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Broadening the genus *Cephalopodium* Korovin (Umbelliferae)

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ABSTRACT

PIMENOV, M. G. & E. V. KLJUYKOV (2002). Broadening the genus *Cephalopodium* Korovin (Umbelliferae). *Candollea* 57: 261-269. In English, English and French abstracts.

The Afghan species *Selinum afghanicum* Rech. f. & Riedl was shown to be more similar to the members of the genus *Cephalopodium* Korovin from the Middle Asia than to *Selinum carvifolia* (L.) L., the nomenclatural type of the genus *Selinum* L. The new combination *Cephalopodium afghanicum* (Rech. f. & Riedl) Pimenov & Kljuykov is validated. A key is provided for the three species of the genus *Cephalopodium*.

RÉSUMÉ

PIMENOV, M. G. & E. V. KLJUYKOV (2002). Nouvelle circonscription du genre *Cephalopodium* Korovin (Umbelliferae). *Candollea* 57: 261-269. En anglais, résumés anglais et français.

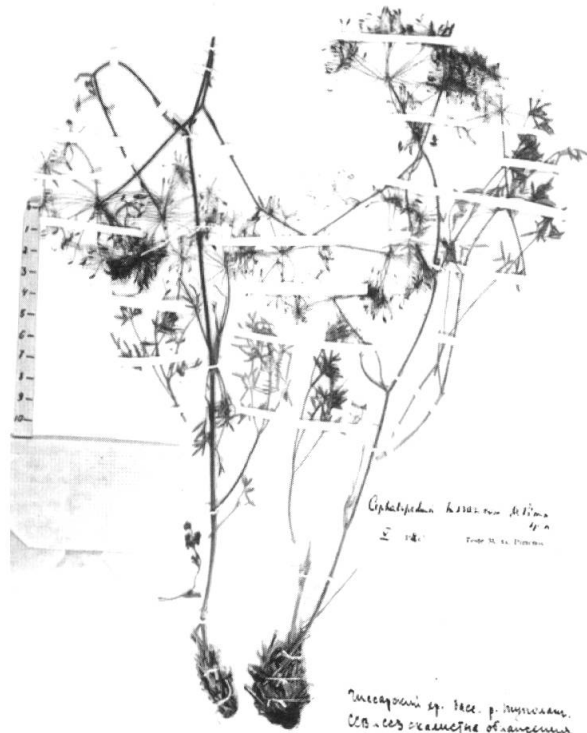
Les auteurs montrent que l'espèce *Selinum afghanicum* Rech. f. & Riedl d'Afghanistan est plus proche des espèces du genre *Cephalopodium* Korovin que de *Selinum carvifolia* (L.) L., l'espèce type du genre *Selinum* L. La nouvelle combinaison *Cephalopodium afghanicum* (Rech. f. & Riedl) Pimenov & Kljuykov en résulte. Une clé de détermination est fournie pour les trois espèces du genre *Cephalopodium*.

KEY-WORDS: Taxonomy – Angiosperms – UMBELLIFERAE – *Selinum* – *Cephalopodium* – Afghanistan.

Cephalopodium Korovin is a little-known *Umbelliferae* genus, now regarded as an endemic of the Middle Asia. It contains only two species. *Cephalopodium* was described approximately 30 years ago (KOROVIN, 1973) as monotypic with the species, *C. badachschanicum* Korovin (Fig. 1A). This species grows in a restricted area of Tadjikistan, limited by the valley of Pjandzh River and its tributaries (KOROVIN & al., 1984). It seems rather strange that, being not rare here and there on rocky slopes on the right (Tadjik) bank of narrow Pjandzh valley, *C. badachschanicum* been never recorded on the left (Afghan) bank. Thus it was not included in "Flora Iranica". The situation is similar to that of *Ferula gigantea* B. Fedtsch., which was a long time ago visually recorded in Afghanistan across the Pjandzh by Russian botanists moving on the road from Chogrog, alongside the Pjandzh valley above the Gunt mouth (see, for instance, FEDTSCHENKO, 1902). This evidence was confirmed by herbarium collections considerably later (PODLECH, 1970). It seems to us that *C. badachschanicum* could be found on the Afghan side of the Pjandzh valley when the conditions for plant collecting improve.



