iaceae I
ore PER WENDELBO+, Göteborg

Lfg.
Cont. No. 151 / Juni 1982

FLORA DES IRANISCHEN HOCHLANDES UND DER UMRAHMENDEN GEBIRGE

PERSIEN, AFGHANISTAN, TEILE VON WEST-PAKISTAN, NORD-IRAQ, AZERBAIDJAN, TURKMENISTAN

von

Univ.-Prof. Dr.
KARL HEINZ RECHINGER
Erster Direktor des Naturhistorischen Museums in Wien (emeritus)

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Liliaceae I.

auctore PER WENDELBO †, Göteborg

Liliaceae A. L. DE JUSSIEU, Gen. Plant. 48 (1789) „*Lilia*".

Lit.: E. BOISSIER & F. BUHSE. Smilacaceae, Liliaceae & Melanthaceae in Aufzählung der auf einer Reise durch Transkaukasien und Persien gesammelten Pflanzen = Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou 12: 210–219 (1860). J. G. BAKER, Liliaceae in J. E. T. AITCHISON, On the Flora of the Kuram Valley, & c., Afghanistan, I, II, Journal of the Linnean Society of London. Botany 18: 101–104 (1881), l.c. 19: 188–189 (1882). E. BOISSIER, Colchicaceae, Liliaceae, Asparagaceae & Smilaceae in Flora Orientalis 5: 155–343 (1882). J. G. BAKER, Liliaceae in J. E. T. AITCHISON, The Botany of the Afghan Delimitation Commission, Transactions of the Linnean Society of London. Botany 3, 1: 116–119 (1888). J. D. HOOKER, Liliaceae in Flora of British India 6: 299–362 (1894). J. BORNMÜLLER, Colchicaceae, Liliaceae & Asparagaceae in Plantae Straussianae, Beihefte zum Botanischen Centralblatt 24, Abt. II: 97–112 (1908); Collectiones Straussianae novae, l.c. 28: 509–517 (1911); Reliquiae Straussianae, l.c. 33: 205–213 (1915). K. KRAUSE, Liliaceae in A. ENGLER & K. A. E. PRANTL, Die Natürlichen Pflanzenfamilien ed. 2, 15a: 227–386 (1930). B. A. FEDTSCHENKO (edit.), Liliaceae in Flora Turkmenii 1: 246–316 (1932). V. L. KOMAROV (edit.) Liliaceae in Flora URSS. 4: 1–475 (1935). J. BORNMÜLLER & E. GAUBA, Colchicaceae, Liliaceae & Asparagaceae in Florulae Keredjensis fundamenta, Feddes Repertorium 47: 74–80, 121–125 (1939). A. A. GROSSHEIM, Liliaceae in Flora Kavkaza 2: 88–191 (1940). A. PARSA, Colchicaceae, Liliaceae & Asparagoideae in Flore de l'Iran 5: 169–386 (1950). S. KITAMURA, Liliaceae in Flora of Afghanistan, Results of the Kyoto University Scientific Expedition to the Karakoram and Hindukush 2: 64–76 (1960). P. WENDELBO, Liliaceae in K. H. RECHINGER, Symbolae Afghanicae IV., Biologiska Skrifter af Det Kongelige Danske Videnskabernes Selskab 10, 3: 151–184 (1958). P. N. OVCHINNIKOV (edit.), Liliaceae in Flora Tadjikskoi SSR. 2: 178–290 (1963). H. MELCHIOR, Liliaceae in A. ENGLER's Syllabus der Pflanzenfamilien ed. 12, 2: 515–524 (1964). P. MOUTERDE, Liliaceae & Smilacaceae in Nouvelle Flore du Liban et de la Syrie 1: 203–289 (1966). E. ESFANDIARI, Colchicaceae, Asparagaceae & Smilacaceae in Une première liste des plantes de l'Herbier du Ministère de l'Agriculture de l'Iran 322–332 (1967). J. HUTCHINSON, Liliaceae, Trilliaceae, Smilacaceae, Ruscaceae & Amaryllidaceae p.p. in The Families of Flowering Plants ed. 2, 2 (1969). A. I. VVEDENSKY & S. S. KOVALEVSKAJA (edit.), Liliaceae in Conspectus Florae Asiae Mediae 2: 9–119 (1971). R. R. STEWART, Liliaceae in An annotated catalogue of the vascular plants of West Pakistan 41–59 (1972). R. DAHLGREN, Stemonales, Asparagales & Liliales in Angiospermernes taxonomi 4: 76–122 (1976). P. WENDELBO, Liliaceae in C. C. TOWNSEND (edit.) Flora of Iraq (ined.).

Herbae perennes e bulbo vel e rhizomate vel e cormo enati rarius (in area nostra) suffrutices vel frutices vel plantae scandentes. Folia plerumque sine petiolo distincto, saepe omnia basalia vel caulina et tum alternantia, rarius opposita vel verticillata. Flores bisexuales vel rarius unisexuales, actinomorphi vel leviter zygomorphi, in racemos vel spicas vel paniculas vel in cymas umbelliformes dispositi rarius solitarii. Perigonium plerumque e verticillis binis ± similibus trimeris e petalis liberis vel vario modo connatis compositum. Ovarium superum vel rarius semiinferum, e carpellis tribus compositum, triloculare; styli 1 vel 3. Fructus plerumque capsula loculicida vel septicida, seminibus paucis vel numerosis, vel bacca.

The family *Liliaceae* is here treated in the wide sense of MELCHIOR, (l.c.) and then containing about 220 genera with about 3500 species scattered all over the world. In older works *Colchicaceae, Asparagaceae* and *Smilaceae* were often treated as separate families. Following HUTCHINSON (l.c.) some recent authors have transferred *Allium* and related genera to *Amaryllidaceae* or treated these genera as belonging to the family *Alliaceae*. For practical reasons *Alliaceae* was also published as a separate family by the present author in Flora Iranica (Cont. 76, 1971).

Extreme in his views is DAHLGREN (l.c.), who divides the family with the genera to be treated in Flora Iranica in no less than 3 orders with 10 families: *Stemonales* with the family *Trilliaceae* *Asparagales* with *Smilacaceae, Convallariaceae, Asparagaceae, Ruscaceae, Asphodelaceae, Hyacinthaceae, Alliaceae* (and *Amaryllidaceae*), and *Liliales* with *Colchicaceae, (Iridaceae), Liliaceae.* His families are in most cases more or less identical with the subfamilies of KRAUSE (l.c.) and MELCHIOR (l.c.).

The total number of genera of *Liliaceae* (including *Alliaceae*) treated in Flora Iranica, will be about 30 with altogether 330–340 species. *Allium* is by far the largest genus with 139 species treated but several new ones will have to be added.

Clavis ad determinandas subfamilias

This key is based on the representatives of the subfamilies found within our area.

1a. Cormus evolutus. Perianthium tubo valde elongato partim subterraneo, segmentis liberis vel connatis. Fructus capsula. . . . . .subfam. *Wurmbaeoideae-Colchiceae*
b. Cormus nullus; aut rhizoma aut bulbus evolutus. Plantae ceterum characteribus alio modo combinatis 2
2a. Plantae scaposae, foliis basi rosulatis, scapo aphyllo florifero. Folia basalia interdum scapum ± vaginantes. Fructus capsula 3
b. Plantae cauligerae, caule bene evoluto, folia vel cladodia vel phyllocladio proferente 5
3a. Plantae rhizomatosae, rhizomate brevi erecto saepe radices penarias incrassatas vel ± tuberiformes proferente vel raro herbae annuae radicibus tenuibus . . . . subfam. *Asphodeloideae*
b. Plantae bulbiferae; bulbi interdum tenues, rhizomati adnati 4
4a. Inflorescentia racemosa, raro ad florem unicum reducta vel ± spiciformis . . . . subfam. *Scilloideae*
b. Inflorescentia umbellata, ante anthesin spatha ± membranacea in valvas 1–4 dissoluta inclusa (76. *Alliaceae* =) . . . . subfam. *Allioideae*
5a. Plantae bulbiferae caule foliato. Flores saepe magni speciosi vel brunnescentes usque virescentes tum ± tesselati. Fructus capsula . . . subfam. *Lilioideae*
b. Plantae rhizomatosae. Flores plerumque parvi, albidi vel virescentes. Fructus bacca rubra vel coerulescens 6
6a. Herbae foliis bene evolutis vel herbae vel suffrutices cladodiis vel phyllocladiis . . . . subfam. *Asparagoideae*
b. Frutices scandentes, foliis latis ± cordatis, nervis 3–5 parallelis reticulato-anastomosantibus. Cirrhi e basi petiolorum enati . . . . . . .subfam. *Smilacoideae*

Subfam. ***Asphodeloideae*** ENGLER, Führer bot. Garten Breslau 24 (1886), non vidi; in ENGLER & PRANTL, Natürl. Pflanzenfam. II, 5: 17 (1887).
Syn.: *Asphodeloideae* VENT. Tabl. II: 162 (1799), non vidi. *Liliaceae-Anthericeae* BOISS., Fl. Or. 5: 313 (1882). *Liliaceae-Asphodeleae* HUTCH., Fam. Fl. Pl. 2, ed, 2: 596 (1969). *Asphodelaceae* DAHLGR., Angiospermernes taxonomi 4: 88 (1976).

1a. Scapus foliorum vaginis ± membranaceis breviter vel longius cinctus. Filamenta longitudine inaequali .... 2. *Asphodeline* REICHENB.
b. Scapus foliorum vaginis non cinctus. Filamenta aequilonga vel subaequilonga 2
2a. Inflorescentia plerumque ramosa. Filamenta prope medium dorsum antherarum affixa .... 1. *Asphodelus* L.
b. Inflorescentia semper racemus simplex. Filamenta prope basin antherarum affixa.................................. 3. *Eremurus* M.B.

1. *Asphodelus*

Asphodelus L., Spec. Plant. 309 (1753); Gen. Plant. ed. 5: 146 (1754).

Herbae radicibus aggregatis ± tuberosis vel tenuiter fibrosis. Folia basalia. Scapus erectus. Inflorescentia paniculata. Pedicelli infra vel prope medium articulati. Tepala basi connata, uninervia, alba vel rosea. Filamenta e basi dilatata filiformia; antherae mediofixae. Stylus filiformis stigmate capitato vel leviter trilobo. Capsula coriacea loculicida. Semina triquetra.

1a. Folia triquetra, usque ad 30 mm lata................ 1. *A. microcarpus* VIV.
b. Folia lineari-subulata, semiteretia, usque ad 2,5 mm lata... 2. *A. tenuifolius* CAV.

1. ***A. microcarpus*** VIV., Fl. Cors. 5 (1824).
Syn.: *A. ramosus* L. subsp. *microcarpus* (VIV.) BAKER, Journ. Linn. Soc. Bot. 15: 270 (1876).
Typus: „Vulgatissimus in maritimis Corsicae australis et in regno valentino".

Herba perennis c. 1 m alta. Folia usque ad 50 cm longa, 3 cm lata, ensiformia, acuminata, triquetra, glabra. Scapus teres, solidus, glaber. Inflorescentia paniculato-racemosa. Perigonium tubuloso-campanulatum; tepala 12–16 mm longa, rosacea usque alba nervo mediano violaceo usque sordide viridi. Capsula 8–9 mm longa, obovoidea, transverse cristata.

Iraq: Kurd.: Arbil: Kuh Safin, 1400 m, BORNM. 1842! 25 km N Arbil, BARKLEY 5652! Inter Arbil et Salah ad-Din, RECH. 15537!, BARKLEY & ABBAS 7062! „Kurdish hills", 270–600 m, LOW 181!

Distr. gen.: Insulae Canarienses, Madeira, Regio Mediterranea usque ad Jordaniam et Iraq.

2. ***A. tenuifolius*** CAV., Anal. Cienc. Nat. 3: 46 (1801).
Syn.: *A. fistulosus* L. var. *tenuifolius* (CAV.) BAKER, Journ. Linn. Soc. Bot. 15: 272 (1876). *A. Bornmuelleri* GAND., Bull. Soc. Bot. Fr. 66: 291 (1920).
Icon.: CAV., l.c.: tab. 27, fig. 2. – Tab. nostr. 1.
Typus: „El Sr. BROUSSONET la encontro junto a Magador".

Herba annua, 4–50 cm alta. Folia quam scapus breviora, 0,5–2,5 mm lata, anguste linearia, subulato-acuminata, semiteretia, fistulosa, prope basin et margine plerumque scabrida. Scapus teres, fistulosus, plerumque prope basin scabridus, plerumque ramosus. Perigonium campanulatum; tepala (3–)5–6 mm longa, pallide rosea vel alba, nervo mediano brunnescente. Capsula 3–4 mm diametro, manifeste transversaliter cristata.

Iraq: Diyala: Jabal Hamrin, SUTHERLAND 410!
Persia: W: Lur.: Posht Kuh, Halat-e Mehran, BEHB. 274! Khuz.: 50 km ab Ahvaz versus Abadan, FOROUGHI 2989! Behbehan, TREGUBOV! Inter Behbehan et Omidiyeh, 100 m, DAVIS & BOKHARI 55779! Hamidiyeh, ESFAND. 71-E!, 5075-E! Mian Ab, WDB. 35! Pazanan, SAB. in GAUBA 1561! 5 km E aggeris Rud-e Karkheh, PABOT 354! Dezful, 600 m, PABOT 175! – S: Fars.: Bushehr, KOELZ 14835!, BORNM. 665!, THRELLFALL! 35 km NE Bushehr, KOEIE 103! Kazerun, GAUBA 1560! Kotal Dalaki, STAPF 1994! Inter Dalaki et Ab Ambar N Borazjan, 300–400 m, RENZ! Supra Borazjan, 200–300 m, DAVIS & BOKHARI 55291! 15 km ab Ahram, 100 m, DAVIS & BOKHARI 56022! 16 km S Bandar-e Rig, STUTZ 927! 11 km SE Khormuj, 40 m, BOKHARI & WENDELBO 22! Insula Khark, GRANT 17138! Kerman: Fahraj, MONOD 14454! Inter Bam et Fahraj, 800 m, RECH. 3901! Prope Bam, LEONARD 6053!, 6279!, DADASHZADEH DK 23! W Hamun-e Jaz Murian, 370 m, LEONARD 5763! Tomagoa, KOELZ 14301! 25 km W Jiroft (Sabzvaran), EDMONDSON & al. 1975! Inter Jiroft (Sabzvaran) et Deh Bakri prope Takht Soleiman, DADASHZADEH DK 24! Tang-e Arshub, PARRIS 75393! Lar.: Bandar Abbas, PABOT 6536!, 6574!, GABRIEL 9!, SAB. in GAUBA 1558!, BORNM. 664!, DADASHZADEH DK 22! Isin, RIAZI 5639! 20 km a Lar versus Bandar Abbas 100 km NE Bandar Abbas, KASY 334! Dalan inter Lar et Bandar Abbas, SAB. in GAUBA 1559! 22 km N Qotbabad, 1200–1250 m, WDB. & FOROUGHI 15777! Kuh-e Genu, 280–1600 m, WDB. & FOROUGHI 15314!, 15455! Inter Genu et Sarzeh, 250 m, RECH. 3436! 12–19 km E Lar, 740 m, PABOT 6431!, GREY-WILSON & HEWER 84! 6 km W Lar, 600 m, GREY-WILSON & HEWER 74! Minab, 20 m, RIAZI 5673!, 5674!, SOJÁK 4798! 12 km NW Minab, SOJÁK 4866! Hajjiabad prope Tarom, 900 m, RECH. 3278! 9 km N Hajjiabad, 1000 m, PABOT 6726! 55 km S Hajjiabad, 2000 m, SOJÁK 4495! Insula Hormoz, ZHUMER 368! Insula Qeys, TERME & MOUSSAVI 34552-E! Bal.: Khash, SOJÁK 430! Montes Karevandar inter Khash et Iranshahr, 1500–1600 m, RECH. 4007! Iranshahr, SHAR. 247-E! MANUCH. 5046-E!, 5044-E!, MAKOUI 5047-E! Makran: Bandini, 30 m, POPOV 64/35! Hudar, 350 m, FOROUGHI 10726! Espakeh, 740 m, FOROUGHI 10628! In regione Dashtiari, POZDENA 15! Chah Bahar versus Tis, MIRD. in GAUBA 1562! Jask, BEHB. 248-E! Qasemabad 10 km W Bampur, SOJÁK 1791! 10 km ENE Sarbaz, SOJÁK 891! 12–30 km S Sarbaz in valle rivi Rudkhaneh-ye Sarbaz, SOJÁK 1041!, 1055! 40 km SW Zaboli, SOJÁK 793!
Pakistan: Peshawar: Ad confluentes fluvios Indus et Kabul adversus Attock, PODLECH 20038! – Quetta: Inter Nushki et Quetta, substr. Tonschiefer, 1200 m, RECH. 27333! – Bannu: Tutaki 50 km N Bannu, substr. arenaceo, 700 m, RECH. 30065! – Makran: 8–25 km W Awaran versus Turbat, RECH. 27706!, 27768! 30–80 km SW Turbat versus Pasni, RECH. 27819!, 27843! Inter Pasni et Kappar, RECH. 27890-b!

Distr. gen.: Insulae Canarienses, Madeira, Africa borealis, Asia austro-occidentalis usque ad Pakistan occidentalem, Socotra, Mauritius.

No type material of *A. Bornmuelleri* GAND. has been seen and the description is rather incomplete. Still there is little reason to doubt that the plant is identical with *A. tenuifolius* which is extremely common within the area.

RICHARDSON & SMYTHIES, Flora Europaea 5: 17 (1980) treated *A. tenuifolius* as a synonym of *A. fistulosus*. As the plants from our area always have small flowers I have preferred to keep *A. tenuifolius* separate until more is known about the pattern of variation of *A. fistulosus* within its whole area.

2. *Asphodeline*

Asphodeline REICHENB., Fl. Germ. Excurs. 116 (1830).

Lit.: A. A. GROSSHEIM, Asphodeline in Flora Kavkaza ed. 2, 2: 96–97, 266–267 (1940).

Herbae annuae vel perennes, tuberibus cylindricis vel radicibus fibrosis confertis. Folia basalia membranacea clausa scapum ± longe cingens; lamina lineari-subulata. Inflorescentia paniculato-racemosa. Pedicelli infra vel prope medium articulati. Tepala basi connata, 1-nervia, flava vel alba vel rosea. Filamenta e basi dilatata filiformia, exteriora quam interiora plerumque manifeste breviora; antherae basifixa staminum exteriorum quam interiorum minores. Stylus filiformis stigmate subcapitato. Capsula coriacea, loculicida. Semina triquetra.

1a. Perennis. Tepala 20–23 mm longa .... 1. *A. Szovitsii* (C. KOCH) MISCZ.
 b. Annua. Tepala usque ad 8 mm longa....... 2. *A. dendroides* (HOFFM.) WORON.

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1. ***A. Szovitsii*** (C. KOCH) MISCZ., Fl. Cauc. crit. 2: 123 (1912).
Syn.: *Asphodelus Szovitsii* C. KOCH, Linnaea 22: 261 (1849).
Icon.: Fl. Kavk. 2: tab. 11, fig. 5 (1940).
Typus: „In Aserbeidschan von SZOVITS gesammelt", B †; isotypus LE!

Herba perennis, 20–40 cm alta. Radices tenues, fibrosae. Folia prope basin scapi inserta, ramum vel florem infimum attingentia, usque ad 1,5 mm lata, tenuia, setacea, laevia vel basin versus margine ± papilloso-scabrida. Scapus ramos 1–3 proferens. Bracteae pedicellos circiter aequantes, ovatae, abrupte longe acuminatae. Pedicelli quam perigonium breviores. Tepala 20–23 mm longa, alba. Filamenta longissima tepala circiter aequantia.

Persia: W: Azerb.: In valle fl. Qotur W Khvoy versus fines Turcicas, 1500–2000 m, LAMOND 4023!, RECH. 41625! Kiyamaki Dagh, 1400–2000 m, ASSADI & MOZAFFARIAN 30001! In montibus W Bazargan, ASSADI & MOZAFFARIAN 30181! Badalan prope Khvoy, SZOVITS 386!

Distr. gen.: Persia boreo-occidentalis, Transcaucasia.

This species was not included in Fl. URSS. vol. 4 (1935) and there may be reason to think that SZOVITS' material was collected in what is now Persian Azerbaijan. The Leningrad sheet is labelled „in solo cretaceo ad pagum Badalan prov. Aderbeidschan, SZOVITS". GROSSHEIM, l.c.: 97 reported the species for the first time from the Soviet side of the border viz. in the Nakhitchevan area.

2. ***A. dendroides*** (HOFFM.) WORON., Sched. Herb. Fl. Cauc. Fasc. II, 28 (1914).
Syn.: *Anthericum dendroides* HOFFM., Comment. Soc. Phys. Med. Mosc. 1: 43

(1802). *Asphodelus prolifer* M.B., Fl. Taur.-Cauc. 1: 280 (1808). *Asphodeline prolifera* (M.B.) KUNTH, Enum. Pl. 4: 563 (1843).
Icon.: Fl. URSS. 4: tab. 5, fig. 1 (1935). GROSSH., Fl. Kavk. 2: tab. 11, fig. 7 (1940). – Tab. nostr.: 2.
Typus: ignotus.

Herba annua, 10–40 cm alta. Radices tenues. Foliorum lamina usque ad 1 mm lata, setacea. Scapus simplex vel interdum in parte inferiore ramos 1–2 proferens. Racemus 4–10-florus. Bracteae pedicellos aequantes. Tepala usque ad 8 mm longa, alba. Capsula c. 5 mm diametro, ovoideo-globosa.

Persia: W: Azerb.: Ghazel Dagh prope Maku, 1340 m, DAMNABI! Now Duz inter Meshgin Shahr et Ahar, 1100 m, WDB. & ASSADI 27875! Dasht-e Moghan, MERTON 3476! In collibus aridis inter Alirezaabad-e Jadid et Sarband, 200 m, RECH. 40201! 45 km S Alirezaabad-e Jadid versus Qareh Aghaj, 250 m, RECH. 40266! In collibus S Parsabad, 100 m, PABOT 3024! 2–12 km W Zonuz, 1500–1700 m, LAMOND 3846!, RECH. 41405!

Distr. gen.: Persia boreo-occidentalis, Caucasus.

3. *Eremurus*

Eremurus M.B., Fl. Taur.-Cauc. 3: 269 (1819).
Syn.: *Ammolirion* KAR. & KIR., Bull. Soc. Nat. Mosc. 15: 515 (1842). *Henningia* KAR. & KIR., l.c.: 516. *Selonia* REGEL, Bull. Soc. Nat. Mosc. 41: 457 (1868).

Lit.: OLGA FEDTSCHENKO, Eremurus. Kritische Übersicht der Gattung, Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, Classe des Sciences Physiques et Mathématiques VIII. Série 23, 8 (1909). A. I. VVEDENSKY, Eremurus in Flora Tadjikskoi SSR 2: 186–212 (1963). P. WENDELBO, On the Genus Eremurus (Liliaceae) in South-West Asia, Acta Universitatis Bergensis Series Mathematica rerumque Naturalium Nr. 5 (1964). A. P. KHOKHRIAKOV, Eremurusy i ikh kultura, Moskva 1965. P. WENDELBO, Further Notes on Eremurus (Liliaceae) in Afghanistan, Acta Horti Gotoburgensis 28: 58–63 (1968). P. WENDELBO & P. FURSE, Eremurus of South-West Asia, Lily Year Book 32: 56–69 (1969). A. I. VVEDENSKY & S. S. KOVALEVSKAJA, Eremurus in Conspectus Florae Asiae Mediae 2: 14–27 (1971). I. C. HEDGE & P. WENDELBO, Studies in the Flora of Afghanistan XIII, Various new Taxa and Records, Notes from the Royal Botanic Garden Edinburgh 31: 342–345 (1972).

Herbae rhizomatis brevibus, radicibus incrassatis fasciculatis plerumque horizontalibus. Folia rosulata. Inflorescentia scaposa, racemosa, bracteata, cylindrica vel conica, multiflora. Perigonium tubulosum, campanulatum vel subrotatum, segmentis plerumque subaequalibus basi breviter connatis. Filamenta filiformia, antheris supra basin adnatis. Ovarium triloculare, loculis 3–4-ovulatis. Stylus filiformis. Capsula loculicida, trivalvis. Semina acute triquetra, saepe alata.

The genus *Eremurus* hat its centre of diversity in NE Afghanistan and the Soviet Republic of Tadjikistan. The highest number of species is found here and also the complete range of characters, i.e. all groups of species are represented within this area.

In many places species of *Eremurus* dominate the vegetation over rather large areas. Thus *E. persicus* may be seen in large numbers in the dry steppe of Central Iran, *E. spectabilis* is frequent even in fields in the west of Iran, *E. stenophyllus* subsp. *aurantiacus* and *E. Kaufmannii* may cover many hectars in nearly pure stands in the high mountains of Central Afghanistan, etc. In such cases the vegetational cover is clearly a secondary one. Heavy overgrazing mainly by sheep has destroyed the original vegetation and the more or less non-palatable species are gradually taking over. It seems as if plants of *Eremurus* are avoided by the sheep, occasionally the tips of the young leaves are eaten in early spring when little else is to be found. Whether there is some sharp-tasting or poisonous constituent in the plant is unknown.

A glue used for many purposes is made from the crushed tuberous roots. This is recorded from many different parts of the area: Turkestan, cp. O. FEDTSCHENKO, l.c.: 95; Afghanistan, AITCHISON, Notes on the products of Western Afghanistan and of North-Eastern Persia, Trans. Bot. Soc. Edinb. 18: 65–66 (1890); and Iran, WULF, The Traditional Crafts of Persia, Massachusetts Institute of Technology 2nd. ed.: 36, 125, 195, 238 (1976). I have myself also noted this use in different parts of Iran and Afghanistan. The name used both for the glue and the plant all over the area seems to be serish or some variant of it.

AITCHISON, l.c. also noted that the young leaves of *E. stenophyllus* subsp. *aurantiacus* were used as a vegetable in cooked state. He found the taste very agreeable. I have noted from Khorassan that the fleshy roots were used for making a soup.

Several species of *Eremurus* such as *E. Aitchisonii, E. robustus, E. stenophyllus, E. Olgae* and *E. himalaicus* as well as hybrids in different combinations are quite popular as garden plants. In Tehran big bouquets of *E. stenophyllus* and *E. persicus* were sold at the florists'. These plants had been picked in nature.

Important taxonomic characters are found in all parts of the plants, width, colour and pubescence of leaves; shape, size and pubescence of bracts; shape, size, number of nerves and colour of tepals; length, thickness and poise of pedicels; size and shape of fruits and seeds. Characters not used in this treatment are also found in the roots which are e.g. short, fleshy and descending in *E. spectabilis;* fleshy but longer and horizontally spreading in *E. stenophyllus* or thin and wiry in *E. Furseorum,* etc. One should note that due to the great size of the plants in many of the species, small and not really representative specimens are often selected for the press. The outer leaves are always the broadest and also the most characteristic ones for the species.

Size and shape of the fruit which is extremely characteristic in living plants, are often misjudged in dried, pressed material, either the fruit is not fully developed or it may be much shrivelled. For this reason the measurements of capsules given in some of the descriptions may be misleading.

Hybrids are quite frequent at least among the species of the section *Henningia,* these may be difficult to name if the possibility of hybrid origin was not noted in the field.

There is reason to believe that the species concept in *Eremurus* has become rather narrow. Thus quite a few species may in the future disappear into synonymy, or be treated as subspecies, geographical races, or ecotypes. Some "species" may also be disclosed as being of hybrid origin.

1a. Tepala 3–5-nervia, apice mox incurva vel involuta; perigonium anguste tubulosum usque ad campanulatum. (Subgenus *Eremurus*) 2
 b. Tepala 1-nervia, immutata; perigonium subrotatum. (Subgenus *Henningia*) 9
2a. Tepala apice incurva, stamina quam tepala vix longiora; perigonium tubulosum vel tubuloso-campanulatum. (Sect. *Ammolirion*) 3
 b. Tepala apice mox involuta, stamina itaque demum valde exserta; perigonium campanulatum. (Sect. *Eremurus*) 6
3a. Bracteae e basi dilatata lineari-subulatae 4
 b. Bracteae anguste ovato-lanceolatae usque ad anguste ovatae 5
4a. Bracteae quam pedicelli floriferi aequilongae vel paulo breviores, margine villoso-ciliatae . . . . 1. *E. inderiensis* (STEV.) BOISS.
 b. Bracteae quam pedicelli floriferi plerumque manifeste longiores, usque ad 40 mm longae, margine glabrae vel prope apicem sparse ciliatae . . . . 2. *E. cappadocicus* J. GAY ex BAKER
5a. (3) Pedicelli floriferi 15–20 mm longi raro longiores, erecti. Perigonium

erectum tubulosum .... 3. *E. comosus* O. FEDTSCH.
b. Pedicelli floriferi usque ad 40 mm longi, ascendentes. Perigonium ± nutans, tubuloso-campanulatum .... 4. *E. dolichomischus* VVED. & WENDELBO
6a. (2) Ovarium capsulaque transverse costatae............ 5. *E. spectabilis* M.B.
b. Ovarium capsulaeque laeves.............................. 7
7a. Tepala exteriora et interiora manifeste inaequalia. Scapus basin versus puberulus. Pedicelli 50–70 cm longi .... 8. *E. soogdianus* (REGEL) BENTH. & HOOK.
b. Tepala subaequalia. Scapus glaber. Pedicelli usque ad 30 mm longi....... 8
8a. Pedicelli 20–30 mm longi, angulo acuto ascendentes. Tepala 15–18 mm longa.............................. 6. *E. Korshinskii* O. FEDTSCH.
b. Pedicelli 9–20 mm longi, ± erecti. Tepala 9–12 mm longa............ .... 7. *E. fuscus* (O. FEDTSCH.) VVED. ex NIKITIN
9a. (1) Perigonium flavum in sicco brunneo-aurantiacum .... 23. *E. stenophyllus* (BOISS. & BUHSE) BAKER
b. Perigonium roseum vel album vel cremeum vel pallide viridi-flavescens, in sicco interdum flavescens 10
10a. Tepala c. 7 mm longa. Filamenta quam tepala plus quam duplo longiora .... 24. *E. Furseorum* WENDELBO
b. Tepala longiora. Filamenta tepala ± aequantia...................... 11
11a. Bracteae glabrae, longe subulatae .... 22. *E. Olgae* REGEL
b. Bracteae ciliatae, forma variae.............................. 12
12a. Scapus puberulus. Folia puberula vel glabrescentia, basin versus saltem puberula 13
b. Scapus glaber. Folia glabra, margine saepe scabrida................... 19
13a. Bracteae anguste ovatae, 15–20 mm longae interdum ± caudatae....... .... 9. *E. persicus* (JAUB. & SPACH) BOISS.
b. Bracteae e basi dilatata lineari-subulatae 14
14a. Folia usque ad 80 mm lata 15
b. Folia minus quam 15 mm lata................................ 17
15a. Folia exteriora latiora, utrinque glabra vel glabrescentia, basin versus puberula, interiora angustiora, puberula .... 12. *E. bactrianus* WENDELBO
b. Folia exteriora et interiora omnia puberula...................... 16
16a. Tepala 10–14 mm longa, alba. Pedicelli patuli, tenues ... 13. *E. afghanicus* GILLI
b. Tepala 15–22 mm longa, alba basi flava. Pedicelli mox incrassati et arcuati .... 11. *E. Kaufmannii* REGEL
17a. (14) Tepala pallide viridi-flava................... 18. *E. Suworowii* REGEL
b. Tepala alba vel roseola.................................. 18
18a. Folia usque ad 8–15 mm lata. Tepala 16–20 mm longa ... 19. *E. roseolus* VVED.
b. Folia c. 5 mm lata. Tepala (10–)13–14(–17) mm longa .... 17. *E. bucharicus* REGEL
19a. (12) Bracteae longissimae, usque ad 40 mm longae vel longiores......... .... 15. *E. Alberti* REGEL
b. Bracteae minus quam 20 mm longae 20
20a. Tepala in sicco flavescentia .... 16. *E. luteus* BAKER

b. Tepala alba vel roseola. 21
21a. Folia plerumque plus quam 20 mm lata, usque ad 80 mm lata 22
b. Folia minus quam 10 mm lata. 23
22a. Tepala alba . . . . 14. *E. himalaicus* BAKER
b. Tepala roseola vel rosea. . . . . 21. *E. Aitchisonii* BAKER
23a. Bracteae anguste lanceolato-lineares. Tepala inaequalia, interiora obovata, quam exteriora ± elliptica manifeste latiora. . . . . .20. *E. kopetdaghensis* M. POP. ex B. FEDTSCH.
b. Bracteae anguste ovato-caudatae. Tepala subaequalia, ± anguste obovato-elliptica . . . . 10. *E. Rechingeri* WENDELBO

Clavis ad determinanda specimina fructifera

Fruiting specimens of *Eremurus* are as characteristic as flowering ones and can usually be named without too much difficulty. The capsule, which is rather fleshy before opening, does shrink a great deal when ripening and drying out. As the fruits of many species have only been studied on pressed specimens the real size may be rather different from what is stated in key and descriptions. It should be noted, that especially the longer bracts are often broken in fruiting specimens and thus may be rather different from what is stated in key and descriptions. Leaf-measurements are taken from the outermost broadest leaves but remains of these are not always preserved in fruiting specimens. Additional characters of great importance for the final naming of the fruiting specimens may be gained from wetted remains.

1a. Capsula scapi appressa. Pedicelli ± erecti 2
b. Capsula scapi non appressa. Pedicelli patentes vel ascendentes vel curvati . . 6
2a. Capsula manifeste transversaliter costata. . . . . 5. *E. spectabilis* M.B.
b. Capsula non transversaliter costata 3
3a. Bracteae lanceolatae . . . . 3. *E. comosus* O. FEDTSCH.
b. Bracteae e basi dilatata lineari-subulatae 4
4a. Folia et scapi glabri . . . . .7. *E. fuscus* (O. FEDTSCH.) VVED. ex NIKITIN
b. Scapi imprimis basin versus et plerumque etiam folia puberuli 5
5a. Pedicelli quam bracteae manifeste breviores. Bracteae glabrae vel apicem versus parce ciliatae. . . . . 2. *E. cappadocicus* J. GAY ex BAKER
b. Pedicelli bracteas aequantes vel quam eae longiores. Bracteae villoso-ciliatae. . . . . 1. *E. inderiensis* (STEV.) BOISS.
6a. (1) Capsula 12 mm diametro vel minor, ± globosa. 7
b. Capsula 14 mm longa vel longior, rarius brevior et tum manifeste longior quam lata 14
7a. Bracteae subulatae, plerumque glabrae, rarius parcissime ciliatae vel prope basin puberulae 8
b. Bracteae non ut supra descriptae, interdum e basi dilatata attenuatae, plerumque manifeste ciliatae. 10
8a. Pedicelli (16–)25–70 mm longi. Capsula 5–8 mm diametro. Bracteae et scapus semper laeves . . . . 22. *E. Olgae* REGEL

b. Pedicelli ad 20 mm longi. Capsula 5–8 mm rarius ad 10 mm diametro sed tum scapus imprimis prope basin puberulus et bracteae ciliatae 9
9a. Pedicelli 8–12 mm longi. Capsula 5–6 mm diametro. Flos marcescens pallidus . . . . 24. *E. Furseorum* WENDELBO
b. Pedicelli 10–20 mm longi. Capsula 6–8(–10) mm diametro. Flos marcescens brunneus . . . . 23. *E. stenophyllus* (BOISS. & BUHSE) BAKER
10a. (7) Scapus et folia omnino glabri. . . . . 6. *E. Korshinskii* O. FEDTSCH.
b. Scapus (interdum et prope basin tantum) pubescens; folia quoque plerumque pubescentia. 11
11a. Pedicelli manifeste prope basin curvati; capsula subappressa . . . . .11. *E. Kaufmannii* REGEL
b. Pedicelli recti, patentes vel ascendentes. 12
12a. Capsula 7–8 mm tantum diametro. Folia lata, ad 50(–65) mm lata . . . . .13. *E. afghanicus* GILLI
b. Capsula major. Folia angusta, ad 7(–15) mm lata 13
13a. Pedicelli ad 75 mm longi, patule ascendentes . . . . 8. *E. soogdianus* (REGEL) BENTH. & HOOK.
b. Pedicelli ad 40 mm longi, ± horizontales . . . . 18. *E. Suworowii* REGEL
14a. (6) Scapus imprimis basin versus puberulus vel tenuiter pubescens 15
b. Scapus omnino glaberrimus. 19
15a. Bracteae anguste ovato-lanceolatae usque anguste lanceolatae. 16
b. Bracteae e basi lata subulatae vel lineari-subulatae. 17
16a. Capsula 14 mm diametro. Pedicellus ad 40 mm longus, ascendens. Folia ad 45 mm lata . . . . .4. *E. dolichomischus* VVED. & WENDELBO
b. Capsula ad 22 mm diametro. Pedicellus ad 30 mm longus, patens. Folia ad 10(–25) mm lata . . . . 9. *E. persicus* (JAUB. & SPACH) BOISS.
17a. (15) Folia ad 80 mm lata. Capsula c. 20 mm diametro, glabra. . . . . .12. *E. bactrianus* WENDELBO
b. Folia ad summum 15 mm lata. Capsula pyriformis 18
18a. Folia ad 5 mm lata . . . . 17. *E. bucharicus* REGEL
b. Folia ad 15 mm lata . . . . .19. *E. roseolus* VVED.
19a. Bracteae ad 45 mm longae (sed saepe diffractae, tum breviores videntur). Capsula 20–25 mm diametro. Pedicelli ad 60 mm longi. Semina c. 15 mm longa, latissime alata . . . . 15. *E. Alberti* REGEL
b. Characteres alio modo combinatae 20
20a. Folia angusta, ad summum 10 mm lata 21
b. Folia latiora, 15–80 mm lata 23
21a. Bracteae anguste ovato-caudatae. Pedicelli 20 mm longi. Capsula 16–18 × 14 mm (probabiliter non omnino matura). . . . . . . 10. *E. Rechingeri* WENDELBO
b. Bracteae anguste lanceolato-lineares. Pedicelli quam 20 mm plerumque manifeste longiores 22
22a. Capsula ellipsoidea, 15–25 × 8–12 mm . . . . 16. *E. luteus* BAKER
b. Capsula subglobosa usque late ellipsoidea, 20–23 mm diametro. . . . . .20. *E. kopetdaghensis* M. POP. ex B. FEDTSCH.
23a. (20) Capsula c. 14 mm diametro. Semina anguste alata. Folia 15–45 mm

lata .... 14. *E. himalaicus* BAKER
b. Capsula 15–20 mm diametro. Semina late alata. Folia ad 80 mm lata .... 21. *E. Aitchisonii* BAKER

Subgen. ***Eremurus***

Perigonium campanulatum usque tubulare; tepala 3–5-nervia, mox involuta vel apice incurva; color saepe mixtus, plerumque brunnescens et/vel virescens.

Sect. *Ammolirion* (KAR. & KIR.) BOISS., Fl. Or. 5: 322 (1882).

Syn.: *Ammolirion* KAR. & KIR., Bull. Soc. Nat. Mosc. 15: 515 (1842).

Perigonium tubulare; tepala demum apice incurva. Filamenta vix exserta.

1. ***E. inderiensis*** (STEV.) BOISS., Fl. Or. 5: 323 (1882).
Syn.: *Asphodelus inderiensis* STEV., Bull. Soc. Nat. Mosc. 4: 257 (1832). *E. velutinus* BOISS. & BUHSE, Aufz. Transkauk. und pers. Pfl. = Nouv. Mém. Soc. Nat. Mosc. 12: 217 (1860). *E. pauciflorus* BAKER, Journ. Bot. 17: 18 (1879).
Icon.: O. FEDTSCH., Mém. Acad. Imp. Scienc. Petersbg. Sér. 8, 23: tab. 6 (1909). – Tab. nostr.: 14, fig. 1; 17, fig. 1.
Typus: „Circa lacum Inderiensem deserti transvolgensis a Tauchero et Helmio lecta specimina communicavit amic. FISCHER" K!, LE!

Planta (55–)70–120 cm alta. Folia 8–15 mm lata, ± puberula vel raro glabra. Bracteae quam pedicelli breviores, e basi dilatata subulatae, villoso-ciliatae. Pedicelli plerumque 10–12 mm longi, erecti, demum incrassati. Tepala 10–14(–16) mm longa, 3–5-nervia, brunnescenti-rosea nervis virescentibus. Capsula c. 10 mm diametro, globosa, scapi appressa. Semina c. 6 mm longa, cinerea, anguste alata.

.Persia: N: Gorg.: Mohammad Reza Shah Res.: In planitie N Robat-e Qareh Bil versus Almeh, 1200 m, RECH. 52941! – W: Ham.: Aq Bolagh-e Aqdaq, 2000 m, RIOUX & GOLV. AB 32! 47 km N Ab-e Garm SW Takestan, 1660 m, PABOT 3967! Esf.: In valle „Gäsnabad" E Esfahan versus Yazd (typus *E. velutini*), BUHSE 1423! Inter Murcheh Khvort et Kashan, 2100 m, BALLS 77! – E: Khor.: In jugo inter Jannatabad et Malu, 1200–1500 m, substr. Tonschiefer, RECH. 55861! Inter Torbat-e Heydariyeh et Gonabad, 1500 m, REJAMAND & BAZARGAN 31970! 60 km N Gonabad inter Manneh et Emrani, 900 m, RECH. 51435! Inter Torbat-e Heydariyeh et Assadabad, 1500 m, RECH. 4383! 35 km SE Fariman, KASY 627! 35 km W Abbasabad inter Mashhad et Shahrud, ZOHARY & ORSHAN 10260/4! Inter Mayamey et Abbasabad, RECH. 5361! W Mozduran, MERTON 390! – C: Damgh.-Semn.: In montibus E Semnan, KASY! In jugo Ahvan (Ahuvan) inter Semnan et Damghan, 1800 m, RECH. 56495! Shahr.-Bust.: 109 km E Shahrud 1200 m, PABOT 8082! Turan Protected Region: Kuh-e Peyghambar S Zamanabad, 1300–1500 m, RECH. 50877! Yazd: Prope Eshratabad, BUNGE 6 (typus *E. paucifloris*)! 100 km S Qom, PABOT 3434! Prope Qohrud, 2100 m, GUISEPPI 49! Mooteh Protected Region: In montibus N Muteh (Mooteh), 2100–2450 m, RECH. 46950!
Turcomania: In steppis arenosis argillosis prope Kazandshik, SINT. 1755!
Afghanistan: NW: Maimana: Inter Maimana et Belchiragh, 1000 m, HDG. & WDB. W-3684! Bala Morghab: Inter Bala Morghab et Ghormach, 480 m, PODLECH & JARMAL 29916! E Bala Morghab, 900 m, HDG., WDB. & EKB. W-8244! Herat: 81 km WNW Herat versus Kisil Islam Qaleh, 800 m, PODLECH & JARMAL 29368! 3 km S Shir Band (Gulran), 850 m, PODLECH & JARMAL 29475! Inter Karokh et Khodja Charshambe, 1400 m, HDG., WDB. & EKB. W-8020! In

jugo Sabzzak, GREY-WILSON & HEWER 1273! Badghiz, AITCH. 402! 48 km E Herat, 1500 m, FURSE 7684! Kuhe- Darunta supra Chashmeh Obeh, 1800 m, HDG., WDB. & EKB. W-7891! Ardewan, 1400 m, KOEIE 2265! – **SW**: Herat: N Adraskan, 1500 m, HDG. & EKB. W-7724! In decl. borealibus jugi Mir Ali, 1580 m, HDG., WDB. & EKB. W-7751! – **SE**: Kalat-i Ghilzai, 1500 m, HAY 206! 10 km NE Kalat-i Ghilzai, 1050 m, HDG., WDB. & EKB. W-7608! – **NE**: Kataghan: 49 km E Tashkurghan versus Kunduz, RECH. 34294!

Pakistan: Quetta: Pishin, LACE 3333! Quetta, 1500–1700 m, R. R. STEW. 28050!, ZAFFAR ALI 4794! Yaro prope Bostan 40 km NNE Quetta versus Pishin, 1450 m, RECH. 28957!, LAMOND 998!

Distr. gen.: Persia, Afghanistan, Pakistan, Asia centralis (Pamir-Alaj, Kopet Dagh).

2. ***E. cappadocicus*** J. GAY ex BAKER, Journ. Linn. Soc. Bot. 15: 281 (1877).
Typus: Cappadocica meridionalis, AUCHER-ELOY 2166, K!

Planta 40–70 cm alta. Folia usque ad 15 mm lata, glabra, margine laevia. Scapus tenuiter puberulus. Racemus angustus. Bracteae lineari-subulatae, infirmae, usque ad 50 mm longae, glabrae vel margine sparse ciliatae. Pedicelli usque ad 15 mm longi, tenues, ascendenti-erecti, fructiferi subincrassati, usque ad 23 mm longi. Tepala c. 11 mm longa, brunnescentia. Capsula c. 9 mm longa, subglobosa, breviter stipitata, scapi appressa. Semina 6 mm longa, late alata.

Iraq: Kurd.: Arbil: In montibus N Rost, 2400–3000 m, THESIGER 965! Hab as-Sultan Dagh, 950 m, RAWI, NURI & KASS 28254! Mosul: Inter Aqra et fl. Khazir, THESIGER 557-b!

Distr. gen.: Anatolia, Iraq boreo-orientalis.

This species is obviously closely related to *E. inderiensis* (STEV.) BOISS. and to *E. Wallii* RECH. f. from Syria. Possibly both *E. cappadocicus* and *E. Wallii* should be treated as subspecies of *E. inderiensis* as the morphological differences are slight, but for both of them more material especially in fruit is needed to come to a final conclusion.

3. ***E. comosus*** O. FEDTSCH., Bull. Herb. Boissier Sér. 2, 4: 742 (1904).
Icon.: O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23: tab. VII (1909). – Tab. nostr.: 3.
Typus: Syntypi plures ex Asia Media; lectotypus Buchara: Hissar, Faizabad, 29. V. 1897, S. KORSHINSKY, LE!

Planta (50–)70–170(–180) cm alta. Folia plerumque usque ad 15 mm (raro ad 30 mm) lata, puberula, glaucescenti-viridia. Scapus tenuis, in parte inferiore puberulus. Inflorescentia angusta, pauciflora. Bracteae usque ad 20 mm longae, lanceolatae, ± ciliatae. Pedicelli usque ad 25 mm longi, erecti, non articulati. Perigonium 8–12 mm longum, sordide roseum. Capsula 12–17 mm diametro, globosa, apiculata, scapo ± appressa. Semina 6–7 mm longa, manifeste alata.

Afghanistan: **E**: Kabul: Tang-i Gharu, 1720 m, GILLI 207! – **NE**: Kataghan: In decl. borealibus jugi Salang, 2000–1100 m, RECH. 31724! In valle Khinjan, 1600 m, HDG., WDB. & EKB. W-8586! In valle fl. Surkhab 7–10 km S Pul-i Khumri, 700 m, PODLECH 21024!, RECH. 33695! Inter Doshi et Daragak, 900 m, ANDERS 6221! W Pul-i Khumri versus Doshi, 750 m, HDG., WDB. & EKB. W-4056! SW Farkhar, 1400–1650 m, PODLECH & JARMAL 30150! Badakhsh.: Taliqan, 900 m, FURSE 6065! 16–30 km E Taliqan, GIBBONS 499!, HDG. & WDB. W-9255! 32 km

ESE Taliqan, 1200 m, PODLECH 21387! 3 km E Kalatgan inter Taliqan et Kishm, 1620 m, PODLECH 21417! In valle Kishm prope Kangurchi, 1150 m, PODLECH 21494!, ANDERS 6686! Yawarzan 30 km S Kishm, 1350 m, HDG. & WDB. W-9482! Darreh-i Ranch, EKBERG W-9130!

Distr. gen.: Afghanistan borealis, Pamir-Alaj.

EKBERG W-9130 is obviously a very unusual specimen with a leaf 57 mm broad and pedicels up to 35 mm long.

4. ***E. dolichomischus*** VVED. & WENDELBO, Acta Horti Gotob. 28: 58 (1966).
Icon.: WENDELBO, l.c.: tab. 1. – Tab. nostr.: 14, fig. 2; 17, fig. 2.
Typus: HEDGE & WENDELBO W-2780; holotypus BG!, isotypus E!

Planta usque ad 120 cm alta. Folia usque ad 45 mm lata, puberula. Scapus puberulus. Bracteae c. 15 mm longae, 4 mm latae, anguste lanceolatae, villoso-ciliatae. Pedicelli usque ad 40 mm longae, non articulati, ascendentes. Perigonium ± nutans; tepala (8–)11 mm longa, virescenti-brunnea vel -rosea, marginibus pallidioribus. Capsula c. 14 mm diametro, globosa. Semina ignota.

Afghanistan: E: Kabul: Tang-i Gharu, 1200–1750 m, HDG. & WDB. W-2779!, 2780! 16 km W Sarobi, 1140 m, HDG. & WDB. W-7593! In jugo Lataband, VOLK 1844! In jugo Khord Kabul, 1800–2000 m, HDG., WDB. & EKB. W-7508! Laghman: 4 km NW Morah infra Daulat Shah, 1650–1960 m, GREY-WILSON & HEWER 1045! Khost: In faucibus fl. Kurram inter Chakmanni et Ahmad Khel, 1850 m, RECH. 35627!
Pakistan: Chitral: Drosh, 1350 m, STAINT. 2359!

Distr. gen.: Endem.

A plant from Chitral (STAINTON 2359) has leaves 20 mm broad, pedicels 20 mm long and tepals only 8 mm long.

Sect. *Eremurus*

Syn.: Sect. *Eueremurus* BOISS., Fl. Or. 5: 321 (1882). *Selonia* REGEL, Bull. Soc. Nat. Mosc. 41, 1: 457 (1868).

Perigonium ± late campanulatum; tepala demum ± involuta, stamina itaque manifeste exserta.

5. ***E. spectabilis*** M.B., Fl. Taur.-Cauc. 3: 269 (1819).

Planta 75–200 cm alta. Folia usque ad 45 mm lata, glabra vel puberula, margine aut laevia aut scabrida aut ciliata, glauca. Scapi glabri. Inflorescentia densa, cylindrica. Bracteae lineari-subulatae, quam pedicelli aequilongae vel paulo longiores, margine longe ciliatae. Pedicelli 10–18 mm longi, primum tenues, erecto-ascendentes, fructiferi incrassati, arcuato-erecti. Perigonium 12–14(–16) mm longum, anguste campanulatum, pallide flavescens, flavo-virescens vel rubellum, late albomarginatum. Filamenta in sicco atrorubra, quam tepala paulo longiora. Capsula c. 9 mm diametro, globosa, apiculata, transverse costata. Semina 5–6 mm longa, atrocinerea, anguste alata.

Distr. gen. speciei: Asia austro-occidentalis ab Anatolia et Palaestina usque ad Asiam mediam.

1a. Tepala rubella late albo-marginata. Capsula manifeste subargute costata .... subsp. *Regelii* (VVED.) WENDELBO
b. Tepala flavescentia vel pallide virescenti-flavescentia. Capsula minus distincte costata, costis rotundatis 2
2a. Folia glabra margine scabra .... subsp. *spectabilis*
b. Folia puberula .... subsp. *subalbiflorus* (VVED.) WENDELBO

– – subsp. ***spectabilis***

Syn.: *E. bachtiaricus* BOISS., Fl. Or. 5: 323 (1882) p.p. (inflor.). *E. Aucherianus* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 7: 120 (1846) p.p. (folia). *Henningia Aucheriana* (BOISS.) BOISS., Diagn. Pl. Or. Nov. Ser. 2, 4: 98 (1859) p.p.
Icon.: WENDELBO, Tulips and Irises of Iran and their Relatives: fig. 7 (1976).
Typus subspeciei: Caucasus septentrionalis: Inter fluvium Kumam et rivum Sablja, LE.

Folia glabra, margine aut laevia aut scabrida aut ciliata. Tepala pallide flavescentia vel virescentia. Capsula costae minus prominentes.

Iraq: Kurd.: Arbil: In montibus Baradost, 1950 m, THESIGER 900!, LOW 264! N Rost, 2400–3000 m, THESIGER 975! Gali Warta 30 km NW Ranya, 1300–1400 m, RAWI & al. 28721! Sul.: Pira Magrun, 1600–1800 m, GILLETT 7810! Kopi Qara Dagh, 1350 m, HAINES W-1177!, POORE 431! Jabal Khantur, 2000 m, RAWI 8583! Mosul: Sirsang, 1500 m, HAINES W-1045! Alho, 2000 m, RAWI 8525!

Persia: N: Maz.: 40 km S Chalus, 900 m, STUTZ 1173! – W: Azerb.: 13 km S Mianeh, 1000 m, PABOT 3385! 90 km NNW Ardabil versus Germi ad confines Talyschenses, RECH. 40005! Kuhha-ye Kalan prope Nabi Jan, 2320–2750 m, TERME & al. 38935-E! In valle fl. Qotur W Khvoy versus fines Turcicas, 1800–2000 m, RECH. 41589!, SHAHR. 7011-E! Insula Kabudan, 1300–1600 m, MATINE & DANESPAJOUH 38414-E! In valle Qasemlu 41 km S Rezaiyeh, 1550–1800 m, MATINE & DANESHPAJOUH 38413-E! Khamseh: In decl. australibus jugi Tarom, 1900 m, LAMOND & IRANSHAHR 3634!, FOROUGHI 1683! In decl. argillosis 52 km SW Zanjan versus Bijar, 1700 m, LAMOND 4289!, RECH. 42375! Kuh Anguran 35–42 km SW Tashvir, 1900–2200 m, RECH. 40899! Kurd.: 100 km N Kermanshah versus Sanandaj, 700 m, WDB. 1932! Sanandaj, 1800 m, JACOBS 6916! Kauleh inter Sanandaj et Saqqez, 2070 m, ARCHIBALD 2131! 32 km E Saqqez, 1800 m, FURSE 2139! Ham.: Aq Bolagh-e Aqdaq, 2000 m, RIOUX & GOLV. 31! Kermansh.: Kuh-e Nevoh 24 km NW Karand, 2220 m, ARCHIBALD 1908! Qashqai: Kuh-e Surmandeh N Semirom, substr. calc., 2700 m, RECH. 47536! Bakht.: Damavar, 3600 m, KOELZ 15188! Chehel Dokhtaran Kuh, 3000 m, WDB. 1745! Kuh Rang, 2400 m, WDB. 927! Galli Sur, KOELZ 18082-a! Lur.: Dow Rud, 1650 m, KOELZ 15655!, 17387! Khali Kuh, 2100 m, KOELZ 15950! Oshtoran Kuh (Kuh-i Shuturan), 1950 m, KOELZ 17834! – S: Fars.: Inter Ardakan et Tal-e Khosravi, 2440 m, ARCHIBALD 2869! 12 km a Yasuj versus Ardakan, 2100 m, DAVIS & BOKHARI D-56472! – E: Khor.: M. Hazar Masjed inter Ardaq et Talqur, 1200–1600 m, RECH. 5203! In montibus serpentinicis ditionis Robat Safid, 1700–2000 m, RECH. 1544-c!, 4426! Kuh-e Bezg, RECH. 1482! 30 km W Bojnurd, 1500 m, HORREÜS DE HAAS 346! Inter Bojnurd et Gifan, 1400 m, GAUBA K-3239! Kopet Dagh, inter Quchan et Lotfabad, in jugo Allah Akbar, 1800 m, RECH. 1706! – C: Tehr.: In decl. australibus M. Elburz, 2250–2550 m, FURSE & SYNGE 446! Homand, PABOT! M. Damavand, PAG 7095-E! Prope Polur, 2200–2400 m, WDB. 726!, 2063! 3 km NW Polur, 1520 m, ARCHIBALD 2579! Qazv.: Kuh-e Nemar prope Karaj, 1600–2000 m, RECH. 708! Kuh Dashteh, GAUBA 1564!

Distr. gen. subspeciei: Anatolia, Israel, Libanon, Syria, Iraq, Persia, Caucasus.

– – subsp. ***subalbiflorus*** (VVED.) WENDELBO, comb. nov.
Syn.: *E. subalbiflorus* VVED., Consp. Fl. As. Med. 2: 311 (1971).
Typus subspeciei: „E rhizomatis a Gnezdillo in montibus Kopet Dag prope urbem Kara-Kola in angustiis Bugunaar a. 1933 lectis in Horto Botanico Universitatis Asiae Mediae enatus, 23. IV. 1935, fl.“, VVEDENSKY.

Folia puberula. Tepala et capsula ut in subsp. *spectabili.*

Persia: N: Gorg.: 14 km E Chaman-e Bid, 1100 m, WDB. & COBHAM 14343! 140 km E Gonbad-e Kavus, 750 m, FURSE 7387! Mohammad Reza Shah Res.: Almeh, 1600–1700 m, SAB. 5643! TERME & MATINE 34883-E! – E: Khor.: M. Kopet Dagh, in jugo Alamli, 20Q0 m, RECH. 4827! 30 km a Quchan versus Darreh Gaz, 1720 m, FOROUGHI 5660!
Turcomania: Kheirabad, 2000 m, NIKITIN!

Distr. gen. subspeciei: Endem.

