

Some remarks on *Artemisia* subgenus *Serephidium* (Asteraceae) mostly from Afghanistan

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Abstract

When worked out the treatment of *Artemisia* for Flora Iranica, in several cases no good, determinable material was available, especially from outside of Afghanistan, namely, Iran and the neighbouring Middle Asian regions. This was especially a problem for species of the homogamous group *Serephidium*. During the work on very rich new material of this group from Iran, collected by V. Mozaffarian (Tehran) and the investigation of material from the neighbouring Middle Asia several errors in the Flora Iranica treatment could be corrected and some species more clearly defined. In this paper some species of *Artemisia* in Afghanistan, which were treated wrongly in former time, are clarified.

Keywords: *Anthemideae*, *Compositae*, flora Iranica, taxonomy

Introduction

The exact determination of *Artemisia* in the homogamous group *Serephidium* is mostly only possible, if all relevant characters are fully developed. The missing of such well developed specimens was always a problem in exact naming of specimens. In *Serephidium* only two complexes of characters are of any value for taxonomy and for separating species: The form of basal leaves, especially also from those of the short sterile offshoots and the basal stem leaves on one side and the form of inflorescence and characters of the capitula on the other side. The leaves appear in spring time after rainfall and are mostly wilted or completely fallen when plant is in flower or fruit, which is normally from September to November. So the both valuable sets of characters can normally not be found together, but they are both necessary for distinguishing and exact naming of specimens. Most of the material collected in summer-time is therefore undeterminable. Most collectors in old times have just collected in spring and summer but very rarely in late autumn. If the material collected in autumn is rich, sometimes one can find sprouting short sterile branches at the stem after rainfall also late in the year, so that both sets of characters can be investigated at the same time. But unfortunately the material of old collectors consists of one or two plants only. This was the reason why several species were put together as synonyms in Flora Iranica. New investigations on very rich and good material from Iran and also from Middle Asian countries have elucidated some of these heterogeneous complexes. Also, some hitherto neglected characters as glandular leaves or the form of phyllaries in the capitula have been found to be of importance in taxonomy. The separating of species with widely paniculate from those with narrowly paniculate inflorescences is of little use, because there is often a great variability within one species and even within one population, but this character has been used in the determination keys in Flora Iranica as well as in all Middle Asian Floras and in the Flora of the Soviet Union (Poljakov 1961). Only the differentiation in inflorescences with strictly erect branches and those with horizontally to obliquely erect branches is a good one.

- Enumeration of species

Artemisia aucheri Boiss., Fl. Or. 3: 367. 1875.

Holotype: Persia: *Aucher-Eloy* 3474 (G-BOIS!; iso: P!).

Plants 25–50 cm tall. Rootstock with short, non-flowering offshoots. Stems numerous, erect, white tomentose, often glabrescent with age to subglabrous at flowering time, indistinctly to distinctly glandular-punctate, striate-angular, stramineous to pale greenish, branched in upper part. Leaves greyish-tomentose, soon glabrescent to glabrous, sparsely to densely glandular-punctate, sometimes only indistinctly; those of sterile offshoots and lower stem leaves often withered at flowering time, densely floccose hairy, glabrescent with age, 0.7–1.5 cm long, petiolate, blade widely ovate to suborbicular, pinnate to bipinnate, with (1–)2(–3) remote primary lateral segments, trifid at top or pinnate, lobes obtuse, 1–3 × 0.5–0.8 mm, keeled on underside; middle stem leaves often remain up to flowering time, greyish-tomentose, soon glabrescent to glabrous, subsessile or with a short petiole, with narrowly linear to linear lobes (2–)3–6(–10) mm long. Inflorescence narrowly paniculate, with short or rarely long, suberect to appressed branches. Capitula sessile, erect, mostly near together, ovoid, 3–3.5 × 2 mm. Phyllaries imbricate, the basal ones small, ovate, gibbous, hairy, the following longer, oblong, with greenish backside and hyaline-scarious margins, sparsely hairy to subglabrous, densely glandular-punctate. Flowers 3–4.

Distinct by being mostly distinctly glandular-punctate in all parts (e.g. in stems, leaves and capitula), a character which is not mentioned in the original descriptions and by erect, appressed side-branches. The statement in the Flora of China (Lin *et al.* 2011) of the occurrence of this species in China (W. Xizang) and Pakistan (Ghafoor 2002) is most probably erroneous.

- Afghan specimens newly investigated

Prov. Heart, Mir Alam pass, S Herat on road to Dilaram, 1720 m, 62°14' E, 33°53' N, 4.9.1978, *Podlech* 32540 (M, MSB); 7 km SW Farsi on the road towards

Shindand, 2300 m, 11.8.1969, *Freitag* 6817 (MSB). – Prov. Orozgan, Syahdara, near Dahane Jawqol, on the road towards Daykundi, 2180 m, 29.7.1970, *Podlech* 19027 (M, MSB).

Artemisia badghysi Poljak. Bot. Mater. Herb. Bot. Inst. Komarova Akad. Nauk 16: 405. 1954.

Type: Turcomania: Badghys, montes Gjas-Gjadyk, prope fontem Kysyldshar, 29.8.1930, *O. et I. Linczevski* (LE).

= *A. kopetdaghensis* auct. non *Poljak.*: *PODLECH* in Fl. Iranica 8: 200. 1986.

Plants (20–)30–45(–60) cm tall. Rootstock branched, with ascending to erect, ligneous, short non-flowering stolones. Flowering stems few to numerous, 20–35(–50) cm long, rigid, densely floccose-hairy, subglabrous with age, pale brown, branched in upper half or more rarely lower down. Leaves densely shortly arachnoid-hairy, indistinctly to distinctly minutely glandular-punctate, the lower ones 1–3 cm long, with a long petiole, blade ± orbicular, bipinnate, lobes linear to narrowly oblong, 2–5 × 0.3–0.7 mm, subobtuse to acuminate; median leaves less hairy and less divided, at the base with pinnatisect auricula; upper leaves sessile. Inflorescence mostly narrowly paniculate, with obliquely spreading to obliquely erect branches. Capitula sessile, small, ovoid, 2–2.5(–3) mm long, remote or rarely 2–5-crowded. Phyllaries imbricate, ovate, continuously longer from outer to inner, not the outer ones distinctly shorter than the following ones, all glandular-punctate and densely hairy, with scarious margins.

