

# Critical notes on the genus *Calyptrosciadium* Rech. f. & Kuber (Umbelliferae)

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# Critical notes on the genus *Calyptrosciadium* Rech. f. & Kuber (Umbelliferae)

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## ABSTRACT

PIMENOV, M. G. & E. V. KLJUYKOV (2004). Critical notes on the genus *Calyptrosciadium* Rech. f. & Kuber (Umbelliferae). *Candollea* 59: 95-101. In English, English and French abstracts.

*Calyptrosciadium polycladum* Rech. f. & Kuber, an endemic Irano-Afghan species, is a taxonomic synonym of the older *Prangos bungei* Boiss. The status of *Calyptrosciadium* as a separate genus is confirmed, and the new nomenclatural combination, *C. bungei* (Boiss.) Pimenov, is made. A new species, *C. rechingeri* Pimenov & Kljuykov, is described from NW Afghanistan, and is known up today only from its type locality.

## RÉSUMÉ

PIMENOV, M. G. & E. V. KLJUYKOV (2004). Notes critiques sur le genre *Calyptrosciadium* Rech. f. & Kuber (Umbelliferae). *Candollea* 59: 95-101. En anglais, résumés anglais et français.

*Calyptrosciadium polycladum* Rech. f. & Kuber, endémique d'Iran et d'Afghanistan, est un synonyme taxonomique de *Prangos bungei* Boiss. Le statut du genre *Calyptrosciadium* est confirmé, et la nouvelle combinaison *C. bungei* (Boiss.) Pimenov en résulte. Une espèce nouvelle, *C. rechingeri* Pimenov & Kljuykov, est décrite de nord-ouest d'Afghanistan et n'est connue jusqu'à présent que de sa localité typique.

**KEY-WORDS:** UMBELLIFERAE – *Calyptrosciadium* – *Prangos* – Iran – Afghanistan – Taxonomy

*Calyptrosciadium* Rech. f. & Kuber is one of the Irano-Afghan endemic genera of the *Umbelliferae*. K. H. Rechinger and G.-H. Kuber described it as monospecific (KUBER & al., 1964). The unique species of *Calyptrosciadium*, *C. polycladum* Rech. f. & Kuber, was described simultaneously with the genus. Later it was splitted with two subspecies – *C. polycladum* subsp. *polycladum* and *C. polycladum* subsp. *bamianicum* Leute (LEUTE & SPETA, 1972; LEUTE, 1987). The authors supposed that *Calyptrosciadium* is closely related to *Stewartiella* Nasir, another endemic genus, distributed a little bit more eastward. Both genera are placed close to *Prangos* in *Flora Iranica* (LEUTE, 1987), and are included in trib. *Apieae* instead of trib. *Smyrnieae*, their traditional classification.

By the lack of gatherings in herbaria, *Calyptrosciadium* was inadequately associated to the known taxa of the Irano-Turcanian *Umbelliferae*. In these notes we would like to make some corrections and additions to its taxonomy, nomenclature and circumscription, and to establish the recognition of two species, one of them newly described.

***Calyptrosciadium polycladum* is identical to *Prangos bungei* Boiss.**

*Calyptrosciadium polycladum* is not the first legitimate name for this taxon, which was described earlier under the name *Prangos bungei* Boiss.

Despite its publication in one of the most famous and highly authoritative floristic and taxonomic essays of the 19th century (BOISSIER, 1888), *P. bungei* is not accepted in modern critical revisions of the genus (HERRNSTADT & HEYN, 1977; PIMENOV & TICHOMIROV, 1983) just as in regional (Iranian) *Umbelliferae* treatments (MOZAFFARIAN, 1983; HERRNSTADT & HEYN, 1987) or Middle East plant checklist (HELLER & HEYN, 1993). HERRNSTADT & HEYN (1977) noted this species as imperfectly known and problematic.