Fig. 1. – The species of the genus *Cephalopodium* Korovin. **A.** *Cephalopodium badachschanicum* Korovin: **1.** general view, **2.** flower, **3.** petal, **4.** mericarp; **B.** *Cephalopodium hissaricum* Pimenov [Pjataeva 887, type specimen, TAK]; **C.** *Cephalopodium afghanicum* (Rech. f. & Riedl) Pimenov & Kljuykov [Rechinger 36669, W].



Cephalopodium korovinii M. G. Pimenov
sp. n.
2008

Умбеллиформное растение.
Стебель сизый, ветви обильно
опушены волосами.
Листья дважды перистые.
Стебель и ветви голые.

2008 г. 10.08.08 Кор. Хакасия

B



10 cm

C

The second species of *Cephalopodium*, *C. hissaricum* Pimenov, is known (PIMENOV, 1983) by very limited herbarium material (one collection by A. D. Pjataeva made in 1948) from the Tupolang River valley in Western Hissar Mts. in Uzbekistan (Fig. 1B).

The presence of *Cephalopodium* in the Afghan flora is currently proved by another evidence. The species *Selinum afghanicum* Rech. f. & Riedl (Fig. 1C) is a further (third) member of *Cephalopodium*. This species, described in 1963 from Central Afghanistan (Deh Kundi) (RECHINGER & RIEDL, 1963), is distributed in the region of the country situated to the south from the area of *C. badachschanicum* – in the provinces of Kabul, Ghazni, Bamian and some others (RECHINGER, 1987).

The name “*Cephalopodium*” originates from an unusual structure at the stem base. *Cephalopodium badachschanicum* has a distinctive “head-like” or “cone-like” agglomeration of enlarged and hardened remains of leaf petioles, accumulated during several years. A very similar structure was described for *S. afghanicum* (“*collum residuis petiolorum induratis grosse et copiose squarroso-comosum*”) (RECHINGER, 1987: 361).

This similarity between *C. badachschanicum* and *S. afghanicum* could be, of course, an example of homoplasy, appearing independently in distant lineages of the *Umbelliferae* phylogenetic tree, and the presumed affinity of these species needs to be verified and confirmed by investigation of other characters.

It should be noted, that the original description of *S. afghanicum* under *Selinum* is, at least, not unequivocal. The taxonomic position of *S. afghanicum* was not quite clear even to one of its authors. RECHINGER (1987: 362) wrote: “Die Gattungszugehörigkeit des *S. afghanicum* zu *Selinum* steht nicht fest. Die Art fällt unter den *Selinum*-Arten im üblichen Sinn durch die Blattform und -Teilung auf”. There were no more critical comments about this species, probably because it occurs in a remote area, now unreachable for investigation.

On the other hand, the genus *Selinum* is very problematic, if one regards its circumscription and specific content. The extreme lumper position of broadest treatment of the genus can be illustrated by KRAUSE’s (1904) inclusion of the majority of Central European *Umbelliferae* into one supergenus *Selinum*. This could be regarded as a historical curiosity, but a broad conception of *Selinum* (including *Cnidium*) with 10 species was proposed by LEUTE (1970) in his critical revision of the *Umbelliferae* taxa related to *Ligusticum*. The most essential and almost only differential character to distinguish *Selinum* from another large genus in this group of *Apioidae*, *Ligusticum*, is the number of vallecular vittae.

Comparing some “*Selinum*” species from the Middle Asia we, however, showed that they differ considerably from the type species of *Selinum*, the mainly European *S. carvifolia* (L.) L., in many characters, including carpological ones (PIMENOV, 1975). Later, a multidisciplinary study on the Himalayan “*Selinums*” and the closest species of adjacent territories has led to restoration of a rather forgotten genus, *Oreocome* Edgew., to which a considerable part of local former *Selinum* species were transferred (PIMENOV & al., 2001). It is clear that *Selinum* in its traditional circumscription seems to form a heterogeneous group of species. The affinity of *S. afghanicum* in this context is also critical, as other species of adjacent territories, previously treated in *Selinum*, are now excluded from this genus.

