



## Article

### ***Cephalopodium badachschanicum*, *Semenovia vachanica* and other Umbelliferae (Apiaceae) novelties of Afghan flora from Badakhshan Province, with notes on some species of the Pamirs.**

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#### **Abstract**

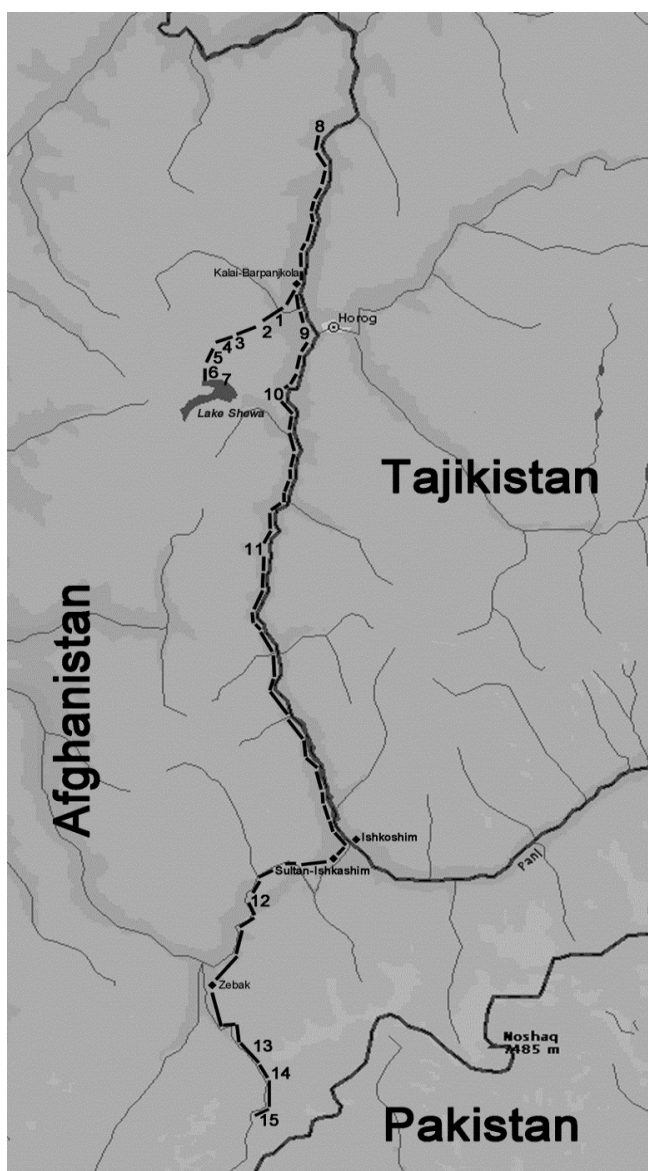
We report here on some Umbelliferae taxa that have been collected for the first time in the area of Afghan Badakhshan that borders Tajikistan. They include *Cephalopodium badachschanicum*, *Elaeosticta hirtula*, *Heracleum lehmannianum*, *Semenovia imbricata*, and *Semenovia vachanica*. The distribution of *Ferula gigantea* in Afghan Badakhshan was confirmed by a herbarium collection. Following comparative studies of plants from Tajik and Afghan Badakhshan the nomenclature of *Angelica komarovii*, *Conioselinum tataricum* and *Pseudotrachydium dichotomum*, as given in Rechinger's 'Flora Iranica,' was revised. In total, 21 species of the Umbelliferae are critically analyzed.

**Keywords:** Afghanistan, Badakhshan, *Cephalopodium*, *Elaeosticta*, *Ferula*, *Heracleum*, *Semenovia*, Umbelliferae

#### **Introduction**

The narrow gorge of the Pyandj River cuts the territory of Badakhshan into Tajik and Afghan parts. In the 1870s it was suggested that the gorge be considered as the frontier between areas of British and Russian interests. The valley later became the USSR-Afghanistan and finally the Tajikistan-Afghanistan border.

Botanical investigations in both parts of this unique territory have been carried out independently and, as a result, there are some inexplicable differences between plant lists of Tajik and Afghan Badakhshan, including those on Umbelliferae distribution. The former Soviet part of Badakhshan was studied in greater detail. Numerous local investigations were summarized in a local Flora by Ikonnikov (1979) and in Flora of Tajikistan, specifically in Vol. 7 (Korovin *et al.*, 1984). Usually, species growing on the right bank of the Pyandj River are not known or, at least, have not been documented for the left bank. The latest critical inventory of



**Figure 1.** Sketch-map showing the track of the 2013 expedition (dashed line) and the localities of plant collections (1–15)

**1** near Andez village, 37°30.45'N, 71°28.63'E; **2** below Gardzhwin village, 37°28.60'N, 71°24.26'E; **3** above Gardzhwin village, 37°28.60'N, 71°24.26'E; **4** from Gardzhwin village to Shewa Lake, 37°27.43'N, 71°24.22'E; **5** Gardzhwin pass, 37°25.92'N, 71°22.61'E; **6** descent from Gardzhwin pass to Shewa Lake, 37°25.27'N, 71°21.60'E; **7** Shewa Lake, 37°25'N, 71°20'E; **8** near Chishnudi Bolo village, 37°44.19'N, 71°32.93'E; **9** Khust (opposite Khorog), 37°30.83'N, 71°32.93'E; **10** Shekhron village, 37°23.42'N, 71°28.43'E; **11** Zuvardara rivulet, 37°08.89'N, 71°26.36'E; **12** near Surkhudara village, 36°38.03'N, 71°25.22'E; **13** Degul' village, 36°25.51'N, 71°23.89'E; **14** mouth of River Match, 36°23.26'N, 71°25.64'E; **15** valley of River Match near Khloped locality. 36°22.39'N, 71°25.27'E

the Umbelliferae for Afghan Badakhshan is contained in Vol. 162 of 'Flora Iranica' (Rechinger, 1987) but the data, especially from the Pyandj River valley, are incomplete, except for the so-called Wakhan Corridor (Podlech and Anders, 1977). They remain incomplete even in the new checklist for Flora of Afghanistan (Breckle *et al.*, 2013). In recent years, due to the political situation in Afghanistan, botanical studies in many regions of the country were hardly carried out at all.