– – subsp. ***Regelii*** (VVED.) WENDELBO, comb. nov.
Syn.: *E. Regelii* VVED., Sched. Herb. Fl. As. Med 14, no. 331 (1928). *E. spectabilis* M.B. var. *marginatus* O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: 39 (1909).
Icon.: O. FEDTSCH., l.c.: tab. I. – Tab. nostr.: 14, fig. 3; 16, fig. 1; 18, fig. 2.
Typus subspeciei: Pamir-Alaj et Tian Shan, LE; isotypus: Tian Shan occid.: In collibus argillosis in loco Kaplanbek dicto haud procul ab urbe Taschkent, RADKEWICZ s.n., K!

Folia glabra raro puberula, margine scabrida. Tepala rubella, late albo-marginata. Capsula costis grossioribus magis argutis.

Afghanistan: N: Mazar-i Sharif: In faucibus calc. prope Mazar-i Sharif, 500–700 m, RECH. 34163! – NW: Maimana: 15 km NW Belchiragh, 900 m, HDG., WDB. & EKB. W-8324! Inter Maimana et Belchiragh, 1000 m, HDG. & WDB. W-3685! 8 km S Belchiragh, 1260 m, PODLECH 20731! Herat: Kuh-e Darunta supra Chashmeh Obeh, 2300 m, HDG., WDB. & EKB. W-7893! Kotal-e Sabzzak, 2400 m, FURSE 7699!, NEUB. 4266!, 4271! Inter Herat et Sabzzak, 1800 m, KOEIE 3857! 5 km SE Kotal-e Sabzzak, 1850 m, MOH. AMIN 80! Qala Nau, 1800 m, AMSEL! In decl. borealibus Kotal-e Robat-i Mirza, 1250–1350 m, PODLECH & JARMAL 29573! – SW: Herat: 5 km SW Farsi versus Shindand, 2300 m, PODLECH 21984! Ghorat: In jugo Shutur Khan Kotal inter Qala Ahangaran et Qala Shahrak, 2725 m, RECH. 18873! 20 km SW Qala-i Ghor (Taiwara) versus Parjuman, 2450 m, PODLECH 21813! Kuh Cheling Safed Daraq (Pirestan) S Parjuman, 2600–2800 m, RECH. 19110-a! – SE: Orozgan: Inter Tirin et Orozgan, RECH. 35164!, 35165! – E: Kabul: M. Khorogh, 1950 m, GILLI 206! Kuh-e Chehelsotun, 2150 m, GILLI 205! Darulfanun, VOLK 2089! In jugo Khord Kabul, 1950 m, HDG., WDB. & EKB. W-7507! In jugo Lataband, 1800–2100 m, RECH. 31079!, VOLK 1843! 27 km S Kabul, 2190 m, GREY-WILSON & HEWER 693! Tang-i Gharu, 1600–1700 m, KERST. 503-b! Inter Kabul et Charikar, 1850 m, HDG. & WDB. W-3291! Jagdalak, 2100 m, KOELZ 11487! 10 km N Kabul, 2000 m, BRECKLE A-1783! Paghman, 3200 m, VOLK 956! Band-e Kargha, VOLK 2645! Gardez: Nozi, 2700 m, KOELZ 12033! – NE: Kataghan: in valle Surkhab 10 km NE Doshi, 800 m, PODLECH 20437! Prope Doshi, 1100 m, HDG. & WDB. W-3507! Inter Pul-i Khumri et Doshi, 1000 m, BRECKLE A-1055! 5 km S Pul-i Khumri, ANDERS 5774! 21 km SE Baghlan versus Narin, 1280 m, PODLECH 21135! In jugo Paigah Kotal (Kotal-e Robatak), 1250 m, ANDERS 5741! 22 km E Khinjan versus Banu, 1500 m, GREY-WILSON & HEWER 748! In valle Andarab, 1550 m, ANDERS 9327! Ad radices Koh-e Shindadara prope Shashan, 1900–2000 m, ANDERS 9365! Badakhsh.: SE Folole Bala, 1600 m, PODLECH 21179! 13 km ENE Ishkamish, 1400 m, PODLECH 21201! – C: Deh Kundi: In decl. australibus jugi Waras, substr. granit., 2400 m, RECH. 36717!

Distr. gen. subspeciei: Afghanistan, Asia centralis (Tien Shan, Pamir-Alaj).

Some specimens from the northern side of the Hindukush, e.g. ANDERS 5774, PODLECH 21135 and BRECKLE A-1055 have puberulous leaves, otherwise they are glabrous.

6. ***E. Korshinskii*** O. FEDTSCH., Bull. Herb. Boissier Sér. 2, 4: 77 (1904).
Icon.: O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: tab. IV. (1909). WENDELBO & FURSE, Lily Year Book 32: fig. 17 (1969). – Tab. nostr.: 14, fig. 4; 18, fig. 1.
Typus (lectotypus): „Buchara: regio Darwas, inter Kalai-Chum et Sarydasch, in decliviis montium, 7000–8000", KORSHINSKY 1639, LE!

Planta 60–120 cm alta. Folia usque ad 40 mm lata, glabra, margine laevia, viridia. Inflorescentia cylindrica, laxa. Bracteae quam pedicelli multo breviores, e basi dilatata subulata, ciliata. Pedicelli 20–30 mm longi, fructiferi 30 mm longi, angulo acuto ascendentes. Perigonium campanulatum, aureo-brunnescens; tepala 15–18 mm longa. Filamenta quam tepala manifeste longiora. Capsula globosa, c. 10 mm diametro. Semina anguste alata.

Afghanistan: E: Kabul: Kuh-i Qhalandaran, 3200 m, HDG. & WDB. W-4481! In valle Paghman superiore, NEUB. 676! In decl. australibus jugi Salang, 2700–3900 m, BRECKLE A-2241!, FURSE 8751!, PODLECH 18100!, RECH. 31431! Panjshir: Darreh Rastagal supra Mukeni, 3700 m, HDG. & WDB. W-5182! Ghazni: In summo jugo Kondali NNE Sang-i Mashi, 3700 m, RECH. 17662! Jaji: In jugo Shuturgardan (Shutur Kotal), 3000–3300 m, BRECKLE A-2011!, RECH. 32375! Hazar Darakht, AITCH. 596 p.p.! – NE: Kataghan: In decl. borealibus jugi Salang, 1500–1980 m, FURSE 7846!, HDG., WDB. & EKB. W-8622!, GREY-WILSON & HEWER 723! Badakhsh.: Distr. Chambuk (Khumbuk), SW Robat, 2700 m, HDG. & WDB. W-9424! Yawarzan 30 km S Kishm, in juniperetis, 1800 m, HDG. & WDB. W-9379! In summo jugo Kotal-e Shiva supra Baharak, 2900 m, CARTER 994! Pul-e Zarewan, 2600 m, CARTER 1028! – C: Bamian: Band-i Amir, 3000–3380 m, DIETERLE 1102!, 571! Band-i Panir, 2930 m, DIETERLE 608! 40 km E Band-i Amir versus Bamian, 2760 m, GREY-WILSON & HEWER 981! Kotal-e Shahtu, 3050–3300 m, ANDERS 4600!, HDG. & WENDELBO W-4869! Panjao: Inter Panjao et jugum Shahtu, 2800–3000 m, RECH. 36284! 20 km W Panjao, 2900 m, HDG. & WDB. W-8763!

Distr. gen.: Afghanistan, Asia centralis (Pamir-Alaj).

7. ***E. fuscus*** (O. FEDTSCH.) VVED. ex NIKITIN, Fl. Kirghiz. SSR. 3: 31 (1951).
Syn.: *E. altaicus* (PALL.) STEV. f. *fuscus* O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: 44 (1909).
Icon.: O. FEDTSCH., l.c.: tab. 3, fig. 12; Fl. Kirghiz SSR. tab. 5, fig. 1 (1951). Fl. Kazakhstan 2: tab. 10, fig. 3 (1958).
Typus: Pamir-Alaj: „Zwischen Tschigirtschik und Gulscha, 27. VI. 1901, fl.", O. & B. FEDTSCHENKO, LE.

Planta 55–100(–170) cm alta. Folia 10–30 mm lata, glauca, glabra, margine laevia. Scapus glaber. Inflorescentia densiuscula, anguste cylindrica. Bracteae lineari-subulatae, quam pedicelli aequilongae vel breviores, margine ciliatae. Pedicelli 10–16 mm longi, erecti, fructiferi vix elongati. Perigonium late campanulatum; tepala 9–13 mm longa, flavescentia, apicem versus brunnescentia, extus viridula, mox fuscescentia. Filamenta quam tepala manifeste longiora, in vivo crocea. Capsula

8–12(–14) mm longa, globosa, scapo appressa. Semina c. 6 mm longa, angustissime alata.

P a k i s t a n: Chitral: Ad glacies aeternas Chatiboi, 3850 m, STAMM & WÖHRL 60! Yarkhun, Ondine „stony, level ground“, 3350 m, BOWES LYON 977!

Distr. gen.: Pakistan borealis (Gilgit, Chitral), Pamir-Alaj, Tien Shan.

8. ***E. soogdianus*** (REGEL) BENTH. & HOOK., Gen. Plant. 3: 787 (1883).
Syn.: *Selonia soogdiana* REGEL, Bull. Soc. Nat. Mosc. 41, 1: 458 (1868).
Icon.: REGEL, l.c.: tab. VI. O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: tab. V (1909). – Tab. nostr.: 4.
Typus: Turkestan: „Karatau in der Nähe von Beroldai, im Mai blühend“, SEWERZOW, LE!

Planta 50–150 cm alta. Folia 4–7(–15) mm lata, puberula vel glabra, margine scabra. Scapus basin versus puberulus. Bracteae parvae, e basi dilatata subulatae, ciliatae. Pedicelli (35–)50–75 mm longi, patulo-ascendentes. Tepala 10–14 mm longa, exteriora anguste elliptico-ovata, interiora late ovata, virescenti-albida, trinervia. Capsula usque ad 12 mm diametro globosa. Semina 5–6 mm longa, anguste alata.

A f g h a n i s t a n: NW: Maimana: Prope Kaolian (Kawlyan) E Belchiragh, 1200 m, HDG., WDB. & EKB. W-8343!, 8397! – NE: Kataghan: N Farkhar, HDG. & WDB. W-9513! Taliqan: Bangi, VOLK 2694! 32 km ESE Taliqan, 1200 m, PODLECH 21386! Prope Kishaktan ad Darya-e Taliqan, 1050 m, ANDERS 9259! Badakhsh.: 2 km SW Gazestan versus Kishm, 1200 m, ANDERS 6590!, 6591!

Distr. gen.: Afghanistan borealis, Asia centralis (Tien Shan, Pamir-Alaj).

Subgen. ***Henningia*** (KAR. & KIR.) BAKER, Journ. Linn. Soc. Bot. 15: 279 (1877).
Syn.: *Henningia* KAR. & KIR., Bull. Soc. Nat. Mosc. 15: 516 (1842).

Perigonium rotatum; tepala 1-nervia; color clarus: albus vel roseus vel flavus.

Sect. *Henningia* (KAR. & KIR.) BOISS., Fl. Or. 5: 322 (1882).
Syn.: Sect. *Trochanthus* BOISS., Fl. Or. 5: 322 (1882).
Characteres subgeneris.

9. ***E. persicus*** (JAUB. & SPACH) BOISS., Diagn. Pl. Or. Nov. Ser. 1, 7: 119 (1846).
Syn.: *Asphodelus persicus* JAUB. & SPACH, Ill. Pl. Or. 2: tab. 102 (1844). *Eremurus bachtiaricus* BOISS., Fl. Or. 5: 323 (1882) p.p. (folia). *E. Aucherianus* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 7: 120 (1846) p.p. (inflor.). *E. sikesarus* O. FEDTSCH., Mém. Acad. Scienc. Imp. Pétersbg. Sér. 8, 23, 8: 132 (1909).
Icon.: JAUB. & SPACH, l.c. O. FEDTSCH., l.c.: tab. XIV. WENDELBO, Acta Univ. Bergen. Ser. Math. Nat. 1964, 5: fig. 9 (1964). WENDELBO & FURSE, Lily Year Book 32: fig. 14 & 18 (1969). WENDELBO, Tulips and Irises of Iran and their Relatives: fig. 8 (1976). – Tab. nostr.: 14, fig. 5; 16, fig. 2; 19.
Typus: AUCHER-ELOY 5383, G!, P.

Planta 30–70 cm alta. Folia angusta, plerumque quam 10 mm angustiora, raro usque ad 25 mm lata, puberula. Scapus puberulus, in parte superiore interdum glabrescens. Bracteae conspicuae, usque ad 22 mm longae, anguste ovato-lanceolatae, interdum ± caudatae, albidae. Pedicelli usque ad 30 mm longi, patuli. Perigonium tubo distincto; tepala patule reflexa, 12–16(–20) mm longa, alba usque pallide rosea, basi flava. Capsula usque ad 22 mm diametro, globosa. Semina 8–10 mm longa, late alata.

P e r s i a: **W**: Ham.: Aq Bolagh-e Aqdaq 90 km N Hamadan, 2000 m, RIOUX & GOLV. AB 29! Arak: Golestan Kuh prope Golpayegan, 2800–3250 m, IRANSHAHR 8032-E! Esf.: In valle ad Kuh-e Darabshah ducentem, 2400 m, HEWER 2072! 35 km S Shahreza, 2000 m, PABOT 5786! In jugo inter Shahreza et Borujen, 2300 m, RECH. 47039! 13 km E Borujen, PABOT 2328! Prope Damaneh, 2300 m, WDB. 1711! Qashqai: Kuh-e Surmandeh N Semirom, 2700 m, substr. calc., RECH. 47504! Lur.: Oshtoran Kuh (Kuh-i Shuturan), 2250 m, KOELZ 17811! – **S**: Fars.: Inter Abadeh et Daulatabad, 1500–2000 m, SCHMID 5266! Prope Abadeh, PAG 7051-E!, 7091-E!, FOROUGHI 5635! ARCHIBALD 1472! 66 km SE Abadeh, 2250 m, PABOT 5884!, STUTZ 807! Kuh-e Bul 60 km S Abadeh, 2550 m, FOROUGHI 17864! Kuh Charmakan, STAPF 1993! Inter Shiraz et Esfahan, AUCH. 5383! Kerm.: Kuh-e Jebal Barez, BOBEK 96! Prope Deh Bakri inter Bam et Jiroft, 1700–2500 m, RECH. 3893!, SOJÁK 4063!, 4095!, FOROUGHI 15938!, SOFAVI & DEZFOULIAN 7016-E! Gardaneh Khaneh Sorkh, 2250 m, WDB. & FOROUGHI 15873! Inter Dasht-e Lut et Hamun-e Jaz Murian, 2250 m, LEONARD 5632! Inter Mashiz et jugum Khaneh Sorkh, 2000–2580 m, RECH. 3016!, 3020! 50 km NE Sirjan (Saidabad), 2350 m, PABOT 6894!, 6905! Inter Sirjan (Saidabad) et Bardsir, DADASHZADEH DK 21! Kuh-e Laleh Zar, 2650–3000 m, MOUSSAVI & TEHRANI 35177-E! – **C**: Semn.-Damgh.: In jugo altissimo inter Semnan et Firuzkuh, 2450 m, WDB. & ASSADI 29771! Yazd: Barfkhaneh Tazarjun, 2800 m, FOROUGHI 5656! Shir Kuh, 3450 m, FOROUGHI 5655! Deh Bala, 2800–4000 m, FOROUGHI & ASSADI 17944!, MOUSSAVI & TEHRANI 35176-E! Kashan: 150 km SE Qom, 2100 m, PABOT 3439! Meimeh inter Esfahan et Qom, 2000 m, WDB. 767!, GAUTIER 12!
A f g h a n i s t a n: **NW**: Herat: In jugo Sabzzak inter Herat et Qala Nau, 1700–2400 m, HDG., WDB. & EKB. W-8031!, KOEIE 3871!, FURSE 7701! Ghorumbaw 86 km ENE Herat versus Qala Nau, 1840 m, PODLECH & JARMAL 29727! Kuh-e Darunta prope Chashmeh Obeh, 2700 m, HDG., WDB. & EKB. W-7892! Inter Obeh et Khwaja Chisht, 1900–2100 m, HDG., WDB. & EKB. W-7798!, KOEIE 3922! – **SW**: Farah: 15 km N Gulestan, 1900 m, HDG. & WDB. W-7275! Ghorat: In jugo Shutur Khun Kotal inter Qala Ahangaran et Qala Shahrak, 2725 m, RECH. 18865! 10 km SW Parjuman versus Gulestan, 2360 m, PODLECH 21746! In decl. borealibus M. Kuh Cheling Safed-Daraq S Parjuman, substr. calc., 2600–2800 m, RECH. 19110-b! – **SE**: Kandahar: Prope aerodromum Kandahar, 1000 m, ANDERS 8689! Ad margines deserti Registan 20 km S Kandahar, 1000 m, RECH. 35286! Kajakai, 1000 m, ANDERS 8301! In valle fl. Arghastan, 1330 m, PODLECH 22379! 32 km SE Kandahar, PABOT A-475-bis! 72 km NE Kandahar versus Kalat-i Ghilzai, 1300 m, RECH. 33568! 8 km N Shahr-i Safa, 1380 m, ANDERS 8345! Alaqadari Atghar inter Shinkai et Maruf, 1800 m, PODLECH 20103! Orozgan: Inter Tirin et Orozgan, RECH. 35163! Orozgan, 2000–2200 m, RECH. 35206! In montibus inter Orozgan et Malestan, 2200–2900 m, RECH. 35218! Mukur: 105 km S Mukur, PABOT A-202! – **E**: Kabul: In jugo Lataband, 1800–2100 m, RECH. 31078!, ANDERS 3109!, 3110! BRECKLE A-221! Prope Kabul, 1700–1900 m, KERST. 107!, KOELZ 8243!, VOLK 1477!, NEUB. 3024!, HDG. & WDB. W-2933!, HDG. & EKB. W-7025!, HDG., WDB. & EKB. W-7511! Tang-e Wardak prope Hasan Khel, 2050 m, ANDERS 3156! Shewaki in valle Logar, REINER 636! Ghazni: Inter Okak et Behzud ad lacum Sabzab, 2800 m, RECH. 17914! Okak NE altoplanitiei Dasht-e Nawar, 3000 m, RECH. 17738! Bozghalak in collibus graniticis prope Shashgao, 2400 m, RECH. 17277! 15 km E Sabzak inter Dasht-i Nawar et Malestan, 3500 m, PODLECH 19274! 25 km N Ghazni versus Jaghatu, 2200 m, GREY-WILSON & HEWER 637! In jugo Altimur (Terah Kotal), 2440 m, KOELZ 11897!, PODLECH 30454! Khost: 20 km W Khost versus Gardez, 1200 m, DIETERLE 372!, 374! Urgun: Urgun, 2200–2300 m, RECH. 35885! – **C**: Bamian: Yakawlang inter Band-i Amir et Panjao, 2500 m, HDG. & WDB. W-4841! Panjao: Tal-e Akhsarat, 3000 m, HDG. & WDB. W-4974! Deh Kundi: 45 km SW Panjao, 2850 m, RECH. 36579! Sar-i Nil, 3000 m, EDELB. 1915! Ghorat: In jugis inter Lal et Daulat Yar, 2800 m, RECH. 18820! 35 km W Lal, 2600 m, HEWER 1300!

Pakistan: Quetta: In valle Khanozai, DUTHIE 19027! Loralai, LAMOND 1225!, RECH. 29418!, MOHINDAR NATH 6071! In jugo W Ziarat, substr. calc., 2200 m, LAMOND 1166!, 29289!, ZAFFAR ALI 4791! Yaro prope Bostan 40 km NNE Quetta versus Pishin, 1450 m, LAMOND 990!, RECH. 28956! Pishin, 1500 m, LACE 3587!, ZAFFAR ALI 4789! Urak, 1950 m, R. R. STEWART 28063! In montibus Torghan 80 km WSW Fort Sandeman, 1650 m, STOCKLER! – Kalat: Basima prope Jangal inter Panjgur et Surab, 1350 m, RECH. 28285!

Distr. gen.: Persia, Afghanistan, Pakistan, Kashmir.

E. persicus is rather variable within its large area of distribution. RECH. 28285 and 28956 from Kalat and Quetta in Baluchestan are nearly glabrous. Plants of the central and western parts of the mountains of Afghanistan tend to be taller and to have smaller capsules than in other areas. Remarkable are plants from Ghorat, RECH. 19110-b and PODLECH 21746, which also have subglabrous bracts combined with the character of the small capsules.

The narrow-leaved plants from Pakistan described by OLGA FEDTSCHENKO as *E. sikesarus* look very distinct and might deserve specific rank. I have seen a plant from the ditio classica: Sikesar, Jehlum distr., ISTIKLAR AHMAD 333! which is outside the border of Flora Iranica area. A closer study of the geographic range of this form and the variability within natural populations would give the solution to this problem.

10. ***E. Rechingeri*** WENDELBO, Nytt Mag. Bot. 9: 211 (1962).
Icon.: WENDELBO, l.c.: fig. 1b. – Tab. nostr.: 5.
Typus: RECHINGER 15436, W!

Planta 50 cm alta. Folia usque ad 5 mm lata, glabra, margine laevia vel subscabrida. Scapus glaber. Inflorescentia laxa. Bracteae ovatae, caudatae, inferiores usque ad 20 mm longae, margine villoso-ciliatae. Pedicelli c. 20 mm longi, patulo-ascendentes. Tepala 17–18 mm longa, alba vel pallide rosea, basi flava. Capsula 16–18 mm longa, 14 mm lata, late ellipsoidea. Semina 6 mm longa, manifeste alata.

Iraq: Amarah: In collibus arenaceis argillosis conglomeraticis ad stationem munitam Shatt at-Tib ab Amarah 70 km septentriones versus, 200 m, RECH. 15436! Jabal al Muwaila E Hamrin, GUEST, RAWI & RECH. 17640!

Distr. gen.: Endem.

11. ***E. Kaufmannii*** REGEL, Acta Horti Petrop. 2: 430 (1873).
Syn.: *E. Griffithii* BAKER, Journ. Linn. Soc. Bot. 15: 283 (1877). *E. schiwanus* O. FEDTSCH., Mém. Acad. Scienc. Imp. Petersbg. Sér. 8, 23, 8: 153 (1909). *E. unaiensis* GILLI, Feddes Repert. 56: 143 (1954).
Icon.: O. FEDTSCH., l.c.: tab. XIII. WENDELBO, Acta Univ. Bergen. Ser. Math. Nat. 1964, 5: fig. 4 (1964). WENDELBO & FURSE, Lily Year Book 32: fig. 13 & 15 (1969). – Tab. nostr.: 14, fig. 6; 20, fig. 2, 3.
Typus: Turkestan: In valle Sarawschansk, Mt. Naubid prope Varzaminor 4500–8500′, O. FEDTSCHENKO, LE!

Planta 60–110 cm alta. Folia usque ad 25(–35) mm lata, pubescentia, glaucescenti-viridia. Scapi pubescentes. Inflorescentia densissima. Bracteae anguste ovato-triangulares, attenuatae, villoso-ciliatae. Pedicelli floriferi c. 10 mm longi, ± horizontales usque ascendentes, articulati, fructiferi usque ad 20 mm elongati, valde incrassati, arcuati. Tepala 15–22 mm longa, alba, basi flava, exsiccando ± pallide flavescentia. Capsula c. 12 mm diametro, distincte stipitata. Semina alata.

Afghanistan: E: Kabul: In jugo Unai, NEUB. 496!; 3300 m, TRAUTMANN in GILLI 209 (typus *E. unaiensis*)!, HDG. & WDB. W-4479! Kuh-e Qhalandaran, 3200 m, HDG. & WDB. W-4480! Darya-e Maidan prope Qole Nati, 2800 m, ANDERS 4288! Ghazni: In summo jugo Kondali NNE Sang-i Masha, 3700 m, RECH. 17661!, 17663! In jugo Kotal Shaghanak inter Ghazni et Okak, 3400–3500 m, RECH. 17817! M. Saperlebuli ad marginem austro-orientalem Dasht-i Nawar, 3200 m, RECH. 37362! Jaji: Inter Qasim Khel et Dobandi in jugo Shuturgardan, 2900–3300 m, RECH. 32376!, HDG. & WDB. W-8892!, EKB. W-9190! – NE: Badakhsh.: In montibus prope lacum Shiva, 3200–3600 m, CARTER 1090!, A. REGEL (typus *E. schiwani*)! – C: Bamian: Band-i Amir, 1950–3000 m, DIETERLE 570!, 1014!, GREY-WILSON & HEWER 956!, GILLI 210!, RECH. 18265!, VOLK 2740!, WDB. & EKB. W-9776! Kuh-i Baba, in jugo Hajjigak, 3300 m, FURSE 8535! In decl. borealibus jugi Ak Robat, 3000 m, DIETERLE 507! Kotal-e Devali inter Yakawlang et Kotal-e Shahtu, 3100 m, HDG. & WDB. W-4850! Panjao: Inter Panjao et jugum Shahtu, 2800–3000 m, RECH. 36289! 20 km W Panjao, 2900 m, HDG. & WDB. W-8762! Ghorat: In jugis inter Lal et Daulat Yar, 2800 m, RECH. 18818! 43 km W Chakcharan (Qala Qansi), 2900 m, GREY-WILSON & HEWER 1202! 35 km W Lal versus Chakcharan, 2600 m, HEWER 1299! In decl. borealibus Band-e Ghok inter Qala Shahrak et Kaminj, 2800 m, PODLECH 21938! – Afghanistan, GRIFFITH 5803 (typus *E. Griffithii*)!

Distr. gen.: Afghanistan, Asia centralis (Pamir-Alaj).

12. ***E. bactrianus*** WENDELBO, Notes Roy. Bot. Gard. Edinb. 31: 342 (1972).
Icon.: WENDELBO, l.c.: fig. 3. – Tab. nostr.: 20, fig. 1.
Typus: HEDGE & WENDELBO W-9426, holotypus GB!; isotypus E!

Planta (75–)125–200 cm alta. Folia exteriora usque ad 80 mm lata, utrinque glabra vel glabrescentia sed basin versus plerumque parum pubescentia, apice margine carinaque pilis brevibus aliquantum crispis, ± pubescentia; folia interiora angustiora, c. 10 mm lata, pilis longioribus dense pubescentia. Scapus inferne aliquantum dense pubescens. Bracteae c. 20 mm longae, e basi dilatata subulatae, villosae. Pedicelli 30–35 mm longi, ascendentes, fructiferi manifeste incrassati. Tepala c. 22 mm longa, exteriora anguste elliptica, interiora elliptica, alba basi flavescentia. Capsula c. 20 mm diam., globosa. Semina c. 6 mm longa, late alata.

Afghanistan: NE: Badakhsh.: Distr. Khash, 3000 m, KOELZ 12998! Yawarzan 30 km S Kishm, 1800 m, HDG. & WDB. W-9380! Distr. Chambuk (Khumbuk) in valle S Robat, 2700 m, HDG. & WDB. W-9426!

Distr. gen.: Endem.

13. ***E. afghanicus*** GILLI, Feddes Repert. 56: 144 (1954).
Syn.: *E. solitarius* HASHIMOTO, Journ. Jap. Bot. 39: 26 (1964).
Icon.: WENDELBO, Acta Univ. Bergen. Ser. Math. Nat. 1964, 5: fig. 6 (1964). HASHIMOTO, l.c.: fig. 1 & 2. – Tab. nostr.: 14, fig. 7; 21.
Typus: GILLI 211, W!

Planta 100–200 cm alta. Folia usque ad 50(–65) mm lata, puberula, canescenti-glaucescentia. Scapus basi puberulus. Inflorescentia cylindrica, densa. Bracteae subulatae, villoso-ciliatae. Pedicelli 10–25 mm longi, horizontales, articulati. Tepala 10–14 mm longa, alba, exsiccando interdum pallide flavescentia. Capsula 7–8 mm diametro, globosa. Semina 5–6 mm longa, distincte alata.

Afghanistan: E: Kabul: Shewaki in valle Logar, 2500 m, GILLI 212! In jugo Khord Kabul, 1950 m, HDG., WDB. & EKB. W-7506! Tang-i Gharu, 1600–1750 m, HDG. & WDB. W-2778!,

PODLECH 28585!, BRECKLE A-1742!, KERST. 512! Tang-i Abushumi „a wonderful canyon of the Kabul River", HASHIMOTO (typus *E. solitarii*). Paghman, 2700 m, GILLI 211!, GREY-WILSON & HEWER 856!, HAY!, HDG. & WDB. W-4392!, RECH. 17121! Panjshir: Basarak, NEUB. 675! Deh-e Kalam, 1700 m, ANDERS 3274!, DIETERLE 250! Gardez: In summo jugo Altimur (Terah Kotal), 2800 m, KOELZ 11896!, RECH. 35391! Inter Pul-e Alam et Gardez, 2700 m, CARTER 1207!

Distr. gen.: Endem.

Even without having studied the type of *E. solitarius* I feel convinced that it belongs to *E. afghanicus*. It is of some interest to note that the photograph of HASHIMOTO (1964, fig. 1) is photographed on the same day and probably in the same locality – although under a different name- as my own photograph of *E. afghanicus* (WENDELBO 1964, fig. 6). In fact, a Japanese botanist was observed collecting somewhat lower down in the gorge.

14. ***E. himalaicus*** BAKER, Journ. Linn. Soc. Bot. 15: 283 (1877).
Icon.: O. FEDTSCH., Mém. Acad. Scienc. Imp. Pétersbg. Sér. 8, 23, 8: tab. XII (1909). – Tab. nostr.: 6, 7.
Typus (syntypi): Regio temperata Himalaya occidentalis, K!

Planta 75–100 cm alta. Folia saepe c. 15 mm lata usque ad 45 mm lata et plerumque latiora, glabra, margine scabrida. Racemus densus. Bracteae lineari-subulatae, ciliatae. Pedicelli usque ad 30 mm longi, ± patuli, fructiferi ± erecti. Tepala 17–20 mm longa, aliquantum angusta, alba exsiccando parum flavescentia. Capsula c. 14 mm diametro, globosa. Semina atrata, angustissime alata.

A f g h a n i s t a n: **E**: Nuristan: Wama, 2100 m, EDELB. 514! Pashki, 2530–2700 m, EDELB. 675!, 981! In jugo Mum inter fluv. Parun et Kantivo, 2200–2600 m, KERST. 895!
P a k i s t a n : Chitral: In jugo Lowarai, 2850–3000 m, STAINTON 2567!, TOPPIN 409! Shighor Aviret, 2700 m, BOWES LYON 757! Chitral Gol, 3000 m, HAKIN KHAN! – Swat: Utror, 2700–3000 m, R. R. STEW. & RAHMAN 37642! In montibus E Kalam, 3000 m, NASIR & ECKER 7501!

Distr. gen.: Afghanistan orientalis, Montes Himalaya boreo-occidentales.

15. ***E. Alberti*** REGEL, Acta Horti Petrop. 8: 668 (1884).
Icon.: REGEL, l.c.: tab. VI, fig. k–q. O. FEDTSCH. Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: tab. XV (1909). – Tab. nostr.: 8, 9; 15, fig. 1; 16, fig. 3.
Typus: „In Buchara orientali ad meridiem urbis Kulab ad montem Chodscha Mumyn, 3000' alt. Aprili 1/13 in statu florente", A. REGEL, LE!; isotypus K!

Planta 60–100 cm alta. Folia usque ad 20 mm lata, glabra, margine laevia, glaucescenti-viridia. Inflorescentia laxa. Bracteae usque ad 45 mm longae, e basi c. 5 mm lata subulatae, ciliatae. Pedicelli fructiferi usque ad 60 mm longi. Tepala 18–24 mm longa, rosea. Capsula 20–25 mm diametro, globosa. Semina c. 15 mm longa, latissime alata.

A f g h a n i s t a n: **N**: Mazar-i Sharif: 6 km E Haibak, 1200 m, substr. calc., RECH. 33973! 3 km S Samangan, 1050 m, GREY-WILSON & HEWER 820! – **NW**: Maimana: Inter Togla Mast et Kaolian (Kawlyan) E Belchiragh, 1200 m, WDB. obs. 30 km W Maimana, 500 m, HDG. & WDB. W-3642! 27 km E Maimana ad viam versus Belchiragh, 900 m, PODLECH 20670! Herat: Badghiz, AITCH. 116!, 1888! Kambao, AITCH. 387 p.p.! Sang Hajji, AITCH. 387 p.p.! Inter Qala Nau et Morghab, 800 m, KOEIE 3495! – **E**: Kabul: Inter Barbur et Gulbagh, 1700 m, KERST. 142! Kabul, 2000 m, FRUMKIN 103! – NE: Kataghan: 76 km W Pul-i Khumri, 1200 m, BRECKLE A-899! In valle Kokcha, 900 m, BRECKLE A-1043!

Distr. gen.: Afghanistan, Asia centralis (Pamir-Alaj, distr. Ferghana).

16. *E.* ***luteus*** BAKER, Journ. Bot. 17: 18 (1879).
Syn.: *E. Capusii* FRANCH., Ann. Scienc. Nat. Ser. 18: 260 (1884). *E. baissunensis* O. FEDTSCH., Not. Syst. Leningrad 2: 9 (1921).
Icon.: O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: tab. XIX (1909). Fl. Uzbek. 1: tab. 63, fig. 1 (1941). – Tab. nostr.: 15, fig. 2; 22, fig. 1.
Typus: BUNGE 4, K!; isotypus LE!

Planta 25–100 cm alta. Folia usque ad 8(–10) mm lata, plerumque manifeste angustiora, glabra, margine scabra. Scapus glaber. Racemus laxiusculus. Bracteae e basi dilatata, triangulari, subulatae, ciliatae. Pedicelli 20–35 mm longi, patulo-ascendentes. Tepala 15–18 mm longa, pallidissime virescenti-flava usque fere alba, basi flava, exsiccando omnino flava. Capsula 15–25 mm longa, 8–12 mm lata, ellipsoidea.

Persia: W: Esf.: Esfahan, 1500 m, ILIFF 58! Inter Nain et Esfahan, 2310 m, BALLS 73!, KASY 619! 26 km SW Ardestan, 2000 m, WDB. & FOROUGHI 11552! – S: Kerm.: Inter Darband et Kerman, 2400 m, PARRIS 75.173! – E: Khor.: 30 km WSW Birjand, 1710 m, GREY-WILSON & HEWER 392! 16 km NW Doruneh, 1000 m, PARRIS 75.99! In montibus serpentinicis inter Torbat-e Heydariyeh et Assadabad, RECH. 4447! Kuh-e Neyshabur, Darreh Abshar supra Akhlamad, 1600–1800 m, RECH. 4493! Prope Sar Chah, BUNGE 4! 18–20 km N Rivash, 1700–1800 m, RECH. 51294! 92 km S Sabzevar versus Kashmar, 1100 m, REJAMAND & BAZARGAN 31618! Prope Sabzevar, PAG 7089-E! W Tabas, 1400 m, LEONARD 5446! Ozbagu, RUTTNER 391!, 116! Garedu 70 km S Ozbagu, RUTTNER 36! – C: Shahr.-Bust.: 14 km S Zeydar versus Biarjmand, 1300 m, RECH. 50282! Damgh.-Semn. 66 km SE Semnan, 1500 m, IRANSHAHR & RIEDL 16215! 15 km E Semnan, 1600 m, WDB. & al. 11231! In deserto gypsaceo 2–7 km supra Sorkheh prope Semnan, 1300–1600 m, RECH. 2811!, 50192!, 52160! Kavir: Kavir Protected Region prope Eyn or-Rashid, WDB. obs. Yazd: In montibus NW Nain, 2000 m, KASY 78!, PABOT 7119! 40 km N Nain, 1600 m, ZOHARY & ORSHAN 5914/5!, 5914/6!
Turcomania: Kopet Dagh: Ashkhabad prope Dali Bolagi, 1100 m, NIKITIN!
Afghanistan: N: Mazar-i Sharif: Inter Mazar-i Sharif et Tashkurgan, 300 m, HDG., WDB. & EKB. W-8544! – NW: Herat: Joy-i Sor-i Kalta Kay (Shore Kultegai) in valle fl. Hari Rud, AITCH. 191!

Distr. gen.: Persia, Afghanistan borealis et boreo-occidentalis, Turcomania.

In Conspectus Florae Asiae Mediae 2: 26 (1971) *E. baissunensis* has been accepted as a species different from *E. luteus* (with *E. Capusii* as a synonym). The only difference given in the key is that the former has white flowers and the latter yellow. *E. luteus* has in the living state, as I have seen it in several localities in Iran, very pale greenish yellow to nearly white flowers with a yellow base to the tepals, but in the dried state they become yellow. The sheets MICHELSON 115-b, 409, 382 at the Leningrad herbarium show a plant with apparently white flowers, but other sheets also from the Baissun area show plants similar to *E. luteus* (e.g. MICHELSON 416, 485). HDG., WDB. & EKB. W-8544 from N Afghanistan is in the fruiting stage, thus the flower colour was not seen. If *E. luteus* and *E. baissunensis* really can be kept separate the mentioned material should, judged from the geographical proximity, belong to the latter.

17. *E.* ***bucharicus*** REGEL, Acta Horti Petrop. 8: 670 (1884).
Icon.: REGEL, l.c.: tab. XX, fig. I. – Tab. nostr.: 10.
Typus: „Plantas vivas A. REGEL e regione bucharica introduxit“.

Planta 80–120 cm alta. Folia usque ad 5 mm lata, ± puberula, glaucescenti-viridia. Scapus basin versus ± puberulus. Inflorescentia aperta, pauciflora. Bracteae c. 13 mm longae, e basi dilatata subulatae, ciliatae. Pedicelli usque ad 30(–60) mm longi, horizontales vel leviter ascendentes. Tepala (10–)13–14(–17) mm longa, exteriora c. 4 mm lata, interiora c. 6,5(–8) mm lata, alba vel pallide rosea. Capsula subglobosa usque pyriformis, 15–18 mm lata. Semina c. 8 mm longa, ± late alata.

Afghanistan: N: Mazar-i Sharif: Tang-i Tashkurghan, 500 m, ANDERS 5529! 20 km NW Haibak, 900 m, BRECKLE A-923! – NW: Maimana: 27 km E Maimana versus Belchiragh, 900 m, PODLECH 20683! – NE: Kataghan: Paigah Kotal (Kotal-e Robatak), 1250 m, ANDERS 5735! Inter Khinjan et Doshi in valle Andarab, 950 m, HDG. & WDB. W-7583! 6 km W Khinjan in valle Andarab, 1030 m, PODLECH 20433! 18 km E Khinjan versus Banu, 1200 m, GREY-WILSON & HEWER 744! Prope Doshi, 950 m, HDG., WDB. & EKB. W-8613! Inter Pul-i Khumri et Doshi, 1000 m, BRECKLE A-1054!

Distr. gen.: Afghanistan borealis, Asia centralis (Pamir-Alaj).

18. ***E. Suworowii*** REGEL, Acta Horti Petrop. 8: 672 (1884).
Icon.: REGEL, l.c.: tab. VI, fig. a–i. – Tab. nostr.: 11.
Typus (lectotypus): „In Bucharae orientalis chanato Baldschuan ad fluvium Kysilsu, 3000′ alt.“ A. REGEL, LE!; isotypus K!

Planta 40–100 cm alta. Folia usque ad 7 mm lata, glabra, margine vel in superficie exteriore pubescentia, glaucescenti-viridia. Scapi puberuli. Inflorescentia aperta. Bracteae lineari-subulatae, c. 8 mm longae, ciliatae. Pedicelli 15–40 mm longi, ± horizontales. Tepala 10–15 mm longa, pallide basi intensius flava. Filamenta quam petala breviora. Capsula 10–14 mm diametro, globosa.

Afghanistan: NE: Kataghan: 8 km NE Farkhar, 1050 m, PODLECH 10566! Taliqan: Prope Kishaktan ad Darya-e Taliqan, 1050 m, ANDERS 5943! Badakhsh.: Distr. Jurm SE Faizabad, 1800–2400 m, FURSE 6313!

Distr. gen.: Afghanistan borealis, Asia centralis (Pamir-Alaj).

19. ***E. roseolus*** VVED., Not. Syst. Leningrad 9: 235 (1946).
Syn.: *E. albo-roseus* WENDELBO, Acta Univ. Bergen. Ser. Math. Nat. 1964, 5: 22 (1964).
Icon.: VVED., Fl. Tadjik. SSR. 2: tab. 44 (1963). WENDELBO, l.c.: fig. 5. – Tab. nostr.: 12, 13; 15, fig. 3.
Typus (holotypus): Ad declivia occidentalia jugi Ak-tau prope trajectum Kalegozy, 1600 m, GRIGORJEV & LINCZEVSKI 20, LE!

Planta 100–150 cm alta. Folia usque ad 15 mm lata, puberula. Scapi puberuli. Inflorescentia cylindrica, densa. Bracteae e basi dilatata lineares. Pedicelli 20(–40) mm longi, fructiferi usque ad 25(–40) mm elongati, ± horizontales. Tepala 16–20 mm longa, interiora quam exteriora circiter sesquilatiora, pallide rosea, basi flava. Capsula c. 15–18 mm longa, 12–14 mm lata, pyriformis. Semina 6–7 mm longa, canescentia, manifeste alata.

Afghanistan: N: Mazar-i Sharif: 20–30 km NW Haibak versus Tashkurghan, 600 m, RECH. 34014! 15 km E Haibak, PABOT A-767! Prope Samangan, 1200 m, HDG. & WDB. W-3561! – NE: Kataghan: In jugo Paigah Kotal (Kotal-i Mirza Atbili) inter Pul-i Khumri et Haibak, 1250–1500 m, RECH. 16422-a!, 16423!, 33876!, PODLECH 21012! Prope Doshi, 1100 m, HDG. & WDB. W-3505 (typus *E. albo-rosei*)! 5 km S Pul-i Khumri, ANDERS 5773! 11 km S Farkhar, 2400 m, FURSE 8167!

Distr. gen.: Afghanistan borealis, Asia centralis (Pamir-Alaj).

This species is very close to *E. bucharicus* and not always easy to distinguish.

20. ***E. kopetdaghensis*** M. POP. ex B. FEDTSCH., Fl. Turkm. 1: 257 (1932), descr. ross.
Syn.: *E. Giselae* BORNM. in BORNM. & GAUBA, Feddes Repert. 47: 123 & tab. 289 (1939). *E. anisopterus* (KAR. & KIR.) REGEL subsp. *Giselae* BORNM., l.c.: tab. 289, nom. altern.
Icon.: Tab. 15, fig. 4; 22, fig. 2.
Typus: CZERNJAKOVSKA 648, LE!

Planta 35–65 cm alta. Folia pedicellos inferiores attingentia vel superantia, 3–6(–9) mm lata, glabra, margine scabra, glauca. Scapus glaber. Inflorescentia sat pauciflora et laxa. Bracteae anguste triangulari-subulatae, ciliatae. Pedicelli 20–35 (–55) mm longi. Tepala 16–19 mm longa, ± elliptica, pallide rosea usque fere albida, basi flava. Capsula 20–23 mm diametro, globosa usque late ellipsoidea. Semina 6–9 mm longa, late alata.

Persia: N: Gorg.: In jugo supra Minudasht, 1200 m, GIBBONS 42! Mohammad Reza Shah Res.: In planitie ad viam versus Almeh N Robat-e Qareh Bil, 1200–1400 m, RECH. 52948!, HALLENBERG!, WDB. & al. 10983! Almeh, 1600 m, DANESHPAJOUH 38640-E!, SAB. 5644! Inter Gorgan et Bojnurd, 1120–1500 m, TERME & MATIN 34887-E! FURSE 7375! – W: Azerb.: 18 km a Mianeh versus Zanjan, 1150 m, WDB. & ASSADI 19180! Shurqeshlaq inter Mianeh et Zanjan, 1000 m, SAB. 14338! Khamseh: In collibus argillosis 55 km SE Mianeh versus Zanjan, 1400 m, RECH. 39366!, LAMOND 2770-A! W Zanjan, GILL.-SM. 2242! Ham.: Gardaneh Avej, 1880 m, RIAZI 5620! – S: Fars.: In montibus inter Hassanabad et Qatruyeh (Qatru), 2070 m, HEWER 939! Deh Bid, 1900 m, PARRIS 75.187! Kerm.: In jugo Khaneh Sorkh, 2400–2500 m, ARCHIBALD 1182!, BOBEK 6! 103–124 km SW Kerman, 2200–2400 m, ZOHARY & ORSHAN 6770/1!, 6794/13! 20–94 km a Saidabad (Sirjan) versus Kerman, 1700–2200 m, WDB. & FOROUGHI 15304!, LEONARD 5945! Inter Darband et Kerman, 2500 m, PARRIS 75.174! Inter Mashiz et jugum Khaneh Sorkh, 2580–2000 m, RECH. 3016! In collibus N Saidabad (Sirjan), 1800–3000 m, POPOV 51/117! Lar.: 53 km a Saidabad (Sirjan) versus Bandar Abbas, 1700–1900 m, WDB. & FOROUGHI 15842! Prope Kareh E Lar, 850 m, MERTON 3625! – C: Tehr.: 24 km a Tehran versus Qom, 1030 m, BABAKHANLOU & AMIN 14343! Gardaneh Hassanabad inter Tehran et Qom, 1150 m, WDB. & FOROUGHI 11569! Qazv.: Shahdasht S Karaj, 1300 m, RECH. 54491! Mardabad prope Ravandeh, GAUBA 1191 (typus *E. Giselae*)! – „Javaz area", 2250 m, BERENS 19!
Turcomania: Adzhi-Dere „Margyz sev.-zap. Trgoja, sukhoe ruslo solenoi rechki Adzhi-Dere", CZERNJAKOVSKA 648!

Distr. gen.: Endem.

Undoubtedly this species is closely related to *E. anisopterus* (KAR. & KIR.) REGEL. *E. Korolkowii* REGEL, and *E. ammophilus* VVED.; the first and the last of these should differ by the purely white flowers. All of the species except *E. anisopterus* have comparatively long leaves that sometimes even exceed the raceme. All of them seem to be more or less desert species growing on sand. A closer field study of the group might lead to merging of some of the taxa.

In the garden of the Botanical Institute of Iran near Tehran, plants from Mardabad SW of Karaj, from Khorassan, Kerman and Yazd were grown together. As one would expect plants from such widely separated areas showed certain differences, but none of these could be considered to be of any taxonomic value. All had narrow, twisted leaves, rather large, rose flowers, and subglobose fleshy fruits up to 23 mm in diameter. Sometimes the fruits were slightly longer than broad.

21. ***E. Aitchisonii*** BAKER in AITCH., Journ. Linn. Soc. Bot. 18: 102 (1881) p.p.
Syn.: *E. Elwesii* M. MICH., Rev. Hort. 69: 280 (1892).
Icon.: WENDELBO & FURSE, Lily Year Book 32: fig. 13 et 15 (1969). – Tab. nostr.: 15, fig. 5; 23, fig. 1.
Typus (lectotypus): AITCHISON 596 p.p., K!

Planta 90–200 cm alta. Folia usque ad 80 mm lata, viridia, nitentia, margine scabra. Inflorescentia laxiuscula. Bracteae e basi dilatata lineari-subulatae, ciliatae. Pedicelli usque ad 35 mm longi, ± ascendentes. Perigonium roseum vel album; tepala 18–24 mm longa. Capsula 15–20 mm diametro, globosa. Semina late alata.

Afghanistan: E: Kabul: In jugo Khord Kabul, 2000 m, HDG., WDB. & EKB. W-7521! Lataband, VOLK 1845! Inter Sarobi et jugum Lataband, 2200 m, RECH. 34462! In valle Paghman, 2700–3100 m, ANDERS 4073!, PODLECH 18451!, HDG. & WDB. W-4421!, W-5052! In decl. australibus jugi Salang, 2600–3300 m, BRECKLE A-2242!, FREY!, PODLECH 18185!, 22402!, 31405! Jaji: Supra Khudikhel, 2700 m, KOELZ 11551! In valle Karcha (Karaia?), AITCH. 596 p.p.! – NE: Kataghan: In decl. borealibus jugi Salang, 2400–2700 m, FURSE 8065! Khost-o Fereng, Darrah-i Dahana, 2600–3200 m, PODLECH 11790! Badakhsh.: Panj Shahr (Pahin Shahr), 3000 m, KOELZ 12465! – C: Deh Kundi: Inter juga Waras et Khonak 65 km SW Panjao, substr. granit., 2600 m, RECH. 36629! Deh Kundi, 2900 m, EDELB. 1919!
Pakistan: Chitral: Madaklasht, 3000–3300 m, TOPPIN 502!

Distr. gen.: Afghanistan, Pakistan, Asia centralis (Pamir-Alaj).

22. ***E. Olgae*** REGEL, Acta Horti Petrop. 2: 430 (1873).
Syn.: *E. angustifolius* BAKER, Journ. Linn. Soc. Bot. 15: 282 (1877) p.p. *E. Aschersonii* O. KUNTZE, Acta Horti Petrop. 10: 243 (1887).
Icon.: Tab. 23, fig. 2.
Typus (lectotypus): Sarawshinskaja obl. between Dshamam and Aksam, 14. V. 1869, 2047–2732', O. FEDTSCHENKO, LE!

Planta 70–100 cm alta. Folia usque ad 15 mm lata, glabra, margine scabra. Scapus glaber. Racemus laxiusculus, cylindricus usque subconicus. Bracteae subulatae, glabrae. Pedicelli (16–)25–70 mm longi, patuli usque ascendentes. Tepala 12–17 mm longa, rosea vel rarius alba, basi flava. Filamenta quam tepala breviora. Capsula 8–12 mm diametro, globosa. Semina 6–7 mm longa, ± anguste alata.

Persia: N: Gorg.: Mohammad Reza Shah Res.: 23–26 km E Tang-e Rah, 900–1000 m, RECH. 52795! Maz.: M. Alamut prope Akbarabad, 1880–2400 m, FOROUGHI 781!, BABAKHANLOU 14341!, AMIN 14342!, MIRFAKHRAI 14337! – W: Azerb.: Inter Mianeh et Zanjan prope Yedibolagh, SAB. 14336!, 14340! Khamseh: 52–85 km SW Zanjan versus Bijar, 1500–1700 m, LAMOND 4294!, RECH. 42374! 10 km a Halab versus Bijar, 1420 m, WDB. & al. 11906! Ham.: 90–100 km N Hamadan, 2000 m, RIOUX & GOLV. AB-30! 47 km W Ab-e Garm, 1660 m, PABOT 3966! Kermansh.: 100 km N Kermanshah versus Sanandaj, 1600 m, WDB. 1934! – E: Khor.: Inter Neyshabur et Mashhad, 1600 m, ASSADI & MASOUMI 21272! Prope Mashhad, 1000 m, SCHMID 6161!, 6162! 144 km NW Mashhad, 1500 m, ZOHARY & ORSHAN A-9964/20! Inter Robat Safid et Torbat-e Heydariyeh, RECH. 1563! Robat Safid, 1800–2000 m, ASSADI & MASOUMI 21289! Kuh-e Bezg 60 km NW Torbat-e Heydariyeh, 1900–2100 m, ASSADI & MASOUMI 21333!, RECH. 1426!, 1499!, AITCH. 566 p.p.! Jowzak 74 km W Bojnurd versus Gorgan, substr. calc., 1100 m, RECH. 53761! 22 km WSW Bojnurd, Kuh-e Aladagh, 2000 m, EDMONDSON 1184! 64 km W Bojnurd versus Gorgan, 1650 m, FURSE & SYNGE 558!, 559! Abdollah Givi 43 km NE Soltanabad versus Quchan, 1400 m, RECH. 53719! Inter Quchan et Bajgiran, 1100–1600 m, SCHMID 6307!,

6321! M. Hazar Masjed inter Ardak et Talqur, 1200–1600 m, RECH. 4915! N Kuh-i Binalud, 1900–2300 m, SCHMID 6253-b! Inter Bik et Sheykh Amiranlu N Shirvan, 1600 m, RECH. 53250! In prolongatione M. Paropamisus 33 km S Salehabad, 800 m, RECH. 55805! 20 km W Shahan-e Garmab, 1400 m, ALAVA 10989! Tandureh Protected Region: 30 km SW Darreh Gaz, 2000 m, EDMONDSON 1292! – C: Tehran: Damavand „Asbseran", VACZI E-183! Qazv.: Kallaj prope Manjil, 500 m, SAB. 14339! – Persia, AUCH. 2168 (lectotypus *E. angustifolii*)!
T u r c o m a n i a : Prope Ashkhabad, O. KUNTZE (typus *E. Aschersonii*).
A f g h a n i s t a n: N: Mazar-i Sharif: Prope Akupruk, 750 m, HDG. & WDB. W-3949! Inter Chashmeh-e Shafal et Akupruk, 800–1000 m, RECH. 16251! Chashmeh-i Shafal, 900 m, HDG. & WDB. W-3874! Tashkurghan, 600–1000 m, EKB. W-9088!, HDG. & WDB. W-3975! Darrah-i Khulm, 1080 m, PODLECH 18310! – NW: Maimana: 30 km W Maimana, 500 m, HDG. & WDB. W-3632! E Belchiragh inter Togla Mast et Kaolian (Kawlyan), 1200 m, WDB. obs. 6 km S Belchiragh, 1140 m, GREY-WILSON & HEWER 1289! Bala Morghab: Prope Bala Morghab, NEUB. 4222! Inter Qala Nau et Morghab, 1200 m, FURSE 7734! Herat: 32 km SE Qala Nau versus Qades, 1130 m, PODLECH & JARMAL 29843! Badghiz: Paropamisus, AITCH. 566 p.p.! Dahan-e Ab prope Khush Asia, 1000 m, JANATA 22! Chashmeh Obeh, substr. granit., 1800 m, RECH. 19239-b!, HDG., WDB. & EKB. W-7889! In jugo Sabzzak (Sauzak), 1800–2000 m, KOEIE 2210!, 3858!, FURSE 7690! 56 km E Herat, 1590 m, GREY-WILSON & HEWER 1251! – NE: Kataghan: Doshi, VOLK 2696!, 2727! Inter Pul-i Khumri et Doshi, 750 m, HDG. & WDB. W-4064!, RECH. 16519! Inter Chal et Ishkamish, VOLK 2695! Taliqan: 30 km E Taliqan, HDG. & WDB. W-9254! Farkhar, 1100 m, FREY! Badakhsh.: Kalifgan, 1950 m, FURSE 8103! Inter Rustak et Sar Rustak, EKBERG W-9111! Darreh-i Ranch S Rustak, EKBERG W-9129!

Distr. gen.: Persia borealis, Afghanistan borealis, Asia centralis (Kopet Dagh, Pamir-Alaj).

For typification of this species see VVEDENSKY & KOVALEVSKAJA in Consp. Florae Asiae Mediae 2: 21 (1971). The species is there treated in a wider sense.

23. ***E. stenophyllus*** (BOISS. & BUHSE) BAKER, Journ. Linn. Soc. Bot. 15: 281 (1877).

Planta 30–150 cm alta. Folia usque ad 12 mm lata, raro latiora, glabra vel puberula. Scapus glaber vel puberulus. Racemus densus. Bracteae subulatae, glabrae vel raro ± ciliatae. Pedicelli 10–20 mm longi, patuli. Tepala 8–13 mm longa, laete flava, marcescendo vel exsiccando aurantiaco-brunnescentia. Filamenta manifeste exserta. Capsula 6–8(–10) mm diametro, globosa. Semina 5–6 mm longa, ± anguste alata.

Distr. gen. speciei: Persia borealis, Afghanistan, Pakistan occidentalis, Asia centralis, (Turcomania, Tadjikistan).

1a. Scapus glaber. . . . . subsp. *stenophyllus*
b. Scapus imprimis prope basin puberulus. 2
2a. Bracteae glabrae (rarissime sparse breviter ciliatae). Capsula 6–8 mm diam. . . . . subsp. *aurantiacus* (BAKER) WENDELBO
b. Bracteae ciliatae. Capsula 8–10 mm diam. . . . . subsp. *ambigens* (VVED.) WENDELBO

– – subsp. ***stenophyllus***

Syn.: *Ammolirion stenophyllum* BOISS. & BUHSE, Aufz. 218 (1860). *Eremurus Bungei*

BAKER, Journ. Bot. 17: 17 (1879). *E. stenophyllus* var. *Bungei* (BAKER) O. FEDTSCH., Mém. Acad. Scienc. Imp. Pétersbg. Sér. 8, 23, 8: 73 (1909).
Typus: BUHSE 1099, K!, LE!

Folia glabra, margine scabrida. Scapus glaber. Bracteae glabrae. Tepala interiora quam exteriora duplo fere latiora. Filamenta quam tepala multo longiora. Capsula 6–8 mm lata.