Carpological characters

Fruits of *C. badachschanicum* (Fig. 2A)

- slightly compressed dorsally, glabrous;
- calyx teeth very short;
- stylopodium low-conical; styles 0.7-0.8 mm long, reflexed on dorsal side of mericarp;
- mericarps elliptic, 3.8-4.0 mm long, 1.8-2.0 mm wide, a few compressed dorsally;
- dorsal ribs filiform, marginal narrow-winged;

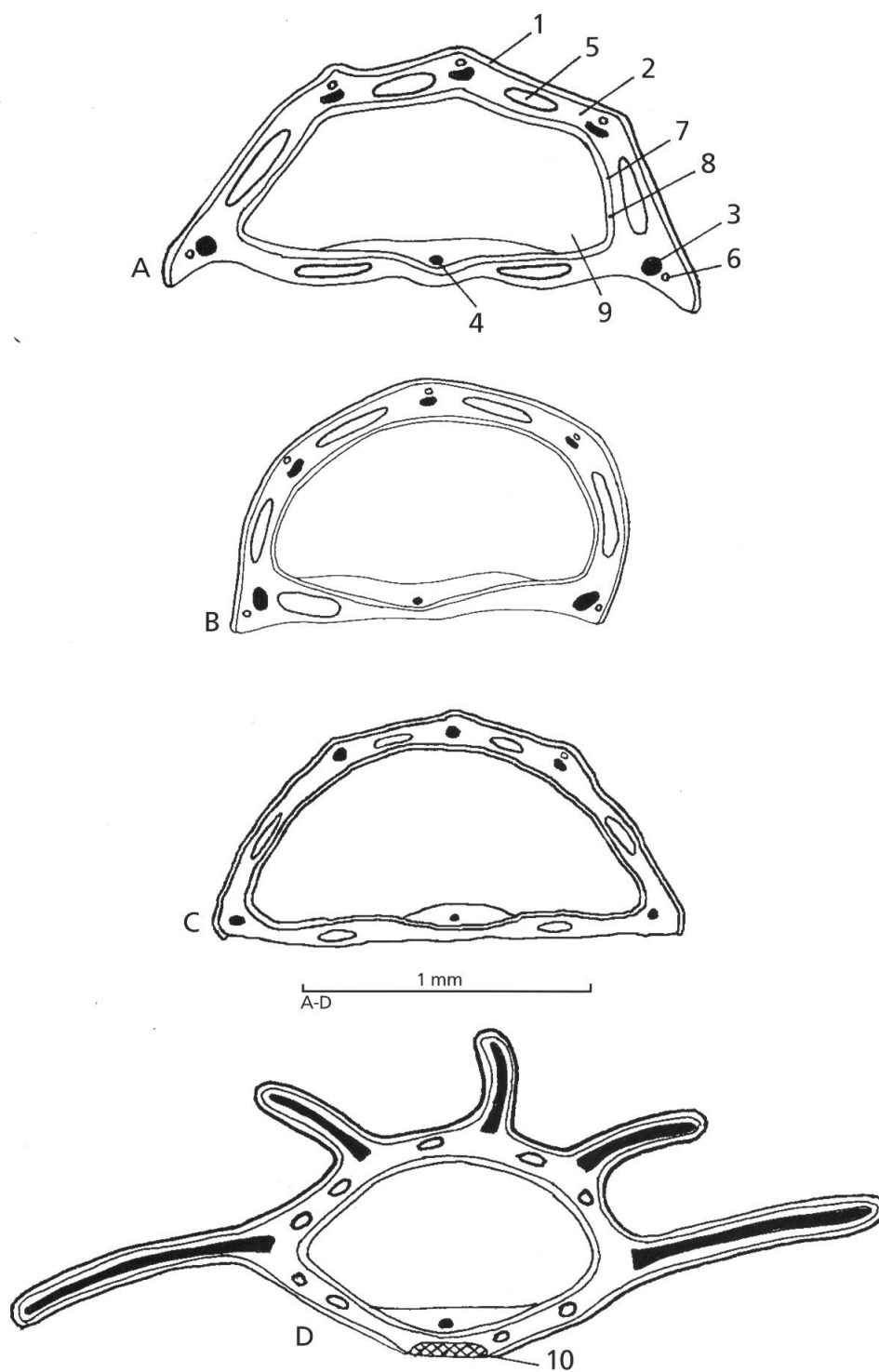


Fig. 2. – Transverse section of mericarps. **A.** *Cephalopodium badachschanicum* Korovin [Pimenov & Kljuykov 1046, MW]: 1. exocarp, 2. mesocarp, 3. rib vascular bundle, 4. funicular vascular bundle, 5. vallicular oil duct, 6. rib oil duct, 7. endocarp, 8. spermoderm, 9. endosperm, 10. sclerenchyma; **B.** *Cephalopodium hissaricum* Pimenov [Pjataeva 887, type specimen, TAK]; **C.** *Cephalopodium afghanicum* (Rech. f. & Riedl) Pimenov & Kljuykov [Rechinger 35986, G]; **D.** *Selinum carvifolia* (L.) L. [Sharapova Okhata s.n., MW].

