

KORSHINSKYA EXTENDED WESTWARDS

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Scaligeria assyriaca Freyn. & Bornm. is reassessed and transferred to *Korshinskya* Lipsky (Umbelliferae), thus extending the distributional range of the genus westwards. *Korshinskya* is compared with allied genera *Astomaea*, *Elaeosticta*, *Physospermum* and *Scaligeria*.

INTRODUCTION

A critical revision of the genus *Scaligeria* DC. (Kljuykov et al., 1976) resulted in the majority of the eastern species being separated into the neglected genus *Elaeosticta* Fenzl. *Elaeosticta* was thus treated as a genus of at least 24 species distributed from eastern Europe to the western Himalaya, leaving *Scaligeria* sens. str. as a rather small E Mediterranean genus of only three species. Some oriental species originally included in *Scaligeria* remain rather critical: their essential diagnostic fruit characters do not fit the circumscription of *Elaeosticta* (namely having a flattened or depressed-conical stylopodium, a thin mesocarp layer, enlarged exocarp cells, and an inconsistent number of small, often obscure, vittae). *Scaligeria assyriaca* Freyn. & Bornm., described in 1897 from Iraqi Kurdistan, is one such little-known and critical species.

TAXONOMIC TREATMENT

In the herbarium collections of the Royal Botanic Garden Edinburgh (E), *S. assyriaca* is represented by a few good specimens including both flowering and fruiting material. In our interpretation three characters separate this species from *Elaeosticta*: didymous fruits (it is not surprising that this species has also been placed in the genus *Bifora* Hoffm.), the non-spreading, incurved petals and the rapiform, branching underground tubers.

Anatomical and morphological investigations of the fruit have confirmed critical differences in structure between *S. assyriaca* and *Elaeosticta*. The fruits of *S. assyriaca* (Fig. 1) are described below.

Fruits didymous, constricted at the narrow commissure, up to 5 × 3.5mm, glabrous; mericarp ribs slightly prominent; *calyx teeth* obsolete; *stylopodium* depressed-conical with a somewhat wavy margin; styles up to 1mm long, reflexed; *carpophore* 2-cleft to base. *Mericarps* pentagonal in transverse section; *vascular bundles* in the ribs thin; *vittae* dorsally compressed, comparatively large, solitary in the valliculae, 2 on the commissure; *exocarp* unilayered, its cells small, outside walls thickened; *mesocarp*

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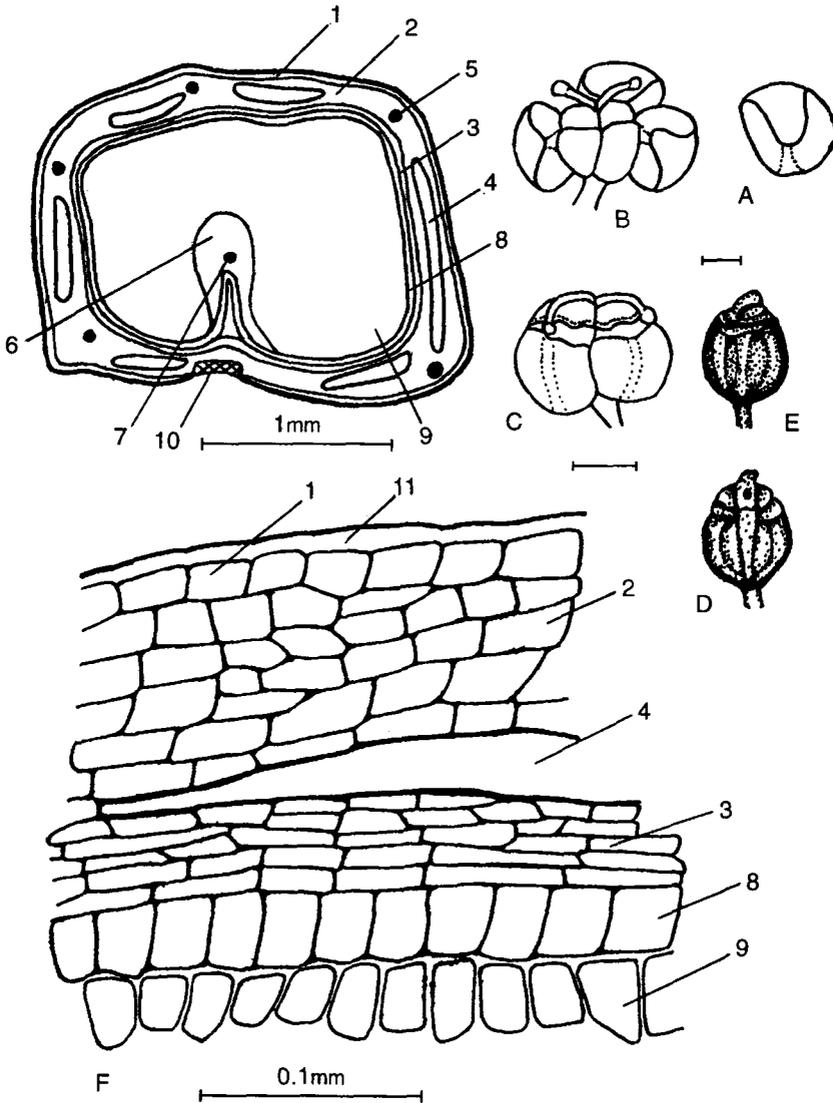