Persia: E: Khor.: Inter Quchan et Bajgiran, 1100–1600 m, SCHMID 6319! Inter Neyshabur et Mashhad, BUNGE 3 (typus *E. Bungei* BAKER)! Inter Kashmar et Neyshabur, 1750 m, REJAMAND & BAZARGAN 32079! Kuh-e Bezg, 1500–2200 m, RECH. 1476!, AITCH. 644! Kuh-e Hazar Masjed inter Ardak et Talqur, 1200–1600 m, RECH. 4985! N Kuh-i Binalud, 1900–2300 m, SCHMID 6246! 66 km N Torbat-e Heydariyeh, 1980 m, ZOHARY & ORSHAN 9610/10!, 9610/33! Robat Safid, in montibus serpent., 1800–2000 m, RECH. 4425! In jugo Bashm, 2400 m, RECH. 1192! Inter Reshvanlu et Namanlu N Shirvan, 1600 m, RECH. 53258! 45 km NNE Shirvan, Kuh-e Alan, 2400 m, EDMONDSON 1200! – C: Tehran: Prope Polur, 1520–2300 m, WDB. 2050!, ARCHIBALD 2566! PABOT 4067! Inter Polur et Ask, 2300 m, ESFAND. in GAUBA 1563! 75–93 km E Tehran, 1900–2080 m, PABOT 4378!, 8245! Abask, 1860 m, GHEISSARI 5621! Inter Firuzkuh et jugum Bashm, 1900–2200 m, RECH. 1174! Prope Firuzkuh, 1800–2400 m, FURSE & SYNGE 474! Inter Firuzkuh et Semnan, 1700 m, FREY! In valle Lar, 2450 m, WDB. & ASSADI 13434! M. Damavand, Ab-e Sard, SABZEVAR 7080-E!

Distr. gen.: subspeciei: Endem.

– – subsp. ***aurantiacus*** (BAKER) WENDELBO, Acta Univ. Bergen Ser. Math. Nat. 1964, 5: 14 (1964).
Syn.: *E. aurantiacus* BAKER, Journ. Linn. Soc. Bot. 15: 285 (1877). *E. Stocksii* BAKER, l.c.: 283. *E. angustifolius* BAKER, l.c.: 282 p.p.
Icon.: Tab. 15, fig. 6; 16, fig. 4; 24, fig. 1.
Typus: GRIFFITH 5800, K!

Folia puberula vel glabra, margine scabrida. Scapus basin versus quidem ± puberulus. Bracteae raro parce ciliatae. Ceterum ut subsp. *stenophyllus*.

Afghanistan: N: Mazar-i Sharif: Inter Paigah Kotal (Robatak) et Haibak, LINDB. 537! In jugo Shanbashak, 2790 m, KOELZ 13864! – NW: Sangcharak: Safedsang, 3000 m, KOELZ 13984! Herat: Kuh-e Darunta supra Chashmeh Obeh, 1800 m, HDG., WDB. & EKB. W-7890! In jugo Sabzzak (Sauzak), 1950–2500 m, KOEIE 2209!, FURSE 7688! – SW: Farah: 6 km N Gulestan, 1800 m, HDG. & EKB. W-7271! Ghorat: In jugis inter Lal et Daulat Yar, 2800 m, RECH. 18819!, PODLECH 19105! In valle Rud-i Ghor prope Orusma inter Taiwara (Qala-i Ghor) et Pasaband, 2200 m, PODLECH 21828! 3 km E Dahane-Garmab, 2350 m, PODLECH 21890! In valle fl. Farah Rud prope Dahane-Chehelgazi, 2450 m, PODLECH 21855! Kandahar: In collibus inter lacum artif. Arghandab Reservoir et Tirin, 1400–1700 m, RECH. 35014! Kalat-i Ghilzai: 10 km NE Kalat, 1650 m, PABOT A-595!, HDG., WDB. & EKB. W-7610! – E: Kabul: Babur, VOLK 2041! Kabul, 1800–1900 m, GILLI 208-a!, -b!, KERST. 431!, KOELZ 8238!, 11420!, LINDB. 129!, RECH. 17014!, REINER 702! Tang-i Gharu, 1500–1850 m, KERST. 502-c!, HDG. & WDB. W-2777!, PODLECH & JARMAL 30227!, PODLECH 17783! In valle Nijrao, 2000–3000 m, NEUB. 307! Inter Gulbahar et Sarobi, 1200 m, BRECKLE A-231! Prope Gulbahar, REINER 669! Khord Kabul, 2000 m, HDG., WDB. & EKB. W-7513! 10 km NW Kabul versus Charikar, 2000–2100 m, RECH. 31138! In valle Paghman, 2300–2800 m, RECH. 17106!, CHAW.-MUST.! In latere orient. jugi Unai, 3000–3250 m, RECH. 18109! In jugo inter Kabul et Maidan, 2200 m, EDELB. 1808! In valle Maidan 22 km SW Kabul, 1950 m, PODLECH 30396! 50–100 km SSW Kabul, 2000–2300 m, HORREÜS DE HAAS 410! Guldara 15 km SE Kabul, 2050 m, DIETERLE 373!, 251! Kotal-e

Takht S Arghandeh inter Kabul et Ghazni, 2300 m, RECH. 17231! Ghazni: Sariab 52 km W Ghazni, substr. calc., 2700 m, RECH. 37184! In jugo Altimur, 2500–3200 m, RECH. 31529!, 31827!, 31911! Jaji: Inter Dre Kalla et Qasim Khel, RECH. 32334! In valle Karcha (Karaia?), AITCH. 596 p.p.! Urgun: 35 km SW Urgun versus Surmat, 2200–2400 m, RECH. 35913! Nuristan: Chandao, 2400 m, KOELZ 11761! – NE: Munjan: Nau, 3100 m, EDELB. 1433! Hauz Anjuman, 3400 m, HDG. & WDB. W-5463! Darrah-i Parshui, 3700 m, FREY! Wakhan: In valle Futur inferiore, 2900 m, ROEMER 64! Kataghan: In decl. borealibus jugi Salang, 1500–3600 m, FURSE 7841!, 8028! RECH. 31620!, PELT 1018!, FREY! 12 km S Farkhar, 2400 m, FURSE 8166! Farkhar, 1200–1500 m, ANDERS 9176! In jugo Paigah Kotal inter Haibak et Pul-i Khumri, 1500 m, RECH. 16422-b! 43 km E Khinjan versus Pul-i Sar, 1500 m, GREY-WILSON & HEWER 798! In valle Khinjan superiore, 3100 m, PODLECH 15904! In valle Kunduz prope Qezel Say, 600 m, ANDERS 6130! Badakhsh.: Prope Zu ad fl. Warduj inter Faizabad et Zebak, 1800 m, FURSE 6333! Kalifgan, 1950 m, FURSE 8111! In valle Kishm prope Kangurchi, 1200–1500 m, PODLECH 21462! Pul-e Zarewan, 2650 m, CARTER 1019! – C: Bamian: Band-i Amir, 3000 m, DIETERLE 1015!, 1022! In jugo Kotal-e Devali inter Yakawlang et Kotal-e Shahtu, 3100 m, HDG. & WDB. W-4851! 40 km W Bamian, 2700 m, FURSE 8412! In valle Ajar 1 km W Banak, 1800 m, ANDERS 6328! Darya-e Bariki prope Kadalak, 2850 m, ANDERS 4409! Nawa-i Surkhjoy, 2500 m, PODLECH 18890! Prope Ak Robat, 3050 m, DIETERLE 472! In collibus W jugi Shibar, 3000 m, HDG. & WDB. W-4194! Panjao: 43 km W Panjao, 2880 m, GREY-WILSON & HEWER 1156! Deh Kundi: 10 km W Shahrestan versus Deh Kundi, 2200 m, RECH. 36820! Ghorat: Qala Sakawa (Lal-i Sar-Jangal), 2500 m, KOEIE 3369! Inter Ashgharat et Khargol, 3120 m, PODLECH 18950! Behzud: Farakulum, FERDINAND! Ghorband: In decl. orientalibus jugi Shibar, 2500–2600 m, RECH. 16867!; 2900 m, FRUMKIN 179! – Afghanistan, GRIFF. 5800 (typus *E. aurantiaci*)!

P a k i s t a n: Chitral: In jugo Shandur, 3700 m, ECKER! Shoghot, 2400 m, BOWES LYON 751! Lutkor, 1800–2100 m, TOPPIN 647! In jugo Chamar Khan versus Mastuj, 3750 m, ECKER 7563! Sanoghar, 2100 m, STAINT. 2469! Tirich Mir: Barum Gol, CHAUDRI 127! – Quetta: Prope Ziarat, 2200–3000 m, POPOV 321!, RECH. 29288!, SIDDIQUI 502! ZAFFAR ALI 4790! Urak, 2000 m, LACE 3416!, Tor Shor supra Urak, 2250 m, ZAFFAR ALI 5654! Quetta, SCHMID 123! In valle Quetta, 1500 m, ZAFFAR ALI 4716! 24 km W Quetta, REPP! Chaman, 1900 m, KOEIE 3370! In jugo Khojak, 2000–2300 m, RECH. 29060!, KASY 42! Supra Sheila Bagh, 2000 m, LAMOND 1063!, HEWER 953! – Baluchistan, STOCKS 1057 (typus *E. Stocksii*)!

Distr. gen. subspeciei: Afghanistan, Pakistan, Asia centralis (Pamir-Alaj).

In Chitral (STAINTON 2469 and BOWES LYON 751) and Ziarat near Quetta (SIDDIQUI 502) specimens with glabrous leaves and scape occur, but obviously rather rarely. Still the trend of glabrous plants in Persia and puberulent ones in Afghanistan-Pakistan is so clear that it is meaningful to distinguish two geographical races.

– – subsp. ***ambigens*** (VVED.) WENDELBO, comb. nov.

Syn.: *E. ambigens* VVED., Fl. Uzbek. 1: 404 (1941). *E. stenophyllus* var. *pilosus* O. FEDTSCH., Mém. Acad. Imp. Scienc. Pétersbg. Sér. 8, 23, 8: 73 (1909) p.p.

Typus: Kurgan-Tybe, 19. IV. 1906, G. MORREN, LE!

Folia puberula vel glabra margine scabrida. Scapus puberulus. Bracteae ± ciliatae. Tepala interiora et exteriora subsimilia. Filamenta quam tepala manifeste longiora. Capsula 8–10 mm diametro.

A f g h a n i s t a n: N: Mazar-i Sharif: 40 km S Tashkurghan (Khulm), 700 m, HEWER 1135! – NE: Kataghan: Surkh Kotal 10 km S Pul-i Khumri, Loess, 800 m, PODLECH 21285! 10 km ESE Haibak versus Pul-i Khumri, 1080 m, PODLECH 30062! 4 km E Baghlan versus Narin, 630 m, Loess, PODLECH 21112! 20 km NW Taliqan, HDG. & WDB. W-9253!

Distr. gen. subspeciei: Afghanistan borealis, Asia centralis (Pamir-Alaj).

24. ***E. Furseorum*** WENDELBO, Acta Horti Gotob. 28: 59 (1966).
Icon.: WENDELBO, l.c.: tab. II. WENDELBO & FURSE, Lily Year Book 32: fig. 15 (1969). – Tab. nostr.: 24, fig. 2.
Typus: FURSE 6566, holotypus K!

Planta c. 90 cm alta. Folia usque ad 20 mm lata, supra glabra, subtus secus nervos et margine minute scabrida. Scapus dense puberulus. Racemus dense multiflorus. Bracteae usque ad 25 mm longae, subulatae, in parte infima leviter puberulae, margine glabrae. Pedicelli 8–12 mm longi, ascendentes. Tepala vix 7 mm longa, cremea leviter virescentia. Filamenta longe exserta. Capsula 5–6 mm diam., globosa. Semina c. 5 mm longa, anguste alata.

A f g h a n i s t a n: NE: Kataghan: In decl. borealibus jugi Salang, 1400–2250 m, FURSE 7824!, CISELY & FURSE 6566!, WDB. & EKB. W-9858!, HDG., WDB. & EKB. W-9244! In valle Khinjan, 1600 m, HDG. & WDB. W-8886! In valle Darrah-i Kayan prope Dahan-e Ahanfalad, 2150 m, PODLECH 18342!

Distr. gen.: Endem.

This species is remarkable in having thin wiry roots, short tepals and very long anthers. It is thus somewhat isolated taxonomically.

Hybridae

Hybrids between different species of *Eremurus*, especially within the section *Henningia* are frequently met with in the field. A zone of introgression with much variation in characters may be noted where populations of two species meet. Thus on the northern side of the Hindukush mountains of Afghanistan *E. stenophyllus* subsp. *aurantiacus* is frequently found on the higher parts of the mountains slopes and *E. Olgae* is equally frequent on the lower parts of the same slopes. In many places populations of the two taxa will meet. Even if the former flowers earlier than the latter there will always be some specimens of both species flowering at the same time and crosses become possible.

E. comosus x *soogdianus*

A f g h a n i s t a n: NE: Badakhsh.: 32 km ESE Taliqan, 1200 m, PODLECH 21388!

The only specimen which was already indicated to be a hybrid by the collector, is similar to *E. soogdianus* in most characters, but the influence of *E. comosus* can be seen in the shorter more erect pedicels and the larger upper bracts.

E. afghanicus x *stenophyllus* subsp. *aurantiacus*

A f g h a n i s t a n: E: Gardez: In decl. australibus jugi Altimur (Tera Kotal), 2700 m, RECH. 35392!

The only specimen seen is more like the second parent, but the bracts are pubescent and the flowers are pale yellow.

E. Aitchisonii x *stenophyllus* subsp. *aurantiacus*

A f g h a n i s t a n: E: Kabul: In jugo Khord Kabul, 2000 m, HDG., WDB. & EKB. W-7523! In valle Paghman, 3200 m, HDG. & WDB. W-4420! – NE: Kataghan: In decl. borealibus jugi Salang, 1100–2200 m, RECH. 31666!, HEWER 1235!

The hybrid plants are intermediate in all characters. The colours of the perigon are a mixture of yellow and rose.

E. Kaufmannii* × *stenophyllus subsp. ***aurantiacus***

Afghanistan: E: Kabul: Unai, Kuh-i Qhalandaran, 3200 m, HDG. & WDB. W-4479! – C: Bamian: In jugo Kotal-e Devali inter Yakawlang et Kotal-e Shahtu, 3100 m, HDG. & WDB. W-4849!

Mostly like the former parent but differs in the narrower leaves, the narrower and more shortly ciliate bracts, the smaller tepals which are also pale yellow becoming brownish when wilting.

E. Olgae* × *stenophyllus subsp. ***stenophyllus* = *E.* × *albocitrinus*** BAKER, Journ. Bot. 17: 17 (1879), as species.

Persia: E: Khor.: Inter Bik et Sheykh Amiranlu N Shirvan, 1600 m, RECH. 53251! Inter Quchan et Bajgiran, 1100–1600 m, SCHMID 6316!, 6320! – C: Tehran: In decl. australibus M. Elburz W Firuzkuh, 1800 m, FURSE & SYNGE 628!

Intermediate between the parents with pale yellow or nearly white flowers.

E. Olgae* × *stenophyllus subsp. ***aurantiacus***

Afghanistan: NW: Herat: Kotal-e Sabzzak N Herat, NEUB. 4265!, 4267!, 4268!, 4270! – NE: Kataghan: In jugo W Kishm (Qeshm), in declivibus siccis, 1600 m, HDG. & WDB. W-9495!

This is undoubtedly the most common of the *Eremurus* hybrids within our area. Hybrid populations are easily discovered from the great variation in flower colours, all shades between rose and yellow may be seen. – See Tab. 24, fig. 3.

E. roseolus* × *stenophyllus subsp. ***aurantiacus***

Afghanistan: N: Mazar-i Sharif: 20–30 km NW Haibak versus Tashkurghan, 600 m, RECH. 34015! – NE: Kataghan: Inter Pul-i Khumri et Ribat, 700–1200 m, RECH. 33820! 11 km S Farkhar, 2400 m, FURSE 8168!

Intermediate between the parents with pale yellow-rose flowers.

E. Aitchisonii* × *Kaufmannii

Afghanistan: E: Jaji: N Chane 50 km E Shuturgardan (Shutur Augardan), in decl. saxosis in juniperetis, 2600 m, EKB. W-9213!

The only specimen is rather like *E. Kaufmannii* and was collected in a locality where that species occurs. The leaves are subglabrous and there seems to be a tint of pink to the tepals.

ZU DEN ABBILDUNGEN

Die Tafeln 1–13 wurden von der Akademischen Druck- u. Verlagsanstalt, Graz, hergestellt.

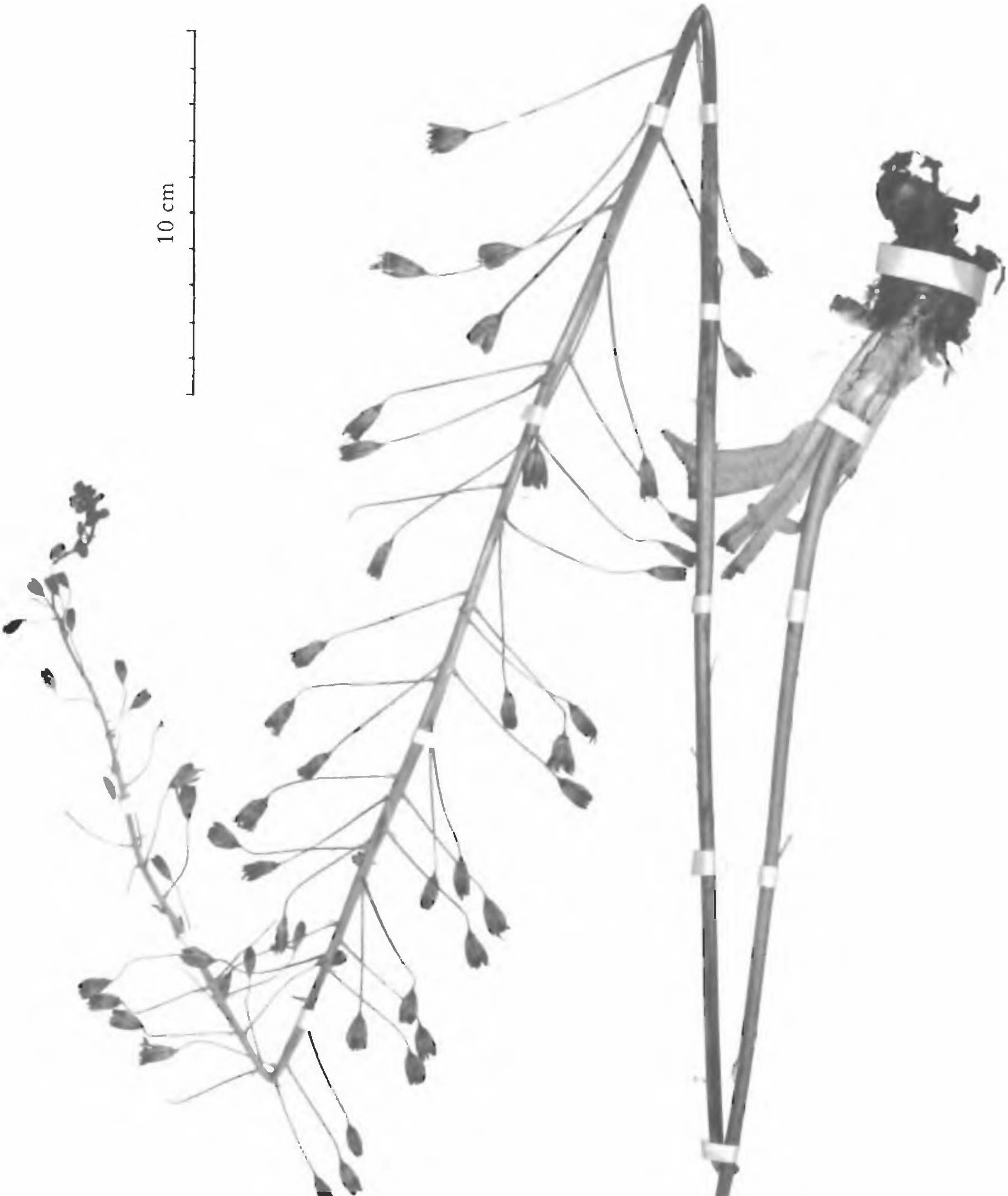
Die Tafeln 14–16 wurden vom Autor aus seinen früheren Publikationen übernommen.

Asphodelus tenuifolius CAV. – RECH. 3436

Asphodeline dendroides (HOFFM.) WORON. – RECH. 41405

Eremurus comosus O. FEDTSCH. – RECH. 33695

Tab. 4

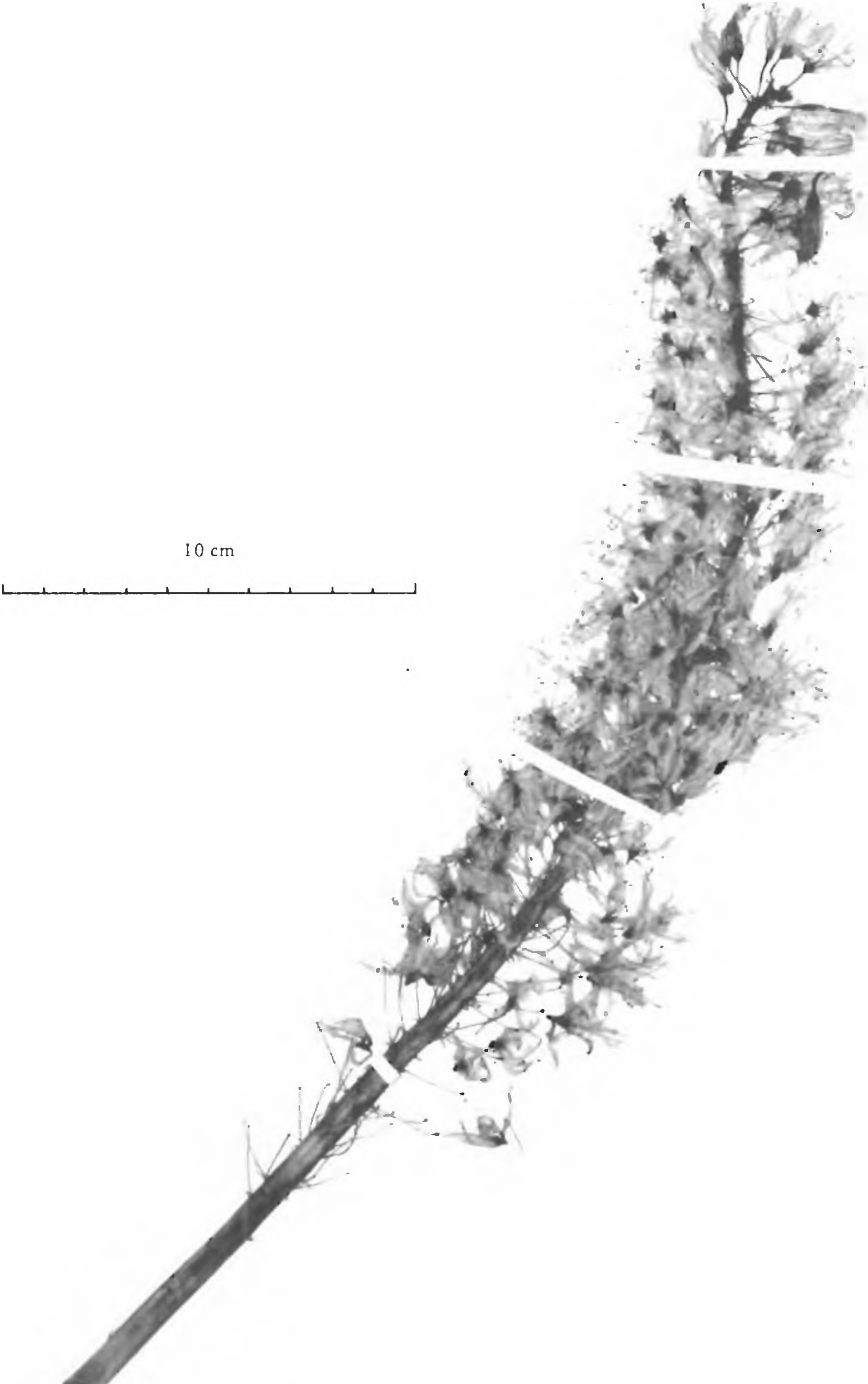


Eremurus soogdianus (REGEL) BENTH. & HOOK. – ANDERS 6590

Tab. 5

Eremurus Rechingeri WENDELBO – RECH. 15436

Tab. 6



Eremurus himalaicus BAKER – EDELB. 981

Eremurus himalaicus BAKER – EDELB. 514

Tab. 8

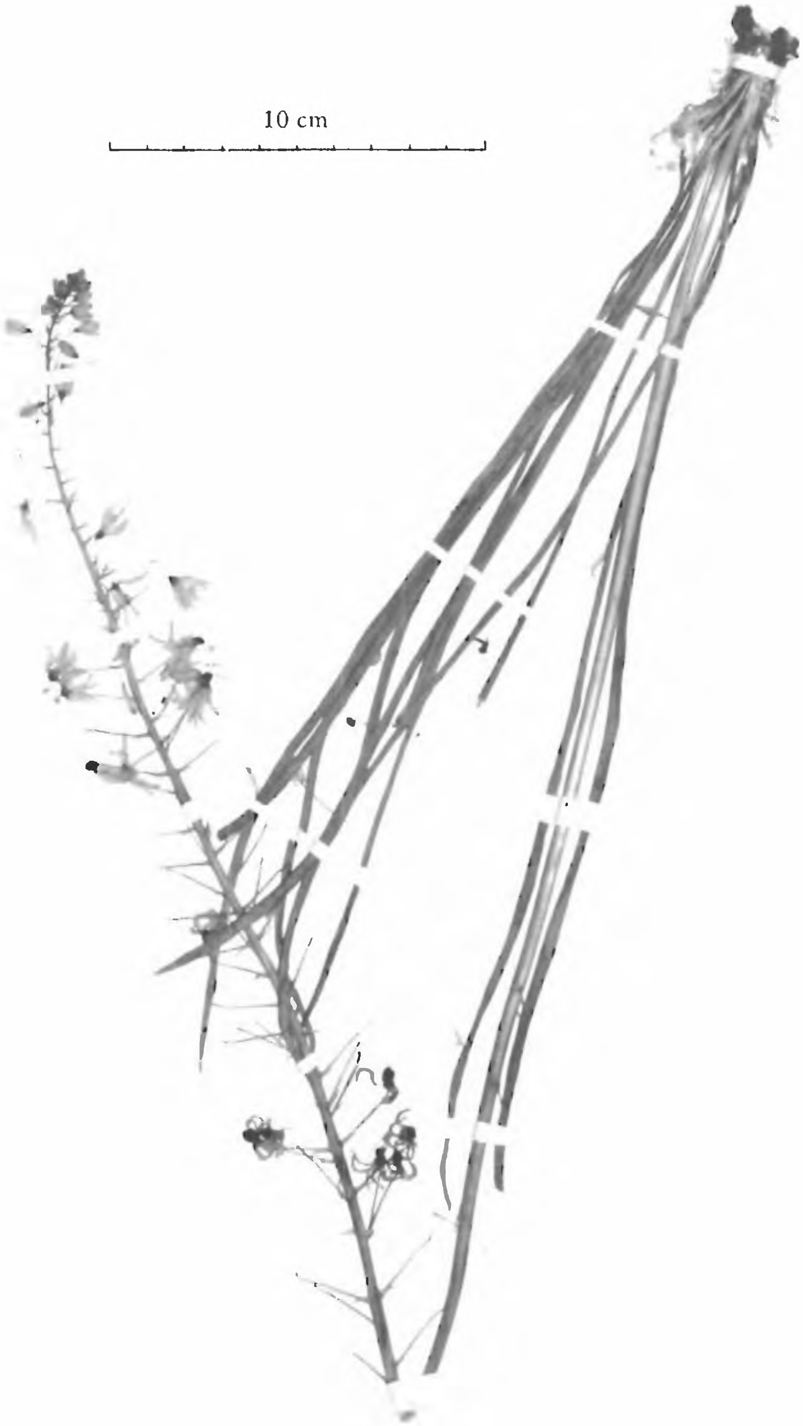
Eremurus Alberti Regel – Koeie 3495

Eremurus Alberti REGEL – RECH. 33973

Tab. 10

Eremurus bucharicus Regel – Anders 5529

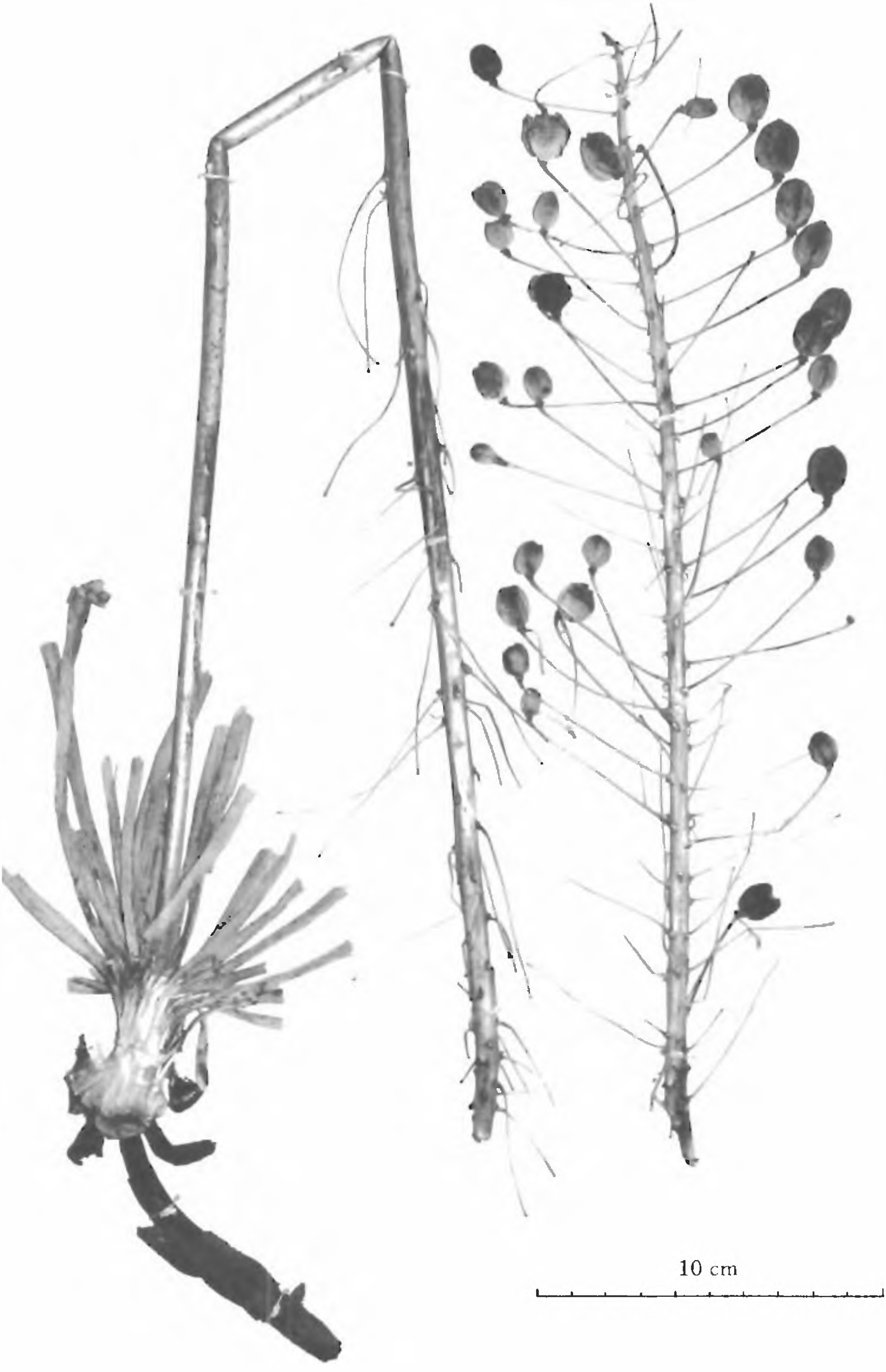
Tab. 11



Eremurus Suworowii REGEL – ANDERS 5943

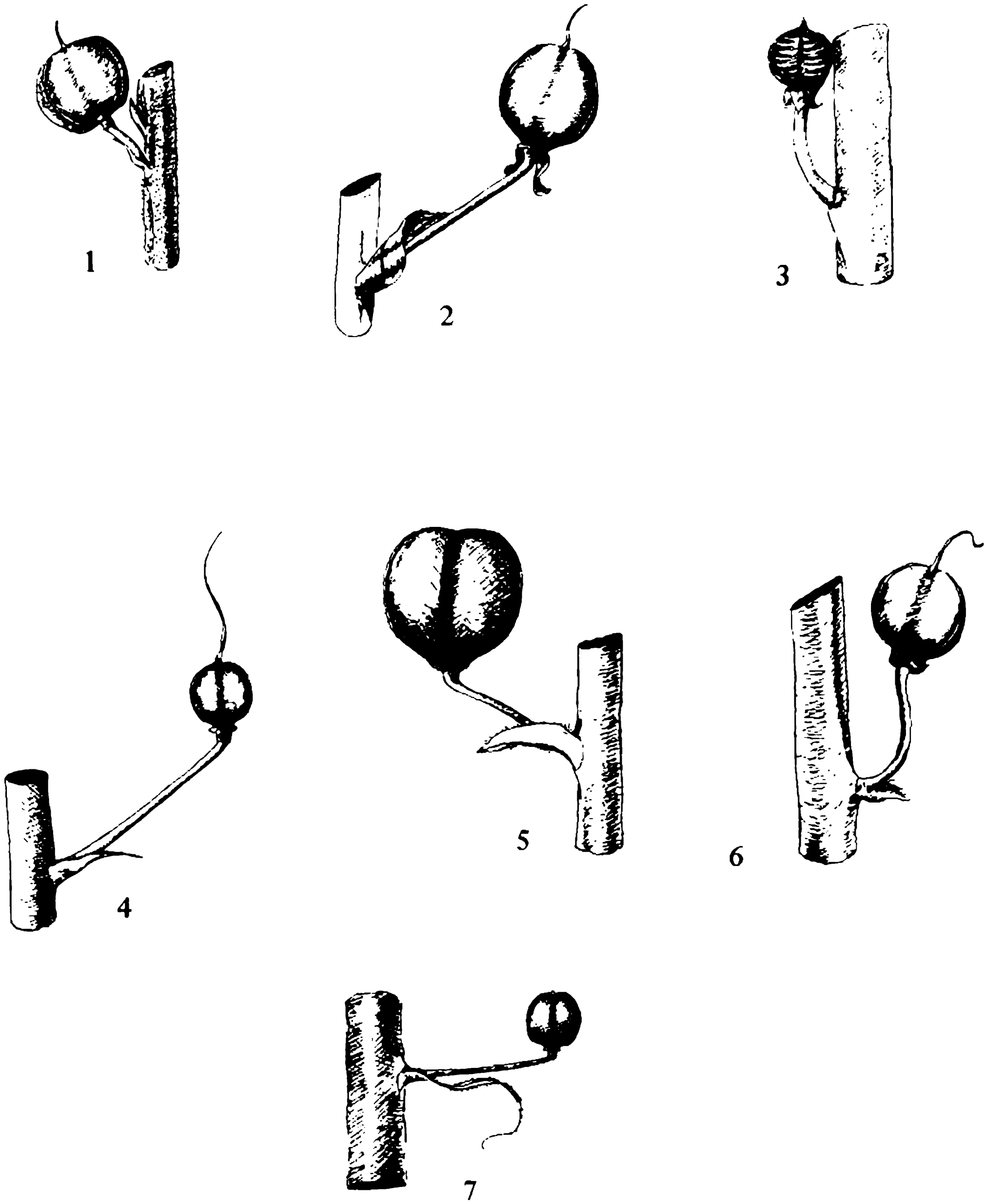
Tab. 12

Eremurus roseolus Vved. – Rech. 33876



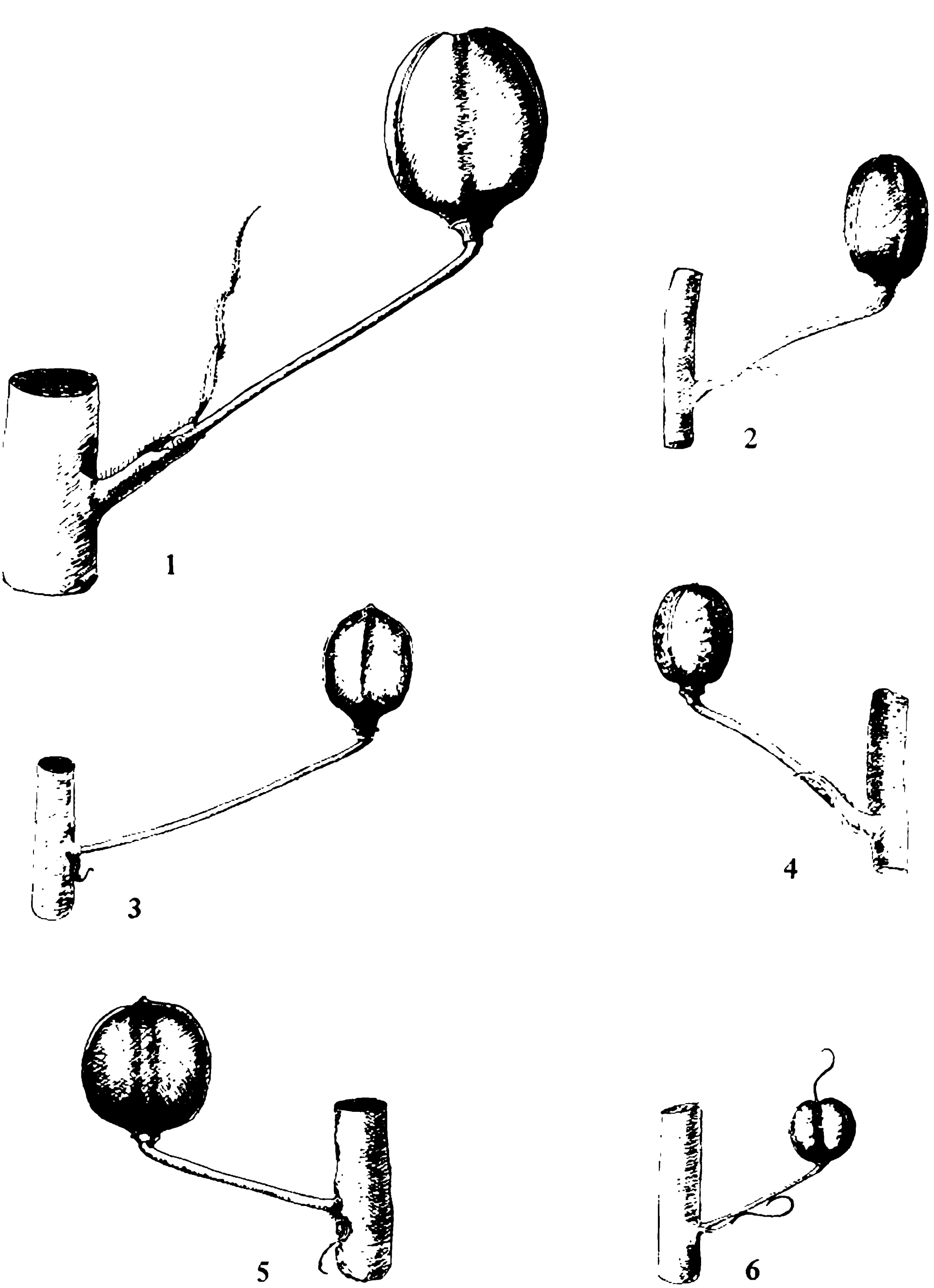
Eremurus roseolus VVED. – RECH. 16423

Tab. 14



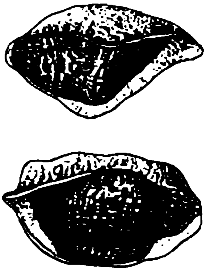
Capsules with pedicels and bracts. **1**: *Eremurus inderiensis* (STEV.) BOISS. – RECH. 5361; **2**: *E. dolichomischus* VVED. & WENDELBO – HDG. & WDB. W-2780; **3**: *E. spectabilis* M.B. subsp. *Regelii* (VVED.) WENDELBO – HDG. & WDB. W-3685; **4**: *E. Korshinskii* O. FEDTSCH. – HDG. & WDB. W-4481; **5**: *E. persicus* (JAUB. & SPACH) BOISS. – RECH. 18820; **6**: *E. Kaufmannii* REGEL – RECH. 17661; **7**: *E. afghanicus* GILLI – HDG. & WDB. W-4392

Tab. 15

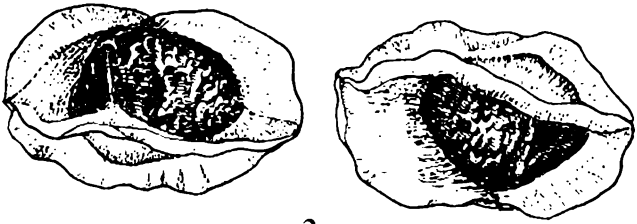


Capsules with pedicels and bracts. **1**: *Eremurus Alberti* REGEL – HDG. & WDB. W-3642; **2**: *E. luteus* BAKER – RECH. 4493; **3**: *E. roseolus* VVED. – RECH. 16423; **4**: *E. kopetdaghensis* M. POP. ex B. FEDTSCH. – GAUBA „1335' ; **5**: *E. Aitchisonii* BAKER – HDG. & WDB. W-5052; **6**: *E. stenophyllus* (BOISS. & BUHSE) BAKER subsp. *aurantiacus* (BAKER) WENDELBO – RECH. 17231

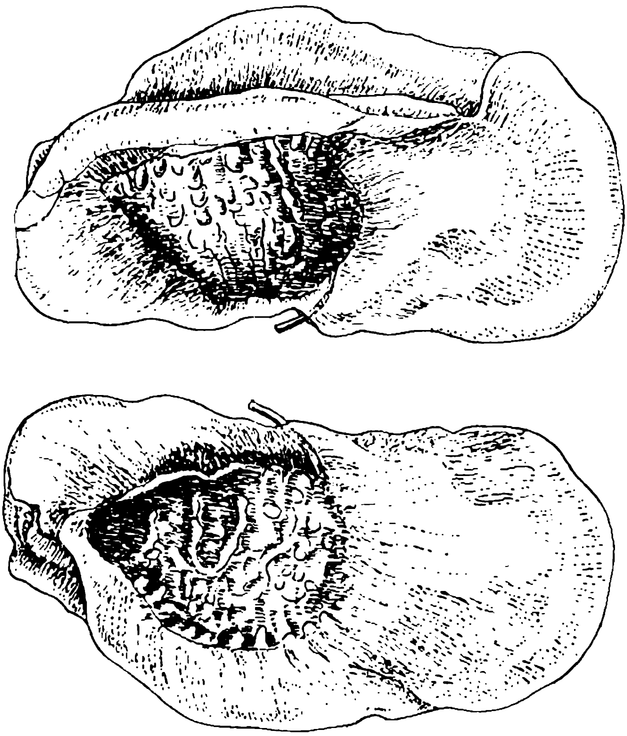
Tab. 16



1



2



3

4

Seeds. **1**: *Eremurus spectabilis* M.B. subsp. *Regelii* (VVED.) WENDELBO – HDG. & WDB. W-3685; **2**: *E. persicus* (JAUB. & SPACH) BOISS. – WDB. 1711; **3**: *E. Alberti* REGEL – HDG. & WDB. W-3642; **4**: *E. stenophyllus* (BOISS. & BUHSE) BAKER subsp. *aurantiacus* (BAKER) WENDELBO – RECH. 17014

1: *Eremurus inderiensis* (Stev.) Boiss. – Hdg., Wdb. & Ekb. W-7608; 2: *E. dolichomischus* Vved. & Wendelbo – Hdg., Wdb. & Ekb. W-7508 (phot. Wendelbo)

Tab. 17

1

2

1: *Eremurus Korshinskii* O. FEDTSCH. Afgh.: Kotal-e Narges; 2: *E. spectabilis* M.B. subsp. *Regelii* (VVED.) WENDELBO – HDG., WDB. & EKB. W-7507 (phot. WENDELBO)

1

2

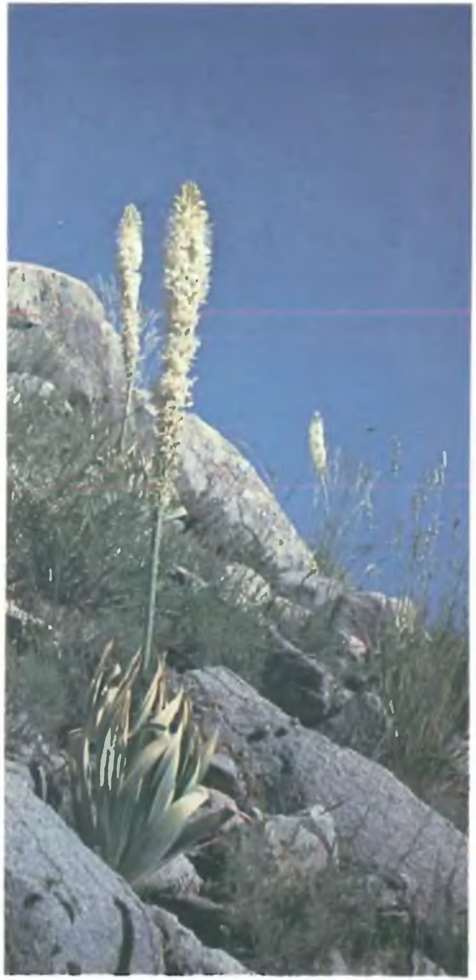
Eremurus persicus (JAUB. & SPACH) BOISS. 1: cult. TARI; 2: HDG. & WDB. W-4974 (phot. WENDELBO)

Tab. 19

Tab. 20

1

2



3

1: *Eremurus bactrianus* WENDELBO – HDG. & WDB. W-9426; 2: *E. Kaufmannii* REGEL – HDG. & WDB. W-4479; 3: *E. Kaufmannii* REGEL – RECH. 36289 (1, 2 phot. WENDELBO, 3 phot. RECHINGER)

1

2

Eremurus afghanicus GILLI – 1: RECH. 35391 (phot. RECHINGER); 2: HDG. & WDB. W-2778 (phot. WENDELBO)

1

2

1: *Eremurus luteus* BAKER – Persia: Damghan; 2: *E. kopetdaghensis* M. POP. ex B. FEDTSCH. – Persia: Khaneh Sorkh (phot. WENDELBO)

1

2

1: *Eremurus Aitchisonii* BAKER – HDG., WDB. & EKB. W-7521; 2: *E. Olgae* REGEL – Persia, Kurdistan (phot. WENDELBO)

Tab. 23

1

2

1: *Eremurus stenophyllus* (Boiss. & Buhse) Baker subsp. *aurantiacus* (Baker) Wendelbo – Afgh.: Band-i Amir; 2: *E. Furseorum* Wendelbo – Afgh.: Salang; 3: *E. Olgae* × *stenophyllus* subsp. *aurantiacus* – Hdg. & Wdb. W-9495 (phot. Wendelbo)

SYSTEMATISCHE ANORDNUNG DER FAMILIEN

Familien mit vorangestellter Continuatio - Nummer sind bereits erschienen.

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
	PTERIDOPHYTA					
	Equisetaceae	1	2	143	(2)	(2)
	Lycopodiaceae	2	1	142	(1)	(1)
	Marsileaceae	5	5	144	(4)	(4)
	Ophioglossaceae	3	3	140	(6)	(6)
	Polypodiaceae	4	4	141	(3)	(3)
	Salviniaceae	6	6	145	(5)	(5)
	GYMNOSPERMAE					
50	Cupressaceae	9	8	136	(8)	(8)
3	Ephedraceae	10	10	138	(10)	(10)
14	Pinaceae	8	9	135	(7)	(9)
12	Taxaceae	7	7	137	(9)	(7)
	ANGIOSPERMAE					
24	Acanthaceae	138	110	84	86	135
61	Aceraceae	86	83	30a	42a	76
113	Aizoaceae	48	27	50	57	106
78	Alismataceae	16	127	115	124	146
76	Alliaceae	26	133	128	116	155
91	Amaranthaceae	45	23	93	92	112
67	Amaryllidaceae	27	134	128	114	162
74	Ampelidaceae	91	91	32	41	66
63	Aracardiaceae	81	81	46	43	75
	Apiaceae	113	94	54	58	127
103	Apocynaceae	125	117	82	75	82
25	Aquifoliaceae	82	86	70	38	58
1	Araceae	22	143	120	122	158
102	Araliaceae	112	93	55	59	19
26	Aristolochiaceae	40	35	103	97	96
73	Asclepiadaceae	126	118	74	76	84
	Asparagaceae	26	133	129	116	155,7pp.
48	Asperifoliaceae	129	104	80	79	142
90/I, 122/II	Asteraceae	146	126	61	65	131
131	Avicenniaceae	130	111	86	88	88
129	Balanophoraceae	42	20	102	103	63
143	Balsaminaceae	89	85	25	33b	140
111	Berberidaceae	54	40	3	13	96
96	Betulaceae	33	11	112	108	25
44	Bignoniaceae	137a	108a	76a	85a	86a
48	Boraginaceae	129	104	80	79	142
57	Brassicaceae	60	46	7	16	101
45	Buddleiaceae	123	115	75	77	80
107	Burseraceae	75	78	33	36	72
79	Butomaceae	17	128	116	124a	145
27	Buxaceae	80	31	105	104a	23
	Caesalpiniaceae	68b	59b	38b	45b	13
118	Callitrichaceae	79	32	47	50b	117
13	Campanulacea	145	125	62	66	130
138	Cannabaceae	37	17a	106	105	30
68	Capparidaceae	59	45	8	17	36

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
10	Caprifoliaceae	141	121	57	61	20
144/I	Caryophyllaceae	50	29	13	23	105
64	Celastraceae	83	87	35	39	60
28	Ceratophyllaceae	52	42	15	110	94
	Chenopodiaceae	44	22	92	93	111
46	Cistaceae	99	49	10	19	33
132	Commelinaceae	24	138	132	117	154
90/I, 122/II	Compositae	146	126	61	65	121
139a/III, 139b/III, 145/IV, 154/V						
2	Convolvulaceae	127	102	78	80	133
54	Cornaceae	114	92	56	60	18
97	Corylaceae	33	11	112	108	27
72	Crassulaceae	63	56	51	48	123
57	Cruciferae	60	46	7	16	101
123	Cucurbitaceae	144	124	48	55	42
77	Cupuliferae	33-4	11-2	111-2	108	25-7
8	Cuscutaceae	128	103	79	80a	141
39	Cynocrambaceae	111	25	91	105c	113
129	Cynomoriaceae	110a	20a	102	103	63
	Cyperaceae	20	139	134	126	169
136	Cytinaceae	41	36	101	96	98
29	Datiscaceae	101	54	49	56	43
104	Dioscoreaceae	28	137	131	115	164
	Dipsacaceae	143	123	60	64	129
30	Ebenaceae	121	100	69	72	68
48	Ehretiaceae	129	104	80	79	87
55	Elaeagnaceae	103	61	97	100	64
16	Elatinaceae	96	52	18	26	103
11	Ericaceae	116	99	63	67	51
89	Eriocaulaceae	23a	138b	–	125a	154a
6	Euphorbiaceae	78	30	104	104	49
140/I	Fabaceae	68	59	38	45	13-5
77	Fagaceae	34	12	111	108a	26
113	Ficoidaceae	48	27	50	57	106
99	Frankeniaceae	97	51	17	22	38
110	Fumariaceae	58	44	6	15a	100
41	Gentianaceae	124	116	76	78	118
69	Geraniaceae	70	74	26	33	138
17	Globulariaceae	137	108	85	87	142
134	Goodeniaceae	145a	125a	62a	66a	130a
70	Gramineae	19	140	135	127	170
47	Grossulariaceae	64	57	52	47	17
49	Guttiferae	95	55	19	27	54
18	Halorag(id)aceae	109	67	46	50	115
53	Hamamelidaceae	65	33	53	49	21
	Helleboraceae	53	39	1	11	90
92	Hippocastanaceae	87	84	30b	42b	77
31	Hippuridaceae	110	68	45	50a	116
19	Hydrangeaceae	64	57	52	47	16a
127	Hydrocaryaceae	108a	66a	44a	54	115a
80	Hydrocharitaceae	18	129	114	111	146

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2.ed.
49	Hypericaceae	95	55	19	27	54
25	Ilicineae	82	86	70	38	58
144/I	Illecebraceae	50	29	13	23	109
112	Iridaceae	29	135	126	113	163
121	Juglandaceae	32	13	109	107	28
75	Juncaceae	25	136	133	118	168
82	Juncaginaceae	14a	130	117a	125b	148
150	Labiatae	131	112	87	89	144
150	Lamiaceae	131	112	87	89	144
141	Lauraceae	56	37	98	98	11
140/I	Leguminosae	68	59	38	45	13-5
119	Lemnaceae	23	144	119	123	159
58	Lentibulariaceae	136	107	65	84	137
151/I	Liliaceae	26	133	128	116	155
106	Linaceae	71	72	23	31	47
45	Loganiaceae	123	115	75	77	79
116	Loranthaceae	39	19	100	101	61
51	Lythraceae	104	62	43	53	114
120	Malvaceae	93	69	20	28	46
133	Meliaceae	76	79	31	37	73
137	Menispermaceae	55	38	2	12	95
41	Menyanthaceae	124	116	76	78	119
	Mimosaceae	68a	59a	38a	45a	14
114	Molluginaceae	48	27	50	57	105
94	Monotropaceae	115	98	64	67a	52
153	Moraceae	36	15	107	105a	31
135	Morinaceae	143	123	60	64	129
109	Moringaceae	62	48	37	44	37
130	Myrsinaceae	117	97	67	70	67
32	Myrtaceae	107	64	40	52	55
86	Najadaceae	15	132	118	125	153
115	Nyctaginaceae	46	26	95	91	35
33	Nymphaeaceae	51	41	4	14	93
7	Oenotheraceae	108	66	44	54	115
52	Oleaceae	122	119	71	73	81
7	Onagraceae	108	66	44	54	115
126	Orchidaceae	30	141	125	112	167
5	Orobanchaceae	135	108	83	83	136
40	Oxalidaceae	69	73	24	33a	139
60	Paeoniaceae	53	39	1	11	89
146	Palmae	21	142	121	119	165
34	Papaveraceae	57	43	5	15	99
140/I	Papilionaceae	68c	59c	38c	45c	15
20	Parnassiaceae	64	57	52	47	126
128	Pedaliaceae	134	109	77	85	86
73	Periplocaceae	126	118	74	76	83
19	Philadelphaceae	64	57	52	47	16
35	Phytolaccaceae	47	24	90	94	110
15	Plantaginaceae	139	114	89	90	122
21	Platanaceae	66	34	110	106	22
108	Plumbaginaceae	119	95	88	68	121
70	Poaceae	19	140	135	127	170
101	Podophyllaceae	54	40	3	13	93

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson
124	Polygalaceae	77	80	12	21	41
56	Polygonaceae	43	21	94	95	108
	Pontederiaceae	24a	133a	–	116a	155
117	Portulacaceae	49	28	14	24	107
83	Potamogetonaceae	14	131	117	125a	150
9	Primulaceae	118	96	66	69	120
22	Punicaceae	105	65	42	53	57
93	Pyrolaceae	115	98	64	67a	50
136	Rafflesiaceae	41	36	101	96	98
	Ranunculaceae	53	39	1	11	91
149	Resedaceae	61	47	9	18	102
125	Rhamnaceae	90	90	36	40	65
	Rhizophoraceae	106	63	41	51	56
66/I, 152/II	Rosaceae	67	58	39	46	12
	Rubiaceae	140	120	58	62	85
84	Ruppiaceae	14	131	117	125a	151
	Ruscaceae	26	133	129	116	157
36	Rutaceae	73	76	28	34	70
65	Salicaceae	31	14	113	109	24
37	Salvadoraceae	84	88	72	74	59
155	Santalaceae	38	18	99	102	62
38	Sapindaceae	88	82	30	42	74
	Sapotaceae	120	101	68	71	69
42	Saxifragaceae	64	57	52	47	124
82	Scheuchzeriaceae	–	130	117a	125b	148
147/I	Scrophulariaceae	133	106	82	82	134
	Selaginaceae	137	108	85	87	–
	Simar(o)ubaceae	74	77	29	35	71
	Smila(ca)ceae	26	133	130	116	156
100	Solanaceae	132	105	81	81	132
59	Sparganiaceae	13	146	123	121a	160
88	Sphenocleaceae	145	125	62a	66	130
87	Staphyleaceae	85	89	30c	42c	78
156	Sterculiaceae	94	71	21	29	45
4	Tamaricaceae	98	50	16	25	39
39	Theligonaceae	111	25	91	105c	113
63	Therebinthaceae	81	81	46	43	75
95	Thymelaeaceae	102	60	96	99	34
148	Tiliaceae	92	70	22	30	44
127	Trapaceae	108a	66a	44a	54	11[illegible]
71	Typhaceae	11	147	124	121	161
142	Ulmaceae	35	16	108	105b	29
	Umbelliferae	113	94	54	58	127
105	Urticaceae	37	17	106	105	32
11	Vacciniaceae	116	99	63	67	53
23	Vahliaceae	64	57	52	47	125
62	Valerianaceae	142	122	59	63	128
43	Verbenaceae	130	111	86	88	88
	Violaceae	100	53	11	20	40
74	Vitaceae	91	91	32	41	66
85	Zannichelliaceae	14	131	117	125a	152
81	Zosteraceae	14	131	117	125a	149
98	Zygophyllaceae	72	75	27	32	48

Rosaceae II - Rosa
auctore J. ZIELIŃSKI, Kórnik

Lfg.
Cont. No. 152 / Juni 1982

FLORA DES IRANISCHEN HOCHLANDES UND DER UMRAHMENDEN GEBIRGE

PERSIEN, AFGHANISTAN, TEILE VON WEST-PAKISTAN, NORD-IRAQ, AZERBAIDJAN, TURKMENISTAN

von

Univ.-Prof. Dr.
KARL HEINZ RECHINGER
Erster Direktor des Naturhistorischen Museums in Wien (emeritus)

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Rosaceae II

Rosa

auctore J. ZIELIŃSKI, Kórnik*

Rosa L., Spec. Plant. 491 (1753).
Syn.: *Hulthemia* DUMORT., Not. Hulthemia: 13 (1824).

