE Korea (Corea), Musan (Musang), Aug. 1913, T. Mori 320 (not seen).

Leaves ovate-triangular, 20–35 × (12–)15–20(–23) mm. Apex of corolla lobes acute and mucronate. Flowering and fruiting: August–September.

Distribution: China (Northeast Region), NE Korea. ca. 670 m.

3.2.2 Ser. *Swertopsis* T. N. He & S. W. Liu, ser. nov.

Herba annua. Folia ovato-elliptica usque rhombiformia, apice acuminata caudataque. Inflorescentia in terminales, axillares fasciculatas cymas vel umbellas disposita. Flores 5-meri. Nectaria 2 in unquoque lobo corollae, sacciformia. Semina tenuiter reticulata.

Annuals. Leaves ovate-elliptic to rhombic, apex acuminate and caudate. Inflorescences terminal and axillary fasciculate cymes or umbels. Flowers 5-merous. Nectaries 2 per corolla lobe, pocket-shaped. Seeds finely reticulate.

This series is more special in sect. *Swertopsis* by inflorescences terminal and axillary fasciculate cymes or umbels and leaves ovate-elliptic to rhomboid, apex acuminate and caudate.

Type species: *Swertia swertopsis* Makino

Distribution: Japan.

3.2.3 Ser. *Dichotomae* T. N. He & S. W. Liu

3.2.3.1 *Swertia dichotoma* var. *rubrostriata* (Y. Z. Zhao, Z. Y. Zhu & L. Q. Zhao) T. N. He, comb. nov.

Anagallidium rubrostriata Y. Z. Zhao, Z. Y. Zhu & L. Q. Zhao, Acta Phytotax. Sin. **42** (1): 83–85, f. 1 (2004). Type: China, Nei Mongol, Hohhot, Horing, Mt. Manhan, grassland on brook side, 1 June 1983, Z. Y. Zhu 83-011 (HIMC—holotype and isotype, not seen).

Var. *rubrostriata* is similar to var. *dichotoma* in having dichotomously branched stems, nectaries 2 per corolla lobe, brown, each with an orbicular covered scale and a small corner on back of the scale, but differs by corolla orange-colored, with red striate, leaves rugose, with crisp margin.

1a. Corolla white, sometimes with purple spots; leaves level

..... **var. *dichotoma***

1b. Corolla orange-colored, with red striate; leaves rugose, with crisp margin

..... **var. *rubrostriata***

Distribution: China (Nei Mongol).

3.3 Sect. *Platynema* T. N. He & S. W. Liu

3.3.1 *Swertia paniculata* var. *gracilescens* (H. Smith) T. N. He, comb. nov.

Swertia gracilescens H. Smith, Bull. Brit. Mus. (Nat. Hist.) Bot. **4**: 251, pl. 33 (1970). Type: Nepal, Bhuji Khola, open slope, 2 100 m, 15 Oct. 1954, J. D. A. Stainton, W. R. Sykes & L. H. J. Williams 9049 (BM! —holotype; E!, GH! —isotypes). Paratypes: Nepal, Gurjakhani 2 600 m, exposed grass slope, 17 Sept. 1954 J. D. A. Stainton, W. R. Sykes & L. H. J. Williams 4470; Kali Gandaki valley, Taglung, south of Tukucha, 3 700 m, on grass slopes, 22 Sept. 1954, J. D. A. Stainton, W. R. Sykes & L. H. J. Williams 7970 (all BM!, GH!).

Var. *graciliscens* is distinguished from var. *paniculata* by corolla pure white without coloured spots and band and whole plant slender and small; stems 8–30 cm tall, leaves 1–1.5 cm × 1.5–2.5 mm, calyx lobes 4.5–5 × 0.5–1 mm, corolla lobes to 5.5 × 4 mm. Var. *paniculata* is characterized by the corolla with 2 purple or yellow-green spots above each nectary and plants relatively robust; stems 35–120 cm tall, leaves 2–6.5 cm × 4–7 mm, calyx lobes 5–5.5 × 1.5–2.5 mm, and corolla lobes 6–6.5 × 4–4.5 mm.

Swertia paniculata is a more common species in the Himalayan region and characterized by oblong to lanceolate leaves, calyx 2/3 to longer than corolla, white corolla, horseshoe-shaped and naked nectaries, and dilated and free filaments.

Distribution: Nepal.

3.4 Sect. *Echinulata* T. N. He & S. W. Liu, sect. nov.

Herba perennis vel annua. Nectaria 2 in unoquoque lobo corollae, oblonga, navicularia, fimbriata. Stylus absens; stigmatе orbiculato. Semina parva, subtiliter reticulata. Pollinis granula echinulato et saepe perforato exinio ornata.