FIG. 1. *Korshinskya assyriaca* (Freyn. & Bornm.) M. Pimenov & Kljuykov (*Scaligeria assyriaca* Freyn. & Bornm.). (Iran: W Lorestan, Ilam, *M. Jacobs* N 6830, E). A, petal; B, flower; C, fruit; D, E, mericarp (D, ventral view; E, dorsal view); F, TS of mericarp; G, TS of mericarp through vallecule. 1, exocarp; 2, mesocarp; 3, endocarp; 4, oil duct; 5, costal vascular bundle; 6, funicle; 7, funicular vascular bundle; 8, spermoderma; 9, endosperm; 10, sclerenchyma; 11, the outer part of the exocarp cell walls.

mainly parenchymatous, only the cells adjacent to the carpophore having slightly thickened lignified walls with chinked pores; *endocarp* 2-3-layered, with small cells having slightly lignified walls; *seed coat* unilayered, its cells large; *endosperm* subterete with deep narrow groove on the commissural side.

According to our studies (Pimenov & Kljuykov, 1981), these fruit characters of *S. assyriaca* clearly indicate an affinity with *Korshinskya* and not with *Elaeosticta*.

It should be noted that Rechinger (1987), in his treatment of *Scaligeria* for *Flora Iranica*, has already drawn attention to the similarity between *S. assyriaca* and *S. kopetdaghensis* (Korov.) Schischk. in both habit and leaf characters (Die Art [*S. kopetdaghensis*] erinnert habituell und durch die breitlappigen Blätter an die kurdisch-westpersische *S. assyriaca* Freyn. & Bornm. (p. 227)). *Scaligeria kopetdaghensis* from Turkmenia and the adjacent part of Iran was originally described in *Physospermum* Cusson, then transferred to *Scaligeria* and is now again regarded by some botanists (e.g. Nikitin & Geldyhanov, 1988) as a member of *Physospermum*. However, it is, in our opinion, a species of *Korshinskya*, the transfer being further supported by carpological characters (Pimenov & Kljuykov, 1981: 481).

The second distinctive character of *Korshinskya*, both interesting and apparently rare in the Umbelliferae, is the petal shape. The flowers of all species of *Korshinskya* known until now seem to be only half-open in the full flowering state because the petals are incurved with the tips fused to the base of the lamina. This creates a sort of platform against the stylopodium which covers the nectar disc. This floral character is also to be found in *S. assyriaca*.

Lastly, it is noteworthy that the branched, rapiform (not globose) tuber of *S. assyriaca* is very similar to that of *K. kopetdaghensis* and to that of the other species of *Korshinskya* distributed in the mountains of Middle Asia and Afghanistan.

Based on these important characters we propose transferring *S. assyriaca* to the genus *Korshinskya*, necessitating the following new nomenclatural combination.

***Korshinskya assyriaca* (Freyn. & Bornm.) Pimenov & Kljuykov, comb. nov.**

Syn.: *Scaligeria assyriaca* Freyn. & Bornm., Bull. Herb. Boiss. 5: 611 (1897); Rechinger, *Flora Iranica* 162, Umbelliferae: 223 (1987).