In August, 2013, for six days we travelled in a relatively peaceful border area of Afghan Badakhshan (Fig. 1) in the Pyandj River valley, from Chishnudi-bolo village to Sultan-Iskashim and also in the pass of Gardzhwin, Lake Shewa, the valley of Surkhudara, Zebak village, and the valleys of Dara-i-Degul' and Match rivers on the north slope of the Hindu Kush.

The authors' collections, all deposited in MW, of Afghan Umbelliferae comprise 20 species. Another species was seen on the opposite bank of the Pyandj River, but could not be collected.

### **Taxonomic treatment**

1. *Angelica komarovii* (Schischk.) V.N.Tikhom. Biol. Nauki, Moscow 1 (37): 91. 1967 (Fig. 2).

≡ *Archangelica komarovii* Schischk. in Schischkin (ed.), Fl. URSS 17: 353, 31. 1951.

≡ *Angelica archangelica* L. f. *komarovii* (Schischk.) Weinert, Feddes Repert. 84, 4: 310. 1973.

**Typus:** Tajikistan, 'Montes Zeravschanici, ad ripam lacum Iskander-kul', 18.VIII.1893, *Komarov s.n.* (holotype LE!; isotype GH).

**Our collections:** Afghanistan, Badakhshan, 20 km SW of Sultan-Ishkashim on the road to



**Figure 2.** *Angelica komarovii* (Schischk.) V.N.Tikhom.

Faizabad, near Surkhudara village, along aryk (irrigation ditch), 36°38.03'N, 71°25.22'E, 2650 m. 08.VIII.2013, 86; Badakhshan, above Gardzhwin village, Khidardzhudara River, moist pebbles along the stream, 37°28.60'N, 71°24.26'E, 3020 m. 06.VIII.2013, 60.

**Comments:** The species was indicated (under the name of *Archangelica komarovii*) only for two localities in Afghanistan – ‘Panjshir, Chimar, Hedge and Wendelbo’ and ‘6 km supra Kur Petau, Podlech’ (Podlech, 1970; Hedge *et al.*, 1987)). It is a Middle-Asiatic, mainly Pamiro-Alai, race of *Angelica archangelica*.

**Distribution:** Kirgizstan, Tajikistan, Uzbekistan, Afghanistan.

**2. *Bupleurum aitchisonii*** (Boiss.) H.Wolff in Engler (ed.) Pflanzenreich 43 (IV, 228): 142. 1910.

≡ *Bupleurum olympicum* Boiss. var. *aitchisonii* Boiss. Fl. Orient. Suppl.: 252. 1888.

**Typus:** Afghanistan, Kurram Valley, amongst stones at 3500 to 4500 m, Sikaram, VIII.1878, *Aitchison* 929 (holotype G-BOIS!; isotypes BM!, C!, DD!, GH!, K!, LE!).

=*Bupleurum aitchisonii* (Boiss.) H.Wolff var. *abbreviatum* H.Wolff in Engler (ed.) Pflanzenreich 43 (IV, 228): 143. 1910.

**Typus:** Afghanistan, auf Alpen des Kuram-Thales, *Aitchison* 929.

**Distribution:** India (W Himalaya: Jammu and Kashmir, Himachal Pradesh, Uttaranchal), Pakistan, Tajikistan, Afghanistan.

**Our collections:** Afghanistan, Badakhshan, road from above Gardzhwin village to Shewa Lake. We found the species twice, in localities close to each other, along the track from Gardzhwin village to Shewa Lake, Khidardzhidara River, spiny cushion vegetation with dominance of *Cousinia semilacera* Juz. 37°27.43'N, 71°24.22'E, 3140 m, 06.VIII.2013, 62; *ibid*, north bank of Shewa Lake, 37°25.14'N, 71°20.41' E, 3200 m, 06.VIII.2013, 72.

**Comments:** These gatherings completely match the type specimen of the species and differ from the same name collections from Tajik Badakhshan, with one exception. The species from Tajik Pamirs was described as a new one (now in press: Pimenov and Kljuykov, Phytotaxa); the Anders' plants from Wakhan also belong to this new species. *B. aitchisonii* is distributed in Tajik Badakhshan but it is rare there, being known, until now, only from the Shakhidara River valley.

**3. *Carum carvi*** L. Sp. Pl.: 263. 1753.

**Typus:** Europe, 'In Europae borealis pratis. *Herb. Clifford*, 106, *Carum 1*' (lectotype BM-Cliff: designated by Reduron and Jarvis in *Regnum Veg.* 127: 30. 1993).

**Distribution:** Northern, Central, Eastern and South-Western Asia, Europe, Africa, North America.

**Our collections:** Afghanistan: Badakhshan, above Gardzhwin village, Khidardzhidara River 37°28.60'N, 71°24.26'E, 3020 m, 06.VIII.2013, 56; Badakhshan, 20 km SW of Sultan-

Ishkashim on the road to Faizabad, near Surkhudara village 36°38.03'N, 71°25.22'E, 2650 m, 08.VIII.2013, 85; Badakhshan, north slope of Hindukush Range, valley of Dara-i-Degul' River, near Degul' village, 36°25.51'N, 71°23.89'E, 2780 m, 09.VIII.2013, 90.

**Comments:** Caraway is common in artificially irrigated mountain grasslands under high grazing pressure.

**4. *Cephalopodium badachschanicum*** Korovin, Izv. Akad. Nauk Tajiksk. SSR, Otd. Biol. Nauk 1(50): 17. 1973.

**Typus:** Tajikistan, 'Jugum Darvas, pars meridionalis, in angustis Obi-Charak, 07.VII.1968, *Koczkaeva and Abdusaljamova*' (holotype TAD!).