Lit.: F. CRÉPIN, Primitiae Monographiae Rosarum, Bulletin de la Société Royale de Botanique de Belgique 8–21 (1869–1882). E. BURNAT, A. GREMLI, Genre Rosa, Revision du groupe des Orientales (1887). H. CHRIST, Rosa L. in E. BOISSIER, Flora Orientalis Supplement. 201–230 (1888). R. KELLER, Über den Formenkreis der Rosa Beggeriana SCHRENK, Verhandlungen des botanischen Vereins der Provinz Brandenburg 46: 92–114 (1905). E. WILLMOTT, The Genus Rosa (1910–1914). A. REHDER, Rosa L. in C. S. SARGENT, Plantae Wilsonianae 2, 2: 304–343 (1915). G. A. BOULENGER, Revision des Roses d'Asie, Bulletin du Jardin Botanique de l'Etat à Bruxelles 9: 202–279; 13: 165–261 (1935); 14: 115–221 (1936). S. V. JUZEPCZUK, Rosa L., Hulthemia Dumort., Hulthemosa Juz. in Flora URSS. 10: 431–508 (1941). I. KLÁŠTERSKÝ, Rosae Asiae anterioris et peninsulae Balcanicae in itineribus cl. K. H. Rechinger fil., A. Pilati et aliorum collectae, Studia Botanica Čechica 5, 1–2: 59–74 (1942). K. V. BLINOVSKIJ, Rosa L., Hulthemia Dumort., Hulthemosa Juz. in Flora Turkmenii 4: 62–78 (1949). M. V. KULTJASOV, The wild roses of Kopetdag (ross.) Trudy Turkmenskogo Filiala Akademii Nauk SSR. 5: 123–140 (1944). V. G. CHRŽANOVSKIJ, Rosa L. in Flora Azerbaijana 5: 144–176 (1954). I. T. VASSILCZENKO, De speciebus generis Rosa L. in jugi Hissarici parte occidentali crescentibus (ross.) Notulae Systematicae ex Herbario Instituti Botanici Nomine V. L. Komarovii Academiae Scientiarum URSS. (Leningrad) 20: 217–230 (1960). T. F. KOČKAREVA, O taksonomičeskom položenii šipovnika gissarskogo, Doklady Akademii Nauk Tadjikskoj SSR. 4 (3): 49–51 (1961). R. D. MEIKLE, Rosa L. in C. C. TOWNSEND & al., Flora of Iraq 2: 141–151 (1966). I. T. VASSILCZENKO, De Rosa Beggeriana f. rosea Keller nota (ross.) Novitates Systematicae Plantarum Vascularium 6: 143–144 (1969). I. P. MANDENOVA, A revision of Rosa in Turkey, Notes from the Royal Botanic Garden Edinburgh 30: 327–340 (1970). Ö. NILSSON, Rosa L. in P. H. DAVIS, Flora of Turkey 4: 106–128 (1972). T. F. KOČKAREVA, Obzor šipovnikov – Rosa L. Tadjikistana, in Rastitelnost Tadjikistana i ee osvoenie 125–145 (1974). T. F. KOČKAREVA, Rosa L. in Flora Tadjikskoj SSR. 4: 449–476 (1975). V. V. FISJUN, Rosa L., Hulthemia Dumort, Hulthemosa Juz. in Conspectus Florae Asiae Mediae (ross.) 5: 205–224 (1976). V. V. FISJUN, Želtocvetnye šipovniki Kazahstana i Srednej Azji, Botaničeskie Materialy Gerbarija Instituta Botaniki Akademii Nauk Kazahskoj SSR. Notulae Systematicae ex Herbario Instituti Botanici Academiae Scientiarum Kasachstanicae SSR. 10: 24–30 (1977). A. V. ROBERTS, Relationship between species in the genus Rosa, section Pimpinellifoliae, Journal of the Linnean Society. Botany, (London) 74: 309–328 (1977). J. ZIELIŃSKI, Distribution of Rosa persica Michx. ex Juss. and its hybrids, Arboretum Kórnickie, Polska Akademia Nauk, Zaklad Dendrologii i Pomologii w Korniku 25: 41–51 (1980).

Frutices decidui vel sempervirentes; truncus erectus vel scandens; rami aculeati raro inermes. Folia alterna, imparipinnata, stipulata, rarius simplicia exstipulata. Flores solitarii vel in corymbos vel paniculas vel in fasciculos umbellatos dispositi, actinomorphi. Calycis tubus globoso-ventricosus, ore constrictus; segmenta 5, integra vel

* Mit Unterstützung des Fonds zur Förderung der wissenschaftlichen Forschung, Wien, Beitrag 2807.

pinnatisecta, decidua vel persistentia. Petala 5. Calycis tubus discum includens. Stamina numerosa, disco inserta. Carpella numerosa, in calycis tubo inserta. Styli per orificium disci protrudentes, liberi vel in columnam longam coaliti. Ovulum 1; achaenia plura vel numerosa, ossea, calycis tubo maturitate ± carnoso bacciformi inclusa.

The genus is taxonomically very complicated and the species are exceptionally variable. Interspecific differences are often very subtle and often blurred by numerous hybrid forms.

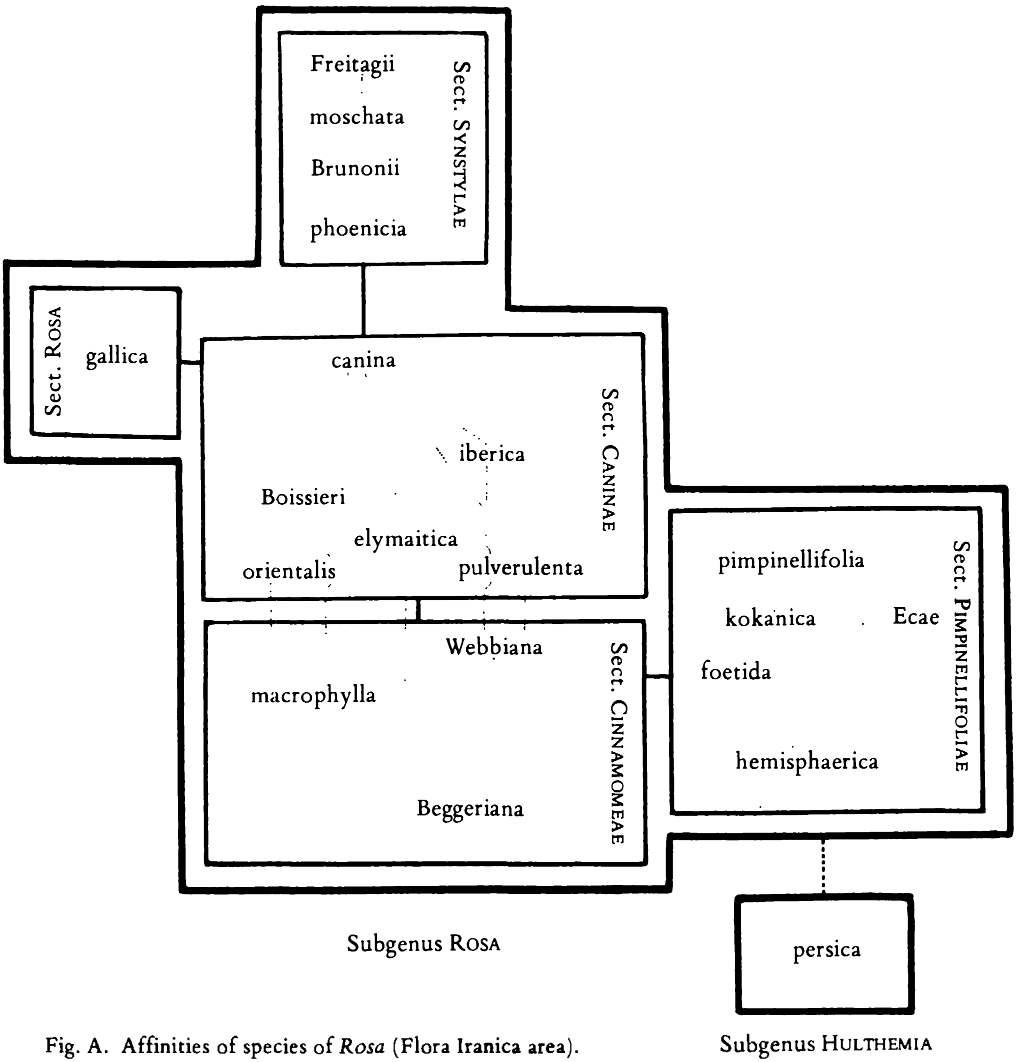

Fig. A. Affinities of species of *Rosa* (Flora Iranica area).

In spite of much study the systematics of roses are still little known. Particular attention is needed in section *Caninae* which is exceptionally variable and difficult. Everything points to the suggestion that this section is heterogeneous and its species are old stabilized hybrids. On the one hand they have a more or less close affinity to *R. canina*, which is as it were a morphological link between all species in the section; and on the other they are undoubtedly related to species (or their antecedents) belonging to several other sections. Within the Flora Iranica area species of section *Caninae* (except for *R. canina* itself) appear to have close morphological affinities only to species from section *Cinnamomeae* (fig. A).

In the past the value of the indumentum on leaves and pedicels has often been over-stressed. An apparently distinctive type of indumentum can be found in several not necessarily related species.

The key mainly uses characters of the flowering branchlets. The colour of the stem and the form of the prickles on the long shoots are also used; the structure of the prickles being characteristic in many species.

Apart from the species mentioned in this account several cultivated roses are in our area: *R. multiflora* THUNB., *R. chinensis* JACQ., *R.* ×*alba* L., *R.* ×*damascena* MILL. s.l. and *R.* ×*centifolia* L.

1a. Folia simplicia, exstipulata .... 1. *R. persica* MICHX. ex JUSS.
b. Folia composita, imparipinnata, stipulata 2
2a. Styli in columnam longam maturitate saepe diffractam coaliti. Petala alba. Orificium disci angustissimum. Frutices saepe scandentes 3
b. Styli liberi, breves 6
3a. Folia plerumque trifoliolata; foliola latitudini ± aequi longa. Aculei recti (Afghanistan centralis) .... 20. *R. Freitagii* J. ZIELIŃSKI
b. Folia plerumque 5–7-foliolata; foliola latitudine manifeste longiora. Aculei uncinati, raro recti... 4
4a. Sepala apice manifeste dilatata, pinnatifida; lobi laterales sat breves et lati. Styli glabri vel glabrescentes (Iraq) .... 17. *R. phoenicia* BOISS.
b. Sepala apice appendice setiformi provisa, integra vel lobis lateralibus filiformibus. Styli in columnam pilosam connata 5
5a. Foliola utrinque viridia, supra ± nitentia, subtus secus nervos glabra vel parce pubescentia .... 19. *R. moschata* J. HERRMANN
b. Foliola opace viridia, subtus plerumque glauca et pubescentia ....
.... 18. *R. Brunonii* LINDL.
6a. Petala flava interdum rubro tincta vel alba. Bracteae plerumque nullae. Stipulae superiores angustae, plerumque auriculis longis divergentibus 7
b. Petala rosea vel alba. Bracteae plerumque evolutae. Stipulae auriculis triangularibus vel lanceolatis ± rectis 11
7a. Petala alba. Fructus niger. Aculei plerumque in aciculos glandulares vel in setas transeuntes (Persia boreo-occidentalis) .... 6. *R. pimpinellifolia* L.
b. Petala flava. Fructus atrobrunneus vel ruber. Aculei ± aequales; aciculi vel setae si evoluti non in aculeos transeuntes. Ramuli juveniles saepe pubescentes 8
8a. Styli tota longitudine pubescentes (etiam infra stigma), capitulum magnum compactum formantes. Sepala in fructu erecta vel ascendentia. Rami recti, sat laxe spinosi 9
b. Styli infra stigma glabri, capitulum laxiusculum parvum formantes. Sepala in fructu patentia vel reflexa. Rami saepe angulato-flexuosi, plerumque dense spinosi.............................. 5. *R. Ecae* AITCH.

9a. Foliola subtus pallide glaucescentia. Sepala exteriora laevia, sine setis vel glandulis stipitatis . . . . .2. *R. hemisphaerica* J. HERRMANN
b. Foliola subtus opace viridia. Sepala exteriora saepe dorso (glanduloso-) hispida. 10
10a. Sepala apice ± dilatata. Fructus ruber. Petala saepe rubro tincta. Rami glabri. . . . . 3. *R. foetida* J. HERRMANN
b. Sepala apice non dilatata. Fructus brunneus. Petala saturate flava. Rami saepe pubescentes . . . . 4. *R. kokanica* (REGEL) JUZ.
11a. Flores parvi, albi, saepe paniculati. Sepala plerumque integra. Stipulae angustae, auriculis lanceolatis, rectis. Aculei plerumque curvati usque falcati, infra basin foliorum binati. Sepala discus et pars summa hypanthii plerumque ante maturitatem fructus decidui . . . . .7. *R. Beggeriana* SCHRENK
b. Plantae combinatione characterum diversae 12
12a. Rami juveniles et pedicelli plerumque dense pubescentes. Aculei tenues, subulati. Folia velutina, eglandulosa. Fructus plerumque dense (glanduloso-) hispidus (Persia, Iraq) .11. *R. orientalis* DUPONT ex SER.
b. Rami juveniles et pedicelli glabri, si interdum pubescentes, aculei validi, ± curvati vel foliola dense glandulosa 13
13a. Pedicelli centrales brevissimi, ad 4(–6) mm longi. Fructus c. 10 mm diametro. Styli ± distincte exserti, capitulum parvum laxum formantes. Foliola simpliciter serrata (Iraq, Persia boreo-occidentalis) . . . . .12. *R. elymaitica* BOISS. & HAUSSKN.
b. Pedicelli centrales longiores. Fructus major, si non, foliola dupliciter glanduloso-serrata vel styli breves, capitulum compactum formantes. 14
14a. Styli dense pubescentes, capitulum magnum, compactum formantes. Orificium latum. Sepala plerumque persistentia 15
b. Styli parce pilosi vel glabri, capitulum laxum parvum formantes. Orificium angustum. Sepala plerumque ante maturitatem fructus decidua 19
15a. Frutex humilis plerumque quam 50 cm humilior, rhizomate longo. Aculei subulati, plerumque cum aciculis glandularibus vel setis mixti. Foliola saepe suborbicularia, plerumque utrinque glandulosa, glutinosa (Persia, Iraq) . . . . 13. *R. pulverulenta* M. B.
b. Plantae combinatione characterum diversae 16
16a. Sepala plerumque pinnatifida (Iraq, Persia boreo-occidentalis) 17
b. Sepala plerumque integra (Afghanistan, Pakistan) 18
17a. Aculei plerumque curvati vel uncinati, basi sensim dilatati. Foliola plerumque dense glandulosa, aromatica. Sepala sat brevia, ad 20 mm longa. . . . . .14. *R. iberica* STEV.
b. Aculei plerumque recti vel leviter curvati, basi abrupte dilatati. Foliola plerumque eglandulosa. Sepala longiora . . . . 10. *R. Boissieri* CRÉPIN
18a. Folia (7–)9–11-foliolata; foliola plerumque elliptica vel obovata, serrulata, maxima nervis lateralibus quam 8 numerosioribus. Aculei uniformes, infrastipulares. . . . . 9. *R. macrophylla* LINDL.
b. Folia 5–7(–9)-foliolata; foliola forma varia, elliptica usque suborbicularia,

grosse serrata, maxima nervis lateralibus 5–8. Aculei saepe cum aciculis glandularibus vel glandulis stipitatis mixti... 8. *R. Webbiana* WALL. ex ROYLE

19a. Frutex humilis rhizomate longo. Rami tenues, non ultra 3(–4) mm crassi. Aculei tenues, plerumque cum aciculis vel setis vel glandulis stipitatis mixti. Flores magni, ad 9 cm diametro .... 16. *R. gallica* L.

b. Frutices plerumque elatiores sine rhizomate. Rami plerumque crassiores. Aculei uniformes. Flores mediocri.............................. 20

20a. Foliola crassiuscula, saepe rugulosa, plerumque utrinque glandulosa, aromatica, nonnulla quidem apice rotundata vel truncata vel emarginata..... .... 14. *R. iberica* STEV.

b. Foliola sat tenuia, non rugosa, plerumque acuta vel acuminata, normaliter eglandulosa .... 15. *R. canina* L.

Conspectus subgenerum, sectionum et specierum

Subgen. **Hulthemia**
1. *R. persica*

Subgen. **Rosa**
Sect. *Pimpinellifoliae*
2. *R. hemisphaerica*
3. *R. foetida*
4. *R. kokanica*
5. *R. Ecae*
6. *R. pimpinellifolia*

Sect. *Cinnamomeae*
7. *R. Beggeriana*
8. *R. Webbiana*
9. *R. macrophylla*

Sect. *Caninae*
10. *R. Boissieri*
11. *R. orientalis*
12. *R. elymaitica*
13. *R. pulverulenta*
14. *R. iberica*
15. *R. canina*

Sect. *Rosa*
16. *R. gallica*

Sect. *Synstylae*
17. *R. phoenicia*
18. *R. Brunonii*
19. *R. moschata*
20. *R. Freitagii*

Subgen. ***Hulthemia*** (DUMORT.) FOCKE in ENGLER & PRANTL, Natürl. Pflanzenfam. 3, 3: 47 (1888).

Folia simplicia, exstipulata. Petala basi macula brunnescenti-rufa provisa.

1. ***R. persica*** MICHX. ex JUSS., Gen. Plant App. 452 (1789).
Syn.: *R. berberifolia* PALL., Nova Acta Petrop. 10: 379 (1797). *Hulthemia berberifolia* (PALL.) DUMORT., Not. Hulthemia: 13 (1824). *H. persica* (MICHX. ex JUSS.) BORNM., Bull. Herb. Boissier Sér. 2, 6: 8 (1906).
Icon.: PALL., l.c.: tab. 10, fig. 5. WILLMOTT, The Genus Rosa 1, 1: tab. 1 (1910). Fl. Uzbekistana 3: tab. 40, fig. 1 (1955). Fl. Tadjik. SSR. 4: tab. 100, fig. 2 (1975). – Tab. nostr.: 1, 2.
Typus: Persia.

Frutex humilis ramosissimus ad 50(–60) cm altus, rhizomate longo. Rami flavi vel raro rubescentes, glabri vel minute puberuli. Aculei numerosi, recti vel curvati, basi ± decurrentes et saepe confluentes, interdum cum setis mixti. Folia simplicia, ad 15(–20) mm longa, brevipetiolata, exstipulata, forma valde variabilia, linearia usque oblonga, apice acuta vel obtusa, basi (anguste) cuneata usque rotundata et integra, utrinque glabra vel puberula, margine grosse serrata. Flores solitarii, ebracteati. Petala ad 15(–18) mm longa, flava, basi macula brunnescenti-rufa provisa. Antherae purpureae. Pedicelli glabri vel puberuli, plerumque hispidi. Sepala integra, appendicibus rigidis apicalibus, dorso hispida, post anthesin ascendentia, persistentia. Styli dense pubescentes, capitulum permagnum compactum formantes. Orificium latissimum. Fructus (depresso-)globosus, ad 10(–15) mm diametro, hispidus, durus, maturitate violaceo-brunneus. Achaenia atrobrunnea, nitida. – Floret IV.–V.; fruct. VII.(–VIII.).

Persia: N: Gorg.: 15–18 km N Behkadeh, 1100–1300 m, RENZ in RECH. 50087! „Gokdagh" prope Shahpasand, coll. ign. 37048-E! Mohammad Reza Shah Res.: Almeh, 1700 m, WDB. & COBHAM 14224! – W: Azerb.: Mianeh, 1200 m, VOLK 71/616! Khamseh: Inter Zanjan et Mianeh, 1400–1500 m, BROWICZ & ZIELIŃSKI 401! JASIEWICZ!, KUKKONEN 5471-a! RECH. 56599! 8–22 km SW Zanjan versus Bijar, 1800 m, RECH. 42355! In jugo Tarom 18 km SW Tashvir, 1300 m, LAMOND & IRANSHAHR in RECH. 41066! Ham.: Aq Bolagh-e Aqdaq, RIOUX & GOLV. 255! 47 km W Ab-e Garm, 1660 m, PABOT 3969! M. Karaghan, in jugo Soltan Bolagh inter Avej et Razan, 2200–2400 m, RECH. 48457! 21 km SE Hamadan, 1890 m, BENT & WR. 528–403! NE Hamadan, KASY! 64 km W Hamadan, 1800 m, FURSE 1998! Kermansh.: Tang-i Dinavar, HAUSSKN. 1867! In valle Mahi Dasht 40 km W Kermanshah, BENT & WR. 514–122! Esf.: 200 km N Esfahan, 1500 m, RISSEL! Inter Esfahan et Abadeh, 1500–2500 m, SCHMID 5375! 34 km a Shahreza versus Borujen, 2150 m, RECH. 47024! Arak: Mowdar, STR.! Prope Arak (Sultanabad), STR.! N Arak, PABOT! NE Arak, STR.! – E: Khor.: 15 km NW Tayyebat, 870 m, UOTILA 16216! 6 km NW Salehabad, 700 m, RECH. 55775! 30 km W Mashhad, 1190 m, KUKKONEN 5797! Wakhilabad prope Mashhad, 930 m, GILLI! Bojnurd, KOELZ 16657! 15 km N Quchan, 1650–1700 m, KUKKONEN 7594! In valle „Shorrud", PREDTEČENSKIJ 130! In montibus inter Birjand et Qayen, RECH. s.n.! – C: Tehr.: Prope Tehran, KY. 26!, 698!, STUTZ 1065! Aminabad, PRAVITZ 762! M. Tuchal supra Evin, 1700 m, RECH. 39412! Manzariyeh, 1800–2200 m, ZHUMER 673! Tajrish, 1500 m, ZHUMER 891-b! 5 km E Tehran, 1310 m, KORHONEN 1029! Inter Bum Hen et Sorkheh Hesar, 1600 m, IRANSHAHR & RIEDL 16141! Qazv.: Karaj, PABOT! In montibus prope Kalak, 1600 m, ZHUMER 548!, RECH. 130! Karaj, KOELZ 33412! 15–20 km S Karaj, BROWICZ & ZIELIŃSKI 431! Inter Qazvin et Tehran, BUHSE! Qazvin, BORNM. 6950! 60 km W Karaj, 1350 m, KUKKONEN 5485! Sultanabad prope Qazvin, 1500 m, LINDS. 254! Kahak SW Qazvin, JASIEWICZ! 30 km W Qazvin versus Takestan, BROWICZ & ZIELINSKI 404! Damgh.-Semn.: 47 km SW Damghan, 1500 m, WDB. & al. 11220! Kuh-i Nizva prope Bashm, 1900 m, WDB. 1296! Shahr.-Bust.: In decl. austrialibus M. Shahvar prope Nokarman, 2000 m, RECH. 6244! Turan Protected Region: Qaleh Bala, 1120 m, IRANSHAHR 37071-E! – „Arasenk ad pedem M. Hataki", ALEXEENKO! „Kagortan", ALEXEENKO 445!

Turcomania: In montibus prope Ashkhabad, KUNTZE! Supra Malaklar, SINT. 486! M. Asulma prope Gaudan, 540 m, FEDTSCHENKO & al. 210! Kara Kala in ripa sinistra fl. Sumdara, 450 m, LINCZ. 537! Bami, ANTONOV! Suluklü, SINT. 58! Kyuren Dagh, SOKOLOV 159!

Afghanistan: NW: Herat: 5–7 km NW Doab ad viam versus Gulran, 1180 m, PODLECH & JARMAL 29450!, 29486! In decl. australibus jugi Mir Alam, 1450 m, PODLECH & JARMAL 29210! 40 km N Herat, RODIN 550, PODLECH & JARMAL 29447! Kuh-i Ziarat NW Herat, 1200–1400 m, PODLECH & JARMAL 29265! 73–86 km ENE Herat versus Qala Nau, 1600–1800 m, PODLECH & JARMAL 29719!, 29730! Khush Asia, Khaleqdad, 900 m, JANATA 36! Infra Chashmeh Obeh, 1600 m, HDG., WDB. & EKB. W-7914! Obeh, 1300–1700 m, KOEIE 3613!, 3764!, PABOT A-1516-bis! In valle Hari Rud prope Arwij 30 km E Obeh, 1450 m, PODLECH & JARMAL 29611! – SW: Herat: Herat, 1000 m, KOEIE 2228! 21–75 km S Herat, 950–1600 m, GREY-WILSON & HEWER 532!, HDG., WDB. & EKB. W-7994!, RECH. 33299! Kuh-e Nas Panj S Herat, 1100 m, ANDERS 9647! Farah: NE Shindand, 1250 m, ANDERS 9569! – Afghanistan, AMSEL!

Distr. gen.: Persia, Turcomania, Afghanistan, Asia centralis.

Most of the variation in *R. persica* concerns its indumentum. There are two main forms, connected by a wide range of intermediates. One has puberulous branches and leaves, whereas in the other they are quite glabrous. The former is common in the southern parts of its range, and the latter, often treated as the independent taxon *R. berberifolia*, is more frequent in the north.

R. persica is clearly different from all other roses and is often placed in the independent genus *Hulthemia*. However the characters used to separate it generically – such as the reduced leaves and the structure of the prickles – are few and adaptive in nature. The species grows in often rather desertic areas where no other roses grow. Study of spontaneous hybrids between *R. persica* and other roses shows that the characteristic features of the former are of a recessive nature. These hybrids hardly differ from typical roses.

A more detailed explanation of the taxonomy and affinities of *R. persica* requires experimental studies. It seems, however, that this rose has most in common with the yellow-flowered species of the genus.

Subgen. *Rosa*

Folia composita, stipulata. Petala immaculata.

Sect. *Pimpinellifoliae* DC. in SÉR., Mus. Helv. Hist. Nat. 1: 3 (1818).

Frutices erecti plerumque manifeste rhizomatosi. Spinae plerumque inaequaliter dispositae, forma saepe variabiles. Stipulae superiores angustae, auriculis longis divergentibus. Flores flavi vel albi, plerumque solitarii, ebracteati. Sepala in statu fructifero erecta vel patentia, persistentia, integra vel lobata. Styli breves, liberi. Orificium amplum. Carpella breviter stipitata. Meiosis normalis.

2. ***R. hemisphaerica*** J. HERRMANN, Diss. de Rosa 18 (1762).
Syn.: *R. sulphurea* AIT., Hort. Kew. 2: 201 (1789). *R. Rapinii* BOISS. & BAL., Diagn. Pl. Or. Nov. Ser. 2, 6: 72 (1859). *R. Bungeana* BOISS. & BUHSE, Mém. Soc. Imp. Nat. Mosc. 12: 84 (1860). *R. spinosissima* L. var. *iranica* KLÁŠT., Stud. Bot. Čech. 5, 1–2: 61, tab. 7, fig. 1 (1942).
Icon.: BOISS. & BUHSE, l.c.: tab. 6. WILLMOTT, The Genus Rosa 2, 14: tab. 93 (1911). Fl. URSS. 10: tab. 27, fig. 4 (1941) sub *R. Bungeana*. Fl. Armenii 3: tab. 58 (1958).
Typus: Specimen cultum.

Frutex erectus multiramosus ad 1(–1,5) m altus. Rami castanei, ± nitentes. Aculei in ramis inaequaliter dispersi, ad 5(–6) mm longi, curvati vel uncinati, pallide flavi, basi compressi, saepe cum aciculis et glandulis stipitatis mixti; rami floriferi saepe glandulis sessilibus ferrugineis obsiti. Foliola 5–7, ad 20(–30) mm longa, obovata vel raro elliptica, apice rotundata vel truncata, basi plerumque cuneata, supra glabra vel parce pilosa, subtus glauca, glabra vel puberula et saepe minute glandulosa, margine simpliciter vel dupliciter glanduloso-serrata. Stipulae angustae, ± dentatae, auriculis longis, divergentibus, saepe valde dilatatis. Flores ad 40(–50) mm diametro, flavi, plerumque solitarii, interdum pleni. Pedicelli ad 15(–20) mm longi, eglandulosi vel glandulis subsessilibus vel aciculis obsiti. Bracteae plerumque nullae. Sepala plerumque pinnatifida, saepe apice valde dilatata, in statu fructifero ascendentia vel erecta, persistentia. Styli dense pilosi, capitula magna ± compacta formantes. Orificium latissimum. Fructus plerumque non ultra 10 mm longus, subglobosus vel ovoideus, collo distincto, maturitate aurantiaco-ruber. – Floret V.–VI.; fruct. VII.–VIII.

Persia: N: Maz.: 70 km NW Damghan ad viam versus Sari, 1650 m, WDB. & ASSADI 29523! – W: Lur.: Gusheh (Gosha), KOELZ 18609! – E: Khor.: In montibus inter Bojnurd et Tappeh-ye Moraveh, RECH. 1895 (typus *R. spinosissimae* var. *iranicae*).
Turcomania: Kopet Dagh, distr. Kara Kala, in faucibus Khozly, BLINOVSKIJ! In subalpinis Sundsodagh, SINT. 1812! Suluklü, SINT. 672!, 1109!, 1110!, 2238! Distr. Geok-tepe, Sumokli, BLINOVSKIJ!

Distr. gen.: Anatolia, Persia, Turcomania, Armenia et Azerbaijan rossicae.

A beautiful and characteristic species, related to *R. foetida* but differing in glaucous leaflets, structure of prickles and sepals.

3. ***R. foetida*** J. HERRMANN, Diss. de Rosa 18 (1762).
Syn.: *R. lutea* MILLER, Gard. Dict. ed. 8, no. 11 (1768).
Icon.: WILLMOTT, The Genus Rosa 2, 14: tab. 90-1 (1911). VICIOSO, Estudios sobre el Genero „Rosa" en Espana: tab. 8 (1964). Fl. Tadjik. SSR. 4: tab. 96, fig. 3–4 (1975). – Tab. nostr.: 3.
Typus: Specimen cultum.

Frutex erectus vel effusus ad 3(–4) m altus. Rami annotini castanei, glabri, nitentes. Aculei in ramis inaequaliter dispersi, straminei, subulati, basi abrupte dilatati, plerumque ± reflexi; aciculi et glandulae stipitatae plerumque nulli. Foliola (5–)7–9, ad 20(–25) mm longa, elliptica vel obovata, apice acuta vel obtusa, basi rotundata vel late cuneata, utrinque ± concoloria viridia, subtus glabra vel parce pubescentia, laevia vel ± glandulosa, dupliciter vel raro simpliciter serrata; dentes eglandulosi vel in latere exteriore tantum glanduliferi. Stipulae plerumque glanduloso-ciliatae vel denticulatae; auriculae longae, normaliter divergentes. Flores solitarii vel rarius 2–3-ni fasciculati, saepe pleni. Petala ad 30(–35) mm longa, flava, saepe rubro suffusa. Pedicelli ad 25(–30) mm longi, laeves vel glandulis stipitatis vel setis obsiti. Sepala plerumque ± pinnatifida, rarius integra, apice ± dilatata, dorso saepe (glanduloso-) hispida, in fructu erecti vel plerumque ascendentes, persistentes. Styli dense pubescentes, capitulum magnum compactum formantes. Orificium latissimum. Fructus subglobosus, maturitate ruber (?), saepe inevolutus. – Floret IV.–VI.; fruct.?

Iraq: Kurd.: Arbil: Rayat, 1200 m, THESIGER 1022! Sul.: Prope Penjwin, 1400 m, RECH. 10441!
Persia: W: Khamseh: Prope Zanjan, 1800–2200 m, MOUSSAVI & TEHRANI 37068! Kurd.: 96 km N Kermanshah versus Sanandaj, BENT & WR. 519–801! Layen, SAB. 402! Kurdistan, OLGUIN! Ham.: Ganjnameh, PICHLER! Aq Bolagh-e Aqdaq 90 km N Hamadan, 2000 m, RIOUX & GOLV. 256! Bakht.: Bakhtiari, SAWYER 13170! – S: Fars.: Kuh-e Barreh prope Estahbanat, 2200–2400 m, MOUSSAVI 37047-E! Lur.: Saravand, 1950 m, KOELZ 17798! – S: Fars.: Prope Shiraz, cult., KY. 297! – C: Tehr.: M. Tuchal prope Shahrestanak, 2200 m, BORNM. 6994! Qazv.: Prope Qazvin, 1280–1500 m, LINDS. 350!, PABOT 3415!
Afghanistan: E: Kabul: Prope Kabul, 1800–1900 m, FREITAG 974!, HONIGBERGER 1318!, KOELZ 8236!, 8240!, KUKKONEN 6530!, NEUB. 491! Tang-i Gharu, 1700 m, RECH. 34349! Prope Charikar, NEUB. 492!
Pakistan: Chitral: Ojhor Gol S Tirich Mir, 2850 m, STAINT. 2738! Turkho, 2850 m, BOWES LYON 1029! – Quetta: Ziarat, STEW. 845! Quetta, 1680 m, LACE!, SCHMID 1615! Quetta, cult. in horto; planta spontanea e montibus circa Quetta, RECH. 32988!, LAMOND 1156!

Distr. gen.: Anatolia, Iraq, Persia, Afghanistan, Pakistan, Caucasus, Turkestan, saepe cult.

Morphologically *R. foetida* is intermediate between *R. hemisphaerica* and *R. kokanica.* It differs from the former in the green (not glaucous) leaflets below and subulate prickles; and from the latter in having sepals ± distinctly dilated apically.

4. ***R. kokanica*** (REGEL) JUZ., Fl. URSS. 10: 476 (1941).
Syn.: *R. platyacantha* SCHRENK var. *kokanica* REGEL p.p. et var. *variabilis* REGEL p.p., Acta Horti Petrop. 5: 313 (1878). *R. xanthina* LINDL. var. *kokanica* (REGEL) BOULENG., Bull. Jard. Bot. Bruxelles 13: 182 (1935), excl. syn. *R. turkestanica. R. divina* SUMN., Bull. Soc. Nat. Mosc. 52, 3: 69 (1947). *R. Ovczinnikovii* KOCZK., Izv. Akad. Nauk Tadjik. SSR. Biol. 3, 14: 100 (1963). *R. lutea* auct. non MILLER. *R. foetida* auct. non J. HERRMANN.
Icon.: Fl. Tadjik. SSR. 4: tab. 101, fig. 6–11 (1975). Fl. Kazakhstana 4: tab. 62, fig. 3 (1961). – Tab. nostr.: 4, 5.
Typus: Asia Media.

Frutex ad 1,5(–2) m altus. Rami juveniles erecti, atrobrunnei, glabri vel ± dense pubescentes. Aculei in ramis irregulariter distributi, recti vel leviter curvati, basi sensim dilatati, saepe reflexi, saepe cum setis vel aciculis vel glandulis stipitatis mixti. Foliola 5–7(–9) ad 15(–20) mm longa, (late) obovata vel (late) elliptica, raro orbicularia vel oblanceolata, apice subacuta, rotundata vel truncata, basi (late) cuneata vel rotundata, subtus quidem glabra vel plerumque ± pubescentia, utrinque vel subtus tantum glandulosa, raro laevia, margine dupliciter glanduloso-serrata; dentes latiusculi, latere externo et interno glandulosi. Stipulae angustissimae, auriculis plerumque divergentibus. Rami floriferi glabri vel dense pubescentes, saepe setis et glandulis stipitatis obsiti. Flores plerumque solitarii, ad 50(–60) mm diametro, flavi, plerumque ebracteati. Pedicelli ad 30 mm longi, laeves vel stipitato-glandulosi vel hispidi, interdum puberuli. Sepala apice non dilatata, raro lobis 2–3 minutis in parte superiore, in fructu ascendentes vel patentes, persistentes. Styli tota longitudine etiam infra stigma dense pubescentes, capitulum magnum ± compactum formantes. Orificium latissimum. Fructus c. 12(–15) mm diametro, subglobosus vel pyriformis, maturitate atro- vel violaceo brunneus. – Floret V.–VI.(–VII.); fruct. VIII.

Afghanistan: NW: Herat: 86 km ENE Herat versus Qala Nau, PODLECH & JARMAL 29731! – E: Kabul: Kabul, HONIGBERGER 1315!; 1800 m, cult., KOELZ 8239! Tang-i Gharu, 1500–1700 m, RECH. 34349! Charikar, 1500 m, KOELZ 11448! In decl. australibus jugi Salang, 2100–2400 m, LAMOND 2089!, RECH. 31387!, FREITAG 2710!, 2717! Prope Unai, 2900 m, HDG. & WDB. W-5049! Jaji: Kotkai, 2600 m, UNKEL in FREITAG 6959! Kohistan: Gomandu, 2700 m, KOELZ 11711!, 11716! – NE: Kataghan: In valle Khinjan, 1900–2500 m, ANDERS 3875!, HDG., WDB. & EKB. W-8577!, PODLECH 18200!, UOTILA 16525! Hesar, UOTILA 18856! Farkhar, 1400–1460 m, PODLECH & JARMAL 30139! Badakhsh.: Distr. Khash, 2400 m, KOELZ 12929! Daraim, 2550 m, KOELZ 13033!, 13035!, 13069!, 13070! – C: Deh Kundi: Inter juga Waras et Khonak, substr. granit., 2600 m, RECH. 36622!
Pakistan: Quetta: Ziarat, SIDDIQUI 2046!

Distr. gen.: Afghanistan, Pakistan, Turkestan, in regionibus occidentalibus Asiae Centralis.

The nomenclature of *R. kokanica* is very confused; it is probable that this name should be discarded as a nomen ambiguum. *R. kokanica* is similar to *R. foetida, R. Ecae* and *R. pimpinellifolia* but differs in the sepals narrowing gradually to the apex, styles hairy along their whole length (and below the stigma), the structure of the prickles, flower colour and distributional area.

5. ***R. Ecae*** AITCH., Journ. Linn. Soc. Bot. London 18: 54 (1880).
Syn.: *R. xanthina* LINDL. var. *Ecae* (AITCH.) BOULENG., Bull. Jard. Bot. Bruxelles 13: 181 (1935).
Icon.: OLIVER Hook., Icon. Pl. 14: tab. 1329 (1881). WILLMOTT, The Genus Rosa 2, 14: tab. 94 (1911). Fl. Tadjik. SSR. 4: tab. 101, fig. 1–5 (1975). – Tab. nostr.: 6, 7.
Typus: AITCHISON 62, 349, isotypus B!

Frutex ramosissimus ad 1,5(–2) m altus; rami juveniles steriles rufo-brunnei, saepe angulato-flexuosi, glabri vel raro puberuli. Aculei recti, valde compressi, basi magna decurrentes, in ramis plerumque dense dispositi, in ramis juvenilibus rubescentes; setae et aciculi plerumque deficientes. Rami floriferi brevissimi, ad 5(–10) mm longi. Folia (5–)7–9, usque ad 5(–8) mm longa, forma variabilia, obovata vel oblanceolata vel ± late elliptica, apice subacuta usque truncata, basi cuneata vel raro rotundata, subtus quidem glabra vel plerumque pubescentia, utrinque glandulosa vel rarius laevia, crenato-serrata. Stipulae angustissimae auriculis divergentibus. Flores 20–30(–40) mm diametro, flavi, solitarii, ebracteati. Pedicelli longitudine variabiles, 5–25(–30) mm longi. Sepala integra, in fructu patentia raro deflexa, persistentia. Styli plerumque leviter exserti, basi dense pilosi, infra stigma glabri. Orificium latiusculum. Fructus 5–7(–10) mm longus, globosus vel subglobosus, maturitate rufescenti-brunneus. – Floret (IV.)V.–VI.; fruct. (VI.)VII.–VIII.

Afghanistan: **N**: Mazar-i Sharif: In faucibus calc. 18–25 km SE Mazar-i Sharif, 500–850 m, PODLECH 20918!, RECH. 34136! Ali Kuh 16 km S Mazar-i Sharif, 1600 m, HDG., WDB. & EKB. W-8459! Boka Mazar, 2300 m, PABOT A-1163-bis! – NW Sangcharak: Safed Sang, 3000 m, KOELZ 14006! – **SE**: Orozgan: Kotal Chakmak, 3000 m, LINDB. 942/1960! 30 km SW Orozgan, 2150 m, FREITAG 903! Inter Tirin et Orozgan, RECH. 35134! – **E**: Kabul: In jugo Khord Kabul, 1950 m, HDG., WDB. & EKB. W-7502! Kuh Qorogh, 2000 m, RECH. 18010! Tang-i Gharu, 1500–1850 m, ANDERS 3635!, HDG. & WDB. W-2801!, NEUB. 4138!, PODLECH 30231! Paghman, 2000–2800 m, CHAW.-MUSTERS!, GILLI 1818!, 1819!, HDG. & WDB. W-4390!, KASY!, MEINERTZHAGEN!, RECH. 17169!, 17187!, VOLK 366! In decl. australibus jugi Salang, 1780–2600 m, ANDERS 3859!, KUKKONEN 6030!, LAMOND 2106!, PODLECH 18094!, RECH. 31392! In valle Panjshir, 2100–3000 m, ANDERS 9849!, HDG. & WDB. W-5525!, KOEIE 3998! In valle Nijrao inter Gulbahar et Sarobi, 2500–3400 m, GILLI 1832!, NEUB. 216! Wardak, VOLK 800! In valle Logar, 2500–2800 m, VOLK 2622! 33 km S Kabul versus Ghazni, 2100 m, GREY-WILSON & HEWER 656! Ghazni: 10 km NW Ghazni versus Dasht-i Nawar, 2400 m, FREITAG 1381! Inter Ghazni et Sariab, 2500 m, RECH. 37138! Sariab, 52 km W Ghazni, 2700 m, RECH. 37202! In montibus circa Dasht-i Nawar, 3100–3300 m, BRECKLE 1986 p.p.!, FREITAG 5872! Kotal-e Binidarzak, 3000 m, FREITAG 1420! In valle fl. Arghandab prope Sang-i Masha, 2400 m, RECH. 17512! Gardez: In montibus 55 km S Gardez, 2500 m, FREITAG 3284! In jugo Altimur (Tera Kotal), 2400–3000 m, HDG. & WDB. W-8839!, KOELZ 11886!, 11887!, LAMOND 2323!, PODLECH 270!, 18500!, RECH. 31880-a!, 31880-b!, 35420! In jugo Sata Kandao, 2750 m, RECH. 32126!, 35460! Jaji: Kotkai, 2400–2600 m, UNKEL 6958!, VOLK 71/77! In montibus Salawat, 3050 m, LALANDE R 497-E 2!, R 497-E 4! Supra Qasim Khel, 3250 m, FREITAG 5773! Inter Said Karam et Ahmad Khel, 2600–2200 m, RECH. 32175! Inter Ahmad Khel et Ali Khel, 2200–2400 m, RECH. 32209! Inter Dre Kalla et Qasim Khel, RECH. 32325! In jugo Sirkei, 2900 m, LAMOND 2522! 7 km E Dobandi, EKB. W-9143!

Zinak, 2800 m, ANDERS 3354! In decl. occidentalibus jugi Shuturgardan, 2600 m, EKB. W-9202 Khost: Sirotai, 2700 m, KOELZ 11921!, 11958! In valle Gabr inter Chakmanni et Maidan Khola, RECH. 35674! Urgun: In jugo Mirzakai Kotal, in pinetis, 2200–2500 m, RECH. 35826! Urgun, 2200–2300 m, RECH. 35889! Ghorband: 19 km W Pol-i Matak, PABOT A-643! Kohistan: Gomandu, 2700 m, KOELZ 11713!, 11717! Nuristan: Kantivo, 2100 m, EDELB. 714! Bragamata (Barge Matal), 1800–3000 m, BOHOSZEWICZ 7!, HEWER 1494! – **NE**: Kataghan: Doshi, 1800 m, MEINERTZHAGEN! In valle Khinjan prope Espandak, 1490 m, PODLECH 20395! Farkhar, 1500–1700 m, ANDERS 9230! Badakhsh.: SE Folole Bala, 1600 m, PODLECH 21180! Inter Ranch et Sar Rustak, EKB. W-9141! Daraim, 2550 m, KOELZ 13031! Distr. Khash, 2400 m, KOELZ 12925! – **C**: Bamian: Kuh-i Baba, 2250 m, FURSE 5772! Panjao: Nawa-i Surkhjoy, 2600 m, PODLECH 18881! 5 km S Panjao, 2680 m, PODLECH 18857! Doab: Lorinj, 2400 m, KOELZ 13724!; 1800–2000 m, VOLK 1744!

Pakistan: Chitral: Ojhor Gol, 2400 m, BOWES LYON 833! Brumboret Gol, N Drosh, 1500 m, STAINT. 2223! Tirich Mir, infra Shokor Shal, 3500 m, WDB.! Chitral versus Mastuj, 2850 m, STAINT. 2516! Prope Chitral, HASSAN DIN 312! Chitral Gol, KHAN 80/A! – Kurram: Parachinar, 1650 m, SIDDIQUI & NASIR 6406!, SIDDIQUI 3860! STEW. 29008! In valle Kurram, AITCH. 165! – Quetta: Ziarat, SIDDIQUI 2044!

Distr. gen.: Afghanistan, Pakistan, Tien Shan, Pamir-Alaj, Sina orientalis (Shansi).

R. Ecae should probably be reduced to synonymy of *R. platyacantha* SCHRENK (described from Dzungaria). A better knowledge of their geographical distribution is necessary to sort out these two taxa. *R. Ecae* is sometimes mistaken for *R. kokanica* (conf. key) and for small-leaved forms of *R. Webbiana* s.l. Sterile material of the latter can be distinguished by the stipules: in *R. Ecae* they are narrow with long diverging auricles, while in *R. Webbiana* they are wide with short and straight auricles.

6. ***R. pimpinellifolia*** L., Syst. Nat. ed. 10, 2: 1062 (1759).
Syn.: *R. spinosissima* L., Spec. Plant. 491 (1753) p.p.
Icon.: WILLMOTT, The Genus Rosa 2, 14: tab. 82, 86 (1911). KELLER & GAMS in HEGI, Ill. Fl. Mitteleur. 4, 2: tab. 154, fig. 4 (1923). Fl. URSS. 10: tab. 27, fig. 2 (1941). Fl. Kavkaza 5: tab. 14, fig. 3 (1952). Fl. Armenii 3: tab. 57 (1958). – Tab. nostr.: 8.
Typus: Europa, herb. LINN 652/12, phot.!

Frutex humilis repens ad 50(–100) cm altus. Aculei grisei, in ramis irregulariter dispositi, plerumque subulati, in setas et aciculos et setas glanduliferas transeuntes; exceptione trunci inermes vel spinis validis tantum obsiti sine aciculis. Foliola 7–9(–11), plerumque parva, ad 15(–20) mm longa, ± concoloria viridia, suborbicularia vel late elliptica vel obovata, apice acuta vel obtusa, basi cuneata vel rotundata, secus costam medianam parce pilosa, subtus laevia vel ± glandulosa, margine simpliciter vel duplicato-serrata. Stipulae angustae, auriculis longis plerumque divergentibus. Flores solitarii, ebracteati. Petala albo-cremea, 40(–50) mm diametro. Pedicelli eglandulosi vel glandulis stipitatis obsiti, interdum cum setis mixtis. Sepala integra, apice non dilatata, in fructu erecta vel ascendentia, persistentia. Fructus globosus vel depresso-globosus, maturitate niger vel violascenti-niger, laevis vel hispidus. – Floret (IV.–)V.(–VI.); fruct. VIII.

Talish: Lenkoran, LEVANDOVSKIJ!
Persia: **W**: Azerb.: In jugo Goja Bel 20–30 km SW Ahar, 1700–1800 m, RECH. 40649!, WDB. & ASSADI 27939! 85 km NE Tabriz, PABOT 5234!

Distr. gen.: Europa occidentalis et australis, Anatolia, Persia, Caucasus, Asia centralis, Asia orientalis?

Sect. *Cinnamomeae* DC. in SÉR., Mus. Helv. Hist. Nat. 1: 2 (1818).

Frutices erecti. Spinae infra-stipulares, saepe aciculis vel setis immixtis; plantae interdum inermes. Stipulae angustae vel latae; auriculae rectae. Flores rosei vel albi, bracteati. Sepala plerumque integra, in fructu erecta vel ascendentia, persistentia vel cum summo hypanthio decidua. Styli breves, liberi. Orificium amplum. Carpella breviter stipitata. Meiosis normalis.

7. ***R. Beggeriana*** SCHRENK in FISCH. & C. A. MEY., Enum. Pl. Nov. Schrenk. 1: 73 (1841).
Syn.: *R. Silverhjelmii* SCHRENK, Bull. Acad. Imp. Scienc. Petersbg. 2: 195 (1844). *R. anserinaefolia* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 6: 51 (1845). *R. latispina* BOISS., Diagn. Pl. Or. Nov. Ser. 2, 2: 49 (1856). *R. lacerans* BOISS. & BUHSE, Nouv. Mém. Soc. Nat. Imp. Mosc. 12: 85 (1860). *R. mitis* BOISS. & BUHSE, l.c.: 85. ? *R. cabulica* BOISS., Fl. Or. 2: 678 (1872).
Icon.: WILLMOTT, The Genus Rosa 1, 8: tab. 54 (1911). Fl. URSS. 10: tab. 19, fig. 3 (1941). Fl. Uzbekistan. 3: tab. 40, fig. 2 (1955). Fl. Kazakhstana 4: tab. 61, fig. 2 (1961). – Tab. nostr.: 9.
Typus: Kuksu, Flußufer, SCHRENK, LE!

Frutex ramosissimus, ad 2(–2,5) m altus. Rami juveniles virides vel rubescenti-virides, plerumque ± glauci. Aculei validiusculi, curvati vel uncinati, flavescentes vel albidi, plerumque infra basin foliorum binati, interdum cum setis mixti. Foliola (5–)7–9(–11), 10–30(–40) mm longa, elliptica vel ovata, apice obtusa vel acuta, basi late cuneata vel rotundata, glabra vel pubescentia, utrinque vel subtus tantum laevia vel ± dense glandulosa, simpliciter vel dupliciter serrata. Stipulae angustae, auriculis sat longis, lanceolatis, rectis. Flores corymbosi vel paniculati, rarius singuli. Pedicelli tenues, glabri vel parce pubescentes, laeves vel raro stipitato-glandulosi. Corolla 20–30(–35) mm diametro, alba. Sepala anguste lanceolata, post florendum erecta vel ascendentia, plerumque ante fructus maturitatem cum summo hypanthio decidua. Styli dense pilosi, capitulum compactum formantes. Orificium latum. Fructus globosus vel raro ovoideus, 5–10(–15) mm diametro, maturitate ruber (vel nigrescens?). – Floret V.–VII.; fruct. (VII.–)VIII.–IX.

Persia: N: Gorg.: Shahkuh, KOELZ 16272! Mohammad Reza Shah Res.: Almeh, 1300–1680 m, KUKKONEN 7734!, TERME 37060-E!, TERME & MATINE 35092! Maz.: In jugo Gaduk, SAB. 398!, 399!, 401!, BEHB. & AELL. 5702-E!, 5703-E!, 37023-E! Pol-e Zanguleh in valle Chalus, SAB. 12050-E! In valle Rud-e Tejan (Tedschen) prope Qomrud Pain, 2200–2500 m, BEHB. & AELL. 3778–3781!!, 3787!, 3828–3837!!, 3864–3866!!, 3868!, 3869!, 3931!, 3935! – W: Esf.: Kuh-e Karkas, 3000–3300 m, FOROUGHI & ASSADI 18087! Qashqai: In faucibus Darreh Abshar E Semirom, 2450 m, RECH. 47466!, IRANSHAHR 37069-E! – S: Fars.: Kakun, BEHB. 1277-E!, 1278-E!, 36 km NW Ardakan, 2360 m, PABOT 2448! Khaneh-ye Zenyan, 2400 m, STAPF! Kuh-e Dinar, KY. 622! Tal-e Khosravi, BEHB. 1281-E! Kerm.: Kuh-e Jupar, 2500–3700 m, BORNM. 3529!, KUHLE 16!, 20! Kuh-e Laleh Zar, 3500 m, BORNM. 3531!, MOUSSAVI & TEHRANI 37075-E!, MOUSSAVI 37074-E! Rabor, 3400 m, BORNM. 3535! Kuh-e Hazaran (Kuh Hezar), 3000–3400 m, GABRIEL 193!, EDMONDSON & MILLER 1598! Rayen, MOUSSAVI 37073-E! Kuh-e Jebal Barez supra Deh Bakri, 2100–2500 m, RECH. 3748! Amirabad inter Jiroft et Deh Bakri, DADASHZADEH!

Chanaran, DADASHZADEH 376! Deh Bala, KOELZ 14248! Inter Mahan et Sirch, 2800 m, BORNM. 3532! Aliabad, GABRIEL 155! – E: Khor.: Kuh-e Neyshabur, Darreh Abshar supra Akhlamad, 1600–1800 m, RECH. 4546! Binalud, 1350–2100 m, TERME & TEHRANI 35152!, 35172-E! 15–17 km N Quchan, 1650–1700 m, UOTILA 18975!, KUKKONEN 7602!, SERAJ SJ 18b/1! Inter Darreh Gaz et Quchan, IRANSHAHR & ZARGUANI 37056-E! Inter Darreh Gaz et Gardaneh Allah Akbar, IRANSHAHR & ZARGUANI 37070-E! In valle fl. Atrak inter Bojnurd et Shirvan, RECH. 1794! Inter Reshvanlu et Milanlu, 1550 m, TERME 37072-E! 2 km SW Arkan, 2300 m, EDMONDSON 1173! 45 km W Bojnurd, 2600 m, EDMONDSON 753! Garmab inter Fariman et Shahan, 1400 m, IRANSHAHR 37057-E! Kuh-e Bezg, 1700 m, RECH. 1429! M. Hazar Masjed inter Ardak et Talqur, 1200–1600 m, RECH. 5023!, IRANSHAHR 37055-E! Kuh-e Ahangaran, 2200–2800 m, RENZ in RECH. 56184! Radkan, 2000 m, TERME & MOUSSAVI 37020-E! In silvis Bardu, KOELZ 16777! – C: Tehr.: Polur, 2300 m, WDB. 2071! M. Tuchal prope Shahrestanak, 2200 m, BORNM. 7000!, LINDS. 464!, 464-A! Dow Darreh, KY. 424, 635, 682! Ad pagum Damavand, 2100 m, AELL. 3807–3809!!, 3813!, 3814!, 3843–3854!!, 3906!, 3916!, 3924!, 3927!, 3929!, 3930! Marunak, 1900 m, BEHB. 160-E!, AELL. 3920–3923!!, 3873–3876!!, SW Firuzkuh versus Damavand, WDB. & COBHAM 13645! 105 km E Tehran, 1930 m, PABOT 4363! Qazv.: W Purkan, 1500 m, ZHUMER 1152! Prope Karaj, SAB. in GAUBA 484!, TREGUBOV 119 p.p. Damgh.-Semn.: 32 km SE Firuzkuh, 2100 m, FURSE 3026! Inter Firuzkuh, et Semnan, 1600–2200 m, MOUSSAVI & KARAVAR 37044-E!, WDB. & COBHAM 13685! Kuh-i Nizva, 2100–2300 m, AELL. 3788!, 3791!, 3792!, 3808!, 3858–3863!!, 3867! Kuh-e Bashm, 2200–2400 m, MOUSSAVI & KARAVAR 370045-E! In montibus prope Tuweh, 1900–2250 m, RECH. 56451! Inter Damghan et Shahrud, 2700–3000 m, MOUSSAVI & KARAVAR 37046-E! Shahr.-Bust.: M. Shahvar supra Nokarman, 2300 m, RECH. 5893!, 5847!, -b!, 5903! Turan Protected Reg.: Kuh-e Peyghambar, 1400 m, FREITAG 13706!, 13768! – „Kashan, Takté Gour", MANOUCH. 5704-E!

T u r c o m a n i a : Ashkhabad: Suluklü, SINT. 668!, 669!, 673!, 998!, 2273!, 2275!, 2276! Prope Ashkhabad, LITW. 651!, 653! Cheirabad, LITW. 652! Keltenczinar, BLINOVSKY & ANDROSSOV! Karaklidere, FEDOROVA!