*Prangos bungei* was described in the Supplement to *Flora Orientalis* (BOISSIER, 1888: 260) based on Khorassan collections of Al. Bunge with the following diagnosis:

«***P. Bungei***, *glaberrima, caule tenui dichotome ramosissimo nudo, foliis omnibus radicalibus petiolis longis basi vaginantibus suffultis ternatim tripinnatisectis petiolulis omnium ordinum tenuibus elongatis, laciniis tenuiter filiformibus abbreviatis, umbellis 3-5-radiatis, umbellulis 3-5-floris, involucri involucrellisque nullis, pedicellis florae minuto vix longioribus, petalis glabris flavis, fructûs (immaturi) parvi breviter ovati jugis in alas angustas subundulatas expansis, vittis in valleculis magnis solitariis.*»

The diagnosis contains some carpological traits, unusual for the genus *Prangos*. The most essential one is the number and the localization of the mericarp vittae, which deviate from all variants of fruit structure found in *Prangos* s.l. (including *Cachrys* auct. non L. and *Cryptodiscus* Fisch. & C. A. Mey. non Fée  $\equiv$  *Neocryptodiscus* Hedge & Lamond). The disposition of the oil ducts, usual in *Prangos*, is the cyclic arrangement of numerous small vittae in the inner mesocarp layer (PIMENOV & TICHOMIROV, 1983). BOISSIER (1888), on the contrary, described the vittae of *P. bungei* as solitary, situated in vallecules. The second remarkable character of the *P. bungei* fruit is the form of its mericarp ribs. They were described as undulate (wavy). That was probably the reason why Boissier published the Bunge's collection as a *Prangos*. However, the ribs are rather different (see below) from those of the other species of *Prangos*.

*Prangos bungei* was described on a gathering made by Bunge during the Khorassan expedition of the Russian (Imperial) Academy of Sciences in 1858. The precise *locus classicus* is «In montosis prov. Khorassan Persiae inter Nishapur and Meshhed», i.e. most probably in Belilud Mts.

Besides *P. latiloba*, widely distributed in this region, and the rarer *P. serpentinica* (Rech. f. & al.) Herrnst. & Heyn, which clearly do not correspond to Boissier's description, there is another *Umbelliferae* species in the local flora that should have for a long time been compared with *P. bungei*. This is *Calyptrosciadium polycladum* Rech. f. & Kuber. It grows on the rocks and screes of the median belt of Belilud Mts. where we observed it during a short visit to Khorassan in 2001.

The herbarium, in which the type of *P. bungei* is conserved, was not designated, neither in the protologue, nor later. Most probably, it would be P or LE, where the principal sets of Bunge's collections are kept, or G-BOIS, the personal herbarium of the describer. Unfortunately, we could find them, neither in P, nor in G-BOIS. At least, they were found in LE (General Sector; Fig. 1) – two sheets with labels written by Al. Bunge («In montibus inter Nishapur et Mashhad»). Unfortunately, there are no signs that Boissier saw the sheets. They were recognized as type material of *P. bungei* by W. I. Lipsky (see his «notae criticae»). Their comparison with sympatric collections of *C. polycladum* confirmed their identity, together with a carpoanatomical analysis (Fig. 2) in complete accordance with the protologue cited above. Therefore, *Prangos bungei* is identical with *C. polycladum*.

*Calyptrosciadium polycladum* was described from Western Afghanistan: «Afghanistan, prov. Herat, montes Paropamisus, Chashma Obek (Tschaschme Obek), ca. 34°25' N, 63°05' E, substr. granit.», ca. 1800 m, 5.VIII.1962, K. H. Rechinger 19253 (Holo-: W!; iso-: E! B!) (KUBER & al., 1964). It is also present in the Iranian province (ostan) Khorassan (LEUTE, 1987). Its independent generic status is out of discussion and could be confirmed by a more detailed carpological analysis.



*Lechotypos*  
 UMBELLIFERAE  
*Calyptroscaadium bungei* (Boiss.) Pimenov  
 (Syn. *C. falscladum* Rich.f. & Baker)  
 No. 2002 Determ. M.G. Pimenov

W. Link. N. exsiccat.  
*Prangos bungei* Boiss.  
 1858. Sept. 2002  
 Vistulae Prangos? (Bl.)

W. Link. N. exsiccat.  
 Umbelliferae (*Prangos*?) a Boiss non commensurata.  
 Albumen anticis sulcatum nec involutum,  
 vittae vitatae magna, etc. Coni  
 ex fructu affine.  
 In montibus in Nisibis et Meschede.