**Distribution:** Tajikistan, Afghanistan.

**Our collections:** Afghanistan, Badakhshan, valley of Pyandj River, left bank 50 km below Kalai-Barpandzhokala village, rocks near Chishnudi Bolo village, 37°44.19'N, 71°32.93'E, 2000 m, 07.VIII.2013, 76; Afghanistan, Badakhshan, valley of Pyandj River, left bank, 8 km above Kalai-Barpandzhokala village, locality Khust (opposite Khorog), sheer rocks on the river bank, 37°30.83'N, 71°32.93'E, 2017 m, 07.VIII.2013, 78.

**Observation:** A population of *C. badachschanicum* was seen across the river on the rocks in the region of Pitab, opposite the Tajik Badakhshan village of Deh.

**Comments:** This species was found for the first time in Afghanistan, on the left bank of the Pyandj River in two localities, one of which was the highest, 2017 m, not only on the left bank, but in the whole species area. In both localities the species grows in rock fissures, being a component of the rock flora.

The type locality of this species is the Obi-Charak Canyon in the Darwaz Ridge (Tajikistan). There are several other known localities (according to the collections at LE, TAD, MW, and KHOR), all within the Tajik Badakhshan territory: southern slope of the Darwaz Ridge, basin Obi-Chumbou, Dudarchi gorge, rocks; southern slope of the Darwaz Ridge, Pshent, on the rocks; the Darwaz Ridge, southern slope, valley of the Obi-Chorok, below Pobot village; Badakhschan, basin of Yazgulem, Chavud gorge; northern slope of Yazgulem ridge, basin Darai-Matrab, 1900 m, rocks; western Pamirs, Yazgulem ridge, near Voznaud village; Yazgulem range, valley of Pyandj River, near Shipad village; between Shipad village and Yazgulem mouth; Yazgulem, basin of Darai-Matrab; valley of Pyandj River, Shidz village; northern slope of the Rushon Ridge, basin of Bartang River, near Adjarkh village, in rock fissures; Bartang gorge, near Rid village, 2200 m; Bartang River, Palrud village, rocks; western Pamirs, Rushon ridge, Barkhuf, right bank, 2100 m, rocks; Rushon, ovring, Kallad. We also

discovered populations of *C. badachschanicum* in the Pyandj River valley near Zebardascht village, 2040 m, the highest locality in the Pyandj Valley, on the right bank, near Shipad, Deh, Kalat, Pozgard, Shidz, Vashd, Derushon, between Bartang mouth and Pastchuv village, Voznavad, between Badzhudara mouth and Dasht village, between Dasht and Chekhikandiz.

**5. *Conioselinum tataricum*** Hoffm., Gen.Pl. Umbell. ed. 2: 185. 1816.

**Typus:** ‘Described on the basis of plants, cultivated in Botanical Garden Gorenki (‘hort. Gorenk.’) ‘.

=*Selinum papyraceum* C.B.Clarke, in Hooker f. (ed.), Fl. Brit. India 2: 701. 1879.

=*Cortia papyracea* (C.B.Clarke) Leute, Ann. Naturhist. Mus. Wien 73: 84. 1969.

=*Conioselinum papyraceum* (C.B.Clarke) Pimenov and Kljuykov, Bot. Zhurn. (Moscow & Leningrad) 84(3): 91. 1999.

**Typus:** India, ‘Polgam, Kashmir, 12000 ft., 04.IX.1875, *Clarke 31047*’ (lectotype K! designated by Nasir in Fl. W. Pakistan 20: 117. 1972).

=*Conioselinum schugnanicum* B.Fedtsch., Trav. Mus. Bot. Acad. Petersb. 1: 135. 1902.

**Typus:** Tajikistan, ‘In valle fl. Gunt prope Rivak, in frutices, 29.VII.1901, *B.A.Fedtschenko*’ (lectotype LE! designated by Vinogradova in Bot. Zhurn. (Moscow & Leningrad) 84(3): 84. 1999); ‘A castellum Chorog ad pag. Rivak, ad riguorum et rivulorum margines, in frutices, 29.VII.1901, *B.A.Fedtschenko*’ (syntype LE!); ‘In valle fl. Toguz-bulak, a locum Vankala (in fl. Gunt) ad locum Dzhilandy, 21–31.VII.1901, *B.A.Fedtschenko*’ (syntype LE!).

**Distribution:** Arctic, Northern, Central, Eastern and South-Western Asia, Europe.

**Our collection:** Afghanistan, Badakhshan, Zebak distr., north slope of Hindu Kush Range, valley of Dara-i-Degul’ River, near mouth of Match River, 36°23.26’N, 71°25.64’E, 2960 m, 09.VIII.2013, 91.

**Comments:** The species under the name of *C. tataricum* is absent in ‘Flora Iranica’, as well as any other species of *Conioselinum* Hoffm., but Leute (1969) and Hedge *et al.* (1987) showed *Cortia papyracea* (*Selinum papyraceum*, *Conioselinum papyraceum*) to be present in Nuristan, Munjan, Wakhan, and Badakhshan. The status of the species is controversial. The attribution to *Conioselinum* is evident, as well as its identity with *Conioselinum schugnanicum* type specimens, whereas the separate status of the latter species is dubious. B.A.Fedtschenko (1902), when describing *C.schugnanicum*, could not indicate any specific characters differentiating it from *C. tataricum*, besides ‘overall dissimilarity’, smaller plant parts and broader leaf lobes. *C. tataricum*, recently recorded also for Himachal Pradesh in Western Himalaya (Pimenov *et al.*, 2003), is, however, a very variable species, and its variability

overlaps these differences. So, we attribute our Afghan collection to *C. tataricum* s.l. The local race, known as *C. schugnanicum*, seems to be regarded as its synonym.

**6. *Daucus carota* L., Sp. Pl.: 242. 1753.**

**Typus:** Europe, 'In Europae campis exaridis, 340.1' (LINN, lectotype designated by Saenz Lain in *Anales Jard. Bot. Madrid* 37: 487. 1981, cf. Wijnheimer *et al.*, 1988).

**Distribution:** Northern, Central, Eastern, South-Western and Mediterranean Asia, Europe, Africa, North America, Australia and Oceania.