A f g h a n i s t a n : NW: Maimana: Mak, 2550 m, KOELZ 14073! Sangcharak: S Damardan, FREITAG 6597! Herat: Inter Obeh et Khwaja Chisht, 1800 m, KOEIE 3658! 14 km W Khwaja Chisht (Cheste Sharif), 1480 m, PODLECH 29651! – SW: Ghorat: 30–50 km W Qala Shahrak (Sharak), 2300–2600 m, PABOT A-1481-bis!, A-1488-bis! Dahane Garmab, 2350 m, PODLECH 21887! Dahane-Dewalak inter Qala Shahrak et Tulak, 2300 m, PODLECH 19165! – E: Kabul: Prope Kabul, 1800–2100 m, FREITAG 975!, KOELZ 8255!, 13197!, NEUB. 157!, 491!, VOLK 727! Istalif, 1900 m, RECH. 31211! Paghman, 2400–2800 m, CARBONNIER JC/70&32!, GILLI 1830!, LINDB. 1298/62!, NEUB. 3402!, PODLECH 18465!, -a!, RECH. 17168!, 17177! In valle Panjshir prope Gulbahar, 1500–1700 m, FAIRSERVIS 8!, GILLI 1824!, KOELZ 11437!, 11812!, NEUB. 493!, RECH. 35978 p.p.!, 35981! In valle Nijrao, 1700–2000 m, FREITAG 3201!, GILLI 1823!, VOLK 2373!, 2374! Inter Badakhshi et Kail, 1700–2100 m, ANDERS 10721! Ghorband: In valle Ghorband, 1600–2160 m, ANDERS 4338!, FREITAG 1268!, HEWER 1273!, PODLECH 18021!, 18023!, 18399!, RECH. 36869! Maidan: In valle Maidan, 2250–2550 m, FREITAG 2939!, PODLECH 18688!, 18694!, 19471!, 30390!, ANDERS 4158! Hauz-i Mahiha, 2500 m, KOEIE 2457! Sar-i Chashmeh, 2500 m, EDELB. 1811! Gardez: Supra Gardez, 2400 m, KOELZ 11970! 7 km N Gardez, 2420 m, PODLECH 22271! In montibus 55 km S Gardez, 2500 m, FREITAG 3283! In jugo Altimur (Tera Kotal), 2500–2750 m, PODLECH 18501!, 18510! Ghazni: 29–32 km NW Ghazni versus Dasht-i Nawar, 2700–2950 m, FREITAG 1389!, PODLECH 19233!, RECH. 37131!, 37155!, 37156! 4 km E Malestan, 2900 m, PODLECH 19362! Inter jugum Kotal-e Kechru et Miradina NW Sang-i Masha, 2700–3200 m, RECH. 17566! 4 km W Loman, 2550 m, PODLECH 19401! In valle Darya-e Yosuf, 2800 m, ANDERS 3986! Jaji: 8 km S Kotkai, 2200 m, ANDERS 5275! Dobandi, 2900 m, LALANDE R 1078-E 4! M. Salawat, 3050 m, LALANDE R 499-E 6! 4 km E Ali Khel, 2000 m, FREITAG 1652! Inter Said Karam et Ahmad Khel, 2200–2600 m, RECH. 32168! Musa Khan, 2750 m, FREITAG 5865-a! E Shuturgardan inter Chane et Qasim Khel, 2500 m, EKB. W-9232! Khost: In valle Gabr inter Chakmanni et Maidan Khola, RECH. 35676!, ANDERS 3492! 2 km S Chakmanni (Chamkani), 1730 m, PODLECH 18607!, VOLK 71/833-a! Inter Said Karam et Hasan

Khel, 2500 m, VOLK 797-b/71! Nuristan: Pashki, 2300 m, EDELB. 919! – NE: Munjan: Parwara, 2550 m, KOELZ 12820! Badakhsh.: Daraim, 2550 m, KOELZ 13065! Jurm, 2100 m, KOELZ 12885! Iskan, 2400 m, KOELZ 12870!, 12871! Hazrat Said, KOELZ 12874!, 12875! – C: Bamian Darreh-i Shikar, 1700–2300 m, PODLECH 18380!, 18391!, FREITAG 6424!, KOELZ 12188!, ANDERS 6399!, HEWER 1163! Band-i Amir, 2800–3000 m, NEUB. 472!, DIETERLE 537!, 895!, 1330! Parjak, 2650 m, DIETERLE 742! 1 km supra Paimuri, 2500 m, DIETERLE 703! Naiak, 2800 m, DIETERLE 1299! 12 km E Bamian, 2320 m, RECH. 36984! Panjao: Prope Panjao, 2700 m, KOEIE 2715!, PODLECH 18865! Ghorband: In jugo Shibar, 2500–2750 m, RECH. 36934!, KOEIE 2799! Deh Kundi: Inter juga Waras et Konak, substr. granit., 2600 m, RECH. 36615!, 36616! 3 km NE Kotal-e Karakarak versus Deh Kundi, 2320 m, PODLECH 19026! Kherskhana, 2770 m, PODLECH 19004! Behzud: Farakulum, 2780 m, FREITAG 6293! Inter Behzud et Panjao, 2500 m, FREITAG 6351!, PODLECH 18823! Behzud, THESIGER 149! Doab: Lorinj, 2400–3000 m, KOELZ 13632!, 13739!

Pakistan: Chitral: Tirich Mir, Prope pagum Barum, JANKOWSKI & MAJCHROWICZ 11! Ojor Gol, 2400 m, STAINT. 2743! In valle Mastuj, 1650–2300 m, ECKER 8210!, STAINT. 2538! Shoghot, 1800 m, BOWES LYON 820! – Quetta: Hanna, SIDDIQUI & NASIR 3479! Prope Quetta, 2500 m, POPOV 271! Prope Ziarat, 2400–3000 m, POPOV 312!, STEW. 531!, 567!, 574!, SIDDIQUI 2074!, LACE 63! Urak, 1800 m, STEW.!, NASIR 28457!, 28457-A! Wam, 2100 m, LACE 3919! – Kurram: Parachinar, 1950 m, STEW. 28054! – Bal.: Murdar Kach, LACE 3359! Baluchistan, LACE.

Distr. gen.: Persia, Turcomania, Afghanistan, Pakistan, Tien Shan, Pamir-Alaj, Dshungaria, Kashgaria.

A highly polymorphic species; some authors split it up, usually on the basis of a single character (e.g. degree of pubescence or occurrence or lack of glands on the leaves), but these divisions are quite artificial.

R. Beggeriana hybridizes easily with *R. Webbiana* (conf. p. 27–28).

8. ***R. Webbiana*** WALL. ex ROYLE, Ill. Bot. Himal. Mount. 208 (1839). s.l.

Syn.: *R. maracandica* BUNGE, Mém. Sav. Etrang. Acad. Petersbg. 7: 110 (1854). *R. Webbiana* WALL. ex ROYLE var. *microphalla* CRÉPIN et var. *latifolia* CRÉPIN, Bull. Soc. Roy. Bot. Belgique 13: 276 (1875). *R. Fedtschenkoana* REGEL Acta Horti Petrop. 5, 2: 314 (1878). *R. Webbiana* WALL. ex ROYLE var. *pustulata* CHRIST in BOISS., Fl. Or. Suppl. 207 (1888). *R. nanothamnus* BOULENG., Bull. Jard. Bot. Bruxelles 13: 206 (1935). *R. Korschinskiana* BOULENG., l.c.: 213. *R. alticola* BOULENG., l.c.: 220. *R. hissarica* SLOBOD., Trudy Tajikistansk. Bazy 2: 197 (1936).

Icon.: ROYLE, l.c.: tab. 42, fig. 2. WILLMOTT, The Genus Rosa 1, 12: 76 (1911). BOULENG., l.c.: fig. 2. 4. Fl. Uzbekistana 3: tab. 40, fig. 3 (1955). VASSILCZENKO, Not. Syst. Leningrad 20: fig. 1, 4 (1960). Fl. Tadjik. SSR. 4: tab. 98 (1975). – Tab. nostr.: 10, 11, 12.

Typus (syntypi) „. . . at Lippa, in Kunawur and on the Kherung Pass, by Mr. INGLIS".

Frutex ad 2(–3) m altus. Rami glabri, saepe angulato-flexuosi, Aculei recti, subulati, infrastipulares vel in trunco irregulariter dispersi, saepe cum glandulis stipitatis vel subsessilibus mixti (var. *pustulata* CHRIST.). Foliola 5–7(–9), magnitudine et forma valde variabilia, 5–25 mm longa, orbicularia vel late obovata vel elliptica, apice acuta vel obtusa vel truncata, basi rotundata vel late cuneata, saepe glauca, glabra vel pubescentia, utrinque vel subtus laevia vel dense glandulosa, maxima nervis lateralibus 5–8, simpliciter vel dupliciter serrata. Stipulae latiusculae, auriculis brevibus triangularibus. Flores solitarii vel 3–5-ni fasciculati, 30–60 mm diametro, rosei vel albi. Pedicelli longitudine variabiles, laeves vel stipitato-glandulosi, interdum parce pilosi. Bracteae latae. Sepala integra, exceptione lobis lateralibus 2–3 minutis, in fructu erecti vel ascendentes, persistentes. Styli dense pilosi, capitulum compactum formantes. Fructus magnitudine variabilis, globosus vel ovoideus vel pyriformis, maturitate ruber. – Floret (IV.–)V.–VII.; fruct. (VII.–)VIII.

Afghanistan: **NW**: Sangcharak: Safed Sang, 3000 m, KOELZ 13990! – **E**: Kabul: Kuh Khorogh, 2800 m, GILLI 1838! Tang-i Gharu, 1400–1650 m, GILLI 1831!, FREITAG 2846!, NEUB. 4182!, RECH. 34380! 25 km ENE Kabul E Baba Qashkhar, 2750 m, PODLECH 15884! Paghman: In valle Paghman, 2400–2700 m, ANDERS 4096!, CHAW.-MUST.!, HDG. & WDB. W-4369!, NEUB. 498!, PODLECH 16071! In decl. australibus jugi Salang, 1450–2400 m, ANDERS 3790!, 3831!, FREITAG 2864!, 3619!, GILLI 1822!, PODLECH 18069!, 18093!, 18174!, PODLECH 21094!, RECH. 31335!, 37440! Panjshir: Gulbahar, NEUB. 494! 2 km supra Gulbahar, 1650 m, DIETERLE 239! In valle Panjshir, 1700–2250 m, ANDERS 3254!, 9798!, 9918!, 9945!, DIETERLE 250!, GILLI 1836!, NEUB. 496!, KOEIE 2934!, 2956!, 3997!, Till Pain, LINDB. 1015/60!, 1026/60! 80 km W Kabul versus jugum Unai, 2670 m, GREY-WILSON & HEWER 1100 B! In decl. orientalibus jugi Shibar 17 km a Pul-i Matak, PABOT A-934! In valle Nijrao inter Gulbahar et Sarobi, 2580 m, GILLI 1828!, 1835!, NEUB. 199!, 267! Laghman: Alishang, 1600–3300 m, ANDERS 3295!, WDB. & EKB. W-9674! Inter Badakhshi et Kail, 1700–2100 m, ANDERS 10749! Daulat Shah, 2100 m, KOELZ 11643! Kail, 2400 m, KOELZ 11688!, 11689! In valle Logar, 1880–2700 m, VOLK 1717!, GILLI 1837! Gardez: In jugo Altimur (Tera Kotal), 2400–2700 m, FREITAG 1607!, KOELZ 11889!, VOLK 71/428! Nozi, 2700 m, KOELZ 11990! 100 km a Kabul versus Gardez, 2700 m, LAMOND 2168! Nangarhar: Dar-e Nur N Jalalabad, 2700 m, FREITAG 6016! Jaji: 50 km E jugi Shuturgardan (Shutur Augardan), 2600 m, EKB. W-9212! Prope Qasim Khel, FREITAG 5775!, 5781!, 5816! Khost: Inter Chakmanni et Ahmad Khel, 1850 m, RECH. 35635! Infra Sirotai, 2400 m, KOELZ 11968! Nuristan: Kunar, 2450–2650 m, ANDERS 5108! Wama, cult. in Rosario Sangerhausen, fruct. leg. KERST. F-79! Shtive, 2550 m, EDELB. 1025! Pashki, 2300 m, EDELB. 919!, 1014! Waigel, 1650 m, EDELB. 893!, NEUB. 892! Prope Kushtos, 2400 m, NEUB. 665!, 4599! In valle Linar, 3600 m, THESIGER 1525! Kamdesh, 2800 m, GILLI 1834! Kuh-e Chrebek, BRECKLE 3069! Prope Garm Chashmeh, RASOUL in BRECKLE 3704!, 3447!, 3494!, 3498! Bragamata (Barge Matal), 2050–2200 m, ANDERS 5000!, PODLECH 16194! In valle Shashgal, 3250–3400 m, PODLECH 16359!, 16363! Darrah-i Pengar, 3250–3400 m, PODLECH 16264!, 16267!, 16300!, 16391!, 16573! In valle Suyengal, BRECKLE 3113! In valle Chap Darrah, 4000 m, JEZIERSKI 11! – **NE**: Munjan: In jugo Munjan, 3750 m, KOELZ 12769! E fl. Munjan, 3600–4000 m, ROWE & SPROUL 18!, 13! Ad lacum Kholik, 3200 m, EDELB. 1447! Darrah-i Parshui, 3700 m, FREY 265!, A-38=204! Sanglich, 3450 m, KOELZ 12628! Parwara, 2550 m, KOELZ 12819! Wakhan: In valle Darya-e Baroghil, 3200–3300 m, ANDERS 7862! Inter Khrach et Sargaz, 2930–3090 m, ANDERS 7963! Darya-e Istmoch, 3400–3800 m, ANDERS 8182! Ptukh, 3150 m, ANDERS 7202!, 7241! Inter Kotal-e Qara Qabchel et Zemestan-e Baharak, 3300– 4550 m, ANDERS 7315! Inter Langar et Zemestan-e Baharak, 3600–3800 m, ANDERS 7765! In valle Issik, 3630 m, HUSS 277!, 334! In valle Urgut-e Bala, OLECH!, KOLASA 14! In valle Qazi Deh, 3200 m, GAMERITH 212!, WOJTUSIAK! In valle Khandud, 3500 m, RENZ 92! Sar-i Skhaur, 2650–3400 m, ROEMER 28!, 31! 16 km E Baharak, 3600 m, GREY-WILSON & HEWER 1474! Langar, 3650 m, ANDERS 7744! Kataghan: In decl. borealibus jugi Salang, 1100–2880 m, CARBONNIER JC/70/21!, FOHLEN!, FREITAG 2732!, 5710!, GIBBONS 434!, HEWER 1226!, RECH. 31634!, 31725!, 37049!, UOTILA 18901! In valle Khinjan, 2100–2600 m, ANDERS 4773!, 10966!, HDG., WDB. & EKB. W-8634!, PODLECH 15916!, PODLECH 30341! Badakhsh.: Zebak, 3000 m, ANGIEL 12! Distr. Khash, 3300 m, KOELZ 12992! Pain Shahr, 2400 m, KOELZ 12413! Ad lacum Shiva, LINDB. 832! – **C**: Bamian: In valle Ajar, 1300–1500 m, RECH. 16635!, HDG. & WDB. W-4121! 7 km E Bulola, 2450 m, FREITAG 1351! Doab: Lorinj, 2400 m, KOELZ 13663!, 13665!

Pakistan: Chitral: In jugo Lowarai, 2100 m, STAINT. 2550! Yarkhun, BOWES LYON 928!, 930!, 931! Inter Shoghor et Lutkor, 1950 m, BOWES LYON 761! Chitral Gol, 2420 m, KHAN 79!

Brumboret, 2850 m, NASIR 5024! Ad viam versus Mastuj, 1800–2250 m, STAINT. 2451!, BOWES LYON 912! Ad glaciem aeternam Chatiboi, 3400 m, STAMM & WÖHRL 95! Tirich Mir, Arkari Gol, 2550 m, STAINT. 2612! Rosh Gol, 3300 m, STAINT. 2823! Shokor Shal, 3500 m, WDB.! Ad glaciem aeternam Barum, 3600 m, CHAUDHRI 175!, 180!, 181!, PORTER 13!, MAJCHROWICZ 42! Supra pagum Barum, 2800 m, JANOWSKI & MAJCHROWICZ 7! – Swat: Bahrain, 1500 m, ALI 26144!, STEW. 24540! Inter Bahrain et Kolalai, LAMOND 1758! Sho Nullah, 2100–2400 m, STEW. & RAHMAN 25202!, RAHMAN 44!, 170!, 170-a! Inter Madyan et Kolalai, RECH. 30690! In valle inter Kalam et Kolalai, 1800 m, RECH. 30863! Kalam, 2100 m, RAHMAN 40!, NASIR & SIDDIQUI 967!, R. R. STEW. 24709!, RECH. 19454! Inter Kalam et Utror, 2100 m, STEW. & RAHMAN 25161!

Distr. gen.: Afghanistan, Pakistan, Himalaya, Pamir-Alaj, Tien Shan, Dshungaria, Kashgaria, Sina austro-occidentalis.

This is one of the most complex and ill-defined species in the genus. It represents a mosaic of biotypes frequently differing substantially from each other in morphology. These biotypes, on the basis of which many species have been described, differ primarily in quantitative characters and are linked by numerous intermediary forms. The situation is further complicated by hybridisation. In particular, there are forms linking *R. Webbiana* with *R. Beggeriana* and *R. macrophylla* – which also occur outside the region of overlap of the species. In both cases we are probably dealing with introgression on a large scale.

Karyological studies and field observations will possibly help to clarify the problems associated with *R. Webbiana*.

9. ***R. macrophylla*** LINDL., Ros. Monogr. 35 (1820).
Syn.: *R. alpina* L. var. *macrophylla* (LINDL.) BOULENG., Bull. Jard. Bot. Bruxelles 13: 248 (1935).
Icon.: LINDL., l.c.: tab. 6. WILLMOTT, The Genus Rosa 1, 8: tab. 50 (1911).
Typus: „Hab. in Gossam Than“, WALLICH.

Frutex erectus ad 3(–4) m altus, saepe rhizomatosus. Rami recti, annotini rufescenti-brunnei. Aculei plerumque uniformes, ad basin foliorum binati, tenues, subulati, recti, saepe ascendentes; rami floriferi saepe inermes. Folia magnitudine variabilia, 5–25 cm longa, 9–11-foliolata; foliola (10–)20–50(–70) mm longa, supra opace viridia, subtus viridia vel rarius glauca, saepe rubro suffusa, saepe exsiccando brunnescentia, elliptica vel lanceolata, raro obovata, apice acuta vel obtusa, basi (late) cuneata, supra glabra vel pubescentia, subtus secus costam medianam quidem pubescentia, laevia vel raro glandulosa, margine simpliciter vel dupliciter serrulata; foliola maxima nervis lateralibus quam 8 numerosioribus. Flores solitarii vel 2–3(–5)-ni fasciculati, 30–50(–70) mm diametro, rubri. Pedicelli plerumque hypanthium aequantes vel longiores, saepe pubescentes, tenues, saepe stipitato-glandulosi. Sepala integra, longa, apice saepe dilatata, in fructu erecta vel ascendentia, persistentia. Styli dense pubescentes, capitulum magnum, compactum formantes. Orificium latum. Fructus plerumque oblongo-ovoideus, collo longo, dense stipitato-glandulosus, raro laevis, maturitate ruber. – Floret VII.–VIII.; fruct. IX.(–X.).

Afghanistan: E: Nangarhar: Dar-e Nur N Jalalabad, 2100–2450 m, FREITAG 5948! Nuristan: Inter jugum Ashpi et pagum Kushtos, 2500 m, NEUB. 685!
Pakistan: Chitral: Inter Ziarat et jugum Lowarai, SIDDIQUI & RAHMAN! – Swat: Kalam, 2400 m, STEW. 24689!, 24690! Bishigram, 3300 m, STEW. & RAHMAN 25034-a! Supra Utror, 2400–2700 m, STEW. & RAHMAN 25263!

Distr. gen.: Afghanistan, Pakistan, Himalaya, Sina austro-occidentalis.

R. macrophylla is often mistaken for a large-leaved form of *R. Webbiana* s.l. A combination of characters is necessary to separate these two taxa.

Sect. Caninae DC. in SÉR., Mus. Helv. Hist. Nat. 1: 3 (1818).

Frutices erecti vel scandentes, rhizomate evoluto vel nullo. Spinae plerumque inaequaliter distributae. Flores rosei vel albi, bracteati. Sepala lobata vel integra, decidua vel persistentia. Styli breves, liberi. Orificium angustum vel amplum. Carpella stipitata. Meiosis irregularis.

10. ***R. Boissieri*** CRÉPIN, Bull. Soc. Roy. Bot. Belgique 8: 119 (1869).
Syn.: *R. britzensis* KOEHNE, Feddes Repert. 8: 21 (1910). *R. Woronowii* LONACZ., Trudy Bot. Sada Jur'evsk. Univ. 13, 2: 107 (1912). *R. Sosnovskiana* TAMAMSCH., Not. Syst. Leningrad 11: 90 (1949). *R. dumalis* BECHST. subsp. *Boissieri* (CRÉPIN) Ö. NILSSON in P. H. DAVIS, Fl. Turkey 4: 125 (1972). *R. montana* CHAIX subsp. *Woronowii* (LONACZ.) Ö. NILSSON, l.c.: 123.
Icon.: KOEHNE, Mitt. Deutsch. Dendrol. Ges. 94: fig. 1 (1910). Fl. Kavkaza 5: tab. 14, fig. 2 (1952). Fl. Armenii 3: tab. 56 (1958). – Tab. nostr.: 13.
Typus: „Vallée de Djimil (Lazistan), vers 2000'", coll. ign. 314.

Frutex erectus, ad 3(–4) m altus. Rami glabri, aculeis rectis vel leviter curvatis sat tenuibus armati. Foliola 7–9, ad 40(–50) mm longa, elliptica vel obovata, apice acuta vel obtusa raro rotundata, basi cuneata, utrinque vel subtus quidem glabra vel ± pubescentia, laevia vel raro minute glandulosa, margine simpliciter vel dupliciter serrata. Stipulae latae. Flores solitarii vel 2–3(–4)-ni fasciculati, ad 50(–60) mm diametro, pallide rosei vel albi. Pedicelli longitudine variabiles sed plerumque hypanthio longiores, stipitato-glandulosi vel hispidi, raro laeves. Sepala plerumque lateraliter lobata, in fructu ascendentia vel erecta (interdum praeparatione pro herbario postea mutata!), persistentia. Styli dense pubescentes, capitulum magnum compactum formantes. Orificium latum. Fructus ovoideus vel pyriformis, stipitato-glandulosus vel hispidus, raro laevis, maturitate saturate ruber. – Floret (V.–)VI.–VII.; fruct. (VIII.–)IX.

I r a q : Kurd.: Mosul: Sirsang, 1500 m, HAINES 1323!
P e r s i a : N: Maz.: In valle fl. Chalus, 2200–2600 m, Pol-e Zanguleh, RECH. 866!, 6347-b!, 6348! – W: Azerb.: M. Sahand, ad pagum Kandavan, 2250–2600 m, RECH. 57121! 20 km SW Kaleybar, 1800–2600 m, TERME 37094!

Distr. gen.: Anatolia, Iraq, Persia, Caucasus.

A variable species especially in leaf indumentum, pedicels, fruit and prickles. Worthy of mention are forms with glandular (sometimes on both sides) leaflets, which may be confused with *R. iberica;* glands on *R. Boissieri* are, however, minute and inodorous.

The impression of variability within *R. Boissieri* is further increased by hybridisation with *R. canina,* the resultant hybrids often being thought pure *R. Boissieri.*

Morphologically this species is similar to the European *R. montana* CHAIX.

11. ***R. orientalis*** DUPONT ex SÉR. in DC., Prodr. 2: 607 (1825).
Syn.: *R. Vanheurckiana* CRÉPIN in BOISS., Fl. Or. 2: 683 (1872). *R. atropatana* SOSN.,

Izv. Azerb. Fil. 10: 22 (1944). *R. Heckeliana* TRATT. subsp. *orientalis* (DUPONT ex SER.) MEIKLE, Kew Bull. 19: 229 (1965). *R. Heckeliana* TRATT. subsp. *Vanheurckiana* (CRÉPIN) Ö. NILSSON in DAVIS, Fl. Turkey 4: 127 (1972).
Icon.: KELLER, Syn. Ros. Eur. Med. Atlas: tab. 36 (1931). MOUTERDE, Nouv. Fl. Liban Syrie 2, Atlas: tab. 71, fig. 4 (1970). – Tab. nostr.: 14.
Typus: Specimen cultum.

Frutex humilis ad 1(–1,5) m altus, rhizomate subterraneo. Rami juveniles plerumque dense pubescentes, exceptione glabri. Aculei recti, subulati, interdum setiformes, primum albi vel flavescentes, demum pallide brunnei, in ramis inaequaliter distributi vel infra stipulas binati. Foliola 5–7, ad 30(–35) mm longa, saepe valde variabilia, elliptica vel orbicularia vel late obovata, apice acuta vel rotundata vel truncata vel retusa, basi late cuneata vel rotundata, griseo-viridia vel glauca, dense pubescentia vel velutina, eglandulosa, margine simpliciter vel dupliciter serrata; dentes majusculi, saepe inaequales; rachis dense pubescens, eglandulosa vel parce glandulosa. Stipulae latae, auriculis brevibus triangularibus, glanduloso-ciliatae. Flores solitarii vel 2–3(–5)-ni fasciculati, pallide rosei vel albi, ad 24(–30) mm diametro. Pedicelli ad 15(–30) mm longi, dense pubescentes et stipitato-glandulosi. Sepala exteriora integra vel lobata, apice dilatata, dorso eglandulosa vel stipitato-glandulosa, in fructu ascendentia vel erecta, persistentia. Fructus ad 10(–15) mm diametro, globosus vel ovoideus, ± pubescens, dorso plerumque stipitato-glandulosus vel (glanduloso-)hispidus, maturitate ruber. – Floret VI.(–VII.); fruct. (VII.–)VIII.

Iraq: Kurd.: Arbil: Algird Dagh in valle supra pagum Nowanda, 2000–2600 m, RECH. 11397! Mosul: Chiya-e Gara, KY. 343!
Persia: W: Khamseh: Dasht inter Zanjan et Geydar, 2050–2200 m, TERME & MOUSSAVI 37081-E! Kuh-e Geydar, 2200–2650 m, TERME & MOUSSAVI 37080-E! Kuh-e Takht, 2150–2550 m, TERME & MOUSSAVI 37079-E! Kurd.: In montibus Kuh-e Hamzeh-Arab SE Bijar, 2100–2600 m, LAMOND & TERME in RECH. 42607!, LAMOND 4336!, IRANSHAHR 13045-E!, TERME 37014-E!, ASSADI & AMINI 13596! Ham.: M. Alvand, 2150–3400 m, PABOT!, TERME & MOUSSAVI 37018-E!, BALLS 114! 13 km SW Hamadan, PABOT! Kermansh.: Dalahu, 2200 m, MOUSSAVI & SATEI 37054-E! Kuh-i Parrow, 1200–2200 m, MOUSSAVI & SAB.! Esf.: Kuh-e Akhvoreh, 2700 m, IRANSHAHR & MOUSSAVI 37084-E! Kuh-e Qeshlaq-Suli, 2600–3200 m, IRANSHAHR 37031-E! Kuh-e Vanizan, 2800 m, MOUSSAVI & SATEI 37053-E! Arak: M. Rasvand, 2200 m, MIRD. in GAUBA 477! Bakht.: Kuh Rang versus Sarchashmeh-e Karun, 2300–2400 m, IRANSHAHR & MOUSSAVI 37087-E! Lur.: Gahar, 2700 m, KOELZ 17974! Kebara, 1800 m, KOELZ 18237! Dow Rud, KOELZ 18324! – C: Qazv.: In montibus calc. Kuh-e Nemar prope Karaj, 1600–2000 m, RECH. 673!

Distr. gen.: Anatolia, Syria, Libanon, Iraq, Persia, Armenia rossica.

R. orientalis is closely related to the European *R. Heckeliana* TRATT. with which it forms a pair of vicarious species. Although the differences between them are rather subtle, both species seem to be fully isolated geographically.

12. ***R. elymaitica*** BOISS. & HAUSSKN. in BOISS., Fl. Or. 2: 675 (1872).
Syn.: *R. albicans* GODET in BOISS., Fl. Or. 2: 675 (1872). *R. elymaitica* BOISS. & HAUSSKN. var. *albicans* (GODET) CHRIST in BOISS., Fl. Or. Suppl. 227 (1888).
Icon.: Fl. Iraq 2: tab. 27 (1966). – Tab. nostr.: 15, 16.

Typus: „Hab. in dumosis alpinis Teng Nalli Persiae austro-occid. alt. 7000'", HAUSSKNECHT, G-BOISS.

Frutex effusus ramosissimus c. 1 m altus; rami rubescentes, glauci, plerumque flexuosi. Aculei uniformes, curvati, raro recti, compressi, basi sensim dilatata, saepe binati. Foliola plerumque 5, ad 15(–17) mm longa, orbicularia vel late ovata, utrinque glabra vel ± dense pubescentia, laevia vel raro glandulosa, simpliciter serrata. Stipulae parvae, auriculis brevibus triangularibus. Flores solitarii vel 2–4(–6)-ni fasciculati, parvi, plerumque non ultra 30(–35) mm diametro, rosei, exceptione albi. Pedicelli 1–4(–6) mm longi, glandulis stipitatis vel subsessilibus obsiti, raro laeves. Sepala integra vel lobis parvis lateralibus, apice plerumque dilatata, dorso glandulosa, post florendum patentia vel reflexa vel raro ascendentia, maturitate persistentia vel decidua. Styli ± dense pilosi, plerumque distincte exserti, capitulum laxiusculum, saepe conicum formantes. Fructus parvus, 6–10(–12) mm diametro, subglobosus, stipitato-glandulosus, raro laevis, maturitate ruber. – Floret (V.–)VI.; fruct. VIII.–IX.

I r a q : Kurd.: Sul.: Pira Magrun W Sulaymaniyah, 1200–2400 m, THESIGER 1093!, HADAČ & al. 1862! M. Avroman prope Tawilla, 1400–1600 m, RECH. 10314! Kopi Qara Dagh, 1500 m, HAINES 1547! Amoret prope Qara Dagh, 1350 m, HAINES 1138!
P e r s i a : W: Kurd.: 47 km W Bijar versus Divandarreh, 2000 m, RECH. 42668! Ham.: Prope Tuysarkan, SAB. in GAUBA 475! Haydere prope Hamadan, SAB. in GAUBA 474! 130 km a Hamadan versus Qazvin, 1850 m, ASSADI & SHIRDELPUR 13221! M. Alvand, 1350–3300 m, BALLS 109!, TERME & MATINE 37017-E!, 37078-E! Kermansh.: Bisotun, 1350–1650 m, JACOBS 6768! 75 km SE Harsin, 1870 m, PABOT 1949!, 37058-E! Kuh-e Nevoh, IRANSHAHR 13046-E! Dalahu, 2000 m, IRANSHAHR & TERME 12676-E! Bisotun, 1360 m, PABOT! Arak: 52 km W Arak, 2150 m, PABOT 1317! M. Alvand prope Arak, STR.! M. Rasvand, MIRD. in GAUBA 476! Hendeh, Tang-e Darband, 2200 m, IRANSHAHR 37033-E! NE Sir Kan (Sherkhan) E Sefid Dasht, 2300–2500 m, PABOT 2548! Bakht.: Inter Dashtak et Cherry, IRANSHAHR & MOUSSAVI 37085-E! Kuh-e Melli, 2100–2150 m, IRANSHAHR & MOUSSAVI 37086-E! Lur.: Oshtoran Kuh, STR.!, RENZ in RECH. 48241! 30 km SE Khorramabad versus Safid Dasht, 1750 m, RECH. 47783! In jugo Chariveh Shah 32 km E Khorramabad, substr. calc., 2050 m, RECH. 47732! Kalvar, 1500 m, KOELZ 15987! Dow Rud, 1500 m, KOELZ 15745!, 17684!, RECH. 48195! 16 km NW Dow Rud, 1500 m, PABOT 2498!, 37059-E! 30 km W Dow Rud versus Khorramabad, 1750 m, IRANSHAHR 37088-E! – S: Fars.: Kuh-e Dinar versus Sisakht, BEHB. 1275-E! Inter Shiraz et Tal-e Khosravi, BEHB. 1279-E! Ardakan, BEHB. 37041-E! Abshar prope Yasuj, 1800–2000 m, IRANSHAHR & MOUSSAVI 37076-E! Inter Fahlian et Hoseynabad, 1100–2100 m, IRANSHAHR & MOUSSAVI 37082-E! – C: Tehr.: M. Tuchal, 1300–2400 m, AELL. 3807!, 3816!, 3818!, 3903!, 3904!, 3842!, TERME 13035-E!, 37089-E!, TERME & SAB. 37092-E! Infra Ushan, 1850 m, WDB. 18651!

Distr. gen.: Anatolia orientalis, Iraq boreo-orientalis, Persia; erronee e Caucaso indicata.

This species is very characteristic because of its small roundish leaflets, small fruits and habit. It can resemble a small-leaved form of *R. Webbiana* s.l. but is distinguished by relatively long styles forming a loose head, a much narrower orifice, the posture of the sepals and the different distributional areas. A form with the leaves densely covered in sessile glands has recently been found in Iran (WENDELBO 18651) – this is distinguished from *R. iberica* by simply serrate leaflets.

13. ***R. pulverulenta*** M. B., Fl. Taur.-Cauc. 1: 399 (1808).
Syn.: *R. glutinosa* SIBTH. & SM., Fl. Graeca Prodr. 1: 348 (1809).
Icon.: WILLMOTT, The Genus Rosa 2, 24: tab. 150 (1912). Fl. URSS. 10: tab. 30,

fig. 5 (1941). MOUTERDE, Nouv. Fl. Liban Syrie 2, Atlas: tab. 71, fig. 5. Fl. R. P. Bulg. 5: tab. 36, fig. 1 (1973). – Tab. nostr.: 17.
Typus: Ex Caucaso Cabardinico: Circa Narzana a. 1803, MARSCHALL VON BIEBERSTEIN, LE!

Frutex humilis, repens, 10–50(–100) cm altus. Rami aculeis tenuiusculis rectis vel curvatis plerumque in setas vel aciculos vel glandulas stipitatas transeuntibus armati; ramuli juveniles saepe pubescentes. Foliola 5–7, 10–25(–35) mm longa, orbicularia vel ovata vel late obovata, apice obtusa vel rotundata, basi rotundata vel late cuneata, nervis supra impressis, pubescentia vel raro glabra, utrinque ± dense glandulosa, glutinosa, aromatica, duplicato-serrata. Stipulae latae. Flores solitarii vel 2–4-ni fasciculati. Pedicelli hypanthio plerumque breviores, glabri vel pubescentes, laeves vel plerumque stipitato-glandulosi. Petala rosea, raro alba, ad 15(–20) mm longa. Sepala plerumque ± pinnatifida, in fructu erecta vel ascendentia, persistentia. Styli dense pubescentes, capitulum magnum, compactum formans. Orificium latum. Fructus ovoideus vel subglobosus, plerumque hispidulus, saepe insuper pubescens, maturitate ruber. – Floret (V.–)VI.–VII.; fruct. (VIII.–)IX.

Persia: N: Gorg.: In decl. borealibus M. Shahvar prope Hajjilang, 2400–2600 m, RECH. 6159! Maz.: In decl. borealibus jugi Kandavan, 2300–2500 m, BROWICZ & ZIELIŃSKI 456!, PABOT 4578! Pol-e Zanguleh in valle fl. Chalus, RECH. & MANOUCH. 37024-E! – W: Azerb.: Kuh-e Mishab Dagh, 1800–2400 m, TERME 37025-E!, in RECH. 43884! 10 km a Marand versus Tabriz, 1650 m, LAMOND 3760! M. Ghogeh Dagh W Bazorgan, 2100–2250 m, RECH. 43992!, LAMOND 4975!, TERME 37026-E! In collibus rubris „Einal Zeinal" inter Tabriz et fl. Talkheh Rud, 1700 m, RECH. 43538! M. Chalil Kuh prope Razhan, 2600–3200 m, RECH. & RENZ 48769! M. Sahand ad pagum Kandavan, 2250–2600 m, RECH. 57120! Esf.: In montibus prope Damaneh 35 km SE Daran, RENZ in RECH. 47629! Prope Akhvoreh, 2420–2700 m, MOUSSAVI & SAB. 37052-E! – C: Tehr.: M. Damavand supra Reneh, 2640 m, GILLI! Shahrestanak, 2400 m, LINDS. 468! Qazv.: Hazarband, 3000 m, SAB. in GAUBA 487!
Turcomania: In montibus prope Khan Jaila, LITW. 644!

Distr. gen.: Anatolia, Libanon, Syria, Iraq, Persia, Caucasus.

This species is unusually variable in size and shape of leaflets, armature and indumentum. Forms with no acicles or glands on the branchlets may be confused with *R. iberica* but differ from it in their prickles being slenderer, more erect and persistent sepals and wider orifices.

The occurence of *R. pulverulenta* eastwards of Iran has not yet been confirmed; reports of it are more likely to be forms of *R. Webbiana* s.l. or hybrids with *R. Beggeriana* (conf. remarks at *R. Webbiana*).

14. ***R. iberica*** STEV. in M. B., Fl. Taur.-Cauc. 3: 345 (1819).
Syn.: *R. Aucheri* CRÉPIN, Bull. Soc. Roy. Bot. Belgique 8: 344 (1869). *R. rubiginosa* L. var. *iberica* (STEV.) BOISS., Fl. Or. 2: 687 (1872). *R. interjecta* BURNAT & GREMLI, Rev. Orient. 4 (1887). *R. rubiginosa* L. var. *Aucheri* (CRÉPIN) CHRIST in BOISS., Fl. Or. Suppl. 221 (1888). *R. Rechingeri* KLÁŠT., Stud. Bot. Čechica 5: 63, tab. 8, fig. 1 (1942).
Icon.: Fl. URSS. 10: tab. 30, fig. 3 (1941). – Tab. nostr.: 18, 19.
Typus: „Habitat circa oppidum Krzchinval Iberiae occidentalis".

Frutex erectus vel effusus ad 1–2 m altus. Rami aculeis curvatis vel raro rectis armati; aciculi et setae nulli. Foliola 5–7, 15–35(–45) mm longa,suborbiculata, late elliptica vel obovata, apice obtusa vel truncata, basi cuneata vel rotundata, crassiuscula, venis supra impressis, glabra vel pubescentia, utrinque ± dense glandulosa, laeviuscula, duplicate glanduloso-serrata. Stipulae latiusculae. Flores solitarii vel 2–4-ni fasciculati. Petala rosea vel raro alba, 2(–2,5) cm longa. Pedicelli hypanthio breviores, glabri vel pubescentes, laeves vel stipitato-glandulosi. Sepala pinnatifida, patentia, in fructu ascendentia vel reflexa, plerumque fructu maturescente vel antea decidui. Styli ± dense pilosi, plerumque capitulum compactum formantes. Orificium amplitudine varium, plerumque c. 1 mm diametro. Fructus ovoideus vel subglobosus, glaber vel parce pubescens, laevis vel stipitato-glandulosus, maturitate aurantiaco-ruber vel ruber. – Floret V.–VI.(–VII.); fruct. (VIII.–)X.

Talish: Prope Orant, 1500–1800 m, ALEXEENKO!
Persia: N: Gorg.: Zarrin Gol, SAB. in GAUBA 481! Maz.: In valle fl. Talar prope Gaduk, 2250 m, BEHB. & AELL. 3856! Inter Gaduk et Abbasabad, RECH. 2003! In valle Rud-e Tejan (Tedschen) prope Qomrud Pain, 2200–2500 m, BEHB. & AELL. 3783–3785!! Maz.: Distr. Kojur: Inter Kinch et Dasht Nazir, 800–1300 m, RECH. 6652! Distr. Kojur, 2500 m, GAUBA K-639! In decl. borealibus jugi Kandavan, BROWICZ & ZIELIŃSKI 478!; 2400 m, MIRD. in GAUBA 479! Supra Valiabad, RECH. 48352! Prope Siah Bisheh, 2100–2300 m, PABOT 4659!, 4747!, BROWICZ & ZIELIŃSKI 444!, 447!, 449!, WDB. & VARNECKE 18654! Prope Pol-e Zanguleh, RECH. 6285!, 6315!, 6346!, PABOT 4607!, SAB. 404 p.p.! Elika, GAUBA K-640! Gilan: In montibus supra Damesh E Rudbar, 2100–2200 m, WDB. & ALA 18210! Espeyli, LINDS. 1149! – Persia borealis, KY. 656! – W: Azerb.: Dishgaduki, MIRD. K-623-a!, -b! Inter Khalkhal et Assalem, MOUSSAVI 37065-E! Lisar protected region: 42 km W Ardabil versus Nohur, 2540 m, FOROUGHI & ASSADI 13802! Ardabil, SAB. in GAUBA K-634! Kuh-e Asbinas, SAB. in GAUBA K-624! 1–3 km E Qareh Aghaj versus Germi, 850 m, RECH. 40309!, LAMOND 3268! 86 km NE Tabriz, 1600 m, PABOT 5216! Kaleybar, SAB. in GAUBA K-633! Ad radices M. Sabalan 10 km W Meshgin Shahr, 1400 m, RECH. 40455! In jugo inter Marand et Sufian, 1600–1750 m, RECH. 41167! M. Ghogeh Dagh W Bazorgan ad confines Turciae, 2100– 2250 m, RECH. 43952! M. Mishab Dagh prope Yam, 1800–2400 m, TERME in RECH. 43883! Kuh Kani Ziarat N Habashi prope Qotur, 2300–3000 m, W. RECH. & RENZ 49747!, 49748!, Chalil Kuh in faucibus NW Selvana, 1750–2600 m, RECH. 48919!, RENZ in RECH. 48994! Inter Shahpur et lacum Rezaiyeh, 1300 m, LAMOND 4075!, RECH. 41853!, MOUSSAVI & TEHRANI 37063-E!, IRANSHAHR 37035-E! Ab Khvareh, MIRD. in GAUBA 488! Khamseh: Kuh Anguran inter Manjil et Zanjan, 2000 m, LAMOND 3529!, in RECH. 41091!, IRANSHAHR 37037-E!, 37038-E! Prope Zanjan, 1500–1950 m, MOUSSAVI & TEHRANI 37067-E! – S: Fars.: Kuh Abbas Ali W Dehbid, 3000 m, STAPF 433! – E: Khor.: In montibus inter Bojnurd et Tappeh ye Moraveh, RECH. 1899! Sovaldi, GAUBA K-641! – C: Tehr.: Gach Sar, 2200 m, BORNM. 6981! M. Tuchal, 2400–2700 m, LINDS. 544! Pas Qaleh prope Darband, 1300–2000 m, AELL. 3893–3900!!, RECH. 1108 (typus *R. Rechingeri*)! Infra Shemshak, 2200 m, RECH. 57166! Ab-e Garm, 2050–2200 m, 3793–3799!!, 3805!, 3815!, 3826!, 3905! M. Damavand supra Reneh, GILLI! 5 km N Polur, 2260 m, PABOT 4090!, 4091!, 12986-E! Qazv.: Bivarzin, 1800 m, DARYADEL 12882-E! In valle fl. Karaj, BROWICZ & ZIELINSKI 420!, 420-a!, TREGUBOV 119 p.p.!, WDB. & WARNECKE 18656! Prope Nissa, 2200 m, RECH. 6727! Damgh.-Semn.: In decl. australibus Kuh-i Nizva, 2200–2300 m, AELLEN 3789!, 3790!, 3810!, 3811!, 3855!, 3857! Shahr.-Bust.: In jugo Khush Yailaq 70 km E Shahrud, 2000–2200 m, RECH. 5431!, 5457!
Turcomania: In montibus supra Firyuza, SINT. 618! M. Ludsch, 1950 m, LITW. 649! Kizyl Arvat: Kara Kala in valle Yoldere, SINT. 2030!

Distr. gen.: Anatolia, Iraq, Talish, Persia, Turcomania, Caucasus.

R. iberica varies mainly in the indumentum of the leaflets. Forms without glands on the leaflets may be confused with *R. canina* but differ in having stiffer and more obtuse leaflets, wider orifices and in the posture of the sepals.

R. Rechingeri KLÁŠT. seems only to be an unusual (abnormal?) form of *R. iberica* – differing mainly in the exceptionally short flowering branchlets. The description of *R. Rechingeri* states that the sepals of this rose are entire, but in fact they are pinnatifid.

SR Pl

15. ***R. canina*** L., Plant. 491 (1753).
Syn.: *R. corymbifera* BORKH., Vers. Forstbot. Beschr. Holzart. 319 (1790). *R. dumetorum* THUILL., Fl. Paris ed. 2: 250 (1800). *R. tomentella* LEHM. var. *acuta* (CRÉPIN) CHRIST in BOISS., Fl. Or. Suppl. 217 (1888). *R. canina* L. var. *keredjensis* KLÁŠT., Stud. Bot. Czechica 5: 72, tab. 7, fig. 2 (1942). *R. achburensis* CHRSHAN., Bot. Mat. Herb. Inst. Bot. Akad. Nauk Uzbekist. SSR. 13: 47 (1952). *R. Klukii* auct. fl. cauc. non BESSER.
Icon.: WILLMOTT, The Genus Rosa 2, 20: tab. 127–128 (1912). KELLER & GAMS in HEGI, Ill. Fl. Mitteleur. 4, 2: tab. 154, fig. 3; fig. 1228 (1923). KELLER, Syn. Ros. Eur. Med., Atlas: tab. 27 (1931). Fl. Armenii 3: tab. 65 (1958). Fl. Tadjik. SSR. 4: tab. 97, fig. 1–10 (1975).
Typus: Europa, Herb. LINN 652/31, phot.!

Frutex erectus vel effusus raro scandens, 1–4 m altus. Aculei curvati vel uncinati, plerumque uniformes, in trunco inaequaliter dispersi; ramuli floriferi interdum inermes. Foliola 5–7, 30–40(–45) mm longa, ovata vel elliptica, raro obovata, apice acuta vel acuminata, basi cuneata vel rotundata, glabra vel subtus quidem pubescentia, utrinque vel subtus tantum laevia vel raro glandulosa. Stipulae angustiusculae. Flores rosei vel albi, ad 35(–45) mm diametro, solitarii vel corymbose fasciculati. Pedicelli plerumque hypanthium aequantes vel eo longiores, laeves vel stipitato-glandulosi, interdum etiam pubescentes. Sepala pinnatifida, post anthesin reflexa, plerumque ante maturitatem fructus decidua. Styli glabri vel parce pilosi, interdum villosi. Orificium angustum. Fructus globosus vel ellipsoideus, laevis vel stipitato-glandulosus, maturitate ruber. – Floret IV.–VI.; fruct. IX.(–X.).

I r a q : Kurd.: Arbil: Rost, cult., HALEY 168! Inter Rayat et Rawandiz, 1200 m, THESIGER 1028! In faucibus N Salah ad-Din versus Shaqlawa, 820 m, WIZNIEWSKI & IZYDOREK 57! Shaqlawa, 840 m, HAINES 620! Kuh Sefin prope Shaqlawa, BORNM. 1053! Mosul: Jabal Khair supra Mirsada, 1500 m, THESIGER 565! Sirsang, 1050 m, HAINES 572!, AL ANI 9801! SW Sawara Tuka, 900 m, ANDERS 1364! Inter Dihok et Amadiyah, 1200 m, RECH. 11665! Sul.: Penjwin, 1400 m, RECH. 12228! M. Avroman prope Tawilla, 1400–1600 m, RECH. 10244! – In montibus Kurdistaniae, LOW 312!
T a l i s h : Lenkoran: Inter Lerik et Kyz-Kala, PRILIPKO! Tangovan, SCHIPZINSKY! Alexeevka, PRILIPKO!, AKHDUNOV! Insula Sara, RUBTSOVA! Inter Jardymly et Perembel, GROSSH.! SE Kyurbasar, MATVEEVA 433! Inter Rwa et Nilish ad fl. Lenkoran Chay, ALEXEENKO! Sangada, 1500 m, ALEXEENKO! 2–3 km SW Bela-Gura, MATVEEVA 250! Lenkoran, RADDE 308! Jardymly, RAKHIMOV!
P e r s i a : N: Gorg.: Minudasht, SHAR. 403!, 404! S Golidagh, HEWER 3984! Inter Naudeh et Shahrud, 1000–2000 m, SCHMID 6107! Aliabad, 1420 m, GAUBA K-645-b! Inter Shahpasand et Bojnurd, 900 m, TERME 37060-E!, 37061-E! In silvis Gulestan, 1000 m, WALTON 170! Mohammad Reza Shah Res.: Almeh, 1500–1750 m, WDB. & FOROUGHI 12735!, KUKKONEN 7736! Maz.: Alamdeh, SAB. 405! Nowshahr, SAB. 37043-E! Gaduk, SAB. 400! In valle Rud-e Tejan (Tedschen) prope Qomrud Pain, 2200–2500 m, BEHB. & AELL. 3786!, 3838–3840!!, 3832!, 3933! In decl. borealibus jugi Kandavan, BROWICZ & ZIELIŃSKI 471!, 482!, FURSE & SYNGE 413!, STUTZ 1181! Pol-e Zanguleh, 2200–2600 m, RECH. M-12!, SAB. 404 p.p.! M. Alamut, 2000 m, BEHB. in GAUBA

483! Gilan: Harsevil , 700 m, GAUBA K-636! Lahijan, LINDS. 830! Supra Damesh, 1900 m, WDB. & ALA 18188!, TERME & DARYA-DEL 37093-E! Inter Hashtpar et Astara, RECH. 39839! 10 km W Astara, IRANSHAHR 37029-E!, RECH. 39886! Assalem, IRANSHAHR 12108-E! 10 km W Meshgin Shahr, 1400 m, RECH. 40456!, IRANSHAHR 37030-E! Meshg Anbar Mianeh prope Tabriz, MIRD. in GAUBA 482! Amirabad inter Mianeh et Khalkhal, 1800–2000 m, RECH. 43306! Inter Mianeh et Tabriz, BROWICZ & ZIELIŃSKI 384!, 389! Inter Khalkhal et Ardabil, 1400–1700 m, TERME & MOUSSAVI 37077-E! 28 km NE Ardabil, 1600 m, GRANT 16319! E Qareh Aghaj versus Germi, 700–850 m, RECH. 40307!, 40308!, IRANSHAHR 37019-E!, LAMOND 3271! 70 km S Alirezaabad-e Jadid versus Qareh Aghaj, 500 m, IRANSHAHR 37095-E!, LAMOND 3232!, RECH. 40288! In jugo inter Marand et Sufian, 1600–1750 m, RECH. 41188!, IRANSHAHR 37091-E! Inter Marand et Zonuz, 1500 m, LAMOND 3806! 2–12 km W Zonuz, 1500–1700 m, RECH. 41378! N Maku, BROWICZ & ZIELIŃSKI 540! In valle fl. Qotur W Khvoy, 1300–2000 m, RECH. 41732!, 41747!, IRANSHAHR 37032-E!, 37036-E!, LAMOND 4011! 26 km NW Rezaiyeh versus Sero, 1600–1700 m, RECH. 42071!, IRANSHAHR 37034-E!, LAMOND 4153! Qasemlu, 1350–1650 m, MOUSSAVI & ZARGUANI 37064-E! Khamseh: Inter Manjil et Zanjan, 2000 m, IRANSHAHR 37042-E! Tashvir, 800–1000 m, IRANSHAHR 37090-E! In jugo Tarom, 800–2000 m, LAMOND & IRANSHAHR in RECH. 41002!, 41003!, 41090!, LAMOND & IRANSHAHR 3470!, 3471!, 3530! Kurd.: M. Chehel Chashmeh 44 km NE Marivan (Dezh Shahpur), 2000 m, RECH. 43002!, LAMOND 4586!, TERME 37027-E! Prope Sanandaj, 1500–1600 m, JACOBS 6697!, ARCHIBALD 1946! Ham.: Ganjnameh, STAPF! Hamadan, SAB. in GAUBA 486! Kuh Alvand, 2150–2350 m, TERME & MATINE 37016-E! Kermansh.: Kuh-e Nevoh 24 km NW Karand, 1340 m, ARCHIBALD 1870! 103 km N Kermanshah, BENT & WR. 519–901! Esf.: Akhvoreh, 1940 m, MOUSSAVI & SAB. 47049! Arak: Suraneh, 1800 m, MIRD. in GAUBA 478! Bakht.: Sar Tang-e Mahmud, 1800 m, IRANSHAHR & MOUSSAVI 37083-E! Galli Sur (Galichir), 2100 m, KOELZ 18058! Peshmshurun, KOELZ 15245! Qashqai: In faucibus Darreh Abshar E Semirom, 2450 m, RECH. 47467!, IRANSHAHR 37028-E! Lur.: Gilan-e Gharb, BEHB. 285! Kalvar, 1500 m, KOELZ 15987! Gahar, 2100 m, KOELZ 17844! Bisheh, 1200–1400 m, RECH. 5677! Saravand, 1800 m, KOELZ 17777!, 17799! Dow Rud, 1650 m, KOELZ 15532!, 15725!, 17401!, 17487!, 17492!, 17674!, 18478! Tidar, 1200 m, KOELZ 17546!, 17553! Luristan, ABEDI 37039-E! – **S**: Fars.: Rud-e Mand (Kara Ahadch) SW Shiraz, STAPF! Kuh-e Dinar prope Sisakht, BEHB. 1276-E! Keh Delu, KY. 547! Dasht-e Arzhan, STAPF! Kuh Bil, STAPF 1504! Kuh Charmakan, 2250 m, STAPF! Estahbanat, 2200–2400 m, MOUSSAVI 37050-E! Tal-e Khosravi, BEHB. 1280-E! Kerm.: Chaharfarsakh, KOELZ 14262! – **E**: Khor.: In valle infra Akhlamad, 1600 m, RECH. 4645!, Kotal Yek-Chenar, KOELZ 16684! Bardu, KOELZ 16771! Khvor, cult., KOELZ 16814! Chenaran, 2000 m, TERME & MOUSSAVI 37021-E! – **C**: Tehr.: M. Tuchal, 2200 m, ZHUMER 201! Pas Qaleh, AELL. 3819–3822!!, 3877–3892!!, 3901!, 3902! Fashand, 1800–1900 m, BORNM. 6972! Marunak, 1900 m, AELL. 3917–3919!!, 3870–3872!! Gach Sar, 2200 m, BORNM. 6975!, 6976! In valle Vardavard, 1700 m, WDB. & al. 11750! Ab Ali, 1900 m, AELL. 3823–3825!!, 3841! Ab-e Garm, 2200 m, AELL. 3801–3804!! Prope pagum Damavand, 2100 m, AELL. 3907– 3910!!, 3912–3915!!, 3925!, 3928! Qazv.: Karaj, RECH 249! In valle fl. Karaj, BROWICZ & ZIELIŃSKI 421!, GAUBA & SAB. 480! Infra Nissa, 2200 m, RECH. 891 (typus var. *keredjensis*)!

T u r c o m a n i a : Ashkhabad: prope Suluklü, SINT. 999! 40 km E Kara Kal in valle Sumbar, GUBANOV 579!

A f g h a n i s t a n : **N**: Shibarghan: Tukzar, 120 m, KOELZ 13978! – **NW**: Maimana: Gharcha, 2550 m, KOELZ 14083! Gaozan, 1550 m, KOELZ 14084! Darrah Abdullah E Belchiragh, 1200 m, HDG., WDB. & EKB. W-8369! Herat: Chashmeh Obeh, 1450–1800 m, RECH. 19258!, PODLECH & JARMAL 29622!, 29686! – **SW**: Herat: 15 km S Herat, 1050 m, FREITAG 5632! – **E**: Kabul: Tang-i Gharu, 1250 m, ANDERS 3712! Kabul, 1800 m, KOELZ 8241! Prope Gulbahar, 1500 m, KOELZ 11427!, 11431! 5 km S Gulbahar versus Charikar, 1550 m, DIETERLE 193!, ANDERS 3217! 20 km E Gulbahar, 1700 m, RECH. 35978 p.p.!, 35980! Laghman: Kail, 2400 m, KOELZ 11687!, KOELZ 11690! Ghorband: In valle Ghorband prope Kushkak, 1650 m, PODLECH 18029! – **NE**: Kataghan: Prope Khinjan, 1050–1200 m, ANDERS 6157!, UOTILA 17134!, KUKKONEN! Badakhsh.: In valle Kokcha propa Baharak, 1550 m, ANDERS 6957! Teshkan, 1800 m, KOELZ

13085! Jurm, 2100 m, KOELZ 12884! Distr. Chambuk prope Robat, 2200 m, HDG. & WDB. W-9419! Taliqan, 600 m, KOELZ 13162!, 13163! – C: Bamian: Bamian (Qala Sarkari), 1500 m, KOELZ 13904! Doab: Qala Dasht-i Safed, 1800 m, KOELZ 13556! Darreh Shikar 15 km S Doab, 1500 m, HDG. & WDB. W-3392!

Pakistan: Chitral: In jugo Lowarai, 1950 m, STAINT. 2582!, Brumboret, BEG 1544! Bashgalian SW Chitral, 2400 m, STAINT. 2703! – Swat: Madian, 1350 m, STEW. 24453!

Distr. gen.: Europa, Africa borealis, Asia austro-occidentalis, Afghanistan, Pakistan, Asia centralis.

Forms of *R. canina* with glandular leaves may be confused with *R. iberica*. They differ, however, in having glabrous or sparsely pubescent styles, a narrow orifice, deflexed and caducous sepals and a different shape of the leaflets.

Sect. *Rosa*

Frutices erecti, humiles, rhizomatibus longis. Spinae irregulariter distributae, plerumque aciculis vel setis immixtae. Flores rosei, bracteati. Sepala exteriora lobata, post anthesin deflexa et ante fructus maturitatem decidua. Styli breves, liberi. Orificium angustum. Carpella sessilia. Meiosis normalis.