This species is an accepted one in Flora USSR (Poljakov 1961) and Conspectus Asiae Mediae (Vvedensky 1993) but was erroneously put into synonymy of *A. kopetdaghensis* in Flora Iranica (Podlech 1986). It is a good species characterised by short, ovoid capitula only 2–2.5 mm long with phyllaries imbricate, ovate, continuously longer from outer to inner, not the outer ones distinctly shorter than the following ones, all glandular-punctate and densely hairy.

A. kopetdaghensis does not occur in Afghanistan. It is probably endemic in western Kopet Dagh.

- Afghan specimens newly investigated

Prov. Badghis, Murghab-valley, near Sakhra-i-Arbab Majnun, 24 km S Bala Murghab, 530 m, 6.10.1969, *Podlech 16957* (M, MSB). – Prov. Farah, 7 km SW Farsi, 2300 m, 11.8.1969, *Freitag 6817* (MSB); 11 km W Deh Tut, 71 km NW Delaram, near road to Herat, 1300 m, 63°08' E, 32°31' N, 1.9.1978, *Podlech 32475* (M, MSB); 7 km NW of Khwaja Mard, near road from Farah-Rud to Herat, 1200 m, 62°28' E, 33°08' N, 4.9.1978, *Podlech 32553* (M). – Prov. Faryab, Dasht-e-Laili, near Namak Sar, 15 km NE Daulatabad, 390 m, 5.8.1969, *Freitag 6674* (MSB). – Prov. Heart, Koh-i-Zyarat NW Herat, surroundings of Zyarate Mulla Khwaja-Kohi, 1250 m, 62°05' E, 34°26' N, 1.9.1978, *Podlech 32484* (M); 7 km N Heart, near road to Toraghundi, 1120 m, 62°11' E, 34°24' N, 2.9.1978, *Podlech 32488* (M); 3 km SE of the bridge, over river Darya-e-Kush Rabat, at the road from Herat to Toraghundi, 1480 m, 62°06' E, 34°37' N, 2.9.1978, *Podlech 32506* (M, MSB); near the main road from Herat to Dilaram, 3 km N of the deviation toward Shindand, 1300 m, 62°17' E, 33°32' N, 4.9.1978, *Podlech 32551, 32552* (MSB); 28 km S of Heart, near Qala-i-Mir Daud, at road to Dilaram, 1280 m, 62°13' E, 34°05' N, 4.9.1978, *Podlech 32538* (M); Mir Ali pass, S of Heart at the road to Adraskan, 1700 m, 17.10.1971, *Volk 71/876* (MSB); 6 km N of Adraskan, near the road to Herat, 1390 m, 62°17' E, 33°40' N, 4.9.1978, *Podlech 32544* (MSB); Karauche, at the new road from Adraskan toward Farsi, 1800 m, vi.1977, *Unger 185* (MSB); Chashma-i-Obeh, 10 km NW Obeh, 1720 m, 63°07' E, 34°26' N, 3.9.1978, *Podlech 32517* (M, MSB); Tschicht (Chisht), viii, 1962, *Rechinger 19202* (W).

Artemisia bicolor Rech.f. & Wagenitz, Anz. Math.-Nat. Kl. Österr. Akad. Wiss. 98: 78. 1961.

Holotype: Afghanistan: Nijrao, 2000–3000 m, *O.H. Volk 2324* (W!).

= *A. flavifolia* Gilli, Feddes Repert. 68: 94. 1963.

Holotype: Am Ufer des Logarflusses östlich Tscharasiah (bei Kabul), 1780 m, 23.9.1949, *Gilli* (W!).

Plants 50–100 cm tall. Stems erect or ascending, striate, covered with white and yellowish, floccose hairs, near the base densely white-lanate, with long internodes, in upper third with obliquely erect to curved branches. Leaves of the sterile offshoots 5–7(–10) cm long, with a long petiole, very densely and at least partly yellowish-lanate, with yellow glands, blade ± widely ovate, 1–3 cm wide, bipinnatisect to tripinnatisect, 3–5 primary segments with linear lobes 3–8(–10) × 0.3–0.5(–1) mm; stem leaves similar but greyish tomentose, shortly petiolate, bipinnatisect, the upper ones gradually smaller and sessile. Uppermost leaves minute, sessile, palmate-few-lobulate, those subtending the capitula linear, simple, 3–5(–7) mm long. Inflorescence narrowly paniculate, with erect to obliquely erect branches, the lower main branches up to 25 cm long, the upper ones shorter. Capitula separate or 2–3- crowded, sessile or shortly pedicellate, from conic base oblong, 3–4 × 2 mm. Phyllaries ± triseriate densely white tomentose, with inconspicuous glands; the outer ones short, ovate, narrowly hyaline-margined, subobtusate; the inner ones linear-oblong, obtuse, widely hyaline-margined, often more sparsely white-tomentose. Flowers 4–5. Corolla purple or yellow. Anthers yellow.

Note: Characteristic by indument of stems and leaves at least partly distinctly yellowish. *Artemisia flavifolia* was erroneously put into synonymy of *A. oliveriana* in Fl. Iranica (Podlech 1986).