**Our collection:** We collected seeds of wild carrot between the villages of Kalai-Barpandzhokala and Chishnudi Bolo.

**Comments:** The species is widely distributed in Asia, mainly as a weed, and is regarded as the ancestor of the cultivated carrot. In Afghanistan it was collected in eastern, northeastern and central parts of the country (Hedge *et al.*, 1987). The species is also common in Tajikistan and in the Tajik part of Badakhshan, except the Pamirs. During our trip we observed it in Afghan Badakhshan near the border pass between Khorog and Shignan, 2300 m and along the Pyandj valley up to Chishnudi Bolo (2000 m). Undoubtedly, the species grows lower in the valley. Upstream in the Pyandj valley the species was not seen above Shekhron village.

**7. *Elaeosticta hirtula* (Regel and Schmalh.) Kljuykov, Pimenov & V.N.Tikhom.,**

*Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol., n.s.*, 81(6): 92. 1976.

≡ *Conopodium hirtulum* Regel and Schmalh., *Izv. Imp. Obshch. Lyubit. Estestv. Moskovsk. Univ.* 34(2) 28. 1881.

**Typus:** Kirgizstan, 'In montibus Maili, Krause' (lectotype LE! Designated by Kljuykov in *Novosti Sist. Vyssh. Rast.* 20: 152. 1983).

= *Scaligeria aitchisonii* H.Wolff, *Repert. Spec. Nov. Regni Veg.* 21: 109. 1925.

= *Elaeosticta aitchisonii* (H.Wolff) Kljuykov and al., *Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol., n.s.*, 81(6): 93. 1976. **Syn. nov.**

**Typus:** India, 'Punjab, Aitchison' (holotype K).

= *Scaligeria indica* H.Wolff, *Repert. Spec. Nov. Regni Veg.* 27: 126. 1929. **Syn. nov.**

**Typus:** India, 'W Kashmir: Muzaffrabad, 750 m, VI.1907, Keshavanand 704' (syntype, DD);

India, 'Kashmir: Sadhuganga, Lolah forests, Jhelun valley, Kashmir, 2100 m, VIII.1907, Keshavanand 738' (syntype DD!).

= *Scaligeria aitchisonii* H.Wolff var. *multiradiata* O.E.Schulz, *Notizbl. Bot. Gart. Berlin-Dahlem* 11: 878. 1933.

**Typus:** Pakistan, 'NW Himalaya: Abbottabad, Hazara, 1300 m, 01.VI.1928, *Stewart 9590*' (holotype NY).

=*Scaligeria polyantha* Rech.f., KBIol. Skr. 13(4): 121. 1963.

**Typus:** Afghanistan, Badakhshan: Faizabad, 1100–1900 m, 11.VII.1948, *Edelberg 1367* (holotype W; isotype C).

≡ *Scaligeria scariosibracteata* Rech.f. & Riedl, Biol. Skr. 13(4): 123. 1963.

≡ *Elaeosticta scariosibracteata* (Rech.f. & Riedl) Kljuykov, Pimenov & V.N.Tikhom., Byull. Moskovsk. Obsch. Isp. Prir., Otd. Biol., n.s., 81(6): 93. 1976. **Syn. nov.**

**Typus:** Afghanistan, Nuristan, in valle fl. Pech inferiore inter confluentes fl. Kurder et Gusalak, 1150m, *Kerstan 732* (holotype HAL).

=*Scaligeria afghanica* Podlech, Mitt. Bot. Staatsamml. München 8: 177. 1970.

**Typus:** Afghanistan, Prov. Takhar: Unteres Namakab-Tal, Lösshänge westlich von Taqcha Khana, 1500 m, 24.VI.1965, *Podlech 11497* (holotype M!; isotype M!).

**Our collection:** Afganistan, Badakhshan, north bank of Shewa Lake, fine-gravel slope, covered by sparse herbaceous vegetation, 37°25'N, 71°20'E, 3200 m, 06.VIII.2013, 71.

**Comments:** This species, one of the most widely distributed members of the genus in Middle Asia, is missing in the *Scaligeria* treatment by Rechinger (1987) for the area of 'Flora Iranica', although closely related species like *S. scariosibracteata* (= *Elaeosticta scariosibracteata*), *S. indica*, *S. aitchisonii* (= *Elaeosticta aitchisonii*), *S. polyantha* and *S. afghanica* were treated. The last three were also synonymized under *E. hirtula* (Kljuykov, 1983).

*E. hirtula* is a variable species in the genus, and, in Middle Asia, broad infraspecific variation of leaf dissection and the number of umbel rays are observed, characters that distinguish the above mentioned Afghan species. The collection of true *E. hirtula* in the area bordering with Middle Asia and the absence of any essential difference with the Afghan species, allows extension of the synonymy of *E. hirtula* and the inclusion of the species in the Afghan flora.

**8. *Ferula gigantea*** B.Fedtsch., Trudy Bot. Muz. Imp. Akad. Nauk 1: 135. 1902.

**Typus:** Tajikistan, 'in valle fl. Pjandzh, in declivibus lapidosis inter pag. Darmarak et pag. Anderob, 8000', 25–27.VII.1901, *B.A.Fedtschenko*' (holotype LE!; isotype B!).

=*Ferula latifolia* Korovin, Monogr. Ferula: 34. 1947.

**Typus:** 'Tajikistan, Asia Media: Karategin prope Kamtschirak, 25.07.1916, *B.A.Fedtschenko, An.P.Fedtschenko and Knorring 1293*' (holotype LE!).

=*Ferula inflata* Korovin, Monogr. Ferula: 35. 1947.



**Typus:** ‘Tajikistan, Asia Media: Pamir-Alaj, montes Tadshikorum in regione Schuroabad; in regione fruticeta, 1840 m, 29.VII.1935, *Linczevski 852*’ (holotype LE!).

**Distribution:** Tajikistan, Uzbekistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, left bank of Pyandj River, 16 km above Kalai-Barpandzhokala village, near Shekhron village in shrubby vegetation among small fields. 37°23.42'N, 71°28.43'E, 2140 m, 07.VIII.2013, 79.