16. ***R. gallica*** L., Spec. Plant. 492 (1753).
Syn.: *R. pygmaea* M. B., Fl. Taur.-Cauc. 1: 397 (1808).
Icon.: WILLMOTT, The Genus Rosa 2, 17: tab. 109 (1912). KELLER & GAMS in HEGI, Ill. Fl. Mitteleur. 4, 2: tab. 155, fig. 1 (1923). KELLER, Syn. Ros. Eur. Med. Atlas: tab. 5–6 (1931).
Typus: Gallia, Herb. LINN 652/26, phot.!

Frutex humilis, erectus, ad 60(–100) cm altus, rhizomate longo. Rami tenues, 3(–4) mm diametro, aculeis tenuibus rectis vel curvatis plerumque cum aciculis et setis glanduliferis mixtis. Foliola 3–5(–7), 20–50(–70) mm longa, coriacea, suborbicularia, ovata vel elliptica, supra glabra, subtus laxe pilosa et plerumque glandulosa, margine grosse serrata vel crenato-serrata. Stipulae angustae, auriculis rectis vel patulis. Flores rosei, ad 70(–90) mm diametro, solitarii vel rarius 3–4-ni. Bracteae parvae, mox deciduae. Pedicelli quam hypanthium plerumque longiores, glanduloso-setosi. Sepala pinnatifida, post anthesin reflexa, ante fructus maturitatem decidua. Styli pilosi. Orificium angustum. Fructus globosus vel ovoideus vel fusiformis, dense glanduloso-setosus, duriusculus, maturitate laete ruber. – Floret (V.–)VI.; fruct. (VIII.–) IX.

Distr. gen.: Europa centralis et australis, Caucasus occidentalis, Anatolia borealis.

The occurrence of *R. gallica* in the Flora Iranica area has not yet been confirmed. Although CHRIST, l. c. and MEIKLE, l. c. included the specimens collected by HAUSSKNECHT on M. Pira Magrun (Pir Omar Gudrun) in Iraq, HAUSSKNECHT 368, herb. WU, it is doubtful whether these specimens are pure *R. gallica*. They differ from the latter in their wide stipules, shorter and weakly-lobed sepals, long exserted styles and wide orifices, characters typical of *R.* x *centifolia* under which species BOISSIER placed these specimens in Flora Orientalis 2: 676.

The occurrence of *R. gallica* in a wild state in Talysh, Fl. Kavk. 5, tab. geogr. 143, is also improbable.

Sect. *Synstylae* DC., Cat. Pl. Horti Monsp. 137 (1813).

Frutices serpentes vel scandentes rhizomate brevi. Spinae irregulariter distributae, ± uniformes. Flores albi (in nostris), bracteati. Sepala lobata vel integra, deflexa et post anthesin decidua. Styli in columnam connati, stamina interiora longitudine ad minimum aequantes. Carpella sessilia. Meiosis normalis.

17. ***R. phoenicia*** BOISS., Diagn. Pl. Or. Nov. Ser. 1, 10: 4 (1849).
Icon.: MOUTERDE, Nouv. Fl. Liban Syrie 2, Atlas: tab. 72, fig. 2.
Typus (syntypi): „In sepibus humidis Phoeniciae littoralis calidioris circa Beyrout, Tripoli, etc.", BOISSIER; In Cilicia, KOTSCHY 185, G-BOISS.

Frutex scandens vel effusus, ad 3(–4) m altus. Rami glabri, aculeis validiusculis uncinatis inaequaliter dispositis armati. Folia decidua, 5(–7)-foliolata; foliola ad 40(–45) mm longa, elliptica vel raro suborbicularia, obtusa, apice acuta vel acuminata, basi late cuneata vel rotundata, supra glabra vel laxe pubescentia, subtus ± pubescentia, griseo-viridia, margine grosse serrata. Stipulae angustae, auriculis brevibus, divergentibus, glanduloso-serratis. Flores albi, 30–60 mm diametro, plerumque corymbosi vel in paniculas laxas, multifloras dispositi. Pedicelli teniusculi, c. 20 mm longi, glabri vel plerumque tenuiter pubescentes et stipitato-glandulosi. Bracteae conspicuae, anguste lanceolatae, plerumque glanduloso-ciliatae. Sepala lobis lateralibus sat brevibus, latis, apice dilatatis, dorso glandulosis, post anthesin deflexis, mox deciduis. Columna stylaris glabra vel glabrescens. Orificium angustissimum. Fructus ovoideus, 10–15 mm longus, plerumque laevis, maturitate ruber. – Floret V.–VI.; fruct. VIII.

Iraq: Kurd.: Arbil: Handren Dagh supra Jindian, GILLETT 8286. Gali Ali Beg, AGNEW & al. W-2124.

Distr. gen.: Graecia boreo-orientalis, Anatolia occidentalis, australis et orientalis, Syria, Libanon, Palaestina, Iraq boreo-orientalis.

18. ***R. Brunonii*** LINDL., Ros. Monogr. 120 (1820).
Syn.: *R. pubescens* ROXB., Fl. Ind. ed. 2, 2: 514 (1832). *R. moschata* auct. non J. HERRMANN.
Icon.: LINDL., l.c.: tab. 14. WILLMOTT, The Genus Rosa 1, 2: tab. 9–10 (1910) sub *R. moschata*. – Tab. nostr.: 20, 21.
Typus: Nepalia, WALLICH, BUCHANAN.

Frutex scandens ad 10 m altus, sempervirens. Rami juveniles glabri vel ± pubescentes, interdum glandulis stipitatis vel subsessilibus obsiti. Aculei parvi, c. 5 mm longi, brunnei, uncinati, plerumque inaequaliter dispositi. Foliola 5–7(–9), magnitudine variabilia, 20–60(–90) mm longa, (oblongo-)ovata vel -elliptica vel rarius obovata, apice acuta vel acuminata, basi rotundata vel late cuneata, supra opace viridia, glabra vel laxe pubescentia, subtus ± glauca, plerumque manifeste pubescentia, saepe glandulosa, margine simpliciter vel dupliciter serrata. Stipulae angustae, saepe incise glanduloso-dentatae, auriculis, longis, angustis, divergentibus. Flores albi, 30–50 (–60) mm diametro, plerumque in corymbos vel paniculas multifloras dispositi, exceptione solitarii. Pedicelli ± pubescentes et stipitato-glandulosi. Sepala appendice apicali setiformi, lobis lateralibus plerumque evolutis, post anthesin deflexa, mox decidua. Columna stylaris pilosa. Fructus ovoideus vel subglobosus, plerumque stipitato-glandulosus, maturitate ruber. – Floret (IV.–)V.–VI.(–VII.: fruct VIII.–IX.

Afghanistan: **E**: Kabul: Jagdalak, 2100 m, KOELZ 11488! Laghman: Daulat Shah, 2100 m, KOELZ 11663! Nangarhar: Dar-e Nur N Jalalabad, 1950 m, FREITAG 5907! Jaji: In decl. borealibus Safed Kuh S Oghaz, 1800–2100 m, ANDERS 10348! Nuristan: Inter Barikot et Kamdesh, 900 m, GILLI 1821! Sulaimanshah Darrah, 2000 m, ANDERS 10608! Waigel, 1450 m, EDELB. 865! Pakistan: Chitral: Prope pagum Chitral, 1500 m, STAINT. 2391!, BOWES LYON 635! – Swat: Inter Khawazakhiela et Shangla, 1300–1900 m, LAMOND 1694!, RECH. 30588!

Distr. gen.: Afghanistan boreo-orientalis, Pakistan, Kashmir, Nepal, Sina austro-occidentalis (Szechuan).

A very characteristic species, sometimes erroneously identified as *R. moschata*. It can be distinguished by its narrower, dull green leaflets, many-flowered inflorescences, stems which are often pubescent and glandular, and different distribution.

19. ***R. moschata*** J. HERRMANN, Diss. de Rosa 15 (1762).
Syn.: *R. moschata* J. HERRMANN var. *Nastarana* CHRIST in BOISS., Fl. Or. Suppl. 229 (1888).
Icon.: Tab. 22.
Typus: Specimen cultum.

Frutex scandens ad 10(–12) m altus. Rami glabri. Aculei plerumque sparsi, ad 5(–7) mm longi, brunnescentes, recti vel ± curvati, inaequaliter dispositi, interdum deficientes. Foliola (5–)7, ad 30(–40) mm longa, late elliptica vel late ovata vel raro obovata, apice acuta vel subacuminata, basi rotundata vel late cuneata, supra glabra et ± nitida, subtus glabra vel secus nervos pilosa, margine simpliciter serrata. Flores albi, 40–60(–80) mm diametro, plerumque corymbosi vel cymosi, raro solitarii. Pedicelli ± pubescentes et stipitato-glandulosi. Hypanthium plerumque pubescens et glandulosum. Sepala appendice apicali provisa, integra vel lobis lateralibus angustissimis, filiformibus, dorso plerumque glandulosa et pilosa, post anthesin deflexa, mox decidua. Columna stylaris dense pilosa. Orificium angustissimum. Fructus ovoideus vel subglobosus, plerumque pubescens et glandulosus, maturitate ruber. – Floret (V.–)VI.–VII; fruct. VIII.–IX.

Persia: **S**: Fars.: Bagh-i Takht prope Shiraz, cult., STAPF! Shiraz, cult., GRANT 15707! Kerm.: Kerman, in hortis, BORNM. 3527!
Afghanistan: **SE**: Kandahar: Kandahar, in horto, 1000 m, UOTILA 16496! – **E**: Kabul: Kabul, NEUB. 490!, KOELZ 11822! Tang-i Gharu, 1650 m, GIBBONS 340! – **NE**: Kataghan: Pul-i Khumri, cult., 1450 m, HEDGE, WDB. & EKB. W-8556!

At present only known in cultivation and often naturalized in SW Asia, N Africa and S Europe. Its origin has not yet been ascertained. According to some authors its country of origin is the Mediterranean, according to others it is Iran.

This species is closely related to the East African *R. abyssinica* R. BROWN but further investigation is necessary to clarify the relationship.

20. ***R. Freitagii*** J. ZIELIŃSKI, spec. nov.
Icon.: Tab. 23, 24.
Typus: RECHINGER 35035, W!

Frutex sempervirens, scandens, ad 4 m altus. Rami glabri, juveniles pallide virides, saepe angulato-flexuosi. Aculei numerosi, pallide virides, ad 10(–12) mm longi, recti vel raro nonnulli curvati, sat inaequaliter dispositi. Folia 3-foliolata, raro folia nonnulla turionum 5-foliolata; foliola ad 20(–25) x 20(–27) mm, suborbicularia vel late obovata, apice obtusa vel rotundata vel truncata, basi late cuneata vel rotundata vel subcordata, plerumque per plusquam dimidiam longitudinem integra, saepe longitudine latiora, nervis lateralibus utrinque plerumque non ultra 10, supra plerumque nitida, glabra. Stipulae angustissimae, auriculis minutis, divergentibus. Inflorescentia (1–)2–3(–5)-flora. Flores 30–40(–45) mm diametro; petala alba. Hypanthium laeve vel minute glandulosum. Pedicelli ad 15(–20) mm longi, glabri vel parce pilosi, interdum glandulis minutis sessilibus vel subsessilibus obsiti. Sepala integra, basi constricta, apicem versus sensim attenuata, appendice terminali setiformi, post anthesin deflexa, ante fructus maturitatem decidua. Bracteae minutissimae, anguste lanceolatae, mox deciduae. Styli longi, in columnam longam, glabram vel pilosam coaliti. Fructus ad 8(–10) mm diametro, subglobosus, laevis, maturitate ruber. – Floret IV.–VI.(–VII.); fruct. VIII.–IX.

A f g h a n i s t a n : **SW**: Ghorat: In faucibus calc. infra Parjuman (Purchaman, Partcheman), 1850 m, RECH. 19049!, PODLECH 21769! Kuh-e Pushte Khola 16 km SW Parjuman versus Gulestan, 1810 m, PODLECH 21734! In decl. borealibus Kuh Cheling-Safed-Daraq (Pirestan) S Parjuman, substr. calc., 2600–2800 m, RECH. 19082! – **SE**: Kandahar: Shah Maqsud supra Darweshan 50 km NW Kandahar, 2000 m, HEDGE & EKB. W-7130! Tirin: In collibus inter lacum artific. „Arghandab Reservoir“, 31° 50'N, 65° 45'E et Tirin, 32° 40'N, 65° 50'E, 1400–1700 m, 23. V. 1967, RECH. 35035! In decl. australibus Surkhab Kotal inter Kandahar et Tirin, FREITAG 858-a! Orozgan: Inter Tirin et Orozgan, RECH. 35123!

Distr. gen.: Endem.

A very characteristic species on account of the three roundish leaflets of the leaves. Most closely related to *R. moschata.*

Hybridae

R. Beggeriana x *Ecae*

A f g h a n i s t a n : **E**: Ghazni: Dasht-i Nawar, 3300 m, BRECKLE 1986 p.p.!

R. Beggeriana x *hemisphaerica; R.* x *Blinovskyana* KULT., Tr. Turkm. fil. Akad. Nauk SSR. 5: 132, fig. 8 (1944).

T u r c o m a n i a : Ad fl. Chorlok prope Gjaurs in faucibus Khirz-der, BLINOVSKI 129! A viam Gjaurs – Shamli usque ad fontes fluvii, BLINOVSKI 15!

R. Beggeriana x *orientalis; R.* x *Kotschyana* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 10: 3 (1849).

P e r s i a : **S**: Fars.: Kuh-e Dinar, KY. 637 (isotypus *R. Kotschyanae*)! Komehr inter Shiraz et Tal-e Khosravi, BEHB. 1274-E!

R. Beggeriana x *pulverulenta*

T u r c o m a n i a : Ashkhabad, Suluklü ad fines Persiae, in montibus versus Gul, SINT. 1109!

R. Beggeriana* × *Webbiana; R.* × *piptocalyx JUZ., Fl. URSS. 10, Addenda IX: 637 (1941).

Afghanistan: **N**: 15 km S Sangcharak, 1800 m, FREITAG 6571! – **NW**: Maimana: Sufak, 2400 m, KOELZ 14039! Mak, 2550 m, KOELZ 14067! Inter Nishar et Maimana, 850 m, AMIN 6204! Sangcharak: Band-i Chakawak, 2700 m, KOELZ 14044!, 14045! – **E**: Kabul: In decl. australibus jugi Salang, 1850–2300 m, LAMOND 2056!, FREITAG 2989! Paghman: In valle Paghman, 2300–2800 m, RECH. 17127!, NEUB. 497! Supra Begtut, 2900 m, GILLI 1826! Panjshir: Prope Basarak, 2450–2800 m, GILLI 1825!, 1829! Gulbahar, NEUB. 495! Maidan: In valle Maidan, 2400 m, RECH. 35999! In jugo Unai, 2800–3000 m, BRECKLE 2257!, GILLI 1827!, HDG. & WDB. W-4534! Inter Sar-i Chashmeh et jugum Unai, 2900 m, RECH. 18064! M. Palan Khana in valle Logar, 3250 m, LALANDE R-1077-E 4! Gardez: M. Safed Kuh W jugi Altimur, 2600–2700 m, RECH. 31946! Ghazni: Dasht-i Nawar ad viam versus Bini Dara-ak Kotal, 3100 m, FREITAG 1442! In jugo inter Sariab et Dasht-i Nawar, 3100 m, RECH. 37248! 15 km E Sabzak inter Dasht-i Nawar et Malestan, 3500 m, PODLECH 19281! Khost: Sirotai, 2700 m, KOELZ 11946! Nuristan: In valle Pech prope Wama, cult. in Rosario Sangerhausen, KERST.! – **NE**: Munjan: Krunn, 2700 m, KOELZ 12801!, 12802! Sanglich, 3450 m, KOELZ 12627!, 12652! Darrah-i Parshui, 3900 m, FREY 370! In jugo Munjan (Minjan), 3750 m, KOELZ 12769!, 12770!, 12771! Irdak, 2550 m, EDELB. 1449! Wakhan: Warg, 2600 m, GRANCY 173! Inter Ab Gaj et Qala Ust, 2800 m, ANDERS 7056! Kataghan: In decl. borealibus jugi Salang, 2200–2800 m, ANGIEL 2!, FOHLEN N 7!, LAMOND 2243!, RECH. 37043!, 37045! In valle Khinjan, 1050–2500 m, PODLECH 18191!, ANDERS 6158! Koh-e Chungar NW Pul-i Khumri, 2200 m, FREITAG 6501!, 6494! Badakhsh.: 20 km a Hazrat Said versus Robat, 2000 m, FREY F-185! Daraim, 2550 m, KOELZ 13060!, 13061!, 13065! Magh Nawol (Magnaul), 3300 m, KOELZ 12786!, 12787! – **C**: Panjao: 20 km SW Panjao versus jugum Waras, substr. Tonschiefer, 2500 m, RECH. 36535! Doab: In jugo Lorinj, 3000 m, KOELZ 13739! In valle Surkhab prope Eshpushta, 1400 m, FREITAG 6459! 4 km S Doab, PABOT A-904! Deh Kundi: In decl. australibus jugi Waras, substr. granit., 2900 m, RECH. 36681! Behzud: Farakulum, KOEIE 3107!

Pakistan: Chitral: In valle Yarkhun, cult. Hort. Bot. Halle, KERST. K-228! Gabur, 2740 m, SCHEIBE 171! Tirich Mir, in valle Ojhor, 2800 m, cult. Rosario Sangerhausen, KERST. F-120!

R. Boissieri* × *canina

Iraq: Kurd.: Mosul: Sirsang, 1350 m, HAINES 493!

R. Boissieri* × *iberica

Persia: **N**: Maz.: Siah Bisheh 5 km N jugi Kandavan, 2300 m, BROWICZ & ZIELIŃSKI 442!

R. Brunonii* × *Webbiana

Afghanistan: **E**: Jaji: Khudi Khel, 2100 m, KOELZ 11530!

Possibly *R. glutinosa* × *moschata* CHRIST in BOISS., Fl. Or. Suppl. 223 (1888) belongs here.

R. canina* × *iberica

Talish: Prope pagum „Chairii", ALEXEENKO!

Persia: **N**: Gorg.: Mohammad Reza Shah Res.: S Tang-e Gol, 1850 m, WDB. & COBHAM 14376! Supra Almeh, WDB. & COBHAM 14248! Maz.: In valle Rud-e Tejan (Tedschen) prope Qomrud Pain, 2200–2500 m, BEHB. & AELL. 3782!, 3827!, 4706-E! In valle Chalus supra Valiabad, 2100 m, RECH. 48371! Pol-e Zanguleh, 2200–2600 m, RECH. 6347-a! 2 km S Siah Bisheh, 2170–2250 m, PABOT 4746! – **W**: Azerb.: Gardaneh Heyran, 300–400 m, TERME & MATINE 37062-E! In decl. borealibus jugi SW Aliabad prope Kaleybar, 2000 m, LAMOND 4818! & TERME in RECH. 44258! – **E**: Khor.: Kotal-e yek Chenar, KOELZ 16717!

T u r c o m a n i a : Kopet Dagh 20 km W Kara Kala, GUBANOV! Suluklü prope Kulkulab, SINT. 2269!

R. canina × **orientalis**

I r a q : Kurd.: Mosul: Sirsang, 1350 m, HAINES 305!

R. Ecae × **Webbiana**

A f g h a n i s t a n : E: Panjshir: Kharu, 2150–2250 m, ANDERS 9913! Jaji: In decl. occidentalibus jugi Shuturgardan, 2600 m, EKB. W-9202 p.p.! Supra Qasim Khel, 3250 m, FREITAG 5774! – NE: Kataghan: In valle Andarab, substr. serpent., 1100 m, RECH. 31755! In decl. borealibus jugi Salang, 2080 m, RECH. 37044!
P a k i s t a n : Chitral: Chitral Gol, 1870 m, KHAN 80!

R. foetida × **hemisphaerica**

P e r s i a : W: Lur.: Tidar, 1500 m, KOELZ 17566!

R. hemisphaerica × **persica; R.** × **kopetdagensis** MEFF., Žurn. Inst. Bot. Vseukrajin'sk. Akad. Nauk 20: 191 (1939).
Syn.: *Hulthemosa kopetdagensis* (MEFF.) JUZ., Fl. URSS. 10: 508 (1941). *H. turcomanica* BLIN., Fl. Turkmen. 4: 76 (1949).
Icon.: Fl. Turkmen. 4: tab. 18 (1949). ZIELIŃSKI, Arbor. Kornickie 25: fig. 5b (1980).
Typus: Turcomania: Roberhovskij, N. V. ANDROSSOV, LE!

Folia valde variabilia, pinnata, foliolorum paribus 1–2(–3), raro nonnulla simplicia. Stipulae plerumque evolutae, saepe cum foliolis infimis connatae. Petala flava, immaculata. Sepala integra vel lobis minutis lateralibus provisa. Hypanthium glabrum vel pubescens. Fructus maturus ignotus. – Floret IV.–V.

P e r s i a : E: Khor.: Inter Gifan et Golaman, 1400 m, SAB. in GAUBA 485! – C: Qazv.: Sultanabad prope Qazvin, 1500 m, LINDS. 252! Damgh.-Semn.: In montibus prope Tuweh (Tuyeh) 35 km N Damghan, 1950 m, RECH. 56452!, WDB. & ASSADI 29508!
T u r c o m a n i a : Ashkhabad: Kopet Dagh orient. supra pagum Roberhovskij, in decl. borealibus angustiarum „Vetehlki", ANDROSSOV! Suluklü, SINT. 1110! Inter Germab et Mergen Ulja, sec. Fl. Turkmen., l.c.

R. kokanica × **Webbiana**

A f g h a n i s t a n : NE: Kataghan: In valle Khinjan, 1900 m, HDG., WDB. & EKB. W-8577 p.p.!

R. macrophylla × **Webbiana**

P a k i s t a n : Swat: Sho Nullah, 3000 m, RAHMAN 44!

R. pimpinellifolia × **pulverulenta**

P e r s i a : W: Azerb.: In jugo Goja Bel, 1800 m, LAMOND 5075! M. Qareh Dagh in decl. saxosis prope Aliabad 20 km SW Kaleybar, 2300–2500 m, LAMOND 4882! & TERME in RECH. 44351!

Species imperfectly known or doubtfully recorded.

R. asperrima GODET in BOISS., Fl. Or. 2: 678 (1872).
Typus: In regione alpina Kuh Nur Persiae austro-occid. alt. 13000' ad nives, HAUSSKNECHT, G-BOISS.

Probably a form of *R. iberica.*

R. caryophyllacea BESSER, Cat. Jard. Bot. Krzemieniec Suppl. 4: 18 (1815).

Recorded by CHRIST (1888) as follows „. . . ad Siaret pr. Asterabad Persiae (Bge. 2)" – is probably a form of *R. canina* or a hybrid of this species with *R. iberica.*

R. fertilis KULT., Tr. Turkm. fil. Akad. Nauk SSR. 5: 125, fig. 2 (1944).
Typus: Turcomania, Kopet Dagh, in angust. Baba Zo, 15. VIII. 1942, KULTIASOV.

Probably a hybrid *R. Beggeriana* × *iberica*

R. glanduloso-setosa G. GADZH., Nov. Syst. Pl. Vasc. 14: 128, fig. 1, 3B (1977).
Typus: Talish: „distr. Lerik, prope pag. Orant, 1550 m, in ostio fl. Lenkoran-czaj, ad declive occidentale montium", G. GADZHIEVA 782, BAK; isotypus LE.

R. karakalenis KULT., Tr. Turkm. fil. Akad. Nauk SSR. 5: 130, fig. 6 (1944).
Typus: Turcomania, distr. Karakala, in angust. Tutly, 5. VIII. 1941, BLINOVSKIJ.

Probably a hybrid *R. canina s.l.* × *iberica*

R. parasicula PONERT, Nov. Syst. Pl. Vasc. 10: 178, fig. 7–12 (1973).
Typus: „Iran borealis, pars borealis montibus Elburs, inter oppida Gachsar et Marzanabad, 39 km per viam ab Marzanabad, declive occidentale cum steppofruticeto, 2050 m, 25. VII. 1971", PONERT 38429/30, Hort. Bot. Batum.

Probably *R. iberica* or a form of *R. pulverulenta.*

R. steppofruticetorum PONERT, Nov. Syst. Pl. Vasc. 10: 176, fig. 1–6 (1973).
Typus: PONERT 38429/4, based on the specimen collected on the same locality as *R. parasicola.*

Probably a form of *R. pulverulenta.*

R. zuvandica G. GADZH., Nov. Syst. Pl. Vasc. 14: 129, fig. 2, 3A (1977).
Typus: Talish: Zuvand, 1,5 km ad orientem a pag. Gosmaljan, G. GADZHIEVA, BAK; isotypus LE.

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ILLUSTRATIONS

All plates have been photographed by the Akademische Druck- u. Verlagsanstalt, Graz

Tab. 1

Rosa persica MICHX. ex JUSS. – BENT & WR. 528–403

Tab. 2

Rosa persica MICHX. ex JUSS. – RECH. 6244

Rosa foetida J. Herrmann – Bent & Wr. 519–801

Tab. 4

Rosa kokanica (REGEL) JUZ. – KOELZ 11711

Rosa kokanica (REGEL) JUZ. – KOELZ 13035

Tab. 6

Rosa Ecae AITCH. – LINDB. 942/1960

Rosa Ecae AITCH. – RECH. 32209

Tab. 8

Rosa pimpinellifolia L. – RECH. 40649

Rosa Beggeriana SCHRENK – RECH. 5847

Tab. 10

Rosa Webbiana WALL. ex ROYLE – ANDERS 9945

Rosa Webbiana WALL. ex ROYLE – ROEMER 31

Rosa Webbiana WALL. ex ROYLE – RAHMAN 170-a

Rosa Boissieri Crépin – Rech. 15042 (Anatolia)

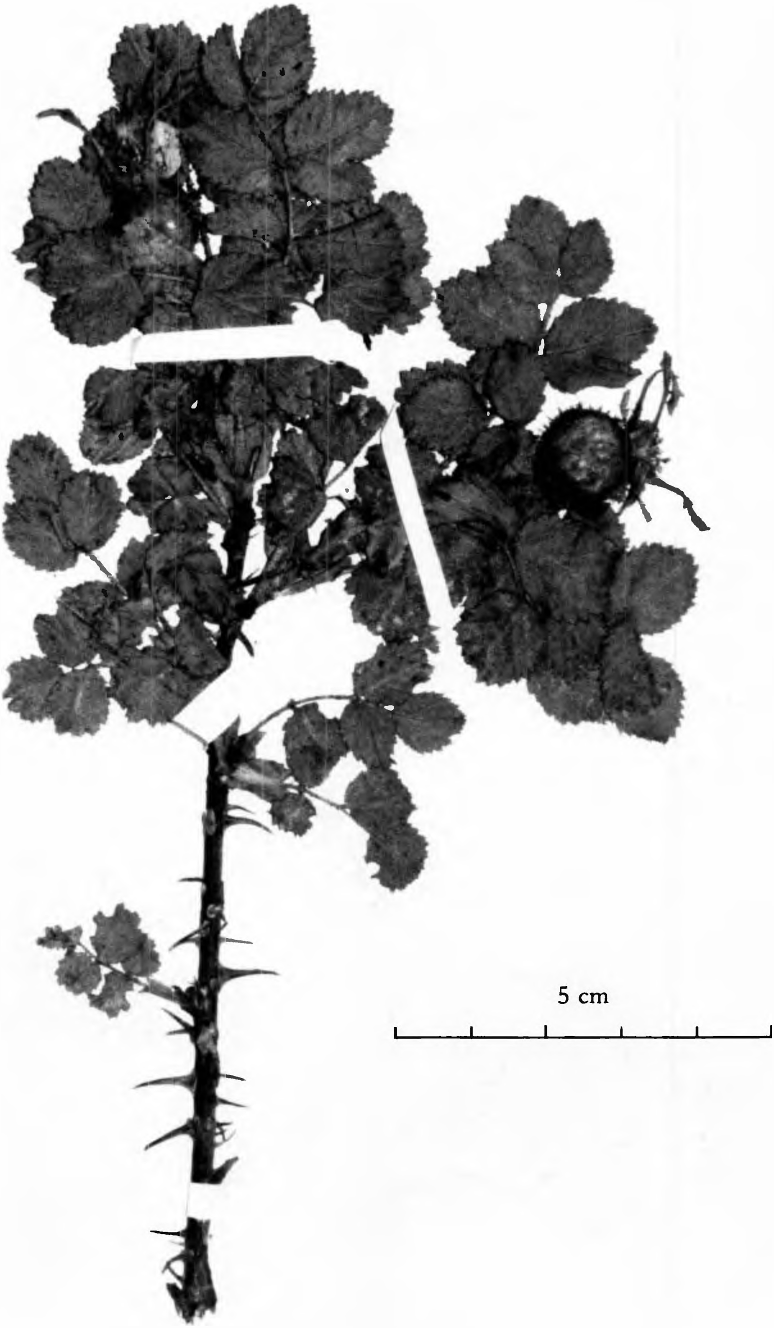
Tab. 14

Rosa orientalis DUPONT ex SER. – KOELZ 18324

Rosa elymaitica Boiss. & Haussk. – Rech. 10314

Tab. 16

Rosa elymaitica BOISS. & HAUSSKN. – BEHB. 1275-E



Rosa pulverulenta M.B. – TERME in RECH. 43884

Rosa iberica STEV. – RECH. 40309

Rosa iberica STEV. – RECH. 48919

Rosa Brunonii LINDL. – EDELB. 865

Rosa Brunonii Lindl. – Anders 10608

Tab. 22

Rosa moschata J. Herrmann – Bornm. 3527

Rosa Freitagii J. ZIELIŃSKI – RECH. 35035

Rosa Freitagii J. Zieliński – Rech. 19049

SYSTEMATISCHE ANORDNUNG DER FAMILIEN

Familien mit vorangestellter Continuatio-Nummer sind bereits erschienen.

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
	PTERIDOPHYTA					
	Equisetaceae	1	2	143	(2)	(2)
	Lycopodiaceae	2	1	142	(1)	(1)
	Marsileaceae	5	5	144	(4)	(4)
	Ophioglossaceae	3	3	140	(6)	(6)
	Polypodiaceae	4	4	141	(3)	(3)
	Salviniaceae	6	6	145	(5)	(5)
	GYMNOSPERMAE					
50	Cupressaceae	9	8	136	(8)	(8)
3	Ephedraceae	10	10	138	(10)	(10)
14	Pinaceae	8	9	135	(7)	(9)
12	Taxaceae	7	7	137	(9)	(7)
	ANGIOSPERMAE					
24	Acanthaceae	138	110	84	86	135
61	Aceraceae	86	83	30a	42a	76
113	Aizoaceae	48	27	50	57	106
78	Alismataceae	16	127	115	124	146
76	Alliaceae	26	133	128	116	155
91	Amaranthaceae	45	23	93	92	112
67	Amaryllidaceae	27	134	128	114	162
74	Ampelidaceae	91	91	32	41	66
63	Anacardiaceae	81	81	46	43	75
	Apiaceae	113	94	54	58	127
03	Apocynaceae	125	117	82	75	82
[illegible]5	Aquifoliaceae	82	86	70	38	58
1	Araceae	22	143	120	122	158
.02	Araliaceae	112	93	55	59	19
26	Aristolochiaceae	40	35	103	97	96
73	Asclepiadaceae	126	118	74	76	84
	Asparagaceae	26	133	129	116	155,7pp.
48	Asperifoliaceae	129	104	80	79	142
90/I, 122/II	Asteraceae	146	126	61	65	131
131	Avicenniaceae	130	111	86	88	88
[illegible]	Balanophoraceae	42	20	102	103	63
143	Balsaminaceae	89	85	25	33b	140
111	Berberidaceae	54	40	3	13	96
96	Betulaceae	33	11	112	108	25
44	Bignoniaceae	137a	108a	76a	85a	86a
48	Boraginaceae	129	104	80	79	142
57	Brassicaceae	60	46	7	16	101
45	Buddleiaceae	123	115	75	77	80
107	Burseraceae	75	78	33	36	72
79	Butomaceae	17	128	116	124a	145
27	Buxaceae	80	31	105	104a	23
	Caesalpiniaceae	68b	59b	38b	45b	13
118	Callitrichaceae	79	32	47	50b	117
13	Campanulaceae	145	125	62	66	130
138	Cannabaceae	37	17a	106	105	30
68	Capparidaceae	59	45	8	17	36

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
10	Caprifoliaceae	141	121	57	61	20
144/I	Caryophyllaceae	50	29	13	23	105
64	Celastraceae	83	87	35	39	60
28	Ceratophyllaceae	52	42	15	110	94
	Chenopodiaceae	44	22	92	93	111
46	Cistaceae	99	49	10	19	33
132	Commelinaceae	24	138	132	117	154
90/I, 122/II	Compositae	146	126	61	65	121
139a/III, 139b/III, 145/IV, 154/V						
2	Convolvulaceae	127	102	78	80	133
54	Cornaceae	114	92	56	60	18
97	Corylaceae	33	11	112	108	27
72	Crassulaceae	63	56	51	48	123
57	Cruciferae	60	46	7	16	101
123	Cucurbitaceae	144	124	48	55	42
77	Cupuliferae	33-4	11-2	111-2	108	25-7
8	Cuscutaceae	128	103	79	80a	141
39	Cynocrambaceae	111	25	91	105c	113
129	Cynomoriaceae	110a	20a	102	103	63
	Cyperaceae	20	139	134	126	169
136	Cytinaceae	41	36	101	96	98
29	Datiscaceae	101	54	49	56	43
104	Dioscoreaceae	28	137	131	115	164
	Dipsacaceae	143	123	60	64	129
30	Ebenaceae	121	100	69	72	68
48	Ehretiaceae	129	104	80	79	87
55	Elaeagnaceae	103	61	97	100	64
16	Elatinaceae	96	52	18	26	103
11	Ericaceae	116	99	63	67	51
89	Eriocaulaceae	23a	138b	–	125a	154a
6	Euphorbiaceae	78	30	104	104	49
140/I	Fabaceae	68	59	38	45	13-5
77	Fagaceae	34	12	111	108a	26
113	Ficoidaceae	48	27	50	57	106
99	Frankeniaceae	97	51	17	22	38
110	Fumariaceae	58	44	6	15a	100
41	Gentianaceae	124	116	76	78	118
69	Geraniaceae	70	74	26	33	138
17	Globulariaceae	137	108	85	87	142
134	Goodeniaceae	145a	125a	62a	66a	130a
70	Gramineae	19	140	135	127	170
47	Grossulariaceae	64	57	52	47	17
49	Guttiferae	95	55	19	27	54
18	Halorag(id)aceae	109	67	46	50	115
53	Hamamelidaceae	65	33	53	49	21
	Helleboraceae	53	39	1	11	90
92	Hippocastanaceae	87	84	30b	42b	77
31	Hippuridaceae	110	68	45	50a	116
19	Hydrangeaceae	64	57	52	47	16a
127	Hydrocaryaceae	108a	66a	44a	54	115a
80	Hydrocharitaceae	18	129	114	111	146

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2.ed.
49	Hypericaceae	95	55	19	27	54
25	Ilicineae	82	86	70	38	58
144/I	Illecebraceae	50	29	13	23	109
112	Iridaceae	29	135	126	113	163
121	Juglandaceae	32	13	109	107	28
75	Juncaceae	25	136	133	118	168
82	Juncaginaceae	14a	130	117a	125b	148
150	Labiatae	131	112	87	89	144
150	Lamiaceae	131	112	87	89	144
141	Lauraceae	56	37	98	98	11
140/I	Leguminosae	68	59	38	45	13-5
119	Lemnaceae	23	144	119	123	159
58	Lentibulariaceae	136	107	65	84	137
151/I	Liliaceae	26	133	128	116	155
106	Linaceae	71	72	23	31	47
45	Loganiaceae	123	115	75	77	79
116	Loranthaceae	39	19	100	101	61
51	Lythraceae	104	62	43	53	114
120	Malvaceae	93	69	20	28	46
133	Meliaceae	76	79	31	37	73
137	Menispermaceae	55	38	2	12	95
41	Menyanthaceae	124	116	76	78	119
	Mimosaceae	68a	59a	38a	45a	14
114	Molluginaceae	48	27	50	57	105
94	Monotropaceae	115	98	64	67a	52
153	Moraceae	36	15	107	105a	31
135	Morinaceae	143	123	60	64	129
109	Moringaceae	62	48	37	44	37
130	Myrsinaceae	117	97	67	70	67
32	Myrtaceae	107	64	40	52	55
86	Najadaceae	15	132	118	125	153
115	Nyctaginaceae	46	26	95	91	35
33	Nymphaeaceae	51	41	4	14	93
7	Oenotheraceae	108	66	44	54	115
52	Oleaceae	122	119	71	73	81
7	Onagraceae	108	66	44	54	115
126	Orchidaceae	30	141	125	112	167
5	Orobanchaceae	135	108	83	83	136
40	Oxalidaceae	69	73	24	33a	139
60	Paeoniaceae	53	39	1	11	89
146	Palmae	21	142	121	119	165
34	Papaveraceae	57	43	5	15	99
140/I	Papilionaceae	68c	59c	38c	45c	15
20	Parnassiaceae	64	57	52	47	126
128	Pedaliaceae	134	109	77	85	86
73	Periplocaceae	126	118	74	76	83
19	Philadelphaceae	64	57	52	47	16
35	Phytolaccaceae	47	24	90	94	110
15	Plantaginaceae	139	114	89	90	122
21	Platanaceae	66	34	110	106	22
108	Plumbaginaceae	119	95	88	68	121
70	Poaceae	19	140	135	127	170
101	Podophyllaceae	54	40	3	13	93

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson
124	Polygalaceae	77	80	12	21	41
56	Polygonaceae	43	21	94	95	108
	Pontederiaceae	24a	133a	–	116a	155
117	Portulacaceae	49	28	14	24	107
83	Potamogetonaceae	14	131	117	125a	150
9	Primulaceae	118	96	66	69	120
22	Punicaceae	105	65	42	53	57
93	Pyrolaceae	115	98	64	67a	50
136	Rafflesiaceae	41	36	101	96	98
	Ranunculaceae	53	39	1	11	91
149	Resedaceae	61	47	9	18	102
125	Rhamnaceae	90	90	36	40	65
	Rhizophoraceae	106	63	41	51	56
66/I, 152/II	Rosaceae	67	58	39	46	12
	Rubiaceae	140	120	58	62	85
84	Ruppiaceae	14	131	117	125a	151
	Ruscaceae	26	133	129	116	157
36	Rutaceae	73	76	28	34	70
65	Salicaceae	31	14	113	109	24
37	Salvadoraceae	84	88	72	74	59
155	Santalaceae	38	18	99	102	62
38	Sapindaceae	88	82	30	42	74
	Sapotaceae	120	101	68	71	69
42	Saxifragaceae	64	57	52	47	124
82	Scheuchzeriaceae	–	130	117a	125b	148
147/I	Scrophulariaceae	133	106	82	82	134
	Selaginaceae	137	108	85	87	–
	Simar(o)ubaceae	74	77	29	35	71
	Smila(ca)ceae	26	133	130	116	156
100	Solanaceae	132	105	81	81	132
59	Sparganiaceae	13	146	123	121a	160
88	Sphenocleaceae	145	125	62a	66	130
87	Staphyleaceae	85	89	30c	42c	78
156	Sterculiaceae	94	71	21	29	45
4	Tamaricaceae	98	50	16	25	39
39	Theligonaceae	111	25	91	105c	113
63	Therebinthaceae	81	81	46	43	75
95	Thymelaeaceae	102	60	96	99	34
148	Tiliaceae	92	70	22	30	44
127	Trapaceae	108a	66a	44a	54	115a
71	Typhaceae	11	147	124	121	161
142	Ulmaceae	35	16	108	105b	29
	Umbelliferae	113	94	54	58	127
105	Urticaceae	37	17	106	105	32
11	Vacciniaceae	116	99	63	67	53
23	Vahliaceae	64	57	52	47	125
62	Valerianaceae	142	122	59	63	128
43	Verbenaceae	130	111	86	88	88
	Violaceae	100	53	11	20	40
74	Vitaceae	91	91	32	41	66
85	Zannichelliaceae	14	131	117	125a	152
81	Zosteraceae	14	131	117	125a	149
98	Zygophyllaceae	72	75	27	32	48

Moraceae

uctore K. BROWICZ, Kórnik

Lfg. Cont. No. 153 / Juni 198

FLORA DES IRANISCHEN HOCHLANDES UND DER UMRAHMENDEN GEBIRGE

PERSIEN, AFGHANISTAN, TEILE VON WEST-PAKISTAN, NORD-IRAQ, AZERBAIDJAN, TURKMENISTAN

von

Univ.-Prof. Dr.

KARL HEINZ RECHINGER

Erster Direktor des Naturhistorischen Museums in Wien (emeritus)

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Moraceae

auctore K. BROWICZ, Kórnik

Moraceae LINK, Handb. 2: 444 (1831) „*Moriformes*".

Lit.: E. BOISSIER, Flora Orientalis 5: 1153–1156 (1879) in *Urticaceis*. J. D. HOOKER, Flora of British India 5: 477–494 (1888) in *Urticaceis*. A. ENGLER in A. ENGLER & K. A. E. PRANTL, Die Natürlichen Pflanzenfamilien 3, 1: 66–98 (1894). C. K. SCHNEIDER, Illustriertes Handbuch der Laubholzkunde 1: 234–245 (1904). A. JARMOLENKO in Flora URSS. 5: 376–384 (1936). G. H. M. LAWRENCE, Taxonomy of vascular plants 462–464 (1958). A. TAKHTAJAN, Systema et Phylogenia Magnoliphytorum 127–128 (1966). M. G. POPOV in Flora Tadjikskoi SSR. 3: 164–176 (1968). J. HUTCHINSON, The Genera of Flowering Plants 2: 151–178 (1967). F. C. BHOPAL & M. N. CHAUDHRI, Flora of Phothohar and the Adjoining Areas in Pakistan Systematics 1, 2: 27–40 (1977). C. C. TOWNSEND in Flora of Iraq 4: 79–93 (1980).

Arbores et frutices, mono- vel dioici, latice lacteo. Folia alterna, interdum ± opposita, decidua vel sempervirentia, simplicia, integra vel interdum ± serrata vel lobata; nervi pinnati vel palmati. Stipulae 2, laterales vel supra gemmam pileum formantes, saepe caducae. Flores minutissimi, valde reducti, actinomorphi, unisexuales, capitati vel pseudospicati vel in facie interiore receptaculi concavi dispositi. Perianthii segmenta 4, libera vel connata, reducta vel deficientia. Flores masculi staminibus 4 (vel ad 1–2 reductis), perianthii segmentis oppositis; filamenta distincta. Flores feminei ovario superiore vel inferiore, plerumque uniloculare; styli plerumque 2, filiformes. Fructus parvus, achaenium vel drupula. Infructescentia syncarpa vel syconium. Semina plerumque endospermio praedita.

1a. Rami spinis axillaribus praedita . . . . 2. *Maclura* NUTT.
b. Rami inermes 2
2a. Flores in receptaculo concavo dispositi. Stipulae connatae gemmam terminalem includentia, cicatricem annulatam formantes . . . . 4. *Ficus* L.
b. Flores spicati vel capitati. Stipulae liberae, cicatricem non formantes 3
3a. Syncarpium ovoideum vel cylindricum, succosum. Gemmae squamis 3–6 . . . . 1. *Morus* L.
b. Syncarpium globosum, non succosum. Gemmae squamis 2–3 . . . . 3. *Broussonetia* L'HÉRIT. ex VENT.

1. *Morus*

Morus L., Spec. Plant. 986 (1753).

Lit.: G. KOIDZUMI, Synopsis specierum generis Mori, Bulletin of the Imperial Central Agricultural Experiment Station Japan 2: 1–45 (1923). T. HOTTA, Taxonomical studies on the Morus plants and their distribution in Japan and its vicinities (1958).

Arbores et frutices decidui lactiferi. Gemmae squamis 3–6. Folia alterna, simplicia, serrata vel dentata, indivisa vel lobata, nervis 3–5 e basi orientibus. Stipulae membranaceae, laterales, parvae, mox deciduae. Flores 4-meri, monoici vel dioici, ambo sexus in amentis pedunculatis axillaribus. Perianthium 4-partitum. Stamina 4. Ovarium ovoideum vel subglobosum, biloculare, loculo uno abortivo. Styli 2-partiti. Ovulum solitarium, pendulum. Fructus et drupulae compressi perianthio dilatato succulento inclusi, in syncarpium ovoideum vel cylindricum succulentum aggregati. Semina endospermio carnoso.

1a. Folia triloba, argute biserrata; lobi distincte longe caudati . . . 3. *M. serrata* ROXB.
 b. Folia indivisa vel ± lobata, crenato-serrata; lobi non caudati 2
2a. Folia utrinque pubescentia, supra scabriuscula, subtus molliora, profunde cordata. Styli pilosi . . . . 1. *M. nigra* L.
 b. Folia subtus tantum secus costam medianam et nervos validiores pubescentia, truncata usque cordata. Styli glabri . . . . 2. *M. alba* L.

1. ***M. nigra*** L., Spec. Plant. 986 (1753).
Icon.: TOWNSEND, Fl. of Iraq 4, 1: tab. 16 (1980). Fl. Armen. 4: tab. 88 (1962). BEAN, Trees and Shrubs hardy in the British Isles ed. 7, 2: 329 et tab. 30 (1951). KUNKEL, Arboles Exoticos, Los Arboles Cultivados en Gran Canaria 1: 141 (1969). – Tab. nostr.: 1.
Typus: „Habitat in Italiae maritimis", Herb. LINN 1112, 3.

Arbor plerumque quam 10 m non elatior, coronam densam altitudine arboris saepe latiorem formans. Truncus brevis, scaber. Surculi crassiusculi, validi, juveniles rufescenti-brunnei, dense pilosi. Folia longitudini circiter aequilata, 6–12(–20) cm longa, late ovata, plerumque indivisa vel interdum (in speciminibus luxuriantibus) 2–3-loba, grosse serrata, apice acuta vel breviter acuminata, basi profunde cordata, supra scabra, subtus imprimis secus nervos principales pubescentia, subcoriacea. Petiolus ad 3(–4) cm longus, crassus, pilosus. Amenta mascula 15–25 mm longa, quam feminea duplo circiter longiora, ambo pedunculis pubescentibus suffulta. Stylus pilosus. Syncarpium oblongo-ovatum, ad 25 mm longum, nigrum, lucidum, valde surcosum, dulcamarum.

Iraq: Kurd.: Arbil: Shaqlawa, cult., GILLETT 8037, OMAR 37619. Algurd Dagh prope Nowanda, GUEST 2775. Prope Halabja, GUEST 13002.
Talish: Prope Lenkoran, HOHEN.
Persia: **W**: Kermansh.: Kuh-i Parrow prope Bernaj, STR.! Arak: Anjidan (Indschidan), STR. Arak (Sultanabad), STR. Lur.: Borujerd, KOELZ 18643! – **S**: Kerm.: Kerman, BORNM. 4511!
Afghanistan: **E**: Kabul: Kabul, cult., VOLK 1695! Nuristan: In regione Ashkun, in valle Madshegel superiore, 1620 m, KERST. 1233! – **NE**: Badakhsh.: Khanabad, 360 m, KOELZ 12223!

Distr. gen.: Origo incerta, culta tantum nota; in Asia australiore, Europa australi et Africa boreali inquilina.

2. ***M. alba*** L., Spec. Plant. 986 (1753).
Syn.: *M. indica* L., l.c.
Icon.: C. K. SCHNEIDER, Ill. Handb. Laubholzk. 1: fig. 152 (1904). BHOPAL & CHAU-

DHRI, Pakistan Syst. 1, 2: tab. 18 (1977). Hegi, Ill. Fl. Mitteleur. ed. 2, 3, 1: tab. 119 (1957). – Tab. nostr.: 2.
Typus: „Habitat in China", Herb. LINN 1112, 1.

Arbor 10–15(–20) m alta, corona densa, compacta rotundata, ad 15 m diametro. Truncus brevis, cortice aspero fisso. Surculi juveniles primum pubescentes vel glabri. Folia 5–15 cm, in formis nonnullis ad 20–25 cm longa, latitudine plerumque longiora, ovata usque late ovata, apice acuta vel breviter acuminata, basi rotundata vel truncata vel ± cordata, grosse dentata, saepe, imprimis in individuis junioribus nondum fructiferis vario modo 3–5(–7)-lobata, supra plerumque laevia et lucida, subtus secus costam medianam et nervos principales patule pilosa, nervorum axillis fasciculis pilorum notatis. Petiolus pilosus, 1–5 cm longus. Stipulae lanceolatae, mox caducae. Amenta mascula 10–15 mm longa, pedunculis brevibus tomentosis suffulta. Amenta feminea minora, 5–10 mm longa. Styli glabri. Syncarpium 10–25 mm longum, plerumque album sed interdum roseo-purpureum vel fere nigrum, succulentum, dulce et sat insipidum. Drupulae pallide brunneae, c. 2 mm longae.

I r a q : Kurd.: Arbil: Algurd Dagh prope Nowanda, GUEST 2777! In faucibus Rawandiz, 600 m, GUEST 459! Shaqlawa, 900 m, cult., GILLETT 8031!, 8032! Sul.: Qaradagh, 850 m, GILLETT 7946!, 7947! Sarchinar prope Sulaymaniyah, 850 m, cult., GILLETT 7688! M. Avroman, HAUSSKN. 877!, GORDON! Mosul: Kalak (Eski Kellek), CHAPMAN 8381. Girdmamik, CHAPMAN 8387.
P e r s i a : **N**: Gorg.: Bandar-i Gaz, in silvis, RECH. 5536!, SINT. 1352! Maz.: Prope Chalus, 1200 m, BOWLES Scholarship Bot. Exp. 764! Now Shahr, STUTZ 1200! Karehsang in valle Haraz, 100 m, WDB. 585! – **W**: Kurd.: M. Shahu, 1200 m, HAUSSKN.! Arak: Arak (Sultanabad), STR.! Lur.: Khorramabad, BENT & WR. 411–102! 6 km N Andimeshk, BENT & WR. 426–101! Khuz.: Abadan, MCMILLAN 276! – **S**: Fars.: Shiraz, cult. GRANT 15705! Takht-i Bagh prope Shiraz, cult. STAPF 872! Prope Shapur „Dauledkuhek", STAPF 871! Lar.: Isin, 150 m, KOELZ 14209! Bal.: Miandar, in decl. borealibus Kuh-e Bam Posht, HOTSON. – **C**: Damgh.-Semn.: Abdullahabad inter Veramin et Semnan, 1200 m, cult., RECH. 2777! Qom: Rahjerd, 2000 m, KOEIE 1606. Qom, cult., COWAN & DARLINGTON 845!
T u r c o m a n i a : Ashkhabad, cult., SINT. 358-b! In valle Aydere, CZERNJAK.
A f g h a n i s t a n : **NW**: Herat: Badghiz, Sim Koh supra 900 m, cult., AITCH. 507. – **SW**: Farah: Jija Sarai, cult., 900 m, KOEIE 409! – **SE**: Kandahar: Prope Kandahar, EGIERSZDORFF 46!, 48!, 50!, GRIFF.! – **E**: Kabul: Kabul, cult., 900 m, KOEIE 4091!, NEUB. 291/1950!, 3055! Charikar, cult., NEUB. 292/1950! Jaji: In decl. borealibus Safid Kuh S Oghaz, 1800–2100 m, ANDERS 10362! Nuristan: Wama, 1400 m, EDELB. 516!, 459! Gusalak, 1000 m, EDELB. 2235! Gultscheilam, KERST. 1234! Nuristan orientalis, EDELB. 1136! Inter Barikot et Kamdesh, 900 m, in silvis *Qu. Baloot*, 900 m, GILLI 2402! 18 km NW Kamdesh, 1567 m, HEWER 1366! Supra Bragamata (Barge Matal), 2200 m, BOHASZEWICZ 1! Prope Pushut, cult., GRIFF.
P a k i s t a n : Chitral: Brumboret Gol N Drosh, 1500 m, STAINT. 2224! Chitral, 1500 m, STAINT. 2193!, HARRISS 16626!, TOPPIN 112! – Kurram: W Thal, AITCH. 364! – N. Wazir.: Boya, 300 m, cult., FZ. 1357, 1358. Razani, cult., 1500 m, FZ. 2177, 2181, 2189. Miram Shah, BLATT & FZ. 521. – S. Wazir.: Sora Rogha, cult., 1200 m, FZ. 128. Tank, WILLIAMS 9181. – Quetta: Quetta, 1500 m, LACE 3366!, SANTAPAU 6253!, 6275! Spin Karez prope Quetta, cult., 1800–1900 m, LAMOND 1124! Inter Quetta et Pishin, HUGHES-BULLER 18819, 18820, 18822. Harnai, LACE. Mastung, LACE. Kotra, HUGHES-BULLER 19253. – Kalat Nal, DUKE. Wad, HUGHES-BULLER 18809, 18810. 115 km S Kalat, 1500 m, HOTSON 148. – Makran: Garmkan 2 km NE Panjgur, 900 m, HOTSON M-168.

Distr. gen.: Iraq, Persia, Turcomania, Afghanistan, Pakistan; in Sina spontanea, in Asia australiore inquilina.

Commonly cultivated in many forms in Asia, Europe, N Africa and America. Planted in gardens and along streets and roads. The leaves are utilized as food for silkworms. Fruits are eaten in fresh and dry state.

3. ***M. serrata*** ROXB., Fl. Ind. ed. 2, 3: 596 (1832).
Syn.: *M. alba* L. var. *serrata* (ROXB.) BUREAU in DC., Prodr. 17: 242 (1873).
Icon.: BHOPAL & CHAUDHRI, Pakistan Syst. 1, 2: tab. 19 (1977).

Speciebus antecedentibus similis sed folia triloba, argute dupliciter serrata, pedunculo syncarpii lanato-tomentoso.

Pakistan: Swat: Swat, R. R. STEW. – N. Wazir.: Razani, 1500 m, cult., FZ. 2139, 2142. – Bal.: Kharan, HUGHES-BULLER 23102.

Distr. gen.: Pakistan, Kashmir, India.

2. *Maclura*

Maclura NUTT., Gen. N. Amer. Pl. 2: 233 (1818).
Syn.: *Ioxylon* RAFIN., Am. Month. Mag. 2: 118 (1817), nomen.

Arbor decidua, lactifera. Rami spinis axillaribus praediti. Folia alterna, tenuiter petiolata, simplicia, integra, pinnati-nervosa, vernatione involuta. Stipulae minutae, membranaceae, caducae. Flores dioici; masculi pedicellati, staminibus 4, in racemis globosis laxis longe pedunculatis dispositi; flores feminei sessiles, ovario sessili, stylo filiformi indiviso, in capitula globosa densa longo pedunculata dispositi. Perianthium 4-lobum. Achaenia oblonga, in syncarpium magnum globosum mamillato-corticatum composita. Semina sine endospermio.

1. ***M. pomifera*** (RAFIN.) C. K. SCHNEIDER, Ill. Handb. Laubholzk. 1: 239 (1904).
Syn.: *Ioxylon pomiferum* RAFIN., Am. Month. Mag. 2: 118 (1817). *Maclura aurantiaca* NUTT., Gen. N. Amer. Pl. 2: 233 (1818).
Icon.: C. K. SCHNEIDER, l.c.: fig. 153, 154 (1904). SARG., Silva N. Amer. 7: tab. 322, 323 (1890).

Arbor ad 15–20 m alta. Truncus cortice profunde fisso atrate aurantiaco-brunneo. Lignum durum, flavum. Spinae validae, 10–25 mm longae. Surculi juveniles pubescentes mox glabrescentes, olivaceo-virides. Folia 5–12(–16) cm longa, latitudine circiter duplo longiora, ovata usque lanceolato-oblonga, apice ± acuminata, basi cuneata usque subcordata, integra, supra atroviridia, glabra et lucida, subtus pallidiora et juvenilia imprimis secus nervos et costam medianam pubescentia. Petiolus 2–5 cm longus. Flores virides inconspicui, minuti. Inflorescentia mascula racemus subglobosus, 25–35 mm longus, pedunculo racemum aequante vel eo longiore suffultus; racemi glomerati. Inflorescentia feminea solitaria, capitata, dense globosa, c. 20 mm diametro, subsessilis vel breviter pedunculata. Syncarpium subglobosum, aurantio simile, 10–15 cm diametro, virescenti-flavum. Semen fere 10 mm longum.

Talish: sec. GROSSH., Fl. Kavk. 3 (1945).
Persia: sec. SABETI, Forest, Trees and Shrubs of Iran (1976).
Pakistan: sec. R. R. STEWART, Ann. Cat. Vasc. Pl. West Pak. Kashmir in NASIR & ALI, Flora West Pakistan (1972).

Distr. gen.: In parte meridionali Americae borealis (Texas, Oklahoma, Arkansas) spontanea.

Cultivated in gardens of many countries of SW and Middle Asia.

3. *Broussonetia*

Broussonetia L'HERIT. ex VENT., Tabl. regn. veg. 3: 547 (1799).

Arbores decidui et frutices lactiferi. Gemmae squamis 2–3. Folia alterna vel partim opposita, dentata, indivisa vel 3(–5)-loba. Stipulae laterales, ovato-lanceolatae, membranaceae, caducae. Flores dioici, 4-meri. Flores masculi in spicas pendulas cylindricas amentiformes dispositi; flores feminei in capitula globosa, breviter pedunculata dispositi. Ovarium stipitatum; stylus subulatus, tota longitudine stigmatosus. Fructus e drupulis syncarpium globosum formantibus compositus. Semina endospermio praedita.