- Afghan specimens newly investigated

Prov. Kabul, Mountains E of Baba Qashkhar, 25 km NE Kabul, 2700 m, 17.7.1969, *Podlech 15843* (M, MSB); near river Logar E of Tscharasiah (near Kabul), 1780 m, 23.9.1949, *Gilli* (W). – Prov. Kapisa, surroundings of Nidjrao (Nejrab), 1700 m, 69°34' E, 34°59' N, 14.9.1951, *Volk 2357* (M). – Prov. Logar, 10 km above Dohmandi, 2700 m, 7.8.1968, *Freitag 3541* (MSB). – Prov. Paktia, Sato Kandaw pass, at the road from Gardez to Khost, summit of the pass, c. 2800 m, 69°22' E,

33°28' N, 24.6.1971, *Volk 71.416a* (MSB); Kotkai, Mandaher Forest, 2600 m, 13.9.1971, *Anders 5281* (M, MSB), *5317* (MSB); Kotkai, 2400 m, 27.9.1971, *Volk 71/845a* (MSB); Peiwar Pass (Afghan-Pakistan frontier), 69°52' E, 33°58' N, 1951, *Volk K. 141* (M).

Artemisia deserticola (Podlech) Podlech, comb. nov. ≡ *A. sieberi* Besser subsp. *deserticola* Podlech in *Fl. Iranica* 158: 205. 1986.

Holotype: Afghanistan: Prov. Kandahar, 10 km WNW von Keshke Nakhud an der Straße nach Girishk, 920 m, 64°58' E, 31°38' N, 3.11.1969, *D. Podlech 17095* (M!; iso: MSB!).

Plants 20–50 cm tall. Stem at the base up to 5 mm in diameter, ligneous, with pale brownish bark, mostly branched, with singular or few flowering stems 20–40 cm long, erect, mostly somewhat flexuose, appressed grey-tomentose up to fruiting time, branched mostly in upper half with ± horizontally or obliquely spreading side-branches. Leaves with exception of uppermost bracts mostly completely missing at flowering time, those of non-flowering shoots small, densely tomentose, 0.3–1.5 cm long, with a distinct petiole, blade with 1–2 simple or few-lobed segments on each side, lobes flat, narrowly obovate to obovate or suborbicular, 0.3–2(–5) mm long, obtuse; leaves of the main, if very rarely present, similar to the basal ones but less densely hairy; subtending leaves of the side-branches in the inflorescence and bracts subtending capitula in the inflorescence obovate, 1–2 mm long. Inflorescence widely paniculate in the upper half of the stems, with mostly obliquely to sometimes ± horizontally spreading, often somewhat flexuose and upcurved long branches. Capitula sessile, separate or 2–4- crowded at the end of very short branchlets, ovoid, c. 3 mm long. Phyllaries 4–5- seriate, basal ones widely ovate to suborbicular, 0.5–0.8 mm long, vaulted, green, tomentose, without distinct margin, middle and upper ones gradually longer, subglabrous to loosely tomentose at the back, glandular, with wide hyaline-scarious margins and tip. Flowers 2–4; corolla purple.

General distribution: W. and S. Afghanistan, E. Iran. In desertic conditions.

Characteristic by leaves with exception of uppermost bracts mostly completely missing at flowering time and by widely paniculate inflorescence in the upper half of the stems, with mostly obliquely to sometimes ± horizontally spreading, often somewhat flexuose and upcurved long branches. A plant only occurring in desertic regions.

- Afghan specimens newly investigated

Prov. Heart, 3 km SE of the bridge, over river Darya-e-Kush Rabat, at the road from Herat to Toraghundi, 1480 m, 62°06' E, 34°37' N, 2.9.1978, *Podlech 32505* (M, MSB). – Prov. Farah, near Farah Rud, 25.11.1976, *Benedikt s.n.* (MSB); 6 km E Farah Rud, 800 m, 21.9.1976, *Breckle 4891* (MSB). – Prov. Helmand, 12 km E of Dilaram, near road to Girishk, 930 m, 6.11.1969, *Podlech 17173* (M, MSB, TARI); Shorab, 60 km ESE of Dilaram, near road to Girishk, 1050 m, 6.11.1969, *Podlech 17180* (M, MSB); 12 km W of Girishk at road to Dilaram, 850 m, 3.11.1969, *Podlech 17097* (M, MSB); dto. 7.8.1967, *Rechinger 37553, 37554* (W); 17 km SE of Girishk, near road to Kandahar, 860 m, 3.11.1969, *Podlech 17096* (M, MSB). – Prov. Kandahar, 10 km WNW of Keshke Nakhud, near road to Girishk, 920 m, 64°58' E, 31°38' N, 3.11.1969, *Podlech 17095* (M, MSB); 13 km E of Keshke Nakhud at road to Kandahar, 960 m, 3.11.1969, *Podlech 17094* (M, MSB); 35 km W of Kandahar at road to Girishk, 940 m, 65°19' E, 31°33' N, 12.10.1978, *Podlech 32680* (M, MSB); 25 km W of Kandahar, 1000 m, 4.10.1967, *Freitag 2037* (MSB); Kandahar, 17.10.1950, *Volk 1378* (W); 30 km NE of Kandahar, 1200 m, near road, 3.10.1967, *Freitag 2030* (MSB). – Prov. Zabul, Khan Koruna, 50 km NE of Qalat-i-Ghilzai, near road to Moqur, 1790 m, 7.11.1969, *Podlech 17182* (M, MSB).

Artemisia dumosa Poljak. Bot. Mater. Herb. Bot. Inst. Komarova Akad. Nauk 16: 425. 1954.

Holotype: Turcomania: Krassnovodsk distr., in declivibus lapidosis, 11.9.1926, *Th. Russanov 463* (LE).

= *A. sieberi* auct. non Besser: Podlech in Fl. Iranica 158: 203. 1986 et in most of the Russian floras.