Perennials or annuals. Nectaries 2 per corolla lobe, oblong, boat-shaped, with a narrow scale and raised fimbriate margin. Style absent; stigma orbicular. Seeds finely reticulate. Pollen grains are subspheroidal, but subprolate and suboblate grains occur in infraspecific variation; medium-sized with the size range of 22.2–27.3 × 19.6–29.3 μm; colpi medium, long or short. The sexine ornamentation is echinulate and perforate but imperforate in *S. usambarensis*. All perforations are very small.

Sect. *Echinulata* is somewhat similar to sect. *swertopsis* in gross morphology, but differs by absent style, orbicular stigma as well as echinulate pollen grains.

Type species: *Swertia abyssinica* Hochstetter

Distribution: East and Northeastern tropical and Northeast Africa (Congo, Ethiopia, Kenya, Tanzania, and Uganda) and West Asia (N. Yemen and SW. Saudia).

18 species, may be divided in 2 series.

3.4.1 Ser. *Pumilae* T. N. He & S. W. Liu, ser. nov.

Herba perennis. Radix crassa, fibrosa usque semilignosa. Caules e basi multum ramosi. Folia basalia saepe abundantia, persistentia et in rosulam conferta.

Perennials. Taproot stout, fibrous to semiwoody. Stems much branched from very base. Basal leaves usually abundant, persistent and crowded into a rosette (usually deciduous at anthesis in *S. quartiniana*).

Type: *Swertia pumila* Hochstetter

Distribution: East and Northeast Africa (Congo, Ethiopia, Kenya, Tanzania, and Uganda) and West Asia (N. Yemen and SW. Saudia),

9 species.

3.4.2 Ser. *Abyssinicae* T. N. He & S. W. Liu, ser. nov.

Herba annua. Radix tenuis, fibrosa. Caules simplices vel e basi ramosi. Folia basalia saepe pauca, sub anthesi decidua.

Annuals. Roots slender, fibrous. Stem simple or branched from base. Basal leaves usually few, deciduous at anthesis.

Type: *Swertia abyssinica* Hochstetter

Distribution: throughout the tropical Africa in North, West, East, Central, and South Africa.

9 species.

4 African *Swertia* species

The African *Swertia* species have been studied by some botanists such as Fries (1923), Hedberg (1957), and Nemomissa (1998), which included ca. 24 species and divided into some informal groups. We have also studied on gross morphology, palynology (using SEM and LE) and known chromosome numbers from the whole African and Western Asian species. The results indicate that there are ca. 28 species. They may be divided into two sections, of which each further into two series (sect. *Montana*; ser. *Repentes* and ser. *Kilimandscharica*, sect. *Echinulata*; ser. *Pumilae* and ser. *Abyssinicae*) respectively. Both sect. *Montana* and sect. *Echinulata* differ from each other as follows:

- 1a. Nectary 1 per corolla lobe; seeds corrugate; pollen grains essentially striate, varying from irregularly striate-reticulate, striate-microreticulate to striate-perforate or scattered and thinly striate-imperforate (**Sect. *Montana***):
- 2a. Nectary reduced to a flat viscous gland patch without raised margin and fimbriae; stems trailing or stoloniferous with adventitious roots at nodes; flowers solitary on long terminal pedicels or in few-flowered terminal cymes
..... **Ser. *Repentes***
- 2b. Nectary fimbriate; stems erect, without stolons and adventitious roots; inflorescences a many-flowered panicle of cymes
..... **Ser. *Kilimandscharicae***
- 1b. Nectaries 2 per corolla lobe; seeds finely reticulate; pollen grains essentially echinulate and small perforate, but imperforate in one species (**Sect. *Echinulata***):
- 3a. Perennials with a stout fibrous to semiwoody taproot; basal leaves usually abundant, persistent and crowded into a rosette (usually deciduous at anthesis in *S. quartiniana*); stems much branched from very base **Ser. *Pumilae***
- 3b. Annuals with slender fibrous roots; basal leaves usually few, deciduous at anthesis; stems simple or branched from base
..... **Ser. *Abyssinicae***

In addition, there is an African species of *Lomatogonium* as follows:

Lomatogonium pleurogynoides (Baker) S. W. Liu & T. N. He, comb. nov.

Swertia pleurogynoides Baker, Bull. Misc. Inform., Kew **1898**: 158 (1898). Type: Malawi (Nyasa-land), between Kondow and Karonga, 2 000–6 000 ft., Whyte s. n. (K! —holotype; BM! —isotype).

Swertia heterosepala Gilg, Notizbl. Bot. Gart. Berlin **14**: 115 (1938). Type: Tanzania, Matengo highland, WSW from Songea, 1 100–1 200 m, 18 April 1936, H. Zerny 604 (K! —isotype).

It is similar to *L. rotatum* in leaves and calyx lobes linear, calyx as long as or rarely longer or slightly shorter than corolla, but differs by corolla smaller, 7–8.5 mm long.

Distribution: East Africa (Ethiopia, Tanzania), South Africa (Mozambique, Malawi). Wet grassland, shire highland; 600–1 800 m.

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