1. ***B. papyrifera*** (L.) L'HERIT. ex VENT., Tabl. regn. veg. 3: 547 (1799).
Syn.: *Morus papyrifera* L., Spec. Plant. 986 (1753).
Icon.: C. K. SCHNEIDER, Ill. Handb. Laubholzk. 1: fig. 151e–g; 153a–c; 153g–m (1904). BRANDIS, Indian Trees fig. 189 (1906). NAKAI, Fl. Sylv. Koreana 19: tab. 34 (1932). BHOPAL & CHAUDHRI, Pakistan Syst. 1, 2: tab. 20 (1977).
Typus: „Habitat in Japonia", LINN 1112, 4.

Arbor parva, 3–10(–16) m alta. Cortex griseus, laevis. Rami validi, imprimis juventute molliter pubescentes. Folia 4–20 × 3,5–16 cm, late ovata usque ovato-elliptica, regulariter grosse dentata, apice breviter acuminata, basi truncata vel leviter cordata, basi saepe asymmetrica, supra dense scabrida, subtus velutina vel pilosa; folia in surculis vegetativis longioribus et in individuis junioribus saepe profunde lobata. Petioli 3–10 cm longi, dense pilosi. Stipulae anguste triangulari-acuminatae, 10–15 mm longae. Inflorescentiae masculae 6–8 cm longae. Syncarpium 2–3 cm diametro, aurantiaco-rubrum, tomentosum. Pedunculus c. 1 cm longus.

Pakistan: Swat, sec. BHOPAL & CHAUDHRI, l.c. – Peshawar: Nowshera 43 km E Peshawar, 400 m, in horto, UOTILA 17355! – Kurram, sec. BHOPAL & CHAUDHRI, l.c.

Distr. gen.: Asia austro-orientalis, Japonia, Sina; ceterum multis locis in hortis et secus vias publicas culta.

4. *Ficus*

Ficus L., Spec. Plant. 1059 (1753).

Lit.: F. A. W. MIQUEL, Prodromus Monographiae Ficuum, Hooker's London Journal of Botany 6: 514–588 (1847); 7: 64–78, 109–116, 221–236, 425–442, 451–471, 563–564 (1848). H. SOLMS-

LAUBACH, Die Herkunft, Domestication und Verbreitung des gewöhnlichen Feigenbaums (Ficus Carica L.) Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen 28: 1–106 (1882). O. WARBURG, Die Gattung Ficus im nichttropischen Vorderasien. Festschrift zur Feier des siebzigsten Geburtstages des Herrn Prof. Dr. Paul Ascherson 364–370 (1904). R. RAVASINI, Über das von Dr. Heinrich Frh. v. Handel-Mazzetti in Mesopotamien und Kurdistan gesammelte Ficus Material, Annalen des K. K. Naturhistorischen Hofmuseums 27: 507–514 (1913). M. G. POPOV, Dikie plodovye derevja i kustarniki Srednej Azii (= Wild growing fruit trees and shrubs of Asia Media): Ficus L., Trudy po Prikladnoj Botanike, Genetike i Selekcii 22, 3: 307–327 (1929). I. J. CONDIT, The Fig, A new series of plant science books, 19. Chronica Botanica (1947). I. J. CONDIT & J. ENDERUD, A bibliography of the fig, Hilgardia 25: 1–663 (1956). E. J. H. CORNER, Check-List of Ficus in Asia and Australasia with key to identification, Garden's Bulletin, Straits Settlements Singapore 21, 1: 1–186 (1965). G. AWEKE, Revision of the genus Ficus L. (Moraceae) in Ethiopia, Mededelingen Landbouwhogeschool Wageningen 79, 3: 1–115 (1979).

Arbores et frutices plerumque monoici, lactiferi, interdum surculosi. Folia sempervirentia vel decidua, alterna, raro opposita, simplicia, integra vel serrata, saepe vario modo lobata. Stipulae connatae, gemmam terminalem includentes, caducae, cicatricem circularem formantes. Flores receptaculo carnoso, ovoideo vel globoso vel pyriformi, ostiolo parvo praedito inclusi. Flores masculi perianthio 2–6-partito staminibus 1–2, raro 3–6. Flores feminei perianthio simili vel perianthium reductum vel nullum. Ovarium rectum vel obliquum, stylo solitario brevi vel filiformi, excentrico vel laterali. Achaenia receptaculo increscente inclusa cum eo ficum formantia. Endospermium saepe parcum.

1a. Folia dentata vel serrata vel ± lobata, decidua 2
b. Folia integra, sepervirentia vel semisempervirentia 6
2a. Folia ± lobata 3
b. Folia non vel exceptione tantum lobata 5
3a. Folia parva, (1–)2–5(–6) cm longa. Petiolus 0,5–2(–3) cm longus . . . . 2. *F. Johannis* BOISS. subsp. *Johannis*
b. Folia majora, 5–20(–35) cm longa. Petiolus plerumque longior, ad 12 cm longus 4
4a. Folia plerumque usque ad tertiam partem vel ad dimidium lobata, undulato-crenata usque dentata, si profunde lobata, lobi spathulati marginibus integris, apice paucidentatis. Ficus sessilis vel subsessilis . . . . 1. *F. carica* L. subsp. *carica*
b. Folia plerumque profunde saepe fere usque ad basin lobata, tum lobi angusti, marginibus irregulariter dentatis vel inciso-serratis vel in lobos secundarios incisi. Ficus pedicello usque ad 2 cm longo suffultus . . . . 2. *F. Johannis* BOISS. subsp. *afghanistanica* (WARB.) BROWICZ
5a. Folia manifeste cordata, plerumque latitudine evidenter longiora, grosse dentata . . . . 1. *F. carica* L. subsp. *rupestris* (HAUSSKN. ex BOISS.) BROWICZ
b. Folia basi cuneata vel rotundata vel truncata vel subcordata, latitudine circiter aequilonga, dentata vel dentato-serrata . . . . 3. *F. palmata* FORSSK. subsp. *virgata* (ROXB.) BROWICZ
6a. Folia deltoideo-ovata, longe caudata. Petioli ad 11 cm longi . . . 4. *F. religiosa* L.
b. Folia forma alia, numquam caudata. Petioli ad 4–5 cm longi 7

7a. Fici e ramulis brevibus aphyllis orientes . . . . 6. *F. racemosa* L.
b. Fici e ramulis foliosis orientes 8
8a. Folia acuminata. Petioli 6–14 mm longi . . . . 7. *F. foveolata* WALL. ex MIQ.
b. Folia apice rotundata vel obtusiuscule subacuta. Petioli 1,5–5 cm longi . . . . 5. *F. benghalensis* L.

1. ***F. carica*** L., Spec. Plant. 1059 (1753).
Syn.: *F. kopetdagensis* PACHOM. in VVED., Consp. Fl. Asiae Mediae 2: 323 (1971).

Frutex vel arbor decidua ad 10 m alta (vel elatior). Rami juveniles virides, demum brunnei, glabri vel ± puberuli; vetustiores grisei, laeves, crassi, rigidi, pauciramosi. Folia 5–20(–35) cm longa, interdum longitudine latiora, undulato-crenata usque dentata, ± lobata vel indivisa, plerumque cordata, scabrida, subtus saepe ± pubescentia usque tomentosa, exceptione subglabra. Petiolus 2–8(–12) cm longus, glaber usque tomentosus. Fici singuli, 2–3 cm (in formis cultis usque ad 8 cm) longi, pyriformes et stipitati vel subglobosi, sessiles vel pedicellati, virescentes vel flavescentes usque violacei, breviter pilosi vel (imprimis in formis cultis) glabri. Achaenia flava, subsphaerica, c. 1,5 mm longa.

Distr. gen. speciei: Europa mediterranea austro-orientalis, Cyprus, Anatolia, Libanon, Syria, Palaestina, Jordania, Iraq borealis, Persia borealis et occidentalis, Turcomania australis, Afghanistan, Caucasus, Tadjikistan australis.

Probably in many places not wild but only cultivated and subspontaneous.

– – subsp. ***carica***
Syn.: *F. colchica* GROSSH., Izv. Azerbajdzansk Fil. Akad. Nauk SSSR. 1–2: 111 (1939). *F. hyrcana* GROSSH., l.c.
Icon.: POPOV, Trudy Prikl. Bot. 22: 309–327, fig. 31–36 (1929). HEGI, Ill. Fl. Mitteleur. ed. 2, 3, 1: tab. 87, fig. 1 (1957). TAKHT., Fl. Armen. 4: tab. 37 (1962). Fl. Tadjik. SSR. 3: tab. 38, fig. 2 (1968).
Typus: Europa australis, Herb. LINN 1240, 1.

Frutex validus vel arbor. Folia magna, ad 10 cm, interdum ad 35 cm longa, ambitu suborbicularia, ± lobata, interdum sublobata; sinus inter lobos tertiam partem vel dimidium laminae attingentes, tum lobi lati, interdum autem sinus multo profundiores, tum lobi angusti, spathulati, margine integri, apice tantum paucidentati. Ficus plerumque pyriformis, stipitatus, sessilis vel subsessilis.

Iraq: Kurd.: Arbil: In faucibus Rawandiz, HELBAEK 796! Bekhal, OMAR 37638! Harir, HELBAEK 795! Galala, OMAR 37646! Sul.: M. Avroman prope Tawilla, 1200 m, RECH. 12387!
Talish: 5 km E Astara prope Mashchan, BEIDEMAN! Prope Alekseevka, PRILIPKO!, SCHIPZINSKY 247! Prope Lerik, GROSSH.! M. Balabur, GROSSH.! In decl. M. Nassiakau, PRILIPKO! Szuwelin, PRILIPKO! Alasapin, PRILIPKO! Insula Sara, RUBTZOVA!
Persia: N: Gorg.: Gorgan, KOELZ 16120!, 16983!, 16984!, 16986!, 16996! 40–80 km W Gorgan versus Sari, 10 m, UOTILA 15971! Bandar-i Gaz, SHAR. 316! Mohammad Reza Shah Res.: Tang-e Gol, 650 m, KUKKONEN 7681! Maz.: Galand Rud, 500 m, ZHUMER 286! S Shahi, 250 m, PABOT 4965! 25 km S Amol, 300 m, KUKKONEN 5570! Abanjarmahali, KOELZ 16191! Regio

Shahsvar, CABALA! Kareh Sang in valle Haraz, 100 m, WDB. 522! Gilan: Inter Bandar-e Pahlavi et Rezvandeh, RECH. 39684! – W: Azerb.: M. Qareh Dagh prope Hasan Beyglu, MIRD. 1919! 20 km W Astara in faucibus fl. Astara, 500 m, GRANT 16417! Insula Espir, 1330 m, WDB. & al. 12063! Arak: Girdu, STR.! Lur.: Safid Dasht, SAB. 327! – S: Fars.: Rishahr, STAPF 865! „Tang-i Tschirkun", STAPF 867! Barm-e Delak (Baermaek Daelak), STAPF 862! – E: Khor.: M. Kopet Dagh inter Quchan et Lotfabad, in jugo Allah Akbar, 800 m, RECH. 1757!; 1400 m, MIRD. in GAUBA 1915! Torbat-e Heydariyeh, KOELZ 16896!, 16897! Khvor, KOELZ 16818!, 16820!, 16827!, 16829!, 16831! – C: Tehr.: Evin, ZARGANI 14062-E! Qazv.: M. Elburz prope Karaj, 1600 m, BORNM. 1097!

T u r c o m a n i a : Kara Kala: In faucibus fl. Chandyr, MICHELSON 3962!, CZERNJAK. 739! In faucibus fl. Bogundar, BORISOVA 444!, GIEZDILLO!, In faucibus Joldere, MICHELSON 3118!, 3254!, 3417!, PETROVA 23! In valle fl. Sumbar prope Tutli Kala, SINT. 1982! Aydere, MICHELSON 3604!, 3657!, 3714!, JEGOROVA! Prope Nokhur, GUBANOV 1299!, ANDROSOV! Inter Nokhur et Archman, DUBJANSKIJ!, FEDTSCH. & al. 752! Ashkhabad: In faucibus Firyuza, SINT. 621!, SAMOKISZ & LIPSKY 1315!, MICHELSON 384!, 1281! FEDTSCH. 575! Inter Chuli et Firyuza, FEDTSCH. & al. 738! Chuli, FEDTSCH. & al. 616!, MICHELSON 1913!, NIKITIN! Prope Ashkhabad, LITW. 159!, SINT.! In faucibus Baba-zo, KULT. Germab, ANTONOV! Kopet Dagh austro-orientalis: In M. Chodsha-Balan, BLINOVSKIJ 495!, 496!, 508! Kelat-Chai, BLINOVSKIJ 485!, 517!, 518!, 523!

A f g h a n i s t a n : **SE**: Kandahar: 3–4 km a Kandahar versus Farah, EGIERSZDORFF 47! Kandahar, KOELZ 13226! – **C**: Bamian: Ad fl. Bamian, 1600 m, KOEIE 2894! Doab: 13 km S Doab versus Bamian, 1680 m, GREY-WILSON & HEWER 919!

Distr. gen. subspeciei: In tota area speciei, imprimis in parte boreali frequentior.

– – subsp. ***rupestris*** (HAUSSKN. ex BOISS.) BROWICZ, stat. nov.
Syn.: *F. carica* L. var. *rupestris* HAUSSKN. ex BOISS., Fl. Or. 4: 1154 (1879).
Icon.: C. K. SCHNEIDER, Ill. Handb. Laubholzk. 1: 237, fig. 151-p (1904). C. C. TOWNSEND, Fl. Iraq 4, 1: tab. 17, fig. 6–7 (1980). – Tab. nostr.: 3.
Typus: Syntypi numerosi ex Anatolia, Syria, Iraq et Persia, G, JE!

Plerumque fruticosa. Folia late ovata usque ovato-oblonga, latitudine manifeste longiora, 5–10(–15) x 4–8(–12) cm, apice plerumque obtusiuscule acuta vel obtusa, basi profunde cordata, utrinque scabra, subtus plerumque molliter pubescentia. Fici plerumque pilosi, forma magnitudineque varia, pyriformia, tum manifeste stipitata vel globosa, sessilia. Pedicellus usque ad 2 cm longus. Stipes interdum tenuissimus subfiliformis, pedicellum aequans vel longior.

I r a q : Kurd. Arbil: M. Sakri Sakran ad fines Persiae, 1600 m, BORNM. 1805! Rost, HALEY 171! In fissuris rupium calc. faucium infra Rawandiz, 700 m, RECH. 11237! Kuh Safin (Sefin Dagh), 1300–1500 m, BORNM. 1806!, KARIM 39406! N viae Salah ad-Din versus Shaqlawa, 850 m, IZDYROREK & WISZNIEWSKI 56! In collibus infra Shaqlawa, BARKLEY & KADHIM 3408! Sul.: QAISI & HAMAD 43519. Kirkuk: In saxosis calc. angustiarum Darband-i Bazian prope Chamchamal, RECH. 10582! Darband-i Bazian, RAWI & GILLETT 7649! Jarmo, HELBAEK 1759! Mosul: Jabal Bakhair 90 km NW Mosul, 800 m, RAWI 22976! Zawita, 1100 m, GUEST 4504!, 4766!, OMAR 37678!, EMBERGER & al. 15384. In jugo Zakho NW Mosul, 750 m, GUEST 2247! SW Aqrah, 500 m, ANDERS 1312! 103 km N Mosul, RECH. 10661!

P e r s i a : W: Azerb.: 12 km SE Naqadeh, 1460 m, PABOT 5468! Ser ad lacum Rezaiyeh (Urumia), KNAPP! 16 km NW Mahabad, 1280 m, RECH. 42225! 12 km NE Mahabad versus Miandoab, 1300 m, LAMOND 4212! Saujbulagh prope Mahabad, SAB. in GAUBA 1917!, KOELZ 17045!, 17046! Kurd.: M. Avroman et M. Shahu, HAUSSKN.! 23 km E Marivan (Dezh Shahpur), BENT & WR. 525–601! Ham.: 90 km N Hamadan Aq Bolagh-e Aqdaq, 2000 m, RIOUX & GOLV. AB 95!

Kuh-e Garri, STR.! Kermansh.: Kuh-e Nevoh prope Karand, STR.! Bisotun, 1350–1650 m, STR.!, PABOT!, JACOBS 6773! 19 km NW Shahpasand inter Kermanshah et Qasr-e Shirin, 1410 m, SERAJ SJ III c/6! Sar-i Pul, 550 m, NAB. 334! In valle Jamnasu, STR.! Esf.: Kuh-e Kolah Qazi 25 km SE Esfahan, substr. calc., 1700–2000 m, RECH. 46735! Arak: M. Rasvand, STR. 444! Girdu, STR.! M. Alvand, Golpayegan, STR.! Lur.: Dow Rud, KOELZ 17409!, 18541! 16 km NW Dow Rud, 1500 m, PABOT 2495! Kebara, KOELZ 18229!, 18230! Baba Zeyd inter Seykan et Halush ad fl. Seymarreh, CABALA! Kuh Giluye, HAUSSKN.! 70 km SW Khorramabad, substr. calc., 980 m, PABOT! 4 km S Bagh-i Sarab inter Khorramabad et Andimeshk, 850 m, BENT & WR. 418–303! Tang-e Malavi, SAB. in GAUBA 1916! 38 km SW Shahabad versus Ilam, 1720 m, SERAJ SJ IV h2! Oshtoran Kuh, STR.! Qaleh Rostam, STR.! Khuz.: Gach Saran (Gosharum), 660 m, STUTZ 978! 10 km S Izeh, PABOT 701! Supra Dehloran, NAB. 335! SE Masjed Soleyman, 750 m, PABOT 791! – S: Fars.: Mian Kotal inter Shiraz et Kazerun, 1800 m, BORNM. 4348! – C: Kashan: Kuh-i Qohrud, STR.!

Distr. gen. subspeciei: Anatolia austro-orientalis, Syria borealis, Iraq borealis, Persia austro-occidentalis.

F. carica, *F. Johannis* and *F. palmata* form a very difficult complex of deciduous figs. Specific limits are far from clear, intra-specific variation in each of the three species is homologous, and their extreme forms further complicate the situation. Many varieties and forms, and even individual species, have been recognised in the past.

The so-called cultivated fig is sometimes thought to have originated from hybridisation of several species, with the Arabian peninsula being suggested as the place of origin. On the basis of the rich SW Asiatic collections (though not as yet from Arabia) it can be suggested that, if the cultivated fig is of hybrid origin, then its parents could be *F. carica* subsp. *rupestris* and *F. Johannis;* the ranges of these two species overlap in Iran. On the other hand, *F. carica* subsp. *carica* seems to represent this very hybrid, cultivated and selected for millenis; it also, as a result anthropo- or zoochoric dispersal, readily establishes itself. This latter characteristic makes it very difficult to define its true native distribution and has led to differing views about its status in, for instance, the Mediterranean area, the Caucasus and N Iran.

If this suggested hypothesis is correct then the substantial variation in the leaf lobing of *F. carica* subsp. *carica* is more understandable, since it is inherited from *F. Johannis*. The occurrence of forms with un-lobed leaves could be a result of the influence of *F. carica* subsp. *rupestris.* It is possible that this taxon deserves to be given specific rank; its range is SW Anatolia, N Syria, N Iraq and SW Iran. However, intermediate forms between subsp. *rupestris* and subsp. *carica* are found in the north of the range of subsp. *rupestris* in Anatolia and Iran. Such specimens are:
Persia: W: Esf.: 30 km S Esfahan, 1700 m, PABOT 8289! Arak: SE Arak (Sultanabad), STR. 366! Bakht.: Tal-i Mansur, KOELZ 15104! Asmand prope Lordegan, 1000 m, IRANSHAHR & MOUSSAVI 15645-E! Lur.: Pol-e Ma'mulan 60 km a Khorramabad versus Andimeshk, 1200 m, WDB. & ASSADI 16597!

2. ***F. Johannis*** BOISS., Diagn. Pl. Or. Nov. Ser. 1, 7: 96 (1846).

Frutex 1–3(–4) m altus, interdum arbor parva, crebre ramosus. Ramuli sat tenuies, juveniles pubescentes vel subglabri. Folia plerumque parva, lobis 3–5 brevibus inciso-serratis plicatis, lobis interdum longis angustis interdum fere ad nervos principales reductis, basi cordata usque truncata, nervis subtus saepe valde prominentibus. Petioli pubescentes vel glabri. Fici pyriformes, tum stipitati, vel globosi, plerumque distincte pedicellati.

Distr. gen. speciei: Persia australis et orientalis, Turcomania austro-orientalis, Afghanistan, Pakistan et Tadjikistan austro-occidentalis.

– – subsp. ***Johannis***

Syn.: *F. persica* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 7: 97 (1846). *F. geraniifolia* MIQ. in Hooker's Journ. Bot. 7: 255 (1848). *F. carica* L. var. *Johannis* BOISS., Fl. Or. 4: 1154 (1879). *F. malvastrifolia* WARB. in Festschrift zur Feier des siebzigsten Geburtstages Dr. Paul Ascherson 369 (1904). *F. vitifolia* WARB., l.c.: 370 (1904). *F. carica* L. var. *longipes* BORNM. ex PARSA, Kew Bull. 1948: 228 (1948).

Icon.: Tab. 4.

Typus (syntypi): KOTSCHY 91, B!, E!, H!, KOTSCHY 91a, E!, H!, JE!

Folia plerumque tantum 1–3(–6) cm longa, valde variabilia, breviter et late lobata usque profunde lobata; sinus inter lobos interdum basin laminae fere attingentes, tum lobi angustissimi, marginibus omnino inciso-serrati; folia talia plerumque nec autem semper in ramulis vegetativis evoluta; folia plerumque subtus, interdum autem utrinque pubescentia. Petioli 0,5–2(–3) cm longi. Fici parvi, 1–1,5(–2) cm longi, plerumque stipitati. Longitudo stipitum variabilis, brevissimi, c. 5 mm usque ad 1,5–2 cm longi. Pedicelli 0,5–2,5(–3) cm longi, ut fici ± pubescentes.

Persia: W: Esf.: 16 km S Esfahan, STUTZ 781! Kuh-e Kolah Qazi 25 km SE Esfahan, substr. calc., 1700–2000 m, RECH. 46759! Bakht.: 57 km S Gandoman, PABOT 2275! Lur.: Kuh-e Seydan, 2230 m, ARCHIBALD 1254! Prope Behbehan, 1500 m, HAUSSKN.! In faucibus Marun, 400 m, PABOT 530! 20 km S Masjed Soleyman, substr. gyps., PABOT 786! SE Masjed Soleyman, substr. calc., 750 m, PABOT 792! 23 km E Haft Gel versus Izeh, 650 m, PABOT 654! 20 km ab Izeh versus Dehdez, 1100 m, IRANSHAHR & MOUSSAVI 15646-E! – S: Fars.: Prope Dalaki, KOTSCHY 91-a!, STAPF 558!, 870! Inter Jiroft et Delvar, DADASHZADEH DK 127! Kuh-i Sivand, STAPF 2760! Konar Takhteh, STAPF! Prope Kazerun, STAPF 864! Nakshi Timur, HAUSSKN.! 8–10 km WNW Kazerun, 800 m, DAVIS & BOKHARI D-56593! 25 km NW Kazerun, 800 m, GRANT 15874! 39 km E Kazerun, 1850 m, PABOT! 10–15 km NE Kazerun, 1200–1300 m, DAVIS & BOKHARI D-55862! Terek SE Kazerun, 840 m, MERTON 3714! Prope Shiraz, 1700 m, GRANT 15007!, BORNM. 4349!, KY. 316!, STAPF 869! Persepolis, 1800 m, BORNM. 4351!, STAPF 863! 39–80 km a Shiraz versus Jahrom, ALAVA & BOKHARI 10674!, 10693! Jahrom, KOELZ 14626! 17 et 100 km a Shiraz versus Esfahan, ALAVA & BOKHARI 10771!, FOROUGHI & ASSADI 15102! Mulla Zadeh prope Shiraz, STAPF 868! Kuh-e Sabz Pushan, 1800 m, WDB. 867! Inter Shiraz et Firuzabad, 2000 m, SAB. in GAUBA 1918!, TROTT 929! Tal-e Khosravi, BEHB. 1304-E! Gere inter Bishehr et Shiraz, KY. 91! Bushehr, STAPF 866! Prope Neyriz, 1600 m, BORNM. 4350! Kerm.: Kuh-i Jupar, 2100–3000 m, BORNM. 4356!, FOROUGHI & ASSADI 16181!, ARMSTRONG 17! Kuh Tagh Ali, 2200 m, BORNM. 4353! Amirabad Kavir N Kerman, DADASHZADEH DK 128! Khabr-va Rouchon Protected Region, 1400–1500 m, PARRIS 75382! Lar: Qotbabad, 800 m, ZHUMER 353! 22 km N Qotbabad, 1100–1200 m, WDB. & FOROUGHI 15807! Kuh-e Gohreh N Bandar Abbas, 800 m, IRANSHAHR & TERME 14060-E! Parabedin, DADASHZADEH! Insula Qeshm, 100 m, KUNKEL 16948! Bal.: Sarhad, JENNINGS! M. Taftan prope Sangon, 1600 m, RECH. 4060-A! Prope Torshab, 2500–2700 m, ASSADI in RECH. 54806! 74–100 km a bifurcatione viae Khash-Iranshahr versus Bazman, 1600 m, RECH. 54958! In decl. orientalibus vulcani Bazman, 1700 m, ASSADI in RECH. 55157!, PARRIS 75467! Ad radices orient. vulcani Bazman, 1400–1700 m, RECH. 55125! 22–40 km N Zahedan, 1500 m, DADASHZADEH!, GREY-WILSON & HEWER 361! Makran: Tang-e Sarha, SAB. 329! Rask, 750 m, SHIRDELPUR 10800! Chah Bahar, SHAR. 264-E! – Persia australis, AUCH. 1318 (typus *F. geraniifoliae*)! – C: Yazd: Yazd, 2200 m, BORNM. 4354! Taft, in montibus, 2000 m, BORNM. 4352! 50 km NW Anar, 1620–1660 m, PABOT 7012! 5 km SW Mehriz, 1700 m, EDMONDSON & al. 1485! Kermanshahan inter Yazd et Kerman, 1800–1900 m, BORNM. 4355!, 4508! S Dasht-e Kavir, W Tabas, LEONARD 5432!

Afghanistan: SW: Jija: Jija, 900 m, KOEIE 4090! – SE: Kandahar: N Girishk ad fl. Helmand, KERST. 412! Girishk, KOELZ 13230! Inter Girishk et Kandahar, PABOT A-443! 15 km SW Kandahar, 1100 m, FREITAG 34841! Pirzada, 1000 m, KOEIE 2020! N Kandahar, NEUB. 290!, KERST. 379! Ispoli 25 km NNE Spin Boldak (Qala-i Jadid), 1400 m, HDG. & EKBERG W-7086!, 7097! Tirin: In collibus inter lacum artif. „Arghandab Reservoir" et Tirin, 1400–1700 m, RECH. 34068! Inter Tirin et Orozgan, RECH. 35158!

Pakistan: Quetta: Murdar, Kach Tangi, 1800 m, LACE 4044! 30 km S Quetta, 2000 m, ANDERSEN & PETERSEN 470! – Makran: Nag inter Panjgur et Surab, Tonschiefer, 1300 m, RECH. 28267! – Zahro (Zahreen), STOCKS!

Distr. gen. subspeciei: Persia, Afghanistan australis, Pakistan austro-occidentalis.

– – subsp. ***afghanistanica*** (WARB.) BROWICZ, stat. et comb. nov.

Syn.: *F. afghanistanica* WARB., l.c.: 369 (1904). *F. carica* L. var. *afghanica* POPOV, Trudy Prikl. Bot. 22, 3: 314 (1929). *F. afghanica* (POPOV) DROBOV, Fl. Uzbekist. 288 (1953).

Icon.: Fl. Tadjik. SSR. 3: tab. 29 (1968). Bot. Žurn. SSSR. 64, 3: 433, fig. 2 (1979). – Tab. nostr.: 5.

Typus subspeciei: AITCHISON anno 1884/85, BM!, LE!

Folia majora, plerumque 7–9(–13) cm longa, profunde lobata, scabra vel subglabra, cordata; lobi angusti imprimis mediani margine omnino obtuse dentati, interdum lobulis secundariis dentatis profunde incisis usque ad dimidium laminae attingentibus provisa. Petiolus usque ad 5 cm longus. Fici 2–3(–3,5) cm longi, plerumque pyriformes, stipitati, glabri vel interdum dense pilosi. Pedicelli ad 2 cm longi.

Persia: **W**: Esf.: 31 km S Esfahan, 1700 m, PABOT! – **S**: Kerm.: Kerman, in hortis, 2000 m, BORNM. 4347! Kuh Tagh-Ali, BORNM.! – **E**: Khor.: Torbat-e Heydariyeh, KOELZ 16905! Inter Torbat-e Heydariyeh et Assadabad, RECH. 4399! Khvor, 2400 m, KOELZ 16836!, 16851! Ad radices montium S Birjand, 1600–1900 m, RUNEMARK in RECH. 56074!, 56075! 13 km N Kashmar versus Rivash, 1300–1400 m, RECH. 51174!

Afghanistan: **N**: Mazar-i Sharif: In faucibus calc. S Mazar-i Sharif 500–800 m, GREY-WILSON & HEWER 887!, PABOT 1179!, 1179-bis!, RECH. 34160! Supra Akupruk in faucibus fl. Balkh, 700–800 m, HDG. & WDB. 3924!, RECH. 16306! Tashkurghan, KOELZ 13183! Akcha, NEUB. 4320! Sangcharak: Karakatak, KOELZ 14025! – **NW**: Maimana: 16 km W Belchiragh, 900 m, GREY-WILSON & HEWER 1286! Herat: Chashmeh Obeh 1800 m, RECH. 19222! Darrah-i Bum, 800 m, HDG., WDB. & EKB. W-8199! – **SW**: Ghorat: 61 km a Qala Shahrak (Shaharak), PABOT A-1504! – **SE**: Kandahar: Kandahar, cult., KOELZ 13226! – **E**: Kabul: In valle Begtut in M. Paghman, 2400 m, GILLI 2404! – Afghanistan, AITCH. 1665!, 481!

Distr. gen. subspeciei: Persia boreo-orientalis, Turcomania austro-orientalis, Afghanistan, Tadjikistan austro-occidentalis.

F. Johannis shows an even greater range of variation than *F. carica*. Sometimes the whole range of leaf lobing can be seen on the same individual; the same also seems to be true for peduncle length and the stipe of the syconium. Some extreme forms have very narrowly lobed leaves and so incised that the leaf blade is almost restricted to the network of the main veins. These latter forms appear to be most frequent on coppice shoots, browsed, pruned or very young individuals. There is no reason to give them separate varietal status (var. *laciniata* BOISS.).

Because of the great variation of *F. Johannis* it is not surprising that several individual species have been described in the past: *F. geraniifolia* MIQ., *F. persica* BOISS., *F. malvastrifolia* WARB., *F. vitifolia* WARB. and *F. afghanistanica* WARB. Only the last named deserves to be maintained, though only at subspecific level. Compared with subsp. *Johannis* it has larger leaves and figs. It appears that, as is also so with *F. carica* subsp. *carica, F. Johannis* subsp. *afghanistanica* is a cultivated form possibly originally selected in the Kerman area of Iran.

At the northern limit of its range of *F. Johannis* subsp. *afghanistanica* hybridizes with *F. carica* subsp. *carica*. Thus in southern Turkmenia and in Iranian Khorassan there are individuals with more or less intermediate characteristics, e.g.: Khor: In saxosis calc. decl. borealibus jugi Allah Akbar inter Quchan et Lotfabad, 800 m, RECH. 1757!; 1400 m, MIRD. in GAUBA 1915! Such hybrid forms are shown in the photographs of leaves in POPOV's paper, Trudy Prikl. Bot. 22, 3: fig. 31–38 (1929). POPOV believed these forms to be subvarieties of *F. carica* var. *transcaspica* POPOV. While the first five photographs – fig. 31–35 (subvar. *subintegrifolia* POPOV, subvar. *obtusiloba* POPOV, subvar. *artocarpifolia* POPOV, subvar. *cordata* POPOV, subvar. *palmata* POPOV) could be considered to be within the circle of *F. carica* subsp. *carica* variability the latter three – fig. 36–38 (subvar. *palmato-auriculata* POPOV, subvar. *irregularis* POPOV) – are unquestionably typical of *F. Johannis* subsp. *afghanistanica*.

3. ***F. palmata*** FORSSK., Fl. Aegypt.-Arab. 179 (1775).

In ditione nostra tantum occurrit:

– – subsp. ***virgata*** (ROXB.) BROWICZ, stat. et comb. nov.
Syn.: *F. virgata* ROXB., Fl. Ind. ed. 2, 3: 530 (1832). *F. caricoides* ROXB., Fl. Ind. ed. 2, 3: 529 (1832).
Icon.: COLLETT, Fl. Simlensis: fig. 148 (1902). BHOPAL & CHAUDHRI, Pakistan Syst. 1, 2: tab. 24 (1977). – Tab. nostr.: 6.
Typus subspeciei: India.

Frutex vel arbor parva, 4–10 cm alta, cortice ± laevi. Rami juveniles tomentosi vel pubescentes, saepe glabrescentes, purpurascenti-brunnei. Folia late ovata vel suborbicularia, plerumque 5–10(–12) cm longa, apice breviter acuta usque obtusa, basi cuneata vel truncata vel subcordata, exceptione cordata, margine ± grosse dentata vel dentato-serrata, plerumque non lobata, supra vel interdum utrinque scabra, exceptione subglabra, subtus molliter tomentosa. Petiolus 1,5–5(–7) cm longus, molliter tomentosus. Fici axillares, solitarii, subglobosi vel pyriformes et tum stipitati, 1,5–2,5 cm longi, pedicellati, plerumque tomentosi, maturitate flavi usque purpurei. Stipes 2–10(–12) mm longus. Pedicellus 4–15(–20) mm longus, dense pubescens.

P e r s i a : S: Bal.: Makran: In jugo Kalgar in Kuh-e Bam Posht, 1050–1350 m, HOTSON. Inter Grawan (Giravan?) et Kant, HOTSON.
A f g h a n i s t a n : E: Kabul: Tang-i Gharu, 1300–1700 m, AMSEL!, GILLI 2406!, HDG. & WDB. W-2796!, KERST. 558!, NEUB. 4123!, PABOT A-1387!, RECH. 16993!, 34379!, UOTILA 17286!, VOLK 1511! Bagrami in valle Nijrao, NEUB. 254! Laghman: Inter Jalalabad et Laghman, 700 m, GILLI 2405! Alishang, 1900 m, WDB. & EKB. W-9732! 45 km N viae Sarobi-Jalalabad versus Alishang, 1200 m, GREY-WILSON & HEWER 1032! Jaji: Khudi Khel, 1500 m, KOELZ 11564! Ghorband: 10 km W Charikar, 1600 m, RECH. 36865! Ghorband, 1700 m, KOEIE 2785! Pul-i Matak, PABOT A-639! Khost: Khost, 500 m, VOLK 1082! 25 km W Khost versus Gardez, 1390 m, PODLECH 18547! Nuristan: Gusalak, 1000 m, EDELB. 235!, 2220!, 2223! Kushtos, 1850 m, NEUB. 3265!, 4534! Prope Bragamata (Barge Matal), 1550–1950 m, ANDERS 5157!, HEWER 1363! Inter Asmar et Barikot, 840 m, GILLI 2403! Inter Ningalam et Darim, 1300 m, NEUB. 966! In valle Pech, 1475 m, CARTER 1279! Wana, 1380 m, KERST. 782! Chigha Sarai, 820 m, SCHEIBE 84! Mandagal, 1240 m, SCHEIBE W-281! In valle Kulam, 2100 m, THESIGER! Nuristan, EDELB. 1243! – Afghanistan, GRIFF.!, NEUB. 3179!
P a k i s t a n : Dir: 3 km versus jugum Lowarai, EGIERSZDORFF 3! In jugo Jambatai, HARRISS 16632! Chitral: 1 km W Chitral, MAJCHROWICZ 88! Maroi inter Chitral et Mastuj, 1800 m, STAINT.

2530! In valle Masin, 1200–1500 m, TOPPIN 302! – Peshawar: E Pabbi, 370 m, UOTILA 17385! – Kurram: Shalozan, AITCH. 345! Habib Kalla, AITCH. 218! Alozai, AITCH. 13! – Quetta: 38 km E Gumbaz, 1050 m, RECH. 29686!, 29681! Supra Harnai, substr. calc., 900 m, RECH. 29500!, 29529!, LACE. Hanna, 2100 m, LACE! Urak, 2100 m, CROOKSHANK 91! Musa Khel, FLEMING! – Kalat: Sethar, HUGHES-BULLER 1739. – Bal.: Chagai distr., Gaz. 231. Ad rupes Baluchistan, STOCKS 609.

Distr. gen. subspeciei: Persia austro-orientalis (?), Afghanistan orientalis, Baluchistan (Pakistan), India, Nepal, in India culta.

The typical subspecies–subsp. *palmata*–occurring in E Africa (Aethiopia, Somalia, Sudan) and in the southern part of the Arabian Peninsula has the leaves more elongate, distinctly acute or acuminate and only weakly pubescent or glabrous. The figs are similarly pubescent.

In Pakistan *F. palmata* subsp. *virgata* is probably locally selected for fruits. Forms of this species with large leaves more or less cordate at the base are sometimes wrongly considered to be *F. carica.*

4. ***F. religiosa*** L., Spec. Plant. 1059 (1753).
Icon.: BENTHALL, The trees of Calcutta: 411 (1946). KUNKEL, Arboles Exoticos. Los Arboles Cultivados en Gran Canaria 1: 141 (1969). BHOPAL & CHAUDHRI, Pakistan Syst. 1, 2: tab. 21 (1977). – Tab. nostr.: 7.
Typus: Habitat in India, LINN 1240, 4–5.

Arbor magna ramis patentibus usque ad 10 m alta; truncus brevis, in speciminibus vetustis forma irregulari. Rami juveniles et omnes fere partes (gemmis foliorum et stipulis exceptis) glabri. Folia sempervirentia, simplicia, integra, leviter undulata, deltoideo-ovata, 6–15(–18) x 4–10(–12) cm, apice abrupte attenuata et longe caudata (cauda $1/3$ longitudinis laminae attingente), basi cuneato-truncata usque subcordata, supra atroviridia, lucida, subtus pallidiora, nervi paribus 8–12. Petioli (4–) 6–10(–11) cm longi, teretes. Fici sessiles, globosi, ± verticaliter compressi, in paribus axillariter dispositi, maturitate atropurpurei, usque ad 12 mm diametro. Achaenia pyriformia, c. 2 mm longa.

P e r s i a : **S**: Bal.: Makran: Tis, cult., SHAR. 263-E!
A f g h a n i s t a n : **E**: Nangarhar: Jalalabad, in horto „Hotel Spinzhar", 600 m, GILLI 2408!, HDG., WDB. & EKB. W-7498!, KUKKONEN 6586!, VOLK 2430!
P a k i s t a n : Peshawar: Nowshera 43 km E Peshawar, 400 m, KUKKONEN 6614! – S. Wazir.: Tank, cult., STEW. – Quetta: Nasirabad et Sibi, Sibi Gaz. 327. Mushkaf et Rindli, Bolan Gaz. 122. – Karachi: Khadeji 46 km ENE Karachi, RECH. 28570!

Distr. gen.: Patria: India; in Asia austro-orientali frequenter, in Asia austro-occidentalis raro culta.

5. ***F. benghalensis*** L., Spec. Plant 1059 (1753) „*bengalensis*".
Icon.: BENTHALL, The Trees of Calcutta: 414 (1946). KUNKEL, Arboles Exoticos. Los Arboles Cultivados en Gran Canaria 1: 127 (1969). SABETI, Forest, Trees and Shrubs of Iran: 356–357 (1976). – Tab. nostr.: 8.
Typus: Habitat in India, LINN 1240, 6(?).

Arbor magna, sempervirens, ad 15–20 m alta, juventute epiphytica, plerumque e ramis dense patentibus subhorizontalibus radicans; radices aeriales quoque e trunco orientes. Surculi juveniles pubescentes, demum ± glabri. Folia coriacea, ad extremos ramos approximata, 8–21 × 5–14 cm, ovata usque orbicularia vel elliptica, apice rotundata vel obtusiuscule acuta, basi rotundata usque subcordata, margine integra, subtus ± molliter brevissime pubescentia. Petiolus 1,5–4(–5) cm longus, crassus, puberulus. Fici per paria prope apicem ramorum axillares, ± globosi, 12–15 mm diametro, puberuli, maturitate rubri.

Persia: S: Fars.: Bushehr, cult., NÁB. 336! Baghmani, KOEIE 1746! Insula Khark, cult., HAUSSKN.!, BORNM. 644!, GRANT 17050! Lar.: Bandar Abbas, KOELZ 14225!, SAB. in GAUBA 1914!, BORNM. 645! Minab, BEHB. 262-E! Makran: Tis 7 km N Chah Bahar, SHAR. 265-E!, SOJÁK 1379!
Afghanistan: E: Kabul: Prope Kabul, MANGER 23! Jalalabad, 600 m, GILLI 2407!, VOLK 2046!
Pakistan: Quetta: Rindli, Bolan Gaz. – Bela: Ad fl. Hab, HUGHES-BULLER 18421. Las Bela, 20 m, HOTSON 399-A. Makran: Pasni, HOTSON M-47. Kech (Kej), HUGHES-BULLER 18448.

Distr. gen.: Patria: In regione silvatica inferiore montium Himalaya et peninsulae Deccan.

Commonly planted as a shade tree along roadside and in the vicinity of villages, particularly near reservoirs of water.

6. ***F. racemosa*** L., Spec. Plant. 1060 (1753).
Syn.: *F. glomerata* ROXB., Pl. Coast Coromandel 2, 2: 13, tab. 123 (1799).
Icon.: BRANDIS, Illustr. Forest Fl. NW India: tab. 49 (1874). BENTHALL, The Trees of Calcutta: 419 (1946).
Typus: Habitat in India.

Arbor mediocris vel magna, sempervirens, cortice laevi. Rami glabri. Folia 8–18 cm longa, ovata vel elliptico-ovata vel elliptico-lanceolata, in apicem obtusiusculum attenuata, basi acuta vel obtusiuscula, adulta integra, membranacea, adulta glabra, nervorum paribus 4–6(–8). Petiolus 2–4 cm longus. Fici subglobosi, 2,5–4 cm diametro, maturitate aurantiaca usque rubra, e ramulis brevibus aphyllis e basi ramorum majorum orientibus orti.

Pakistan: N. Wazir.: Miram Shah, cult., BLATT. & FZ. 522.

Distr. gen.: Pakistan orientalis, India, Bangladesh.

7. ***F. foveolata*** WALL. ex MIQ., Ann. Mus. Bot. Lugduno-Batavum 3: 294 (1867).
Icon.: BHOPAL & CHAUDHRI, Pakistan Syst. 1, 2: tab. 23 (1977).
Typus: India.

Frutex scandens vel repens, ad nodos radicans. Surculi juveniles pubescentes, adulti glabrescentes. Folia ovata vel elliptica usque lanceolata, forma, magnitudine, pubescentia, crassitudine valde variabilia, (4–)6–12(–15) cm longa, apice acuminata, basi rotundato-cordata usque subcuneata, margine integra, supra glabra, subtus secus costam medianam et nervos leviter pubescentia; consistentia rigide membranacea usque tenuiter coriacea, sempervirentia, nervi laterales paribus (7–)8–10(–12); petiolus 6–14 mm longus, pubescens. Fici axillares plerumque solitarii, ovoideo-subglobosi usque globosi, 8–16 mm diametro, pubescentes. Pedicellus 3–7 mm longus, pubescens.

Pakistan: „Climbs on trees and cliffs in Chitral, Swat, ..." sec. R. R. STEWART, Ann. Cat. Vasc. Pl. West Pak. Kashmir in NASIR & ALI, Flora West Pakistan (1972).

Distr. gen.: Asia australis et austro-orientalis, a Pakistan ad Burmam et Sinam.

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ILLUSTRATIONS

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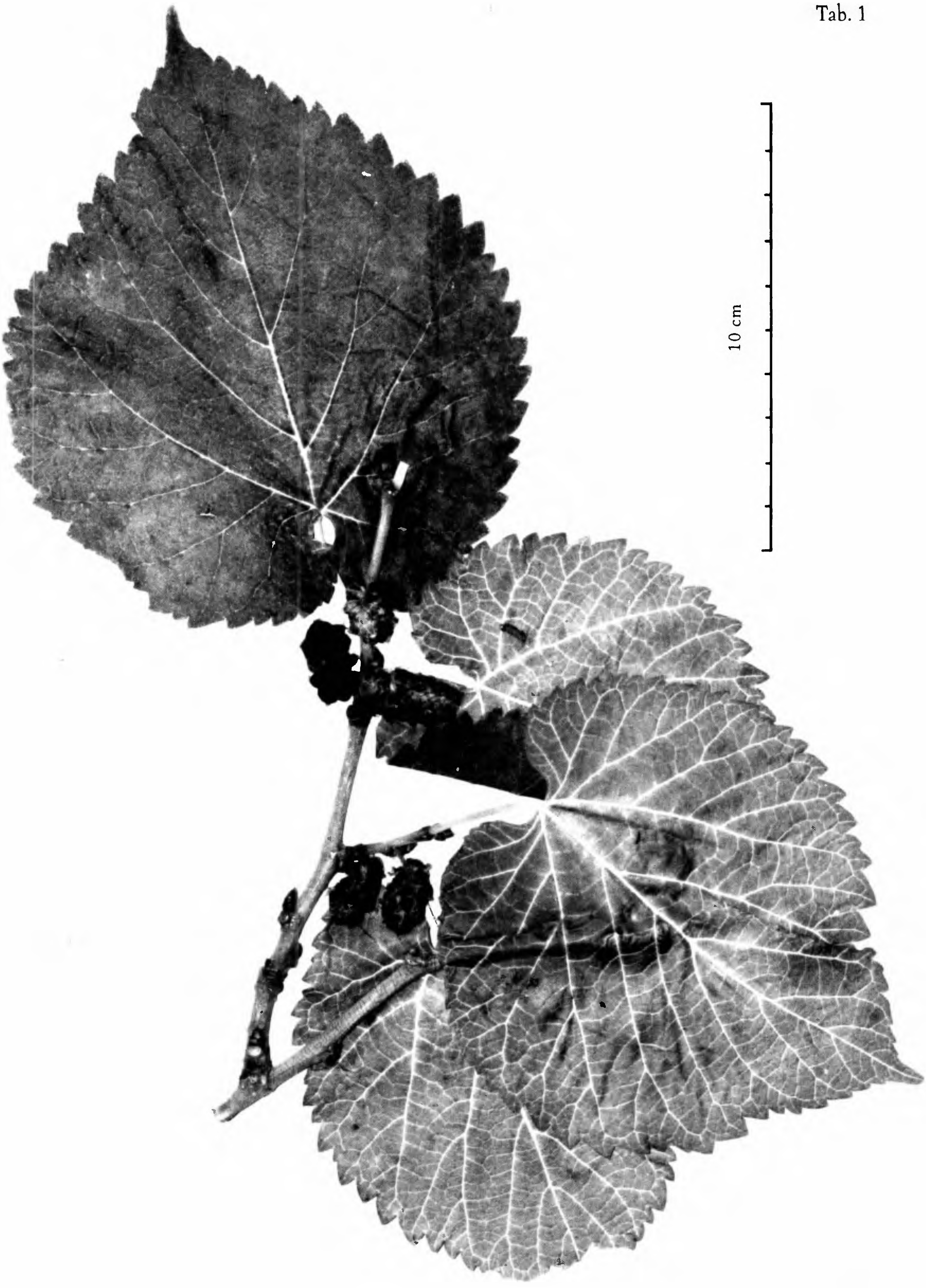
Tab. 1



Morus nigra L. – KERSTAN 1233

Morus alba L. – Rech. 5536

Tab. 3

Ficus carica L. subsp. *rupestris* (HAUSSKN. ex BORNM.) BROWICZ – RECH. 10661

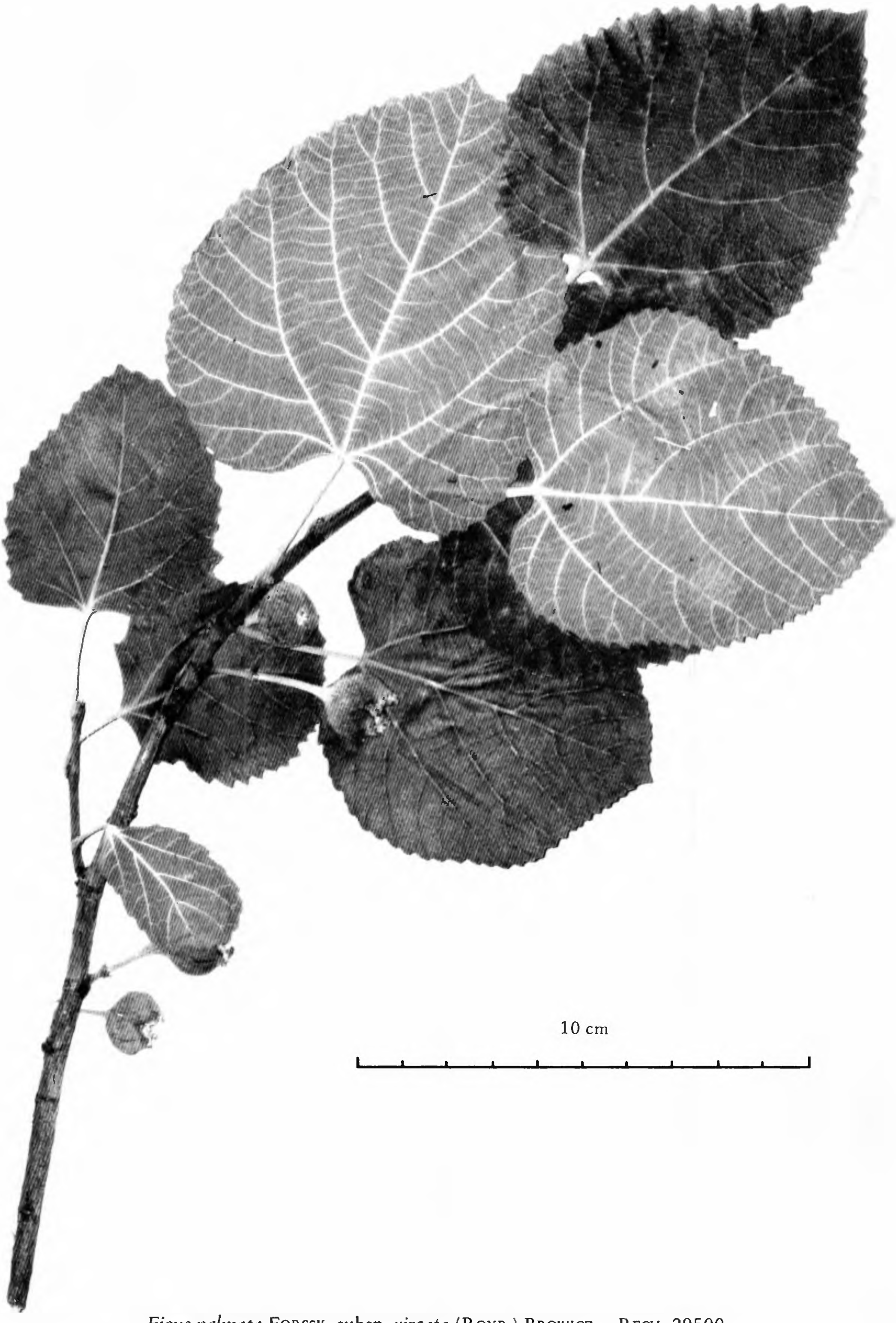
Tab. 4

Ficus Johannis Boiss. subsp. *Johannis* – 1: Sharif 264-E; 2: Rech. 4060-A

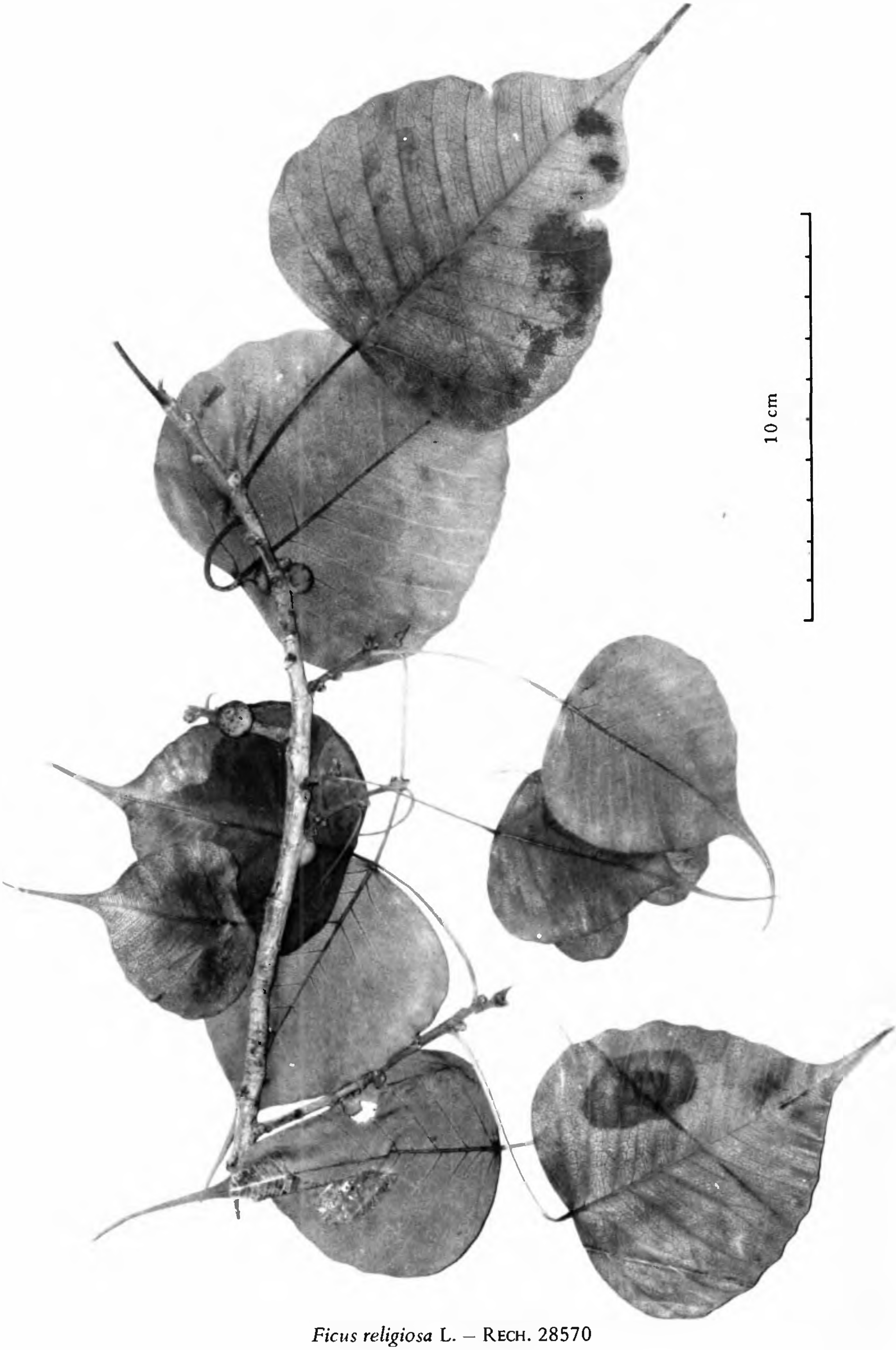
Tab. 5

Ficus Johannis Boiss. subsp. *afghanistanica* (Warb.) Browicz – Grey-Wilson & Hewer 1286

Tab. 6

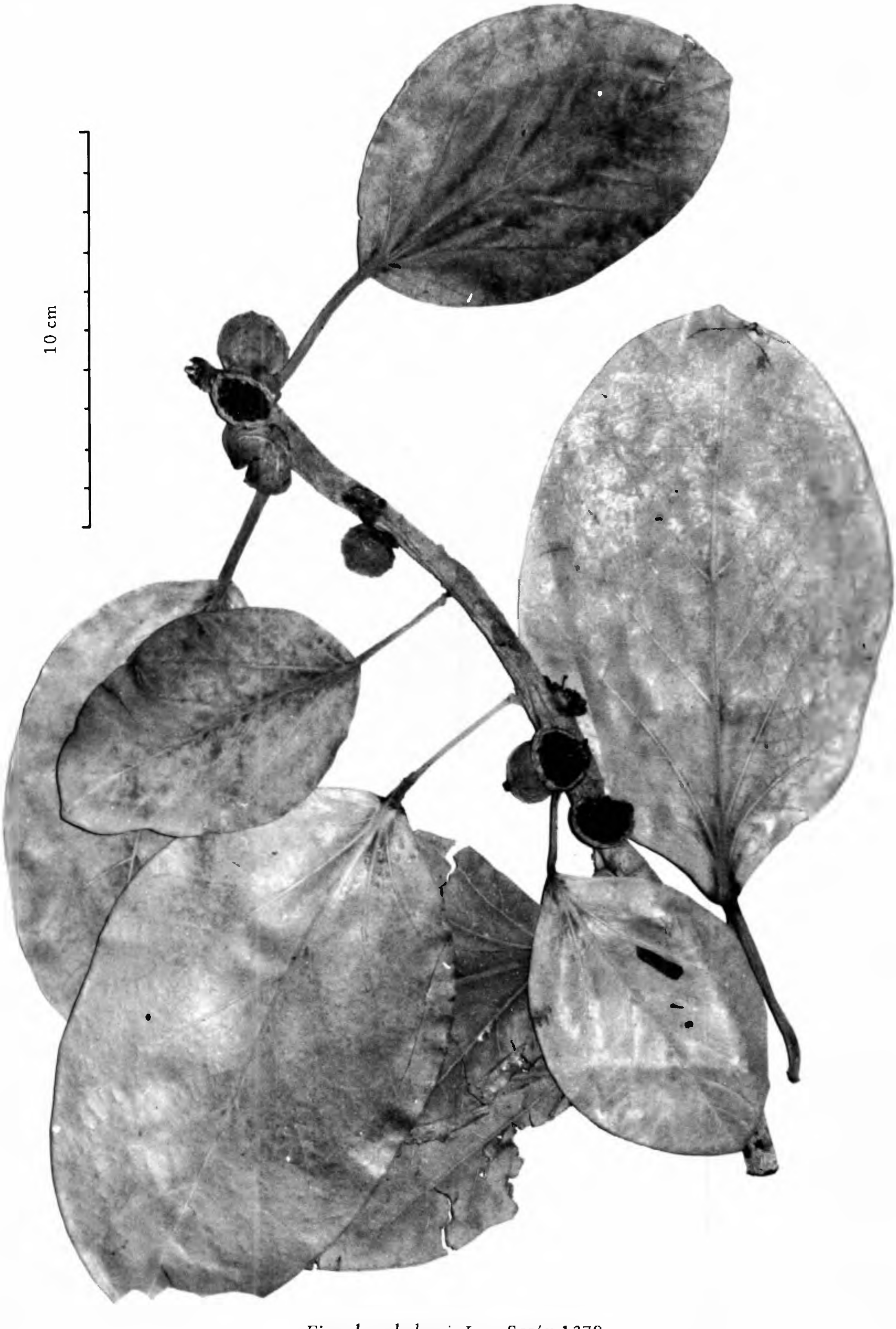


Ficus palmata FORSSK. subsp. *virgata* (ROXB.) BROWICZ – RECH. 29500



Ficus religiosa L. – Rech. 28570

Tab. 8



Ficus benghalensis L. – Soják 1379

SYSTEMATISCHE ANORDNUNG DER FAMILIEN

Familien mit vorangestellter Continuatio - Nummer sind bereits erschienen.