Plants 20–35(–50) cm tall. Rootstock thick. Stems at the base up to 3 mm in diameter, at the base branched, the long, flowering branches 7–15 cm long, erect, rigid, grey-tomentose up to fruiting time, rarely and only partly glabrescent with age, with horizontally or obliquely spreading side-branches. Leaves often missing at flowering time, those of non-flowering shoots small, densely tomentose, 0.3–1 cm long, with a distinct petiole, blade with 1–2 simple or few-lobed segments on each side, lobes flat, ovate to suborbicular, 0.3–1.5 mm long, obtuse; leaves of the main stem longer, 1–2 cm long, tomentose to sometimes glabrescent, often with somewhat narrower and longer, subobtuse lobes 1–4 × 0.3–0.8 mm; upper leaves somewhat longer, subsessile, slightly dissected, with partly divided auricles; subtending leaves of the side-branches in the inflorescence often slightly palmately divided or pinnate; bracts subtending capitula simple, linear, short, 1–2 mm long, sometimes with very short auricles at the base. Inflorescence widely paniculate, mostly confusely and repeatedly branched, with ± horizontally or sometimes obliquely spreading, often ± rigid and sometimes subpungent straight branches, often from near the base of the main stems, so often form rather dense, wide inflorescences. Capitula sessile, separate or 2–3-crowded, ovoid, ca. 3(–4) mm long. Phyllaries 4–5-seriate, basal ones widely ovate to suborbicular, 0.5–0.8 mm long, vaulted, green, tomentose, without distinct margin, middle and upper ones gradually longer, subglabrous to loosely tomentose at the back, glandular, with wide hyaline-scarious margins and tip. Flowers 2–4; corolla purple.

Distribution: In desertic and semidesertic region of Turkmenistan, eastern Iran, western and southern Afghanistan, often in sand-dunes or salty deserts.

This species was in former time mostly completely misinterpreted. Rightly described by Poljakov (1954) it was in former time, also in Flora Iranica, mostly named *Artemisia sieberi*. *A. sieberi* is in

fact a completely different species. More information about this species see under *A. inculta*. *Artemisia dumosa* is a species of mostly very dry regions and, if completely collected, easily to recognise by inflorescence densely pyramidal, with ± horizontally or sometimes obliquely spreading, often ± rigid and sometimes subpungent branches, often from near the base of the main stems.

- Afghan specimens newly investigated

Prov. Heart, Koh-i-Zyarat NW of Herat, surroundings of the Zyarate Mulla Khwaja-Kohi, 1250 m, 62°05' E, 34°26' N, 1.9.1978, *Podlech 32484* (MSB); Kotale-Rabat-i-Mirza at road from Herat to Toraghundi, 1560 m, 62°06' E, 34°44' N, 2.9.1978, *Podlech 32502* (G, M, MSB); 3 km SE of the bridge, over the Darya-e-Kush Rabat at road from Herat to Toraghundi, 1480 m, 62°06' E, 34°37' N, 2.1978, *Podlech 32505* (M, MSB); semidesert 35 km W of Heart, near the road to Eslam Qala, 16.10.1971, *Volk 71/872a* (MSB); 2 km N of Turan at road from Herat toward Obeh, 1080 m, 62°34' E, 34°20' N, 3.9.1978, *Podlech 32516* (MSB, PE, S); 28 km S of Heart, near Qala-i-Mir Daud, at road to Dilaram, 1280 m, 62°13' E, 34°05' N, 4.9.1978, *Podlech 32538* (MSB); 26 km W of Sabzawar [Shindand], 28.8.1971, *Volk 71/631* (MSB); 3 km N of the deviation to Shindand, at the main road Herat-Dilaram, 1300 m, 62°17' E, 33°32' N, 4.9.1978, *Podlech 32551* (MSB). – Prov. Farah, 60 km SE Shindand, near the mainroad Herat-Dilaram, 1220 m, 5.10.1969, *Podlech 16928* (M, MSB); 7 km NW of Khwaja Mard at road from Farah Rud to Herat, 1200 m, 62°28' E, 33°08' N, 4.9.1978, *Podlech 32553* (G, M, MSB); 10 km S of Khwaja Mard at road from Farah Rud to Herat, 1030 m, 62°32' E, 33°01' N, 4.9.1978, *Podlech 32555* (MSB); near Farah Rud, 1200 m, 16.10.1971, *Volk 71/874a* (MSB); 6 km E of Farah Rud, 800 m, 21.9.1976, *Breckle 4891* (MSB); 10 km SE of Farah Rud, near road to Dilaram, 62°33' E, 32°53' N, 27.8.1971, *Volk 71/637* (MSB); Dilaram, c. 900 m, 28.8.1971, *Volk 71/645* (MSB); 6 km W of Dilaram, near road to Farah, 800 m, 6.11.1969, *Podlech 17170* (M, MSB). – Prov. Helmand, 8 km W of

Lashkargah, 780 m, 19.9.1976, *Breckle 4851* (MSB); 4 km E of the bridge, over Helman river, near Girishk, 850 m, 64°36' E, 31°48' N, 22.4.1977, *Podlech 28954 & Jarmal* (MSB); 12 km W of Girishk, 820 m, 23.8.1968, *Freitag 3702* (MSB); Boghra, S of Girishk, 18.10.1950, *Volk 1300* (M). – Prov. Nimroz, Lokhi at Kash Rudriver, 607 m, 62°53' E, 31°38' N, 3.10.1969, *Podlech 16880* (MSB); near Lase Jowayn, 61°37' E, 31°43' N, 510 m, 29.2.1953, *Volk 1924* (M); Eastern border of the lake Jehile Puzak, 460 m, 23.9.1976, *Breckle 4919* (MSB); 37 km S of Zaranj, near road to Chahar Burjak, 505 m, 5.11.1969, *Podlech 17131* (M, MSB). – Prov. Kandahar, Daman, 15 km E of Kandahar, near road to Qalat-i-Ghilzai, 1045 m, 2.10.1969, *Podlech 16868* (MSB); near airport of Kandahar, 18 km SE of Kandahar at road to Spin Boldak, 1020 m, 65°52' E, 31°31' N, 10.10.1978, *Podlech 32648* (M, MSB).