**Observation:** The species was recorded also on the left bank of the Pyandj River, near the mouth of the Arakht River.

**Comments:** We treat this species broadly, including *F. inflata* and *F. latifolia* (Pimenov and Baranova, 1979). In such interpretation *F. gigantea* is distributed in S Uzbekistan, S Tajikistan and Gorny Badakhshan. From the latter region (‘In valle fl. Pjandzh, in declivibus lapidosis inter pag. Darmarak et pag. Anderob, 8,000’, 25-27.VII.1901, B.A.Fedtschenko’, LE!), the species was described by B.A. Fedtschenko (1902: 137) who noted that he and his fellow travellers saw the species on the Afghan bank of Pyandj opposite Anderob village. Podlech (1970) found the species (*s.l.*) in another province of Afghanistan, namely Takhar, near Khost-o-Fereng. On the basis of this information, Afghanistan was included in the general distribution of the species (Korovin *et al.*, 1984). Chamberlain and Rechinger (1987) list, for Afghanistan, a closely related species, *F. trachyphylla* (provinces of Mazar-i Sharif, Kabul, Nuristan, Katahan, and Badakhshan). They regarded one gathering from Badakhshan (Hedge and Wendelbo W-9360) as intermediate between *F. trachyphylla* and *F. gigantea* and the gathering from Mazar-i Sharif as related to *F. gigantea s.l.* We can now confirm its presence in Afghan Badakhshan.

**9. *Ferula grigorievii*** B.Fedtsch., Trudy Bot. Muz. Imp. Akad. Nauk 1: 137. 1902.

**Typus:** Tajikistan, Plantae Turkestanicae. Schugnan, in valle fl. Gunt, Vankala-Rivak, 22.VII.1901, O.A. and B.A.Fedtschenko (lectotype LE! designated by Vinogradova in Bot. Zhurn. (Moskow & Leningrad) 85: 91. 2000).

**Distribution:** Tajikistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, north slope of the Hindu Kush, valley of River Match (tributary of Dara-i Degul’), stony terrace, 36°22.39'N, 71°25.27'E, 3070 m, 09.VIII.2013, 94.

**Observation:** We observed the species near Andez village and in the Pyandj valley, near the mouth of Zuvadara (2330 m), as well as near Zebak and Degul’ villages. All plants grew on screes and in rock fissures.

**Comments:** The species is endemic to Tajikistan and Afghanistan. Chamberlain and Rechinger (1987) recorded the species from two localities of NE Afghanistan, the valley of Qazi Deh (Wakhan) and near Zebak (Badakhshan). *F. grigoriwii* is one of the two most widely distributed *Ferula* L. species in the region of our studies.

**10. *Ferula kokanica*** Regel and Schmalh., Trudy Imp. S.-Petersburg. Bot. Sada 5(2): 593. 1877.

**Typus:** Kirgizstan, 'in Kokaniae valle fluvii Isfairam, 8000', *O.A.Fedtschenko*' (holotype LE!). =*Ferula schugnanica* B.Fedtsch., Trudy Bot. Muz. Imp. Akad. Nauk 1: 136. 1902.

**Typus:** Tajikistan, 'in valle fl. Gunt, in declivibus lapidosis ab loco Vankala ad pag. Rivak, 8-10000', 2.VII.1901, *B.A.Fedtschenko*' (holotype LE!).

**Distribution:** India (W Himalaya: Jammu and Kashmir), Pakistan, Kirgizstan, Tajikistan, Uzbekistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, near Shewa Lake, below Gardzhwin pass towards the lake, loess-stony slope, rarefied spiny herbaceous vegetation under strong pasture pressure. 37°25.14'N, 71°20.41'E, 3360 m, 06.VIII.2013, 74.

**Observation:** We found this species also near the mouth of Zuvardara in the valley of the Pyandj River.

**11. *Ferula narthex*** Boiss., Fl. Orient. 2: 994. 1872. (Fig. 3)

≡ *Narthex asafoetida* Falc. in Lindley (ed.), Gard. Chron.: 743. 1846; Trans. Linn. Soc. London 20: 285. 1846, non *Ferula assa-foetida* L.

≡ *Peucedanum narthex* (Boiss.) Baill., Hist. Pl. 7: 185. 1879.

**Typus:** India, 'inter saxa in valle Astore vel Hussorah dictae prope Indum, ultra Cashmeer prope Boostbon, 23.IX.1838, *Falconer*' (holotype K!).

=*Ferula koelzii* Rech.f. Riedl, Biol. Skr: 70. 1963.

**Typus:** Afghanistan, 'Sangcharak, Safedsang, N Qala Shehar, 3048 m, 23.IX.1939, *Koelz 13997*' (holotype US).

**Distribution:** Pakistan, Tajikistan, Afghanistan.

**Our collections:** Afghanistan: Badakhshan, vicinity of Shewa lake, on the descent from Gardzhwin pass to the lake, loess-stony slope, rarefied spiny herbaceous vegetation under strong growing pressure. 37°25.14'N, 71°20.41'E, 3360 m, 06.VIII.2013, 69; Badakhshan, north slope of Hindu Kush, valley of River Match (tributary of Dara-i Degul'), stony terrace, 36°22.39'N, 71°25.27'E, 3070 m, 09.VIII.2013, 93.

**Comments:** The identification of ferulas smelling of rotten garlic that belong to sect. *Narthex* (Falc.) C.B.Clarke, in High Asia is controversial. In Middle Asia (Tian Shan and Pamiro-Alai) we distinguish *F. foetidissima* Regel and Schmalh., *F. conocaula* Korovin, *F. incisoserrata* Pimenov and Baranova, *F. tadshikorum* Pimenov, *F. eugenii* Kamelin, and *F. violacea* Korovin (Pimenov and Baranova, 1979), but in Afghanistan only *F. narthex* Boiss., described from