Herbar. Bungeanum. iter persicum.  
 Umbelliferae (*Prangos*?) a Boiss non commensurata  
 albumen

Fig. 1.— *Prangos bungei* Boiss. (= *Calyptroscaadium bungei* (Boiss.) Pimenov).  
 [Bunge 1858, type specimen, LE]

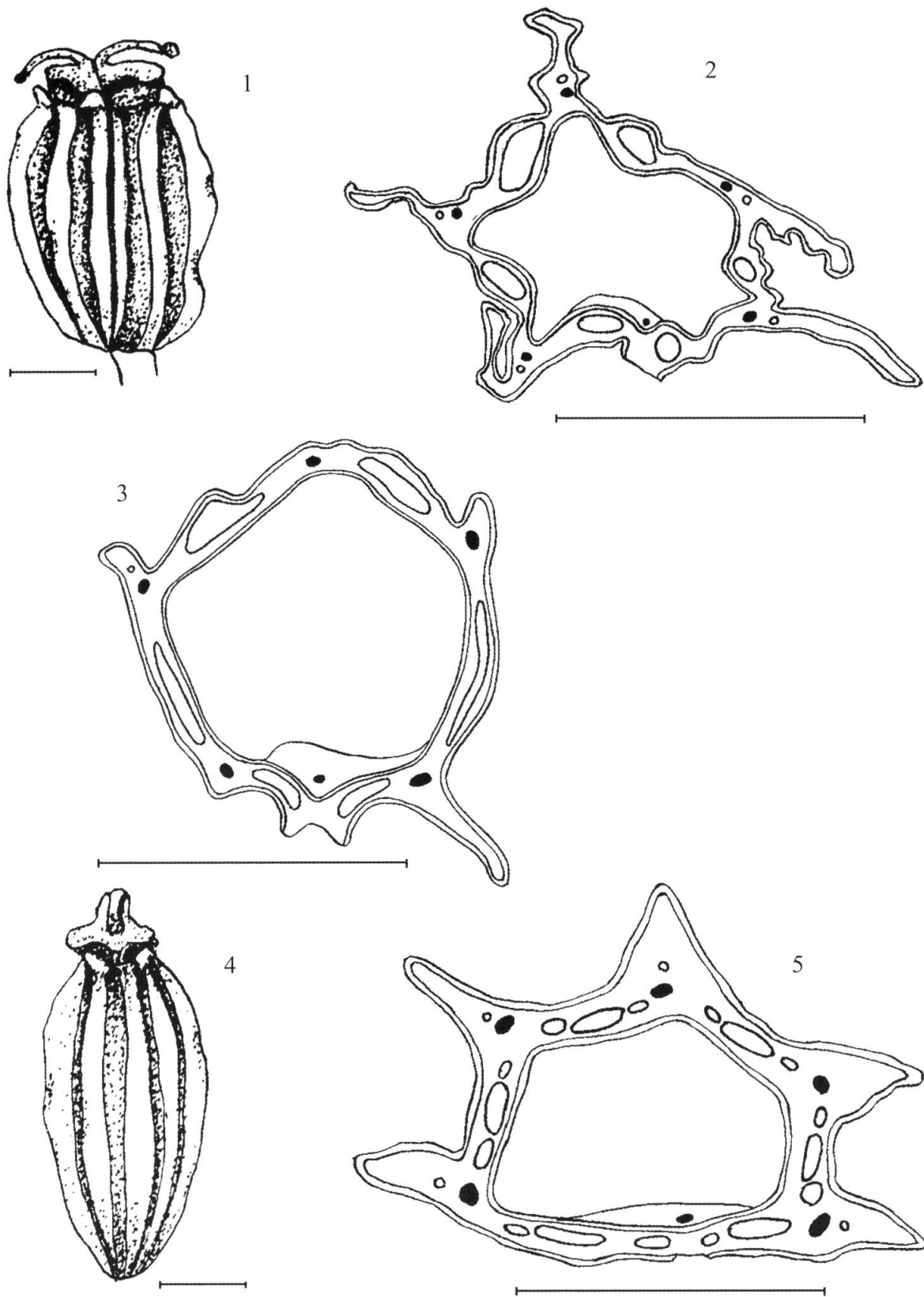


Fig. 2.— *Calyptroscaadium bungei* (Boiss.) Pimenov: 1. fruit; 2-3. TS of mericarps. *Calyptroscaadium rechingeri* Pimenov & Kljuykov: 4. mericarp; 5. TS of mericarp. [Scale bar = 1 mm]

[1-2. Bunge 1858, LE; 3. Koelz 16775, W; 4-5. Rechinger 19075, W]