Artemisia gypsacea Poljak., Bot. Mater. Herb. Bot. Inst. Komarova Akad. Nauk 16: 408. 1954.

Holotype: Turcomania: In montibus prope pag. Czuli, 1.10.1897, *D. Litwinov 1537* (LE).

Plants 60–80 cm tall. Rootstock thick, with long, ligneous, erect non-flowering shoots covered with brownish-grey bark, 6–8 mm in diameter. Flowering stems few, erect, 45–65 cm long, pale grey-brownish, densely floccose-tomentose, subglabrous to glabrous with age, branched from the middle. Leaves at the non-flowering shoots 5–8 cm long, with a long petiole, bipinnate or sometimes slightly tripinnate, densely hairy but subglabrescent with age; lobes linear to narrowly oblong, obtuse, c. 2–6 × 1 mm; lower stem leaves 3–8 cm long, with a rather long petiole, bipinnate, sparsely to loosely hairy, lobes linear 5–12 × c. 1 mm; middle stem leaves sessile, less strongly divided, with pinnate auricles; upper ones linear, undivided, often with 2 short lobes at the base. Inflorescences loose, narrowly paniculate, with obliquely to horizontally spreading sidebranches 2–6(–10) cm long. Capitula ± remote or 2–3- crowded at the end of short branchlets, sessile or often with a stipe up to 2 mm long, narrowly ovoid to

narrowly obconical, c. 4 mm long. Phyllaries light brownish-green, the basal ones ovate to widely ovate, without or with narrow scarious margins, sparsely to loosely hairy; middle and inner phyllaries distinctly longer, subglabrous to glabrous, with distinct hyaline-scarious, wide margins, all indistinctly glandular-punctate. Flowers 4–5, yellow.

This species was not mentioned in Flora Iranica for Afghanistan, but its specimens were included into *Artemisia oliveriana*. It is different from *A. oliveriana* by being 60–80 cm tall with thick non-flowering shoots 6–8 cm long; lower leaves (3–)5–8 cm long, bi- to tripinnate; lobes 2–6 × c. 1 mm; inflorescence loose, narrowly paniculate, with obliquely to horizontally spreading sidebranches 2–6(–10) cm long. Its distribution is E. Iran, Turkmenistan, NW. Afghanistan.

- Afghan specimens newly investigated

Prov. Herat, northern slopes of the pass Kotale Rabat-i-Mirza, S of Rabat-i-Sangi-i-Bala, at road from Herat to Toraghundi, 250–350 m, 62°06' E, 34°45' N, 29.4.977, *Podlech & Jarmal 29519* (M, MSB), *29520* (MSB).

Artemisia inculta Delile, Descr. Egypte, Hist. nat., tome seconde: 264, tab. 43, fig. 2 (Fl. d'Egypte). 1813–1814. Holotype: Partie élevée de la vallée de l'Égarement [Wadi Digla], du côté des sources de Gandely, *Delile* (MPU!).

= *A. sieberi* Besser, Bull. Soc. Imp. Natur. Moscou 9: 80. 1836 ≡ *A. glomerata* Sieber ex Spreng., Syst. Veg., ed. 16, 3. 489. 1826 non Ledeb. (1815).

Types: Palestine: In Monte Gallorum (Herodio) (AKW?, KW?; Isotype: M!, W!).

= ? *A. lippii* Besser, Bull. Soc. Imp. Natur. Moscou 9: 79. 1836 ≡ *A. monosperma* Spreng., Syst. Veg. 3: 491 non Delile.

Type: In Aegypto

= *A. billardieriana* Besser, Bull. Soc. Imp. Natur. Moscou 9: 81. 1836. In Damasio, *Labillardière* Holotype: (herb. Steven: ? H; prob. FI-Webb).

Plants 20–30 cm tall. Rootstock thick, branched in upper part. Stems at the base up to 4 mm in diameter, at the base with short non-flowering offshoots; flowering stems singular or few, erect, up to 30 cm long, branched often from near the base, grey-tomentose up to fruiting time, with horizontally or obliquely spreading side-branches. Leaves of non-flowering shoots densely appressed tomentose, small, 1–2 cm long, with a petiole c. as long as the blade; blade pinnate to bipinnate, with 2–3 simple or few-lobed segments on each side, lobes flat, ovate, subobtusate, flat, 1–2.5 × 0.5–0.8 mm; leaves of the main stem similar but with short petiole to subsessile, at the base with divided auricles; subtending leaves of the side-branches in the inflorescence small, scarcely divided to simple and then the lobe often up to 5 mm long, sometimes with very short auricles at the base. *Inflorescence* narrowly to rather widely paniculate, with ± remote, horizontally or slightly obliquely spreading branches 2–5 cm long. Capitula sessile, separate or often up to 5-crowded at the end of very short branchlets, narrowly ovoid to sometimes ovoid, 3–3.5 mm long. Phyllaries 4–5- seriate, basal ones ovate, 0.5–0.8 mm long, vaulted, green, tomentose, with indistinct hyaline margin, middle and upper ones gradually longer, subglabrous to sparsely tomentose at the back, eglandular to indistinctly glandular, with wide hyaline-scarious margins and tip. Flowers 3–4; corolla purple.

This species is mentioned here because *Artemisia sieberi* which clearly belongs here is mentioned, also if wrongly, in most Russian floras and in Flora Iranica (Podlech 1986).

It is an astonishing fact, that in modern time in all floras and papers dealing with *Artemisia* of Egypte and the Near East no one of the old species described from there (*A. inculta*, *A. billardieriana*, *A. lippii* and *A. sieberi*) are mentioned in any way and that instead always the name *A. herba-alba* (a species endemic in the Iberian Peninsula and probably Morocco) is used because this was introduced by Boissier in the Flora Orientalis (Boissier 1875).