- exocarp of small cells, interrupted near the ends of ribs margin (commissure broad);
- vittae large, solitary in valliculae, paired on the commissural side;
- rib secretory ducts small, solitary;
- vascular bundles small;
- endocarp consisting of small cells;
- spermoderma of large cells;
- endosperm almost flat on the commissural side.

Fruits of *C. hissaricum* (not completely mature) (Fig. 2B)

- slightly compressed dorsally, glabrous;
- calyx teeth inconspicuous;
- stylopodium conical; styles thin, 0.5-0.6 mm long, reflexed on dorsal side of mericarp;
- mericarps elliptic, 3.0 mm long, 1.8-2.0 mm wide, semicircular in cross-section.
- dorsal ribs filiform, marginal slightly enlarged;
- exocarp of small cells, interrupted near the ends of ribs margin (commissure broad);
- vittae large, solitary in valliculae, paired on the commissural side;
- rib secretory ducts small, solitary;
- vascular bundles small;
- endocarp and spermoderma of small cells;
- endosperm almost flat on the commissural side.

Immature fruits of *S. afghanicum* (Fig. 2C)

- slightly compressed dorsally, glabrous;
- calyx teeth inconspicuous;
- stylopodium conical; styles 1.3-1.5 mm long, reflexed on dorsal side of mericarp;
- mericarps elliptic, 3.3-4.0 mm long, 1.6-2.0 mm wide, almost semicircular in cross-section;
- dorsal ribs filiform, marginal a little expanded;
- exocarp of small cells, interrupted near the ends of ribs margin (commissure broad);
- vittae solitary in valliculae, paired on the commissural side;
- rib secretory ducts small, solitary;
- vascular bundles small;
- endocarp and spermoderma consisting of small cells;
- endosperm almost flat on the commissural side.

Fruits of *S. carvifolia* (Fig. 2D)

- slightly compressed dorsally, glabrous;
- calyx teeth absent;
- stylopodium conical; styles long (1.2-1.7 mm long), reflexed on dorsal side of mericarp;
- mericarps elliptic, 3.2-4.5 mm long, 2.5-3.5 mm wide;
- dorsal ribs narrow-winged, marginal broadly winged;

- exocarp of small cells, interrupted near column (commissure very narrow);
- vittae 1-3 per vallecule, 3-5 on the commissural side;
- rib secretory ducts absent;
- vascular bundles expanded radially, occupying the greater part of rib;
- endocarp and spermoderma of small cells;
- endosperm almost flat on the commissural side.

It can be concluded that in its carpological characters, *S. afghanicum* differs considerably from *S. carvifolia* and is more similar to *C. badachschanicum*, although there are differences at the specific level between *S. afghanicum* and *C. badachschanicum*. Taking into account the similarity of the two species in habit and vegetative features, it can be inferred that the inclusion of *S. afghanicum* within the genus *Cephalododum* is preferable.