We investigated some fruit samples of different origins (Fig. 2), showing similar structure. The fruits specimens of type *P. bungei* are not completely ripe, but the principal traits are obvious. Additionally we studied some gatherings of *C. polycladum* (with ripe and unripe fruits), kept in W and TARI. Mericarps 3-3,5 mm long, 1,6-2,5 mm broad, obovate. Calyx teeth broad, short, obtuse, triangular. Stylopods plate, dish-shaped, styles reflexed, up to 1 mm long. Ribs winged, more or less thin, slightly undulate. Sometimes (*Koelz 16785* from Khorassan) ribs could be slightly unequal, partly winged, partly keeled. Exocarp of small cells; commissure narrow. Mesocarp parenchymatous. Vittae in vallecule large, solitary, at commissural side 2. There are small secretor ducts in ribs. Endosperm at commissural side flat or slightly concave. In the main positions, this description agrees with carpological characteristics of *Calyptrosciadium* done in *Flora Iranica* (LEUTE, 1987). The only discrepancy seems to be in the endosperm form on commissural side, described by Leute as «sectione transversali semilunare, ad commissuram excavatum». It appears that the degree of development of the endosperm groove can vary in this species.

### How many taxa in *Calyptrosciadium*?

The separation of two subspecies in *C. bungei* is problematic. LEUTE & SPETA (1972) and LEUTE (1987) distinguished them as following:

*Calyptrosciadium polycladum* subsp. *polycladum*: Umbellae pedunculis usque ad 5 cm longis, radiis 1-3, 4-18 mm longis; umbellulae 2-6-radiatae, pedicellis 1-3 mm longis.

*Calyptrosciadium polycladum* subsp. *bamianicum*: Umbellae pedunculis usque ad 8 cm longis, radiis 4-5, usque ad 50 mm longis; umbellulae (6-) 10-radiatae, pedicellis usque ad 13 mm longis.

Table 156 in LEUTE (1987) seems to correspond to the diagnostic characters of subsp. *bamianicum*; reportedly based on *Rechinger 37000*. However, we studied in W another sheet under the same number 37000, which corresponds to the description of the type of the subspecies rather than subsp. *bamianicum*. At the same time, the collection *Rechinger 16707* from the same place (Darreh Shikar) has really 6 or even more rays in umbellets, and these rays are longer than in typical *C. bungei*. However, *Rechinger 16707* does not belong to the type material. This issue requires further investigation and more gatherings, when possible.

Subsp. *bamianicum* is indicated not only for Central, but also for NW Afghanistan, what could be problematic. In the same region, *Stewartiella crucifolia* (Gilli) Hedge & Lamond was shown to be distributed. Its general distribution ranges from Pakistan to W Afghanistan; in *Flora Iranica*, it is illustrated with a photo in Table 157, made from *Rechinger 19075*, collected in prov. Gerat (Ghorat), i.e. in NW Afghanistan. In Table 157, there is also a cross-section of *S. crucifolia* mericarp, being a full copie of Fig. 45-G in the treatment of the *Umbelliferae* of Pakistan by NASIR (1972). Our examination of the fruit anatomy (Fig. 2) of *Rechinger 19075* (W) showed a structure, quite different from Table 157 and in general corresponding to the carpological description of *Calyptrosciadium*, rather than *Stewartiella*.

The fruits of this plant (*Rechinger 19075*) are slightly compressed laterally. Mericarps elliptic to elliptic-elongate, ca. 4,5 mm long, 2 mm broad. Stylopods are depresso-conical, styles ca. 0,5 mm long, reflexed. Calyx teeth short, triangular. Ribs obtuse winged, slightly undulate, and enlarged at the base, subequal. Exocarp of comparatively large cells with slightly thickened outer and thin inner walls. Mesocarp of parenchymatous thin-walled cells. Vittae usually per three in each vallecule, one (central) being larger than others; on commissural side 5-6 vittae. Rib secretory ducts small, solitary in each rib. Endocarp of one layer of cells, slightly elongated in tangential direction. Endosperm flat on commissural side.

True *Stewartiella*, as described by Nasir (unfortunately we could not check these species' fruits), has numerous vittae disposed in the inner layer of mesocarp around endosperm («*fructus... vittis minutis et circum seminem numerosis*», p. 152) and thickened mericarp ribs, i.e. this genus seems to be closer to *Prangos* carpologically than *Calyptrosciadium* is.