Specimens seen: Egypt: Partie élevée de la vallée de l'Égarement [Wadi Digla], du côté des sources de

Gandely, *Delile* (MPU); C. Sinai, Wadi Abu Elgin, 70 km S of Nakhl, 18.11.1969, *Tadmor S-1249* (MSB); Sinai, *Alfred Kaiser* (M). – Saudi Arabia: Northern Frontiers prov., Sha'ib Aba ar-Rawath, 29°20' N, 43°44' E, 19.11.1982, *Mandaville 7851* (MSB). – Israel: W. Negev, Mashabbe Sade, 20.7.1950, *Orshan* (M); In Monte Gallorum (Herodio), near Jerusalem, *Sieber* (M, W). – Syria: Hauran, between Damaskus and Quneitra, 43 km S Damaskus, 26.5.1957, *Rechinger 13086* (M). – Iraq: Karbala distr., Western Desert, 25 km S Ramadi, 135 m, 21.11.1956, *Rechinger 8363* (M, W); Diyala distr., on the Persian border 10 km E Mandali, 2.6.1957, *Rechinger 9629* (W); Basra distr., S of Al Busaia, 7.11.1956, *Rechinger 8205* (W); near Johanna, 80 km SW Al Busaiya, 7.11.1956, *Rechinger 8211, 8224* (W); Wadi Obela, 10 km N of Rutba, Ramadi liwa, 18.11.1964, *Hikmat Abbas al Ani & Barkley 9209* (W); Jebel Theba'a, 30 km N of Rutba, Ramadi liwa, 18.11.1964, *Hikmat Abbas al Ani & Barkley 9220* (W); Mosul liwa, Dehole, N of Jebel Sinjar, 12.11.1964, *Barkley & Sharif & Y. Haddad 9153* (W); Iskanderiya, S. of Bagdad, 16.11.1956, *Rechinger & Haines 8278* (W); Southern Desert, prope Andab, 145 km SE AS Salman, 340 m, 22.4.1957, *Rechinger 9350* (W).

Artemisia korshinskyi Poljak., Bot. Mater. Herb. Bot. Inst. Komarova Akad. Nauk 16: 414. 1954.

Holotype: Pamir, in loco Indyravicz, fl. Gunt, inter ostia fl. Airan-Su et Kumysch-Dzhylga, 16.8.1897, *S. Korshinsky 3478* (LE).

= *A. lehmanniana* auct. non Bunge: Podlech in Fl. Iranica, Lief. 158: 196. 1986.

= *A. afghanica* Rech.f. & Køie, Biol. Skr. 8(2): 51. 1955.

Type: Afghanistan: Inter Panjao et fl. Hari Rud superiorem, *Køie 3287* (W!).

Plants (20–)30–40(–50) cm tall. Rootstock thick, branched in upper part. Stems rather numerous and sometimes up to 10–15, erect or at the base ascending, branched in upper part or more rarely from near the base, grey-cobwebby mostly up to fruiting time rarely becoming subglabrous. Leaves of non-flowering shoots

20–35 mm long, densely grey-cobwebby, with a petiole nearly as long as the blade; blade bipinnate to rarely slightly tripinnate, lobes flat, linear, 2–3 mm long; lower leaves of the main stems similar with a short petiole, the median ones nearly sessile with palmatisect auricles at the base, pinnate to bipinnate; uppermost leaves, linear, entire. Inflorescence narrowly paniculate, with mostly short, obliquely spreading to erect branches. Capitula sessile, mostly up to 5 in remote to dense spikelets, ovoid, 3–4 mm long. Phyllaries 4–5- seriate, basal ones ovate, small, densely hairy, middle and upper ones gradually longer, subglabrous to glabrous or sparsely tomentose near the tip, with wide hyaline-scarious margins and tip. Flowers 5–7.

This species was put into synonymy of *Artemisia lehmanniana* in most of the older Floras of the Soviet Union region (Poljakov 1961). In the more modern Floras (for example Fl. Tadshikskoj SSR or Conspectus Florae Asiae Media) (Kinzikaeva 1988, Vvedensky 1993) the two species are rightly treated as different and *A. afghanica* is put here into synonymy of *A. korshinskyi*. The specimens cited in Fl. Iranica from Iran surely don't belong to this species.

- Afghan specimens newly investigated

Prov. Takhar, Hindukush, Khwaja-Muhammad range, Farkhar valley, uppermost Piu valley, alpine pasture, Masqa Shoy, 3550 m; 70°24' E, 36°09' N, 14.9.1965, *Podlech 12645* (M, MSB); Farkhar valley, upper Piu valley below the village Piu, 3000 m, 18.9.1965, *Podlech 12667* (MSB); Farkhar valley, middle part of Piu valley, 2700–3100 m; 70°20' E, 36°09' N, 18.9.1965, *Podlech 12667* (E, G, KYO, M, MSB, W). – Prov. Bamian, Band-e-Amir, plains above the lakes, 3100 m; 67°12' E, 34°49' N, 29.7.1969, *Podlech 15984, 17044* (LG, M, MSB); Band-e-Amir, dam of Band-e-Paneer, 2950 m; 67°12' E, 34°49' N, 26.8.1970, *Podlech 19528* (M, MSB); Koh-i-Baba, Kotal-i-Shatu, 3380 m; 66°57' E, 34°34' N, 26.8.1970, *Podlech 19551* (M, MSB); Western slope of the pass “Kotale-Shebar”, near Daki, 2770 m; 68°14' E, 34°54' N, 17.10.1969, *Podlech 17047* (G, M, MSB);

Kotale-Shebar, top of the pass, 2900 m; 68°15' E, 34°54' N, 17.10.1969, *Podlech 17048* (M), *17049* (G, HUI, M, MSB); Syadarrak, 3 km E Kalandeh, near road from Behsud to Panjaw, 2900 m; 67°07' E, 34°23' N, 27.7.1970, *Podlech 18842* (M, MSB, TARI). – Prov. Ghazni, 15 km E of Sabzak, near road from the Dasht-i-Nawar toward Malestan, 3500 m; 67°31' E, 33°26' N, 13.8.1970, *Podlech 19283* (M, MSB).