**Figure 3.** *Ferula narthex* Boiss.

western Himalaya, has been recorded. Chamberlain and Rechinger (1987) regarded *F. narthex* as ‘clearly a common species’ for Afghanistan. We believe *F. tadshikorum* with broader fruits, in comparison with other species of the group, widely distributed in the hills of South Tajikistan, must be present in adjacent provinces of Afghanistan, e.g. in Mazar-i Sharif. In the high mountains of Badakhshan, this species has not been found. We noted *F. foetidissima*, as the most widely distributed species of Western Pamiro-Alaj, in a limited area in Gorny Badakhshan too, but this part of the area, near Khorog, is rather isolated. At the same time, the area of the Khorog population borders Afghanistan. We found that leaves (there were almost no generative specimens of different *Ferula* species in 2013) of *F. narthex* from Afghan Badakhshan (Shewa Lake; Zebak; valley of Match River) and those of the collection by H.Falconer (West Tibet, n 495, LE) were quite similar to *F. foetidissima* leaves from the

Khorog population. The early publication by Holmes (1889), who summarized the protologues and additional information on eight oriental species with an alliaceous smell, seems to be useful in our discussion. The author noted the difference in leaf segment margin between *F. narthex* and *F. foetidissima*, almost entire in the former and distinctly serrulate in the latter. Based on this character, the Khorog population can be attributed to *F. narthex*. We have also noticed that the smell of the root and resin of the Afghan *F. narthex* is not as strong as that of *F. foetidissima* from its classical locality in the Zeravschan basin. So, we would like to attribute the Khorog population to *F. narthex*. It appears to be new for Tajikistan flora.

**12. *Heracleum lehmannianum*** Bunge, Index Seminum (TU) 1850: unpagged [2]

**Typus:** Uzbekistan, ‘ad torrentes prope Samarkand, 14.IX.1841, *Lehmann*’ (holotype P!, isotype G-BOIS!, (seeds)).

= *Heracleum afghanicum* Kitam., Acta Phytotax. Geobot. 17: 131. 1958. **Syn. nov.**

**Typus:** Afghanistan, ‘near Schibar Pass, 2500 m, 24.VI.1955, *Kitamura*’ (holotype KYO!).

**Distribution:** Kazakhstan, Kirgizstan, Tajikistan, Uzbekistan, Pakistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, route between Kala-i Barpandzhokala and Gardzhwin pass, near Andez village, pebbles along the stream. 37°30.45'N. 71°28.63'E, 2300 m, 05.VIII.2013, 55.

**Observation:** We also found the species on the north slope of the Hindu Kush, in the Match River valley (locality Chloped, 3080 m), but could not collect herbarium material.

**Comments:** The identity of the species in this locality is beyond doubt, and it appeared to be new for Afghan flora.

This species had never been recorded for Afghanistan (Mandenova, 1987), although a species from the same sect. *Pubescentia* Manden., *H. afghanicum*, described from Shibar pass in Panjshir province, was listed in ‘Flora Iranica’ for Katahan and Minjan provinces in NE Afghanistan. *H. afghanicum* was described without mature fruits (Kitamura, 1958). Its carpological description was added later by Mandenova (1987), based on material specially collected in the type locality. A comparison of Middle Asian *H. lehmannianum* and our collections of the species from Afghan Badakhshan with descriptions of *H. afghanicum* (Kitamura, 1958; Mandenova, 1987) and its type (KYO!) showed no difference whatsoever. We therefore synonymise this name. The picture in Breckle and Rafiqpoor (2010) could be attributed to *H. lehmannianum* too.

**13. *Lomatocarpa steineri*** (Podlech) Pimenov, Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol. 87(1): 116. 1982. (Fig. 4).

≡*Ligusticum steineri* Podlech, Mitt. Bot. Staatsamml. München 8: 173. 1970.

**Typus:** NE Afghanistan, ‘prov. Kapisa, Oberes Panjir-Tal, Passhöhe am Übergang von Kur-Petau in das obere Dekhawak-Tal. 3800 m, 19.VIII.1965, *Podlech 12497*’ (holotype M!; isotypes G!, W!).



**Figure 4.** *Lomatocarpa steineri* (Podlech) Pimenov

=*Pachypleurum linearilobum* Korovin, Izv. Akad. Nauk Tadzh.SSR, Otd. Estest. Nauk 2(51): 9. 1973.

**Typus:** Tajikistan, ‘Pamir occidentalis, regio Schachdariensis, adversus pago Roschkaly, in altitudine 3800 m, 29.VII.1960, *Agachanajanz 277*’ (holotype TAD!).

**Distribution:** Pakistan, Tajikistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, vicinities of Shewa Lake, Gardzhwin pass, rocky outcrops, among stones and detritus, 37°25.92'N, 71°22.61'E, 3650 m 06.VIII.2013, 66.

**Comments:** Our gathering completely corresponds to *Ligusticum steineri* (= *Lomatocarpa steineri*). Rechinger (1987) synonymized *Ligusticum steineri* with the previously described *Ligusticum afghanicum* Rech.f. We followed him in the synonymization of *Lomatocarpa steineri* and *Lomatocarpa afghanica*. (Pimenov and Kljuykov, 2005). The picture of *Ligusticum afghanicum* in ‘Flora Iranica’ (Rechinger, 1987) is not, however, completely similar to

*Lomatocarpa steineri*. Further studies could reveal the presence of two *Lomatocarpa* species in the region.

**14. *Prangos pabularia*** Lindl., Quart. J. Sci. Lit. Arts 19: 7. 1825.

≡ *Cachrys pabularia* (Lindl.) Baill., Hist. Pl. 7: 193. 1879.

≡ *Koelzella pabularia* (Lindl.) M.Hiroe, Umbell. Asia 1: 147. 1958.

**Typus:** India, ‘in Indiae orientalis temperatis circa Draz, *Moorcraft*’.

**Distribution:** India (W Himalaya: Jammu and Kashmir), Pakistan, Kazakhstan, Kirgizstan, Tajikistan, Uzbekistan, Turkmenistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, on the descent from Gardzhwin pass to Gardzhwin village, Khidardzhakdara River, 37°26.60'N, 71°24.26'E, 3020 m, 05.VIII.2013, 59.