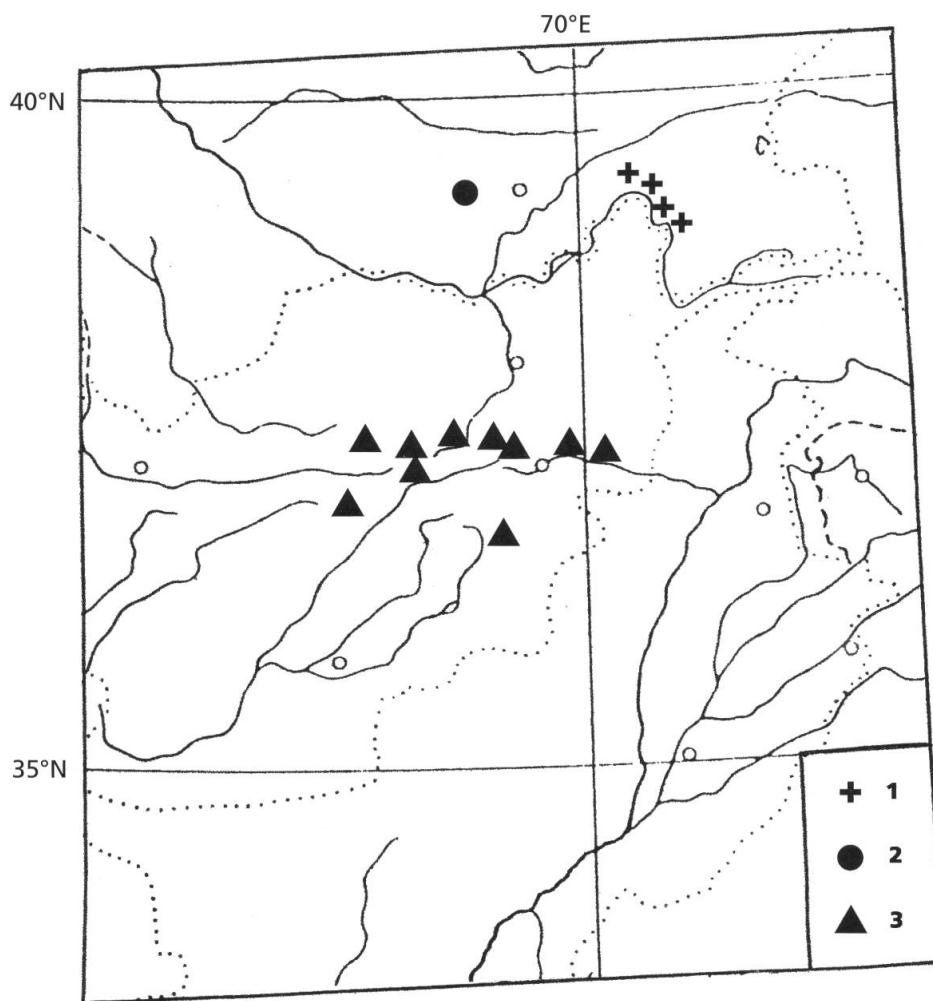


Fig. 3. – Distribution of the species of the genus *Cephalopodium* Korovin. – 1. *Cephalopodium badachschanicum* Korovin; 2. *Cephalopodium hissaricum* Pimenov; 3. *Cephalopodium afghanicum* (Rech. f. & Riedl) Pimenov & Kljuykov.

Key to the species of *Cephalopodum*

1. Stems thin up to 5 mm in diam.; bracts and bracteoles obsolete *C. hissaricum*
- 1a. Stems thicker; bracts and bracteoles 2-5, herbaceous 2
 2. Monocarpic plant with unbranched caudex; stems solitary; stylopodium low-conical; calyx teeth very short *C. badachschanicum*
 - 2a. Polycarpic plant with several stems and branched caudex; stylopodium conical; calyx teeth obsolete *C. afghanicum*

Cephalopodum afghanicum (Rech. f. & Riedl) Pimenov & Kljuykov, **comb. nova**

≡ *Selinum afghanicum* Rech. f. & Riedl in Biol. Skr. 13(4): 126. 1963.

Holotypus: AFGHANISTAN: "Central Afghanistan: Deh Kundi, 2900 m. 11.06.1949, L. Edelberg, 1922" (W; iso-: C).

Distribution: Afghanistan (Fig. 3.3).

Cephalopodum badachschanicum Korovin in Izv. Akad. Nauk Tadjhiksk. SSR, Otd. Biol. Nauk 50: 17, fig. 5-9. 1973.

Holotypus: TADZHIKISTAN: "Jugum Darvas, pars meridionalis, in angustis Obicharak. 07.07.1968. T. F. Koczkaeva, L. Abdsuljamova" (TAD!).

Chromosome number: $2n = 22$ (PIMENOV & VASSILIEVA, 1983; VASSILIEVA & al., 1984).

Distribution: Tadjhikistan, Afghanistan (?) (Fig. 3.1).

Cephalopodum hissaricum Pimenov in Vved., Opred. Rast. Sred. Azii 7: 374. 1983.

Holotypus: UZBEKISTAN: "Jugum hissaricum, pars occidentalis in systematis fluminis Tupolang, NNE et NNW abrupti saxosi ripam sinistram fl. Taminda infra pag. Taminda, region arboreo-fruticosa. 10.07.1948. A. D. Pjataeva, 887" (TAK!).

Distribution: Uzbekistan (Fig. 3.2).

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