Artemisia oliveriana Besser, Bull. Soc. Imp. Naturalistes Moscou 9: 77. 1836.

Holotype: In Persia septentrionalis inter Teheran et Ispahan, *Olivier* (P!).

= *A. khorassanica* Podlech, in Fl. Iranica 158: 210. 1986.

Type: Iran: Shahrud-Bustam, Shahrud, 16.9.1940, *W. Koelz 16955* (US!; iso: W!).

Plants 30–45(–60) cm tall. Rootstock thick, up to 2 cm in diameter, branched in upper part, with some short non-flowering shoots, these mostly completely withered at flowering time. Flowering stems several to sometimes many, erect, densely floccose-tomentose up to flowering time or often glabrescent to glabrous with age. Leaves at flowering time mostly completely withered, those of sterile shoots and of outgrowths of the stem densely hairy, with a long petiole, small, 0.8–1.5(–3) cm long, bipinnate, with mostly 2–3 lateral segments on each side, lobes narrowly oblong to narrowly obovate, 2–5 × (0.2–)0.3–0.8(–1) mm; middle stem leaves and those subtending the lateral branches shorter, subsessile or with a short petiole, pinnate to slightly bipinnate, at the base with simple or divided auricles. Inflorescences a dense or more rarely loose wide or sometimes narrow panicle, with obliquely to often ± horizontally spreading and often upcurved primary branches often from the base of stems, which are mostly rather densely branched again. Subtending bracts of the side-branches simple or slightly palmatisect, sometimes with short auricles at the base. Bracts ovate, 0.5–1 mm long. Capitula ± separate or more often 2–3- crowded at the end of short branchlets, sessile to sometimes shortly stipitate, narrowly

obconical, 3.5–4.5 × 1.5–2 mm; stipes, if present, c. 1 mm long, partly covered with small, widely ovate bracts without distinct margins, greenish, passing into the outermost phyllaries. Outer phyllaries ovate, c. 0.5 mm long, greenish, without or with narrow scarious margins, sparsely to loosely hairy, middle and inner phyllaries distinctly longer, sparsely hairy on the backside, with distinct hyaline-scarious, wide margins, all indistinctly glandular-punctate. Flowers 4–5, very pale reddish.

This species was treated in most of the Sovietic Floras (!!!) and in Flora Iranica (Podlech 1986) in an extremely wide sense and contained several good species. The numerous specimens cited in Flora Iranica under this name belong to other species, mostly to *Artemisia serotina* Bunge and *A. porrecta* Poljak. (see there). It is common in most parts of Iran but in Afghanistan only in the North-west!

- Afghan specimens newly investigated

Prov. Badghis, Laman, 33 km S of Qala-i-Naw, near road to Herat, 63°06' E, 34°45' N, 6.10.1969, *Podlech 16946, 16947* (M, MSB). – Prov. Farah, 11 km W of Deh Tut, 71 km NW Delaram, near road to Herat, 1300 m, 63°08' E, 32°31' N, 1.9.1978, *Podlech 32475* (MSB). – Prov. Herat, Mir Alam Pass, S of Herat at the road to Dilaram, 1720 m, 62°14' E, 33°53' N, *Podlech 32541, 32542* (M, MSB).

Artemisia porrecta Poljak. Bot. Mater. Herb. Bot. Inst. Komarova Akad. Nauk 16: 410. 1954.

Holotype: Tadzhikistania: Jugi Petri I declivia septentrionalis, in valle fl. Surchob, 1800 m, 26.9.1935, *J. Grigorjev 208* (LE).

Illustration: Podlech 1986: Tab 198 (under *A. oliveriana*).

Plants 45–60(–70) cm tall. Rootstock thick, with short, sterile shoots and mostly few flowering stems. Stems 2–4(–5) mm thick, erect or ascending at the base, straw-yellow to brownish, floccose-tomentose, partly glabrous at flowering time. Leaves of the very short sterile shoots 0.5–1.5 cm long, with few narrowly oblong to narrowly obovate, up to 3 × c. 0.5 mm, densely white-

tomentose. Leaves of lower part of the stems early withering, up to 5 cm long, with long petiole, blade ovate-oblong, up to 2.4 cm wide, bipinnate, in well developed leaves to partly tripinnate, terminal lobes linear, 3–7(–10) × (0.2–)0.5–1 mm, tomentose, leaves of middle of the stem mostly sessile, pinnate to bipinnate, lobes linear, 5–10(–15) long, uppermost leaves undivided, linear, mostly 2–3 mm long. Inflorescences widely paniculae, primary branches from the middle of stem, horizontally or obliquely spreading, 7–15 cm long. Capitula 3–3.5 mm long, ovoid, mostly 3–7- crowded on short branchlets, rarely singular and slightly remote. Phyllaries imbricate, convex, glandular-punctate and whitish pubescent, basal ones short, without scarious margins, inner ones longer, mostly less densely hairy, with scarious margins. Flowers 4–5, pink or yellow.

In Flora Iranica, the specimens of this species were included in *A. oliveriana* (Podlech 1986: 207).