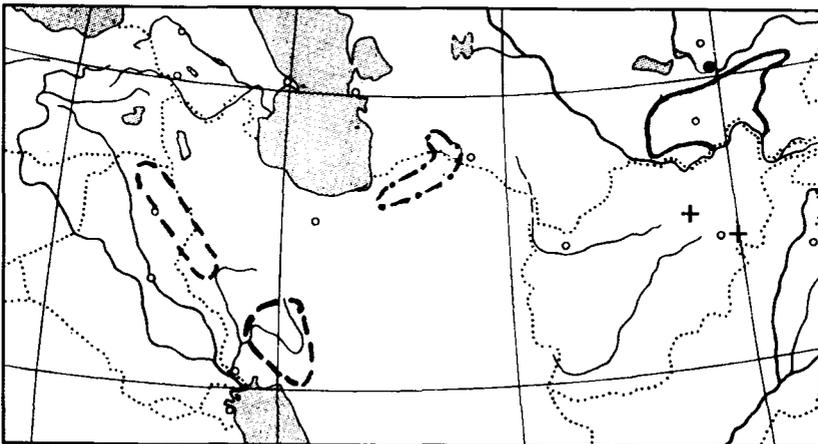


FIG. 2. Distribution of *Korshinskya* species: *K. olgae* (—); *K. bupleuroides* (●); *K. rapifera* (+); *K. kopetdaghensis* (- • - • -); *K. assyriaca* (- - -).

TABLE 1. Diagnostic characters of the genera *Korshinskya*, *Scaligeria*, *Elaeosticta*, *Physospermum* and *Astomaea*.

	<i>Korshinskya</i>	<i>Scaligeria</i>	<i>Elaeosticta</i>	<i>Physospermum</i>	<i>Astomaea</i>
Roots	Tuber-like, thickened, lobed	Tuber-like, thickened, globose, entire	Tuber-like, thickened, globose or cylindrical, entire or branched	Cylindrical, vertical	Tuber-like, thickened, globose, entire
Life-form	Monocarpic	Polycarpic	Monocarpic	Polycarpic	Polycarpic
Bracts	Present	Absent	Present	Present	Absent/present
Calyx teeth	Absent or very short	Present	Absent	Present	Absent
Petals	Yellow or white, with tip adnate to the lamina and emarginate apex	White, with free acute apex	White or yellow, with free acute apex	White, with free acute apex	White, with free acute apex
Stylopodium	Flat or depressed-conical	Conical	Flat or depressed-conical	Conical	Flat
Exocarp cells	Small with thickened outer walls	Small with thickened outer walls	Very large with thin outer walls	Small with thickened outer walls	Small with thickened outer walls
Vallecular vittae	Large, free, usually solitary, sometimes 1-2	Large and narrow, free, 2-4	Narrow or large, anastomosing, inconsistent, often obscure, 2-7	Narrow, free, solitary	Narrow, free or anastomosing, 2-7
Crystals of calcium oxalate	Absent	Present	Absent	Absent	Absent

As a result, *Korshinskya* becomes a genus with five species in two sections. The type section contains three closely related species: *K. olgae* (Regel & Schmalh.) Lipsky, the generic type, widely distributed in the Pamiro-Alai Mts; *K. bupleuroides* Korovin replacing it in the Mogoltau Mts, western Tian Shan; and *K. rapifera* (Gilli) Podlech & Rech.f. from north and east Afghanistan. It is possible that the last two may only be local isolated races of *K. olgae*. Section *Albiflorae* Pimenov & Kljuykov, once