So, «*Stewartiella crucifolia*» *Rechinger 19075* belongs to *Calyptrosciadium*, but is not identical with *C. bungei*. The main difference is the structure of fruits, having three vallecular vittae, the central one usually larger than the two others. Another difference is the form of the terminal leaf lobes. In *Rechinger 19075*, they are longer and flattened. The same character was noted in «*Flora Iranica*» (HEDGE & LAMOND, 1987: 214) as a difference of this gathering from the type of *S. crucifolia*. Both plants clearly differ also in their umbels, as *Rechinger 19075* has 6-7 umbel rays (in *C. bungei* – 1-3 rays), which are divaricated and considerably longer than in *C. bungei*. These differences seem to be sufficient to describe *Rechinger 19075* as a new (second) species of *Calyptrosciadium*.

### The genus *Calyptrosciadium* Rech. f. & Kuber

*Calyptrosciadium* Rech. f. & Kuber in Oesterr. Akad. Wiss., Math.-Naturwiss. Kl., Anz. 101: 362. 1964.

**Type:** *Calyptrosciadium polycladum* Rech. f. & Kuber

*Calyptrosciadium bungei* (Boiss.) Pimenov, **comb. nova** (Fig. 1)

≡ *Prangos bungei* Boiss., Fl. Orient. Suppl.: 260. 1888.

**Type: IRAN:** «In montosis prov. Khorassan Persiae inter Nishapur et Maschhed», 1858, *A. Bunge s. n.* (Holo-: LE!).

= *Calyptrosciadium polycladum* Rech. f. & Kuber in Oesterr. Akad. Wiss., Math.-Naturwiss. Kl., Anz. 101: 363. 1964 (LEUTE, 1987; HELLER & HEYN, 1993). **Type: AFGHANISTAN:** «Afghanistan, prov. Herat, montes Paropamisus, Chashma Obeh (Tschaschme Obeh), ca. 34°25' N, 63°05' E, substr. granit.», ca. 1800 m, 5.VIII.1962, *K. H. Rechinger 19253* (Holo-: W!; iso-: E!, B!).

= *Calyptrosciadium polycladum* subsp. *bamianicum* Leute in Oesterr. Bot. Z. 120: 306. 1972 (LEUTE, 1987). **Type: AFGHANISTAN:** «Bamian, Darrah Shikar inter Doab et Bulola», 1600-2000 m, 13.VII.1967, *K. H. Rechinger 37000* (Holo-: W!; iso-: E!, S, B!).

*Distribution.* – Afghanistan, Iran (E: Khorassan).

*Calyptrosciadium rechingeri* Pimenov & Kljuykov, **spec. nova**

**Type: AFGHANISTAN, Ghorat:** «In declivibus borealibus Kuh Cheling Sefid Daraq (Pirestan) S Parjuman», 2600-2800 m, *K. H. Rechinger 19075* (Holo-: W!).

*A Calyptroscadio bungei, qui proxima est, fructibus vittis vallecularibus ternis, unis magnis duabus minoribus (non singulis magnis), vittis commissuralibus 5-6 (non duabus), umbellis majoribus, radiis 6-7 (non 1-3) divaricatis, 2-3 cm (non 4-18 mm) longis, lobis terminalibus foliorum planis (non setaceis) bene differt.*

*Planta perennis, verosimiliter polycarpica, caulibus solitariis vel paucis, tenuibus, ca. 70 cm alti, glaberrimis, in parte media et superiore pauciramosis. Folia plerumque radicalia, 3-4-ternatisecta, petiolis longis, lobis ultimis linearibus, complanatis, mucronulatis. Umbellae in synflorescentiam laxam, centrales 5-6 cm in diam., 6-7-radiatae, radiis divaricatis, 2-3 cm longis. Involucrum involucellumque nulli. Dentis calycini parvi, triangulares. Petala verosimiliter flavescencia, ca. 0,7 mm longa, integra, apice lata incurva. Mericarps 4,5 × 2 mm, dorsaliter vix compressi, mericarpiis ellipticis vel elongatis, jugis subaequalibus, obtusis, anguste alatis, basi dilatatis. Stylopodia plano-conica, stylodia, reflexa, ca. 0,5 mm longa. Commissura angusta. Mesocarpium parenchymaticis, cellulis leptodermaticis. Vittae vallecularae ternae, inaequales, vittae centrales in valleculis latiores, vittae commissurales 5-6, vittae jugales parvae, solitariae. Endospermium ventre planum.*

*Distribution.* – Afghanistan.

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