**Observation:** We observed the species also near the villages of Andez (2300 m) and Gardzhwin.

**Comments:** This species is widely distributed in most regions and provinces of Afghanistan, including Badakhshan (Herrnstadt and Heyn 1987). The localities cited were not entirely new, as the species had been collected in the mountains near Shewa Lake by Lindberg, and nearby in NE Afghanistan by other collectors. In 2013, for all practical purposes, the plants did not flower and therefore bore no fruits.

**15. *Pseudotrachydium dichotomum*** (Korovin) Pimenov and Kljuykov, Feddes Repert. 111(7–8): 527. 2000b.

≡ *Trachydium dichotomum* Korovin, Not. Syst. Herb. Inst. Bot. and Zool. Acad. Sci. Uzbekistan 12: 19. 1948.

≡ *Aulacospermum dichotomum* (Korovin) Kljuykov and al., Bjull. Moskovsk. Obšč. Isp. Prir. Otd. Biol. 81, 4: 82. 1976.

**Typus:** Uzbekistan, ‘Pamir-Alaj, montes Kuhitang supra p. Kyzyl-alma, 28.VI.1927, *Popov 192, 193*’ (holotype TASH!; isotype LE!).

=*Trachydium depressum* (Boiss.) Boiss. subsp. *chitralicum* Rech.f. and Riedl, K. Danske Vid. Selsk., Biol. Skrift. 13, 4 (Symb. Afghan. 5): 131. 1963.

**Typus:** Pakistan, Chitral, Oihor Gol, *Bowes-Lyon 825* (holotype BM!; isotype RAW).

**Distribution:** Pakistan, Kirgizstan, Tajikistan, Uzbekistan, Turkmenistan, Afghanistan.

**Our collection:** Afganistan, Badakhshan, north shore of Shewa Lake, fine-gravel slope, covered by sparse herbaceous vegetation, 37°25'N, 71°20'E, 3200 m, 06.VIII.2013, 70.

**Comments:** The plants from Lake Shewa completely correspond to *Trachydium dichotomum* Korovin from Tajikistan. In ‘Flora Iranica’ the same taxon is referred to *Trachydium depressum*

(Boiss.) Boiss. subsp. *chitralicum* Rech.f. and Riedl, described from Chitral. We initially attributed the species to *Aulacospermum* Ledeb. sect. *Pseudotrachydium* Kljuykov *et al.* and then treated it as a species of a separate genus *Pseudotrachydium* (Kljuykov *et al.*) Pimenov and Kljuykov (2000b)

**16. *Semenovia imbricata*** Ukrainskaja and Kljuykov, *Nordic J. Bot.* 31(6): 652. 2013.

**Our collection:** Afghanistan, Badakhshan, valley of the Pyandj River, left bank 50 km below Kalai-Barpandzhokala village, screes near Chishnudi Bolo village, 37°44.19'N, 71°32.93'E, 2000 m, 07.VIII.2013, 77.

**Comments:** This is a newly described species (Ukrainskaja *et al.*, 2013), distributed from the Vanch basin to the Gunt basin in Tajik Badakhshan. It is related to *S. furcata* Korovin. New record for Afghanistan.

**17. *Semenovia vachanica*** Ukrainskaja and Kljuykov, *Nordic J. Bot.* 31(6): 652. 2013.

**Our collection:** Afghanistan, Badakhshan, near Shewa Lake, Gardzhwin pass, rocky outcrop, among sparse spiny herbs (*Acantholimon pamiricum* Czerniak. ex Lincz., *Morina parviflora* Kar. and Kir. etc.) and stones, 37°25.92'N, 71°22.61'E, 3630 m. 06.VIII.2013, 64.

This species grows among rocks on the crest of a lateral mountain spur above the north shore of Lake Shewa in rock flora, together with *Acantholimon pamiricum*, *Ephedra intermedia* Schrenk and C.A.Mey., *Delphinium brunonianum* Royle, *Tanacetopsis mucronata* (Regel and Schmalh.) Kovalevsk., *Lindelophia stylosa* (Kar. and Kir.) Brand, *Morina parviflora*, *Linaria* Hill aff. *L. popovii* Kuprian., *Piptatherum pamirolaicum* (Grig.) Roshev. ex E.Nikit. and other species.

**Comments:** This is another species of *Semenovia* Regel and Herd. recently split and described (Ukrainskaja *et al.*, 2013) from Tajikistan (Vakhan part of Gorny Badakhshan). The species is related to *S. pimpinelloides* (Nevski) Manden. New record for Afghanistan.

**18. *Seseli afghanicum*** (Podlech) Pimenov, *Byull. Moskovsk. Obshch. Isp. Prir., Otd. Biol.*, n.s., 82(3): 140. 1977. (Fig. 5)

≡ *Libanotis afghanica* Podlech, *Mitt. Bot. Staatssamml. München* 8: 171. 1970.

**Typus:** NE Afghanistan, 'prov. Badakhshan: Oberes Anjuman-Tal, Umgebung des Ortes Anjuman, 3100 m, 14.VIII.1965, *Podlech 12358*' (holotype M!, isotypi E! LE!).

=*Seseli subaphyllum* Korovin, *Izv. Akad. Nauk Tadzh. SSR, Otd. Estest. Nauk* 3(60): 6. 1975.

**Typus:** Tajikistan, 'systema fl. Pjandzh, vallis fl. Bidzhun-Dara, prope pagum Bidzhun-Dara, 21.VII.1936, *Nikiforova and Kuznetzov 310*' (holotype TASH!).

**Distribution:** Tajikistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, valley of the Pyandj River, Zuvardara rivulet near the mouth, stony slope, 37°08.89'N, 71°26.36'E, 2330 m, 08.VIII.2013, 81.



**Figure 5.** *Seseli afghanicum* (Podlech) Pimenov

**Comments:** This species belongs to sect. *Eriocycla* (Lindl.) Pimenov and Kljuykov of the genus *Seseli* L. (Pimenov and Kljuykov, 2000a). It was described, under the name of *Libanotis afghanica* Podlech, from NE Afghanistan, prov. Munjan, in jugo Anjuman (Podlech, 1970). Then *Seseli subaphyllum* Korovin (1975), described from Tajik Badakhshan (Systema fl. Pjandzh, vallis fl. Bidzhun-Dara, prope pagum Bidzhun-Dara, 21.VII.1936, Nikiforova and Kuznetsov 310, TASH) was identified (Pimenov, 1977) as a synonym of *Libanotis afghanica*, and the species *Seseli afghanicum* appeared to be a Badakhshan (Tajik and Afghan) endemic. Our Afghan collection is the second for the country, and a natural extension of the Tajik part of distribution (Korovin *et al.*, 1984) to the left bank of the Pyandj River. Here the plants grow on screes and in rock fissures, as in Tajikistan.