- Afghan specimens newly investigated

Prov. Balkh, 12 km W of Mazar-i-Sharif, near road to Balkh, 360m, 66°58' E, 36°45' N, 7.10.1970, *Podlech 19781* (MSB). – Prov. Takhar, Aqbolaq, 8 km SW of Kalafgan, near the administration of the salt-mine of Kalafgan, 1550 m; 69°53' E, 36°45' N, 28.9.1965, *Podlech 12768* (M, MSB); middle Farkhar valley, near Khanaqah-i-Warsaj, 800 m, 69°59' E, 36°13' N, 9.9.1965, *Podlech 12688* (MSB); upper Farkhar valley, Piu valley, 2900 m, 70°20' E, 36°09' N, 18.9.1965, *Podlech 12670* (MSB). – Prov. Baghlan, near Eschpuschta, N of Doab, 1500 m, 1.7.1951, *Gilli 4071* (W); Salang Pass northern side, near the road, 1968, *Fohlen s.n.* (W). – Prov. Parwan, middle part of Ghorband valley, near Dahane Pasak, c. 2000 m, 68°39' E, 34°58' N, *Freitag 3942* (MSB). – Prov. Kabul, Tangi-Gharu (ravine of Kabul river), near Mahipar, 1399 m, 69°32' E, 34°34' N, 10.6.1972, *Alpay in Anders 11194* (MSB); c. 20 km E of Kabul, near the road to Sarobi, 1800 m, 69°24' E, 34°34' N, 10.9.1970, *Podlech 22349a* (MSB). – Prov. Wardak (Maidan), Kabul valley below Naidan (Kota-e-Ashro), 2100 m, 17.2.1967, *Freitag* (MSB).

Artemisia quettensis Podlech, Fl. Iranica 158: 212. 1986.

Holotype: Pakistan: Prov. Quetta, Spin Karez, 11.5.1965, S.M.A. Kazmi 1602 (M).

Plants 30–40 cm tall. Stems few, branched near the base, erect, pale brown, tomentose, glabrescent at flowering time. Leaves of sterile offshoots and in lower part of the stems 2–3 cm long, petiolate, densely white tomentose, glandular-punctate, blade orbicular, bipinnate to partly tripinnate, lobes crowded, linear or narrowly oblong, 2–4(–8) × 0.3–1.2 mm, subobtuse; middle leaves of the main stems up to 4 cm long, with a long petiole, similar to the basal ones; upper leaves in the inflorescence narrowly oblong to linear, entire. Inflorescence in upper half or third of the stems, narrowly paniculate, with obliquely erect to appressed primary side-branches up to 6 cm long. Capitula sessile, mostly separate or 2 together, narrowly ovoid, 3.5–4.5 mm long. Phyllaries 4–5-seriate, densely woolly-tomentose, glandular-punctate, the basal ones very short, without distinct margins, the inner ones gradually longer, with wide hyaline-scarious margins.

A characteristic species only known from SW. Pakistan. The specimen from Iran (Kuh-i-Taftan), mentioned in Flora Iranica does not belong here but is a distinct species. The plants collected by *Gertraud Repp* were in Flora Iranica erroneously cited under *A. oliveriana*.

Specimens seen: Pakistan: Prov. Quetta, Spin Karez, 11.5.1965, *Kazmi 1602* (M); Urak valley, 24 km W of Quetta, v. 1858, *Gertraud Repp!* (W) (under *A. oliveriana*).

Artemisia serotina Bunge, Beitr. Fl. Russl.: 165. 1852 et in Mém. Sav. Etr. St. Pétersb. 7: 340. 1854.

Holotype: Between Buchara and Samarkand, 31.8.1841, *A. Lehmann* (LE).

Plants 35–65 cm tall. Rootstock branched, with short, non-flowering shoots with rosettes of early summer leaves. Flowering stems few to several, erect, straw-yellow to pale greenish or pale brownish, angular-sulcate, densely floccose-pubescent, subglabrous with age, last branches in the inflorescence mostly densely

hairy. Leaves of sterile stolones, if present, mostly short, 1–2 cm long, with short, narrowly oblong to narrowly obovate lobes, densely floccose-tomentose; basal stem leaves often soon withered, floccose-hairy, mostly (2–)3–5 cm long, with a long petiole, blade oblong to widely elliptic, bipinnate, end-lobes linear, 2–4(–6) × 0.1–0.3(–0.8) mm, shortly acuminate. Middle stem leaves shorter, with short petiole to sessile, pinnate to bipinnate. Upper stem leaves undivided, linear. Inflorescences a loose to rather dense, mostly long, rather wide panicle in the upper part of the stems; main branches obliquely spreading to upcurved, the lower ones up to 15 cm long. Capitula mostly sessile to subsessile, loosely to densely spicate along the side-branches, ovoid to narrowly ovoid, 3–3.5 mm long. Phyllaries imbricate, ca. 4–5-seriate, mostly slightly glandular-punctate, the outer ones small, ovate, subacuminate, without or with narrow margins, loosely pubescent, the inner ones gradually longer, oblong, sparsely to loosely hairy or sometimes subglabrous, with hyaline-scarious margins. Flowers 5–7, yellow or red.

This characteristic species was in Flora Iranica included in *Artemisia oliveriana* (Podlech 1986). It is clearly different from this species by longer leaves with lobes linear, 2–8 × 0.2–0.5 mm and by shorter capitula.

- Afghan specimens newly investigated

Prov. Badghis, 14 km NE of Qala-i-Naw, near the road to Bala-Murghab, 970 m, 63°14' E, 35°01' N, 6.10.1969, *Podlech 16951* (G, HUI, M, MSB); Najak, 12 km S of Qala-i-Naw, 1080 m, 63°04' E, 34°53' N, 6.10.1969, *Podlech 16949* (M, MSB). – Prov. Faryab, Takhte Zabhan, near the road from Maymana to Sare Hawdz, 1100 m, 64°55' E, 35°44' N, 8.5.1977, *Podlech & Jarmal 29966* (MSB). – Prov. Herat, 60 miles East of Herat, c. 7000 ft., 8.9.1960, *Stutz 644* (W). – Prov. Farah, Farah, 1700 ft., 8.11.1937, *Koelz 13248* (W). – Prov. Balkh, 8 km SE of Taralai, near road from Mazar-i-Sharif toward Chahar Mallah, 1300 m, 67°11' E, 36°30' N, 29.8.1978, *Podlech 32444* (M, MSB). – Prov. Takhar, Lower Namakab valley, near Taqcha Khana, 1100 m, 69°38' E, 36°37' N, 16.8.1969, *Podlech 16096* (M, MSB).

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