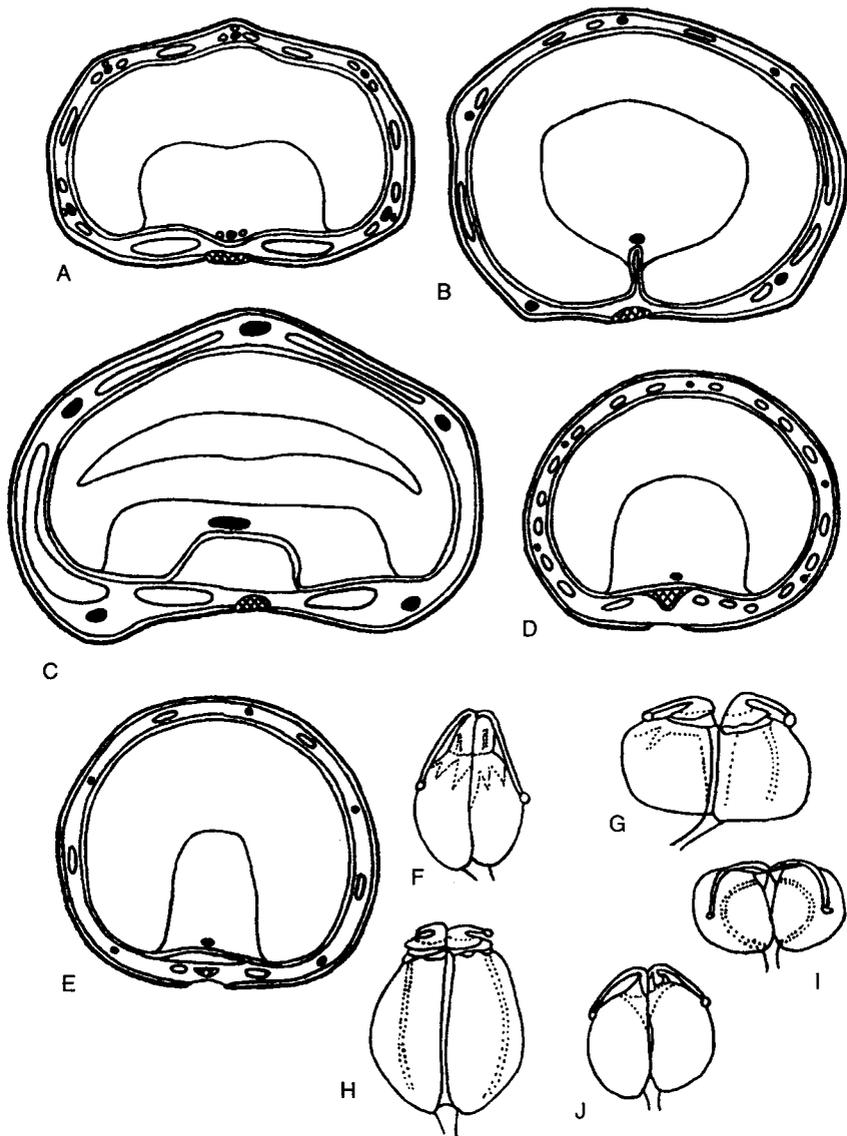


FIG. 3. *Scaligeria napiformis* (Willd. ex Sprengel) Grande (A, F); *Korshinskya kopetdaghensis* (Korovin) Pimenov & Kljuykov (B, G); *Korshinskya olgae* (Regel & Schmalh.) Lipsky (C, H); *Astomaea seselifolium* (DC.) Rauschert (D, I); *Physospermum cornubiense* (L.) DC. (E, J). A-E, TS of mericarps. F-J, fruits. A, F, from Kljuykov et al. (1976); B-E, G-J, from Pimenov & Kljuykov (1981).

monotypic, is now considered to contain two species with a more western distribution and with long-distant disjunction. These species are *K. kopetdaghensis* from Kopet Dagh in south-west Turkmenia and NW Iran, and *K. assyriaca* from SW Iran and

Iraqi Kurdistan. The distribution of the species of *Korshinskya* is shown in Fig. 2, and a key is given below.

Key to species of Korshinskya

- 1a. Flowers yellow; stems solid _____ 2
 1b. Flowers white; stems hollow _____ 4
- 2a. Rays of umbel 11–20; involucre of 3–4 large bracts _____ **K. olgae**
 2b. Rays < 10; involucre of short, subulate bracts _____ 3
- 3a. Rays 5–9; pedicels 6–11; stems greenish brown _____ **K. bupleuroides**
 3b. Rays 1–5; pedicels 1–8; stems violet near the base _____ **K. rapifera**
- 4a. Upper cauline leaves with entire lamina; rays 5–8, slender; pedicels 4–5;
 vallecular vittae 1–2 _____ **K. kopetdaghensis**
 4b. Upper cauline leaves with dissected lamina; rays 9–15, ± sturdy; pedicels
 15–18; vallecular vittae always solitary _____ **K. assyriaca**

COMPARISON WITH OTHER GENERA

As the area of distribution of *Korshinskya* has been extended westwards, a comparison with other geophytic campylospermous Umbelliferae genera with sympatric or almost sympatric areas of distribution, e.g. *Scaligeria* sens. str. and *Astomaea* Reichenb., is useful. In addition it is necessary to emphasize (Table 1, Fig. 3) the differences between *Korshinskya* with its new circumscription, *Physospermum*, from which *Korshinskya* was first separated (Lipsky, 1900), and *Elaeosticta*.

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