**19. *Seseli* sp. aff. *S. afghanicum* (Podlech) Pimenov**

**Our collection:** Afghanistan, Badakhshan, vicinities of Shewa Lake, descent from Gardzhwin pass to the lake, low retaining wall near the road, among big stones, 37°25.27'N, 71°21.60'E, 3500 m, 06.VIII.2013, 68.



**Comments:** These collections also belong to *Seseli* sect. *Eriocycla*. They differ from *S. afghanicum* in the fruits which are densely covered with long sericeous white thin hairs, whereas the fruit hairs in *S. afghanicum* are sparse, grey and short. It may be a new species.

**20. *Tetrataenium olgae*** (Regel and Schmalh.) Manden., Trudy Tbilis. Bot. Inst. 20: 8. 1959.

≡ *Heracleum olgae* Regel and Schmalh., Izv. Obšč. Ljubit. Estestv. 34, 2 (Descr. Pl. Nov. Rar. Fedtsch.): 38. 1881.

≡ *Pastinaca olgae* (Regel and Schmalh.) Koso-Pol., Bull. Soc. Imp. Naturalistes Moscou, s.n. 29: 113. 1916, nom. illeg., non Regel et Schmalh. (1882).

≡ *Platytaenia olgae* (Regel and Schmalh.) Korovin, in Vvedensky (ed.), Fl. Uzbekistan. 4: 465. 1959.

**Typus:** Kirgizstan, 'in Kokaniae trajectum Isfairam [In descendi trajectis Isfairam in Alai], 8000', 20.VII.1871, *O.A.Fedtschenko*' (lectotype LE! designated by Vinogradova in Bot. Zhurn. (Moscow & Leningrad) 86: 51. 2001); Tajikistan, 'in valle fl. Sarawschan inter Obburdon et Pachud, 5-6000', *O.A.Fedtschenko*' (syntype LE!); 'in montibus Naubod prope Varsaminor, 4500-8000', *O.A.Fedtschenko*' (syntype LE!).

=*Heracleum polyadenum* Rech.f., K. Danske Vid. Selsk., Biol. Skrift. 13, 4 (Symb. Afghan. 5): 85. 1963.

**Typus:** Afghanistan, 'Munjan, Sanglich, 3450 m, 24.VII.1937, *Koelz 12617*' (holotype US).

**Distribution:** China, Pakistan, Kirgizstan, Tajikistan, Uzbekistan, Afghanistan.

**Our collection:** Afghanistan, Badakhshan, Pyandj Rivervalley, near the mouth of Zuwardara, on pebbles along the rivulet. 37°08.89'N, 71°26.36'E, 2330 m, 07.VIII.2013, 82.

**Observation:** We also recorded this species in the valley of Surkhudara (2650 m) and near Degul' village (2780 m) in the valley of Dara-i-Degul' (Hindu Kush).

**Comments:** The species, which is common in adjacent Tajikistan, from the Turkestan Ridge to East Pamirs (Korovin *et al.*, 1984), is not rare in NE Afghanistan either, where it is known in the provinces of Munjan and Badakhshan (Podlech and Anders 1977; Mandenova, 1987). Outside Tajikistan and Afghanistan *T. olgae* spreads through Xinjiang (China), Pakistan, Kirgizstan, and Uzbekistan.

**21.** One more species, previously unknown for the Afghan flora, was seen across the river on the left bank of the Pyandj River, namely *Ferula kosopoljanskyi* Korovin.

*Ferula kosopoljanskyi* Korovin, Gen. Ferula Monogr. Ill.: 46. 1947.

**Typus:** Tajikistan, ‘Buchara, Darvaz, ad fl. Pjandsh, 4000’, 11.VII.1899, *Lipsky*’ (lectotype LE! designated by Vinogradova in Bot. Zhurn. (Moscow & Leningrad) 87: 139. 2002).

**Distribution:** Tajikistan, Afghanistan.

**Comments:** This is a monocarpic herbaceous plant, regarded as an endemic to Tajikistan (Korovin *et al.*, 1984). Based on LE, TASH, TAD and MW collections, at least 9 separate localities in Tajikistan are known, mainly in Gorny Badakhshan, but also in adjacent regions of Khatlon province: ‘Buchara, Darwaz, Pyandj River’ (type specimen); ‘Buchara, Darwaz, River Vischarvi, tributary of the Pyandj River’; ‘Badakhshan, S slope of Darwaz Mts, mouth of Poshkharv rivulet’; ‘Darwaz ridge, Khaburabad pass, S slope, descent to River Obi-Kharak’; ‘Tajik Badakhshan, Darwaz ridge, canyon above Barau village’; ‘Badakhshan, Vansch ridge, canyon Khikhik, 1900 m’; ‘Yazgulem River, near the mouth’; ‘S slope of Peter I ridge, basin of Sangvor River, River Obi-Yekhg near Saed village’; ‘S slope of Peter I ridge, valley of Obichingou River, Dacti-Khasan village’, ‘Khatlon province, S extremity of Kuh-i Frush Mt., former village of Kala-i Kunja, screes’, our collection of 2012. The species was never indicated as distributed outside Tajikistan. However, in LE herbarium there is a collection from ‘Darwaz, Omar ad fluvii Pändsch, rip. sinist. IX.1882. A.Regel’, i.e. from the left bank of the Pyandj River that is now Afghanistan. We could not collect the species in Afghanistan, although across the Pyandj River we did see a population of *F. kosopoljanskyi* in Afghanistan, opposite to the Tajik villages of Dashtak and Poshkharv. So the species is to be included into Afghan flora.

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