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
	PTERIDOPHYTA					
	Equisetaceae	1	2	143	(2)	(2)
	Lycopodiaceae	2	1	142	(1)	(1)
	Marsileaceae	5	5	144	(4)	(4)
	Ophioglossaceae	3	3	140	(6)	(6)
	Polypodiaceae	4	4	141	(3)	(3)
	Salviniaceae	6	6	145	(5)	(5)
	GYMNOSPERMAE					
50	Cupressaceae	9	8	136	(8)	(8)
3	Ephedraceae	10	10	138	(10)	(10)
14	Pinaceae	8	9	135	(7)	(9)
12	Taxaceae	7	7	137	(9)	(7)
	ANGIOSPERMAE					
24	Acanthaceae	138	110	84	86	135
61	Aceraceae	86	83	30a	42a	76
113	Aizoaceae	48	27	50	57	106
78	Alismataceae	16	127	115	124	146
76	Alliaceae	26	133	128	116	155
91	Amaranthaceae	45	23	93	92	112
67	Amaryllidaceae	27	134	128	114	162
74	Ampelidaceae	91	91	32	41	66
63	Anacardiaceae	81	81	46	43	75
	Apiaceae	113	94	54	58	127
103	Apocynaceae	125	117	82	75	82
25	Aquifoliaceae	82	86	70	38	58
1	Araceae	22	143	120	122	158
102	Araliaceae	112	93	55	59	19
26	Aristolochiaceae	40	35	103	97	96
73	Asclepiadaceae	126	118	74	76	84
	Asparagaceae	26	133	129	116	155,7pp.
48	Asperifoliaceae	129	104	80	79	142
90/I, 122/II	Asteraceae	146	126	61	65	131
131	Avicenniaceae	130	111	86	88	88
129	Balanophoraceae	42	20	102	103	63
143	Balsaminaceae	89	85	25	33b	140
111	Berberidaceae	54	40	3	13	96
96	Betulaceae	33	11	112	108	25
44	Bignoniaceae	137a	108a	76a	85a	86a
48	Boraginaceae	129	104	80	79	142
57	Brassicaceae	60	46	7	16	101
45	Buddleiaceae	123	115	75	77	80
107	Burseraceae	75	78	33	36	72
79	Butomaceae	17	128	116	124a	145
27	Buxaceae	80	31	105	104a	23
	Caesalpiniaceae	68b	59b	38b	45b	13
118	Callitrichaceae	79	32	47	50b	117
13	Campanulaceae	145	125	62	66	130
138	Cannabaceae	37	17a	106	105	30
68	Capparidaceae	59	45	8	17	36

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
10	Caprifoliaceae	141	121	57	61	20
144/I	Caryophyllaceae	50	29	13	23	105
64	Celastraceae	83	87	35	39	60
28	Ceratophyllaceae	52	42	15	110	94
	Chenopodiaceae	44	22	92	93	111
46	Cistaceae	99	49	10	19	33
132	Commelinaceae	24	138	132	117	154
90/I, 122/II	Compositae	146	126	61	65	121
139a/III, 139b/III, 145/IV, 154/V						
2	Convolvulaceae	127	102	78	80	133
54	Cornaceae	114	92	56	60	18
97	Corylaceae	33	11	112	108	27
72	Crassulaceae	63	56	51	48	123
57	Cruciferae	60	46	7	16	101
123	Cucurbitaceae	144	124	48	55	42
77	Cupuliferae	33-4	11-2	111-2	108	25-7
8	Cuscutaceae	128	103	79	80a	141
39	Cynocrambaceae	111	25	91	105c	113
129	Cynomoriaceae	110a	20a	102	103	63
	Cyperaceae	20	139	134	126	169
136	Cytinaceae	41	36	101	96	98
29	Datiscaceae	101	54	49	56	43
104	Dioscoreaceae	28	137	131	115	164
	Dipsacaceae	143	123	60	64	129
30	Ebenaceae	121	100	69	72	68
48	Ehretiaceae	129	104	80	79	87
55	Elaeagnaceae	103	61	97	100	64
16	Elatinaceae	96	52	18	26	103
11	Ericaceae	116	99	63	67	51
89	Eriocaulaceae	23a	138b	–	125a	154a
6	Euphorbiaceae	78	30	104	104	49
140/I	Fabaceae	68	59	38	45	13-5
77	Fagaceae	34	12	111	108a	26
113	Ficoidaceae	48	27	50	57	106
99	Frankeniaceae	97	51	17	22	38
110	Fumariaceae	58	44	6	15a	100
41	Gentianaceae	124	116	76	78	118
69	Geraniaceae	70	74	26	33	138
17	Globulariaceae	137	108	85	87	142
134	Goodeniaceae	145a	125a	62a	66a	130a
70	Gramineae	19	140	135	127	170
47	Grossulariaceae	64	57	52	47	17
49	Guttiferae	95	55	19	27	54
18	Halorag(id)aceae	109	67	46	50	115
53	Hamamelidaceae	65	33	53	49	21
	Helleboraceae	53	39	1	11	90
92	Hippocastanaceae	87	84	30b	42b	77
31	Hippuridaceae	110	68	45	50a	116
19	Hydrangeaceae	64	57	52	47	16a
127	Hydrocaryaceae	108a	66a	44a	54	115a
80	Hydrocharitaceae	18	129	114	111	146

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2.ed.
49	Hypericaceae	95	55	19	27	54
25	Ilicineae	82	86	70	38	58
144/I	Illecebraceae	50	29	13	23	109
112	Iridaceae	29	135	126	113	163
121	Juglandaceae	32	13	109	107	28
75	Juncaceae	25	136	133	118	168
82	Juncaginaceae	14a	130	117a	125b	148
150	Labiatae	131	112	87	89	144
150	Lamiaceae	131	112	87	89	144
141	Lauraceae	56	37	98	98	11
140/I	Leguminosae	68	59	38	45	13-5
119	Lemnaceae	23	144	119	123	159
58	Lentibulariaceae	136	107	65	84	137
151/I	Liliaceae	26	133	128	116	155
106	Linaceae	71	72	23	31	47
45	Loganiaceae	123	115	75	77	79
116	Loranthaceae	39	19	100	101	61
51	Lythraceae	104	62	43	53	114
120	Malvaceae	93	69	20	28	46
133	Meliaceae	76	79	31	37	73
137	Menispermaceae	55	38	2	12	95
41	Menyanthaceae	124	116	76	78	119
	Mimosaceae	68a	59a	38a	45a	14
114	Molluginaceae	48	27	50	57	105
94	Monotropaceae	115	98	64	67a	52
153	Moraceae	36	15	107	105a	31
135	Morinaceae	143	123	60	64	129
109	Moringaceae	62	48	37	44	37
130	Myrsinaceae	117	97	67	70	67
32	Myrtaceae	107	64	40	52	55
86	Najadaceae	15	132	118	125	153
115	Nyctaginaceae	46	26	95	91	35
33	Nymphaeaceae	51	41	4	14	93
7	Oenotheraceae	108	66	44	54	115
52	Oleaceae	122	119	71	73	81
7	Onagraceae	108	66	44	54	115
126	Orchidaceae	30	141	125	112	167
5	Orobanchaceae	135	108	83	83	136
40	Oxalidaceae	69	73	24	33a	139
60	Paeoniaceae	53	39	1	11	89
146	Palmae	21	142	121	119	165
34	Papaveraceae	57	43	5	15	99
140/I	Papilionaceae	68c	59c	38c	45c	15
20	Parnassiaceae	64	57	52	47	126
128	Pedaliaceae	134	109	77	85	86
73	Periplocaceae	126	118	74	76	83
19	Philadelphaceae	64	57	52	47	16
35	Phytolaccaceae	47	24	90	94	110
15	Plantaginaceae	139	114	89	90	122
21	Platanaceae	66	34	110	106	22
108	Plumbaginaceae	119	95	88	68	121
70	Poaceae	19	140	135	127	170
101	Podophyllaceae	54	40	3	13	93

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham &
124	Polygalaceae	77	80	12	21
56	Polygonaceae	43	21	94	95
	Pontederiaceae	24a	133a	–	11
117	Portulacaceae	49	28	14	2
83	Potamogetonaceae	14	131	117	12
9	Primulaceae	118	96	66	6
22	Punicaceae	105	65	42	5
93	Pyrolaceae	115	98	64	6
136	Rafflesiaceae	41	36	101	9
	Ranunculaceae	53	39	1	1
149	Resedaceae	61	47	9	1
125	Rhamnaceae	90	90	36	4
	Rhizophoraceae	106	63	41	51
66/I, 152/II	Rosaceae	67	58	39	4
	Rubiaceae	140	120	58	6
84	Ruppiaceae	14	131	117	125
	Ruscaceae	26	133	129	11
36	Rutaceae	73	76	28	3
65	Salicaceae	31	14	113	10
37	Salvadoraceae	84	88	72	74
155	Santalaceae	38	18	99	10
38	Sapindaceae	88	82	30	4
	Sapotaceae	120	101	68	71
42	Saxifragaceae	64	57	52	47
82	Scheuchzeriaceae	–	130	117a	12
147/I	Scrophulariaceae	133	106	82	82
	Selaginaceae	137	108	85	8
	Simar(o)ubaceae	74	77	29	3
	Smila(ca)ceae	26	133	130	11
100	Solanaceae	132	105	81	81
59	Sparganiaceae	13	146	123	121
88	Sphenocleaceae	145	125	62a	66
87	Staphyleaceae	85	89	30c	42
156	Sterculiaceae	94	71	21	29
4	Tamaricaceae	98	50	16	25
39	Theligonaceae	111	25	91	105
63	Therebinthaceae	81	81	46	43
95	Thymelaeaceae	102	60	96	99
148	Tiliaceae	92	70	22	30
127	Trapaceae	108a	66a	44a	54
71	Typhaceae	11	147	124	121
142	Ulmaceae	35	16	108	105
	Umbelliferae	113	94	54	5
105	Urticaceae	37	17	106	10
11	Vacciniaceae	116	99	63	[illegible]
23	Vahliaceae	64	57	52	47
62	Valerianaceae	142	122	59	63
43	Verbenaceae	130	111	86	88
	Violaceae	100	53	11	20
74	Vitaceae	91	91	32	41
85	Zannichelliaceae	14	131	117	125
81	Zosteraceae	14	131	117	125
98	Zygophyllaceae	72	75	27	32

npositae V - Astereae
us A. J. C. GRIERSON et K. H. RECHINGER, Wien
Lfg. Cont. No. 154 / Juni 1982

FLORA DES IRANISCHEN HOCHLANDES UND DER UMRAHMENDEN GEBIRGE

PERSIEN, AFGHANISTAN, TEILE VON WEST-PAKISTAN, NORD-IRAQ, AZERBAIDJAN, TURKMENISTAN

von

Univ.-Prof. Dr.
KARL HEINZ RECHINGER
Erster Direktor des Naturhistorischen Museums in Wien (emeritus)

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Compositae V – Astereae

auctoribus A. J. C. GRIERSON, Edinburgh et K. H. RECHINGER, Wien

Compositae Tribus *Astereae* CASS., Bull. Soc. Philom. Paris (1815).

Lit.: J. GRAU, Astereae–a systematic review in V. H. HEYWOOD, J. B. HARBORNE & B. L. TURNER, The Biology and Chemistry of the Compositae 539–565 (1977).

Herbae annuae vel perennes vel suffrutescentes. Folia alterna vel basalia, plerumque indivisa. Capitula heterogama, radiata vel homogama, discoidea. Involucrum ± herbaceum; phylla pluriseriata, saepe imbricata. Flores radiantes flavi vel purpurei vel coerulei vel albi; flores disci plerumque flavi. Antherae basi obtusae vel acutae. Styli rami ± applanati, lineis stigmaticis marginalibus apice appendicem sterilem ferentes. Achaenia compressa, numquam rostrata; pappus scaber vel nullus.

Synopsis generum

1. *Solidago*[1]
2. *Aster*[2]
3. *Heteropappus*[2]
4. *Galatella*[1]
5. *Crinitaria*[2]
6. *Erigeron*[1]
7. *Lachnophyllum*[2]
8. *Chamaegeron*[2]
9. *Psychrogeton*[2]
10. *Brachyactis*[2]
11. *Conyzanthus*[2]
12. *Myriactis*[1]
13. *Conyza*[2]
14. *Dichrocephala*[1]
15. *Grangea*[1]
16. *Bellis*[1]

1 Auctore K. H. RECHINGER, Wien.
2 Auctore A. J. C. GRIERSON, Edinburgh.

Clavis generum

auctore A. J. C. GRIERSON, Edinburgh

1a. Capitula discoidea vel disciformia; flores feminei si evoluti quam flores hermaphroditi non ultra 1 mm longiores 2
b. Capitula radiata; flores feminei quam hermaphroditi ad minimum 2 mm longiores 10
2a. Capitula discoidea; flores feminei nulli 3
b. Capitula disciformia; flores feminei evoluti, ± inconspicui 4
3a. Plantae frutescentes vel basi induratae. Capitula pauciflora, floribus 4–10 . . . . 5. *Crinitaria* CASS.

b. Herbae non induratae. Capitula ultra 10-flora .... 3. *Heteropappus* LESS. (*H. holohermaphroditus* GRIERSON)
4a. Folia lyrata vel pinnatifida 5
b. Folia integra vel serrata numquam autem pinnatifida 6
5a. Plantae prostratae. Capitula 6–9 mm diametro. Pappus cupuliformis .... 15. *Grangea* ADANS.
b. Plantae ± erectae. Capitula 4–5 mm diametro. Achaenia epapposa .... 14. *Dichrocephala* DC.
6a. Pedunculi squamis nonnullis scariosis involucri phyllis exterioribus similibus obsiti .... 11. *Conyzanthus* TAMAMSCH.
b. Pedunculi nudi vel squamis 1–2 involucri phyllis dissimilibus obsiti 7
7a. Involucri phylla exteriora viridia, foliacea 8
b. Involucri phylla exteriora interioribus similia, vix foliacea 9
8a. Achaenia florum femineorum et hermaphroditorum forma similia, 1,5–2,25 mm longa, omnia fertilia .... 10. *Brachyactis* LEDEB.
b. Achaenia florum hermaphroditorum linearia vel oblanceolata, 2,5–4,5 mm longa, sterilia .... 9. *Psychrogeton* BOISS.
9a. Achaenia raro ultro 1 mm longa, omnia forma similia, ea florum hermaphroditorum sterilia .... 13. *Conyza* LESS.
b. Achaenia 2,5–4,5 mm longa, ea florum hermaphroditorum linearia vel oblanceolata, sterilia .... 9. *Psychrogeton* BOISS.
10a. Achaenia epapposa 11
b. Achaenia pappo e pilis composito provisa 12
11a. Folia omnia rosulata .... 16. *Bellis* L.
b. Caules foliati .... 12. *Myriactis* LESS.
12a. Achaenia florum hermaphroditorum linearia vel anguste oblanceolata, sterilia .... 9. *Psychrogeton* BOISS.
b. Achaenia florum hermaphroditorum obovata, plerumque fertilia 13
13a. Ligulae demum spiraliter revolutae 14
b. Ligulae non revolutae, planae vel interdum longitudinaliter involutae 15
14a. Plantae longe villosae vel lanatae. Pappi setae separatim deciduae .... 7. *Lachnophyllum* BUNGE
b. Plantae glabrae vel breviter pubescentes. Pappi setae basi in annulum connatae .... 8. *Chamaegeron* SCHRENK
15a. Flores radiantes flavi. Folia subtus tenuiter atrivenosa .... 1. *Solidagó* L.
b. Flores radiantes coerulei vel albi. Folia non atrivenosa 16
16a. Flores radiantes sine stylis, steriles .... 4. *Galatella* CASS.
b. Flores radiantes stylis praediti, fertiles 17
17a. Flores disci inaequaliter denticulati vel lobati .... 3. *Heteropappus* LESS.
b. Flores disci aequaliter denticulati vel lobati 18
18a. Involucri phylla et ligulae ± 0,5 mm latae; ligulae saepe demum longitudinaliter involutae. Styli florum hermaphroditorum appendices late triangulares, subacutae .... 6. *Erigeron* L.
b. Involucri phylla et ligulae ultra 1 mm latae; ligulae semper planae. Styli appendices lanceolatae vel acuminatae .... 2. *Aster* L.

1. *Solidago*

auctore K. H. RECHINGER, Wien

Solidago L., Spec. Plant. 878 (1753).

Lit.: L. M. KEMULARIA-NATHADZE, Caucasian representatives of the genus Solidago (Vaill.) L., Trudy Tbilliskogo Botaniceskogo Instituta 6: 91–107 (1938). A. J. C. GRIERSON, Solidago in P. H. DAVIS, Flora of Turkey 5: 116–118 (1975).

Herbae perennes. Caulis ± erectus, foliatus, plerumque in regione synflorescentiae tantum ramosus. Capitula parva, heterogama, radiata, in racemos vel paniculas terminales disposita. Involucrum campanulatum; phylla imbricata, 3–6-seriata, subscariosa vel apice subherbacea. Receptaculum parvum, nudum. Flores omnes flavi; flores radiantes ligulati, erecti vel patuli; flores disci tubulosi, anguste campanulati, quinquedentati. Achaenia fusiformia, teretia vel subcompressa, plerumque tenuiter decemcostata; pappi setae biseriatae, scabrae, liberae.

1. ***Solidago virga-aurea*** L., Spec. Plant. 880 (1753).
Icon.: Tab. 1, 2, 3.
Typus: Europa.

Caulis (15–)25–100 cm altus, glaber vel pubescens. Folia elliptica, lanceolata vel oblanceolata, subtus plerumque tenuiter atrius reticulato-nervosa; folia basalia (si evoluta) 5–15 x 1–3,5 cm, in petiolum 2–6 cm longum attenuata, apice acuta, margine integra vel leviter serrata, utrinque subglabra vel tenuiter pubescentia; folia superiora sursum decrescentia, sessilia et plerumque integra. Capitula pauca (c. 5) usque numerosa; involucrum 75–125 mm diametro; phylla exteriora ovato-triangularia, 2,5–3 mm longa, interiora oblongo-lanceolata, 5–9 mm longa, obtusa vel acuta vel acuminata. Flores radiantes (3–)5–10(–15) mm longi; ligulae 5–8 x 2–3 mm; flores disci 5–6 mm longi. Achaenia 3–3,5 mm longa, tenuiter parce pubescentia; pappus 5–5,5 mm longus, brunnescenti-albidus.

T a l i s h : M. Keridach prope Swant, 900 m, LEDEB. Talish, LEDEB.
P e r s i a : N: Maz.: Inter Nemasieh et Zanus, distr. Kojur, 2800 m, RECH. 6546-b! Kalar Dasht, 1660 m, ROWSHAN 6715! Ney Dasht prope Ramsar, 1000 m, SAB. 6931! Pol-e Zanguleh, 2300 m, SAB. in GAUBA 1509!, GAUBA 1577. Siah Bisheh in valle fl. Chalus, 1150–2200 m, FOROUGHI 2759!, PABOT 47xx! Gilan: Asalem, IRANSHAHR 18102-E! Inter Asalem et Khalkhal, 350 m, WDB. & SHIRDELPUR 14896! In valle Lisar, 550 m, AMINI 6633! In montibus Gilan, AUCH. 4752. – W: Azerb.: Qareh Dagh: In decl. saxosis prope Aliabad 20 km SW Kaleybar, 2300–2500 m, LAMOND 4920 & TERME in RECH. 44329! In montibus prope Ahar, TERME 13204-E!
A f g h a n i s t a n : E: Laghman: NW Kail (Kayli), 2100–2500 m, ANDERS 10798! Nangarhar: Dar-e Nur N Jalalabad, FREITAG 6044! Nuristan: In valle Kunar prope Kamdesh, 1800–2000 m, PODLECH 32174! Pashki, 2300 m, EDELB. 1311! In valle Waigel, 1800 m, EDELB. E-2390!, NEUB. 931/1951! Kuh-e Adrugal inter Waigel et vallem Pech, 2200 m, LARSSON 12 in BRECKLE 5512! In jugo Ashpi, NEUB. 1033/1951! Chetras, 2090 m, KERST. 1300! Prope Mandagal, 1650 m, ANDERS 5176! Kushtos, 2000 m, NEUB. 3274! Chapadarrah, 1300–1900 m, ALPAY in ANDERS 11336! – NE: Wakhan: Zemestan-e Baharak, 3300 m, ROEMER 396!, ANDERS 7800!, GREY-WILSON & HEWER 1463! Badakhsh.: Ad lacum Shiva (Koul Shoghnan), LINDB. 882/1960!, 1054/1960!
P a k i s t a n : Chitral: Ad glaciem aeternam Chatiboi, 3400 m, STAMM & WÖHRL 92! Golen Gol, 2170 m, BOWES LYON 11! – Swat: Utror, substr. granit., 2500 m, RECH. 19548! – Kurram: Parachinar, 2650 m, SIDDIQUI 4312! Shend Toi, 2400–2700 m, AITCH. 1237.

Distr. gen.: Europa fere omnis, Asia temperata, Africa boreo-occidentalis.

S. virga-aurea ist eine weitverbreitete, äußerst polymorphe Art, deren kritisch-systematisc Bearbeitung noch ausständig ist.

Sämtliche afghanischen Belege sind kahl, die Blattspitze ist lang ausgezogen, der Blattrand schmal und scharf gesägt.

2. *Aster*

auctore A. J. C. GRIERSON, Edinburgh

Aster L., Spec. Plant. 2: 872 (1753); Gen. Plant. ed. 5: 373 (1754).

Lit.: A. J. C. GRIERSON, A revision of the Asters of the Himalayan area, Notes from the Royal Botanic Garden, Edinburgh 26: 67–163 (1967).

Herbae biennes vel perennes vel suffruticosae, caudice saepe rhizomatoso ± lignescente. Caulis simplex monocephalus vel ramosus pleiocephalus, foliosus. Folia basalia et caulina oblanceolata vel spathulata vel lanceolata (interdum ovato-cordata). Capitula heterogama, radiata, plerumque heterochroma. Involucrum pluriseriatum, disco ± aequilongum; phylla subaequalia vel imbricata, ± herbacea, plerumque 1 mm lata vel latiora. Flores radiantes feminei plerumque uniseriati; ligulae latiusculae, quam discus longiores, plerumque coeruleae vel purpurascentes vel albae. Flores disci hermaphroditi, tubulares, anguste campanulati, apice 5-lobi, plerumque flavi. Antherae basi sagittatae, appendices apicales, ovati, acuti. Styli florum disci rami ± applanati, appendicibus lanceolatis vel acuminatis. Achaenia oblonga vel obovata, compressa, plerumque bicostata; pappus setiformis, persistens, simplex, 1- vel 2-seriatus vel serie externa breviore e setis subpaleaceis composita. – Typus generis: *A. Amellus* L.

1a. Folia dentata. Involucri phylla cartilaginea, nec herbacea nec membranacea .... 3. *A. Aitchisonii* BOISS.
b. Folia integra vel subintegra. Involucri phylla herbacea vel membranacea 2
2a. Caulis ramosus pleiocephalus. Involucri phylla membranacea .... 4. *A. Tripolium* L.
b. Caulis simplex monocephalus. Involucri phylla apice quidem herbacea 3
3a. Caulis parte inferiore paucifoliatus, foliis 2–3. Involucri phylla saepe atroviridia, acuta vel acuminata. Pappi setae exteriores breviores, subpaleaceae .... 2. *A. flaccidus* BUNGE
b. Caulis tota longitudine foliatus, foliis 5–10. Involucri phylla plerumque viridia, obtusa vel late acuta. Pappi setae exteriores breviores, interioribus similes .... 1. *A. alpinus* L.

1. ***A. alpinus*** L., Spec. Plant. 2: 872 (1753). •
Icon.: Tab. 4.
Typus: „Habitat in Austria, Vallesia, Helvetia, Pyrenaeis"; Herb. LINN 997/10.

Rhizoma crassum, ascendens. Caules 5–15 cm alti, foliati, ± dense albo-pilosi. Folia utrinque albo-pilosa; basalia spathulata, 15–70 x 5–10 mm, basi attenuata, apice obtusa, margine integra; folia caulina 10–30 mm longa, plerumque 5–10, per lem distributa, lineari-lanceolata vel oblanceolata, acuta. Capitulum solitarium, 12,5–17,5 mm diametro. Involucrum biseriatum; phylla linearia, 7–8 x 0,75–1 mm, obtusa vel late acuta, viridia, anguste albido-marginata, apice sparse pubescentia, valde ciliata. Flores radiantes 30–40, coerulei vel lilacini; tubus basalis 2–3 mm longus, ligula 10–15 x 1–3 mm. Flores disci flavi, 5–6 mm longi. Achaenia 2–3 mm longa, dense sericea; pappus 4,5–6 mm longus, simplex, biseriatus, albidus, demum brunnescens, setis exterioribus nonnullis brevioribus.

Crescit in declivibus saxosis et glareosis.

P e r s i a : N: Gilan: In montibus Gilani, AUCH. 4745! In montibus inter Asalem et Khalkhal supra limitem fagetorum, 1900–2300 m, RECH. 43448!, TERME & MATIN 36686-E, TERME & MOUSSAVI 16437! – W: Azerb.: Kuh-e Almas prope Khalkhal (Herowabad), 2270 m, MAKOUI 9883! – C: Qazv.: Manjil, BUHSE. – „Amarlu: Shahidan versus Sheykh Sara, 1800–2200 m", TERME 15091-E!

Distr. gen.: Circumborealis.

2. ***A. flaccidus*** BUNGE, Mém. Acad. Scienc. Petersbg. 2: 599 (1835).
Syn.: *A. heterochaeta* C. B. CLARKE, Comp. Ind. 44 (1876); HOOK. f., Fl. Brit. Ind. 3: 250 (1881) p.p. excl. typo.
Icon.: Tab. 5.
Typus: Altai, a. 1832, BUNGE, LE.

Rhizoma tenue, surculiferum. Caules 5–15 cm alti, rarius elatiores, basi residuis foliorum nonnullis, imprimis superne villoso-pubescentes, pilis albis vel articulis transversalibus atris, interdum glandulis stipitatis immixtis. Folia utrinque villoso-pubescentia, margine ciliata, crispata vel plana; basalia 15–40(–65) x 4–8(–15) mm, spathulata vel obovata, basi attenuata et subpetiolata, apice acuta vel obtusa et mucronulata; folia caulina pauca (2–3), plerumque in parte inferiore caulis, angustiora, lineari-lanceolata. Capitulum solitarium 12,5–20 mm diametro; involucrum 7,5–10 mm longum, ± dense albo-villoso-lanatum, glandulis stipitatis vel subsessilibus intermixtis; involucri phylla lineari-lanceolata, acuta vel acuminata, biseriata, discum ± aequantia, atroviridia. Flores radiantes 30–65; tubus basalis 1–2 mm longus, ligulae coeruleae vel malvinae, 12,5–20 x 1,25–2,25 mm. Flores disci flavi, 5,5–6,5 mm longi, lobis plerumque pilos glanduliferos ferentibus. Achaenia 2–2,5 mm longa, anguste obovata, imprimis prope apicem parce pubescentia et interdum glandulosa. Pappus albidus, 6–7 mm longus, setis exterioribus subpaleaceis, 0,75–1,5 mm longis.

Crescit in glareosis et pascuis alpinis.

A f g h a n i s t a n : E: Panjshir: M. Mir Samir „Apollograt", 4630 m, BRECKLE 790! Nuristan: Sulaimanshah Darrah prope Sulaimanshah, 3000–3500 m, ALPAY in ANDERS 11448! – NE: Wakhan: In valle Badjens, 4500 m, ROEMER 356! In valle Taliboy, 4650 m, PETOCZ 41 in BRECKLE A-3941! Kotal-e Wazit, 4600 m, BRECKLE 1289! In valle Tergan Qurum S lacus Bishutik, 4500 m, GREY-WILSON & HEWER 1511! Kol-e Chaqmaqtin, 4150–4350 m, ANDERS 7479! In valle Issik, 4760 m, „Frostbodenflecken im Grobschutt", HUSS 440! Munjan: Sanglech, 3900 m, KOELZ 12632!
P a k i s t a n : Chitral: Inter Chatiboi et Pechus, 4000–4200 m, STAMM & WÖHRL 187!, 194! – Kurram: Inter lapides mobiles jugi Sikaram, 3900–4200 m, AITCH. 951.

Distr. gen.: Afghanistan, Himalaya, Asia centralis, Sina borealis, Sibiria.

3. ***A. Aitchisonii*** Boiss., Fl. Or. Suppl. 287 (1888).
Icon.: Tab. 6.
Typus: Aitchison 812, G!

Caudex aliquantum lignosus. Caules plures, 25–30 cm alti, erecti, foliati, albido-pubescentes. Folia subcoriacea, canescenti-viridia, supra glabra, subtus margine et secus costam medianam sparse hispidula, 20–45 × 4–13 mm, ovato-lanceolata, in petiolum brevem attenuata, apice acuta, margine utrinque remote 2–3-dentata. Capitula 6–7 mm diametro, 5-na, terminaliter corymbosa; involucrum 7–8 mm longum, imbricatum, 4-seriatum; phylla ovato-lanceolata, coriacea, straminea, apice anguste purpureo-rimosa, margine tenuiter albo-ciliata. Flores radii 8–10; tubus basalis 4–5 mm longus; ligulae albae, 7–8 × 2,5–3 mm. Flores disci flavi, 5–5,6 mm longi. Achaenia (immatura) 3 mm longa, albido-sericea; pappus albus, simplex, 5 mm longus.

Pakistan: Kurram: Mangal, 3300 m, HARSUKH 15382! Kats Kalle, 2135–2440 m, AITCH. 812! Capnitri (? Chapri), 2135 m, AITCH. 323!

Distr. gen.: Endem.

4. ***A. Tripolium*** L., Spec. Plant. 2: 872 (1753).
Syn.: *Tripolium vulgare* Nees, Gen. Sp. Aster 153 (1832).
Typus: „Habitat in Europae littoribus maritimis et ad Siberiae lacus salsos", Herb. LINN 997/15.

Biennis vel ± perennis, 15–60 cm altus. Caulis erectus vel ascendens, glaber vel subglaber, saepe rubescens, plerumque a basi ramosus. Folia glabra vel tenuiter ciliata; basalia 40–120 × 5–10 mm, basi attenuata semiamplexicaulia; media et superiora ad 65 × 10 mm, lineari-lanceolata, sessilia. Capitula pauca vel numerosa, laxe corymbosa. Involucrum 2–3-seriatum, 7,5–10 mm diametro; phylla 6–8 × 2–3 mm, oblongo-linearia, obtusa, glabra. Flores radii 15–30, tubo basali 3–3,5 mm longo; ligulae coeruleo-lavandulaceae, 4,5–6,5 × 1–2,5 mm. Flores disci flavi, 5–6 mm longi. Achaenia 3–4,5 mm longa, basi paucipilosa, ceterum subglabra; pappus uniseriatus, albus, accrescens, maturitate ad 12 mm longus. – Floret VI.–IX.

Crescit in arenosis maritimis et in paludibus subsalsis.

Talish: Lenkoran, Astara, Sallian, HOHEN.
Persia: N: Gorg.: Ad litus prope Gorgan (Asterabad), BUHSE. Gorgan, KARELIN. Bandar-i Gaz, SINT. 1476.

Distr. gen.: Europa, Asia, America temperata; Algeria.

3. *Heteropappus*

auctore A. J. C. Grierson, Edinburgh

Heteropappus Less., Syn. Comp. 189 (1832).

Herbae biennes vel perennes, usque ad 1 m altae. Indumentum appresse pubescens et glandulosum. Folia linearia vel oblanceolata vel spathulata, sessilia vel basi attenuata, apice obtusa vel acuta, margine plerumque integra. Capitula in extremis ramis solitaria vel laxe racemosa vel corymbosa. Involucrum 2–3-seriatum; phylla lineari-lanceolata, subaequalia, viridia, interiora quidem scarioso-marginata. Flores radii ligulati vel nulli. Flores disci tubulosi, infundibuliformi-quinquelobi, lobis inaequilongis. Achaenia obovata, compressa, sericea; pappus simplex, floribus disci aequilongus, stramineus vel rubescens.

1a. Flores radiantes nulli .... 1. *A. holohermaphroditus* GRIERSON
b. Flores radiantes evoluti, 10–20 per capitulum .... 2. *H. altaicus* (WILLD.) NOVOPOKR.

1. ***H. holohermaphroditus*** GRIERSON, Notes Roy. Bot. Gard. Edinb. 26: 155 (1964). Typus: India boreali-occidentalis, Lahul, Gondla, 3050 m, BOR 12444, DD!

Herba perennis. Caudex lignescens. Caules erecti, plures, 15–45 cm alti, parce pubescentes et glandulosi. Folia caulina inferiora late oblanceolata vel spathulata, folia superiora linearia, 13–35 × (1–)2,5–8 mm. Capitula 3–10, laxe racemosa vel corymbosa, 13–15 mm diametro; involucri phylla 6–7 × 1–1,7 mm. Flores radiantes nulli. Flores disci flavi, c. 6 mm longi. Achaenia c. 3 × 1,5 mm; pappus brunnescens, 4–4,5 mm longus.

Pakistan: Chitral: Gehrait, SIDDIQUI 2201! – Quetta: Ziarat, 2440 m, R. R. STEWART 517!

Distr. gen.: Pakistan, Kashmir, India boreo-occidentalis.

Superficially this species resembles and has been mistaken for *Pulicaria angustifolia* DC. It is not uncommon to find specimens of both species mounted together on herbarium sheets.

2. ***H. altaicus*** (WILLD.) NOVOPOKR. in Sched. ad Herb. Fl. Ross. 8: 193 (1922). Syn.: *Aster altaicus* WILLD., Enum. Pl. Hort. Berol. 881 (1809).

Biennis vel perennis, erectus, viridis vel canescens. Indumentum appresse pubescens, glandulis subsessilibus intermixtis. Caules 20–45(–100) cm alti, interdum basi lignescentes, foliati, superne ramosi, ramis capitula solitaria terminalia ferentibus. Folia linearia vel oblanceolata; inferiora 20–55(–100) × 7–15 mm; superiora saepe reducta, ad 5 × 1 mm, patula vel ramis appressa. Capitula 10–15 mm diametro; phylla lineari-lanceolata, 4–8 × 0,6–2 mm. Flores radii 15–20; ligulae coeruleae, 10–15 × 1,5–2,5 mm. Flores disci flavi, 3,5–5 mm longi. Achaenia 2–2,5 × 0,75–1,5 mm; pappus simplex, albidus vel rubescenti-brunneus, flores disci aequans.

Distr. gen. speciei: Persia, Afghanistan, Pakistan occidentalis, Turcomania, Himalaya, Sina.

1a. Caules plerumque prostrati, breves, 15–25 cm longi. Folia ± appressa, sursum decrescentia .... var. *decrescens* GRIERSON
b. Caules plerumque erecti, 30–60(–100) cm alti. Folia inferiora demum patula 2

2a. Involucrum ad summum 10 mm diametro; phylla interiora 4–6 x 0,75–1 mm. Herbae tenues, caules plerumque 30–40 cm alti. Pedunculi infra capitula saepe 0,50 mm crassi .... var. *tenuicaulis* GRIERSON
b. Involucrum 13–15 mm diametro; phylla interiora 6–7 x 1,5 mm. Herbae robustae, ultra 45 cm altae. Pedunculi infra capitula plerumque 1 mm crassi 3
3a. Plantae virides, diffuse ramosi. Folia patula vel caulibus vix appressa .... var. *altaicus*
b. Plantae canescenti-virides, fastigiate ramosi. Folia imprimis superiora caulibus ramisque appressa .... var. *canescens* (NEES) SERG.

— — var. ***altaicus***
Typus: Specimen cultum, B-WILLD. 15877.

Persia: C: Qazv.: Karaj, 1400 m, RECH. 220! Shahr.-Bust.: Inter Naudeh et Shahrud, 1000–2000 m, SCHMID 6118!

Distr. gen. varietatis: Persia, Turcomania (?), India boreo-occidentalis.

— — var. ***canescens*** (NEES) SERG. in KRILOV, Fl. W. Siberia 11: 226 (1949).
Syn.: *Callimeris canescens* NEES, Gen. Sp. Aster 229 (1832). *Aster pyrrhopappus* BOISS., Fl. Or. 3: 158 (1875).
Icon.: Tab. 7.
Typus varietatis: Patria ignota, Herb. GUNTHER.

Persia: N: Gorg.: Gorgan, KOELZ 16164! Golidagh, 800 m, HEWER H-4024. Mohammad Reza Shah Res.: Inter Tang-e Rah et Tang-e Gol, 400–600 m, RECH. 52592! SOJÁK 8464! Almeh, 1730 m, ROWSHAN 6692, WDB. & COBHAM 14226! In silvis Golestan, WALTON 151-A! Maz.: In valle fl. Haraz, 1100–2050 m, ROWSHAN 6705, RIAZI 6704, PANAHI 2433, 2597. Gaznak, 1600 m, WDB. 1431! S Amol, 540 m, ARCHIBALD 2272! Alamut, 1060–1370 m, FOROUGHI 722, 2692, BABAKHANLOU 3619! In valle fl. Chalus, 2750 m, RIAZI 2232! 20 km S Rasht, 1200 m, ANDERSEN & PETERSEN 218! Gilan: Inter Rudbar et Manjil, BORNM. 7503, 7504. In valle fl. Safid Rud BUHSE. In montibus Gilan, AUCH. 4748! – E: Khor.: Akhlamad, Darreh Abshar, 1500 m, IRANSHAHR 15116-E! Kuh-e Bezg, RECH. 1462! In montibus inter Bojnurd et Tappeh-ye Moraveh, RECH. 1871! Tappeh-ye Moraveh, in stepposis, KOELZ 16625! Mashhad. 900 m, RECH. 4876!, ALAVA 10909! Hazar Masjed inter Ardak et Talqur, 1200–1600 m, RECH. 5003! 30 km N Torbat-e Heydariyeh, 1900 m, ASSADI & MASOUMI 21308. Tandureh Wildlife Res.: 30 km WSW Darreh Gaz, 700 m, EDMONDSON 1315! Khorasan, BUNGE. – C: Tehr.: Fashand, 1800–1900 m, BORNM. 7505. Tehran, KY. 447! 26–38 km NE Tehran, 1700–1900 m, FURSE 3124!, BABAKHANLOU & al. 3611!, 3612!, 3614!, 3615! Chitgar, 1320 m, AMINI & al. 12572. In valle Vardavard, 1700 m, WDB. & SANII 12578. Shemshak, GHEISSARI 2708. M. Damavand, 2 km S Ab-e Garm, 2200–2700 m, BRECKLE & BHADRESA 5381. Prope Varamin, 1500 m, BROWN 780! Qazv.: Karaj, 1400 m, RECH. 6703!, GILLI! In montibus Halkedar, 1300 m, RECH. 1015! Kalak, 2500 m, FOROUGHIAN & HARIRI 3613! Shahdasht, 1220 m, FOROUGHIAN 3618! Kuh Dashteh, 1720–1950 m, RIAZI 4066, FOROUGHI 968. 24–30 km NE Karaj versus Chalus, 1560–1800 m, KUKKONEN 7891!, AMIN & BAZARGAN 3616! Jowstan, 1950 m, TERME 13766-E! Prope Qazvin, HAUSSKN., LINDS. 383! Shahr.-Bust.: Shahrud, ASSEFI 13213-E!, KOELZ 16934!
Turcomania: Ashkhabad: prope Kulkulab, SINT. 957! Koese, SINT. 489! In deserto argilloso prope Ashkhabad, LITW. 1577! Kopet Dagh, MIKESHIN! Ad ripas rivuli Chuli, LITW. 1426! In montibus prope Chan Jaila, LITW. 1541! Venoskoje in valle Firiuzinka, 600 m, VASAK.

Afghanistan: N: Mazar-i Sharif: Mazar-i Sharif, LINDB. 554/1959! 20 km S Mazar-i Sharif, GREY-WILSON & HEWER 884! Inter Chashmeh-i Shafal et Akupruk, 800–1000 m, RECH. 16278! Shibarghan: 10 km S Sangcharak, 1800–1900 m, FREITAG 6568-a! Darrah-i Suf: Polat, 2700 m, KOELZ 13948! – NW: Maimana: Zehnadis, 3000 m, KOELZ 14034! Inter Andkhoi et Maimana, 500 m, HDG. & WDB. W-3587! 30 km W Maimana, 500 m, HDG. & WDB. W-3637! Inter Maimana et Murghab prope Qaisar, 1170 m, NOEL 25. Bala Murghab: Chechaktu (Tschitchaktou), LINDB. 448/1959! Bala Morghab, NEUB. 4223! 55 km S Morghab, 720 m PODLECH 22121. 23 km E Bala Morghab, 610 m, PODLECH 16964. Herat: 105 km ENE Herat, in jugo Sabzzak, 2400 m, GREY-WILSON & HEWER 1258! – SW: Herat: Herat, KOEIE 2250! Ghorat: SW Sar-i Naorak, 2480 m, RECH. 18941! Qala Shahrak, 2000–2320 m, PODLECH 19157, RECH. 19151! Farah: 32 km N Gulestan, 1460 m, PODLECH 21725. – SE: Kandahar: Kandahar, KOELZ 13228!, HDG. & EKB. W-7177!, VOLK 1373! – E: Kabul: Kabul, KOEIE 2317!, HONIGBERGER! Khorogh, 2400–2800 m, GILLI 2903!, 3902! Gulbagh, LINDB. 213/1957! Lataband, VOLK 624!, BRECKLE A-490! Chakewardak, 2600 m, GILLI 3904! Arbarp, 2100 m, CHAW.-MUST.! In montibus 25 km ENE Kabul, 3000 m, PODLECH 15856. SE Istalif, 1880 m, GILLI 3901! Giri, 2100 m, KOELZ 11504! Wardak, VOLK 858! Inter Charikar et Bamian, 2500 m, KUKKONEN 7215!, 7398!, UOTILA 18485! E jugi Shibar, 2600 m, PODLECH 12061! Gulbahar, 1600 m, AMSEL! Panjshir: Dasht-i Rewat, 2500 m, PODLECH 12844. Darrah-i Zaria N Safed Jir, 3100 m, PODLECH 12565! In decl. australibus jugi Salang prope Wolang, PODLECH 12619! Nangarhar: Mamakhel, 1600–1700 m, ANDERS 10419! In valle Maidan, 2500–2900 m, PODLECH 18693, 18722, ANDERS 4154! Hauz-i Mahiha, 2500 m, KOEIE 3265! Logar: Salawat, 3050 m, LALANDE R-498-E-2! Ghazni: Ad lacum Sabzab inter Okak et Behzud (Diwal Kol), 2800 m, RECH. 17972! Dasht-i Nawar, 3200 m, BRECKLE 4570-A. Dasht-i Nawar prope Qashe Amro, 3150 m, PODLECH 19261. Inter Ghazni et Sariab, substr. granit., 2400 m, RECH. 37102! 29 km NW Ghazni, FREITAG 1385! Okak, 3000 m, RECH. 17753! 10 km W Ghazni, 2400 m, ANDERS 3893! Loman inter Qarabagh et Sang-i Masha, 2400 m, RECH. 17423! 10 km E Bazar-e Malestan, 2950 m, PODLECH 19344. Gardez: 25–30 km W Gardez, LINDB. 34/1962! M. Safed Kuh W jugi Altimur (Terah Kotal), 2600–2900 m, RECH. 31968!, VOLK 71/454. Jaji: 35–50 km a Gardez versus Ali Khel, 2600 m, LAMOND 2463! Kotkai, 2500–2600 m, FREITAG 1820!, AMSEL! Peiwar Kotal, VOLK 71/520. Mangal prope Zambar, 1350 m, FREITAG 1889! Dobandi prope fl. Kafardarra, 2900 m, LALANDE R-1078-E 6! In decl. borealibus Safed Kuh prope Oghaz, 1800–2100 m, ANDERS 10311! Khost: 2 km S Moghulkhel, 1500 m, ANDERS 3622! Khost, 1170 m, HAGER in RECH. 37775!, PODLECH 18657. In valle fl. Matun 10–15 km NW Khost, 1400 m, RECH. 35762! In montibus S Yakubi, 1400 m, RECH. 35720! 1 km N Yakubi, 1150 m, ANDERS 3582! 2 km S Chamkani versus Yakubi, 1730 m, PODLECH 18609. In valle Tangai inter Domandao et Urgun, 1500–2000 m, RECH. 35788! Urgun, VOLK 71/758-a. Nuristan: Kushtos, 1800 m, EDELB. 1113!, NEUB. 3311! Kamdesh, 1700 m, EDELB. 1127! In valle Waigel, 1800 m, EDELB. 2400! – NE: Kataghan: In decl. borealibus jugi Salang, 2200–2750 m, AMSEL!, CARBONNIER JC/70/13!, FREITAG 3794!, KUKKONEN 7521!, LAMOND 2227!, 2237!, RECH. 31644! In valle Khinjan, 2000–2700 m, ANDERS 10981!, PODLECH 22028, VOLK 71/737-b. In valle Andarab, 1100 m, VOLK 71/683. Kuh-e Chungar NW Pul-i Khumri, 1400 m, FREITAG 6482! In decl. boreo-orientalibus jugo Yawnu, 2600 m, PODLECH 11730! Prope Farkhar, 1500 m, PODLECH 12704. Taliqan: 2 km W Taqcha Khana, 1500 m, PODLECH 11504! Badakhsh.: In jugo W Kishm, 1600 m, HDG. & WDB. W-9498! Rustak, 600 m, KOELZ 13141! – C: Bamian: Qala Sarkari, 2100 m, KOELZ 13930! Inter Bamian et Band-i Amir, 2800–3000 m, BRECKLE A-2390!, RECH. 18135! Band-i Amir, 2900 m, ANDERS 4473! DIETERLE 433, 1063, HAGER 70!, NEUB. 473/1951!, PODLECH 12122!, VOLK 2848! In decl. borealibus Kuh-i Baba, 2700 m, THESIGER 52!, 87! Bamian, 2300 m, NEUB. 398/1951!, 4194!, 4474! Kotal-i Ak Robat, 3000 m, DIETERLE 491. Doab: Lorinj, 2400 m, KOELZ 13677!, 13678! Doab, VOLK 464!, 1783!, KOELZ 13527! Eshpushta, 1500 m, GILLI 3900! Deh Kundi: Dahane Khubak ad viam versus Deh Kundi, 2420 m, PODLECH 19032. 3–30 km NE Shahrestan, 2200 m, RECH. 36774! Sar-e Bum, 2880 m, PODLECH 18971. Ghorat: Darrah i La'l inter Panjao et Lal, 2710 m, PODLECH 19102. Ghorband: In jugo Shibar, 3000 m, KOELZ 12162! – Afghanistan, GRIFF. Herb. Late East Ind. Comp. 3113!

Pakistan: Chitral: In valle Yarkhun prope Dartsan, 2850 m, STAMM & WÖHRL 296! Reshun, 1700–1800 m, KERST. 2013! Brep, STAINTON 3078! – Swat: Mingora, R. R. STEW. 24222! – Kohat: Cherat, 1310 m, JOHNSTON 4! – Kurram: Parachinar, 1500–1800 m, AFENDI 188!, KAZMI 4236! In valle Kurram, AFENDI 316!, 522!, KAZMI 3762! – Quetta: Ziarat, 2440 m, LACE 73! Urak, REPP! Quetta, 2500 m, POPOV 27-b!

Distr. gen. varietatis: Persia, Afghanistan, Turcomania, Pakistan occidentalis, India boreo-occidentalis.

– – var. ***tenuicaulis*** GRIERSON, var. nova.
Icon.: Tab. 8.
Typus varietatis: STAINTON 3222, E!

Crescit in glareosis aridis et in alveis exsiccatis.

Afghanistan: **E**: Jaji: Patan, VOLK 1117! Nuristan: Asmar, 900 m, EDELB. 1626! Gusalak, NEUB. 819/1951! Inter Kotal-e Agok et Waigel, NEUB. 937/1951! Wama, 1380 m, KERST. F-45 = 1260-A! Darim, 1900–2400 m, NEUB. 1008! – **NE**: Munjan: Magh Nawol (Magnaul), 3300 m, KOELZ 12783!
Pakistan: Chitral: Shishi, 2250 m, BOWES LYON 144! Broz, 2135 m, HARRISS 16278! Bashgalian Deh, 2135 m, STAINTON 3222! – Baluchistan, BANERJEE!

Distr. gen. varietatis: Afghanistan orientalis, Pakistan occidentalis.

– – var. ***decrescens*** GRIERSON, var. nova.
Icon.: Tab. 9.
Typus varietatis: LAMOND 1874, E!

Crescit in glareosis aridis.

Afghanistan: **NW**: Darra-i Suf: In jugo Shanbashak, 2790 m, KOELZ 13866! Afghanistan, AITCH. 3/1880!
Pakistan: Kurram: Parachinar, 1500 m, LAMOND 1874!, RECH. 30931! In valle Kurram, DUTHIE 15352 p.p.!, 15353!, 15354.

Distr. gen. varietatis: Afghanistan, Pakistan.

4. *Galatella*

auctore K. H. RECHINGER, Wien

Galatella CASS., Dict. Sciences Nat. 37: 463 (1825).

Herbae perennes *Asteri* similes, sed caules dense foliati, foliis elliptico-lanceolatis. Capitula plura, corymbosa, 20–30-flora. Involucrum campanulatum; phylla pluriseriata, imbricata, dimidiam longitudinem florum disci attingentia. Flores radiantes neutri (stylo nullo); ligulae violaceae; flores disci flavi, lobis longiusculis, lanceolatis. Achaenia densiuscule sericea; pappus simplex.

1. ***G. punctata*** (WALDST. & KIT.) NEES, Gen. Sp. Aster 187 (1832).
Syn.: *Aster punctatus* WALDST. & KIT., Pl. Rar. Hung. 2: 113, Tab. 109 (1805). *Galatella armena* BOISS., Fl. Or. 3: 161 (1875).
Icon.: JÁV. & CSÁPODY, Icon. Fl. Hung.: fig. 3641 (1933). – Tab. nostr.: 10.
Typus: Hungaria: Csongrad, KITAIBEL.

Caulis 25–50 cm altus, pubescens et glandulis subsessilibus obsitus. Folia 15–50 x 2–10 mm, basi semiamplexicaulia, apice acuta, margine integra, trinervia, papillosa, papillis in statu juvenili in pilos tenues lanatos excurrentibus, interdum glanduloso-punctata. Capitula plerumque per corymbum quam 6 numerosiora; pedunculi foliis minutis squamiformibus obsiti. Involucrum 5–6 mm latum; phylla 2,5–4 x 0,75–1 mm, 3–4-seriata, oblongo-lanceolata, trinervia. Flores disci 10–24, 4,5–6 mm longi. Achaenia 2,5–4 mm longa, sericeo-pilosa et glandulosa; pappus 5–6 mm longus, brunnescenti-albidus.

Persia: W: Azerb.: Kuh Goja Bel prope Ahar, TERME 13161-E! Hasan Beyglu, KNAPP. Takht-i Soleyman: Aqdarreh, KNAPP.

Distr. gen.: Ab Europa centrali usque ad Asiam centralem; Anatolia, Persia occidentalis.

5. ***Crinitaria***

auctore A. J. C. GRIERSON, Edinburgh

Crinitaria CASS., Dict. Scienc. Nat. 37: 460, 475 (1825).
Syn.: *Pseudolinosyris* NOVOPOKR., Bull. Jard. Bot. Petersbg. 18, 1: 11 (1918).

Suffrutices humiles, basi lignosi, valde ramosi, superne foliati. Folia alterna, lineari-lanceolata, sessilia, integra vel paucidentata. Capitula homogama, discoidea, pauciflora, laxe racemosa vel corymbosa. Involucrum ± cylindricum, imbricatum, 4–5-seriatum; phylla ovato-oblonga, cartilaginea vel scariosa. Flores 4–10(–20), tubulosi, anguste campanulati, 4–5-lobi, ex involucro exserti. Antherae basi minute sagittatae, apice lanceolatae. Styli basi bulboso-incrassati, ramorum appendicibus minutis. Achaenia oblonga vel anguste obovata, 4–5-costata, pubescentia et glandulosa; pappus simplex, 2–3-seriatus, setis subaequalibus.

1a. Involucri phylla rotundata vel subacuta, margine ciliata, non vel vix scariosa 2
b. Involucri phylla acuminata, vix rotundata, margine scariosa .... 1. *C. Grimmii* (REGEL & SCHMALH.) GRIERSON
2a. Folia caulina ovata, margine plerumque utrinque 1–4-dentata .... 2. *C. asperella* (RECH. f. & KOEIE) GRIERSON
b. Folia caulina lanceolato-elliptica, semper integra 3
3a. Corymbi laxi. Pedunculi foliis paucis bracteiformibus obsiti .... 3. *C. corymbulosa* (BORNM.) GRIERSON
b. Corymbi ± compacti. Pedunculi foliis pluribus bracteiformibus cum involucri phyllis continuis obsiti .... 4. *C. villosa* (L.) GROSSH.

1. *C. Grimmii* (REGEL & SCHMALH.) GRIERSON in RECH. f., Fl. Iran. 145: 109 (1980).
Syn.: *Pseudolinosyris Grimmi* (REGEL & SCHMALH.) NOVOPOKR., Bull. Jard. Bot. Petersbg. 18, 1: 12 (1918). *Linosyris Grimmii* REGEL & SCHMALH., Acta Horti Petrop. 5: 615 (1878). *Linosyris Capusii* FRANCH., Ann. Scienc. Nat. Ser. 6, 16: 306 (1883). *Staehelina Sintenisii* BORNM., Mitt. Thür. Bot. Ver. M.S. 18: 50 (1903). *Aster Grimmii* FEDTSCH., Rast Turkest. 731 (1916) p.p. *Pseudolinosyris Capusii* NOVOPOKR., Bull. Jard. Bot. Petersbg. 18, 1: 12 (1918) p.p. *Varthemia platylepis* RECH. f. & KOEIE, Dan. Biol. Skr. 8, 2: 37, fig. 27 (1955). *Pseudolinosyris Sintenisii* (BORNM.) TAMAMSCH., Fl. URSS. 25: 183 (1959).
Icon.: Tab. 11.
Typus: „In Turkestaniae montibus alatavicis in valle fluvii Tschirtschik prope Pacrak", A. REGEL, LE.

Rami hornotini 8–10 cm longi, sparse lanato-pubescentes, glandulis sessilibus nitidulis intermixtis, simplices, pleiocephali. Folia lineari-oblanceolata, 7,5–17,5 × 1–1,5 mm, basi attenuata, apice acuta, margine revoluta, utrinque breviter sparse lanato-pubescentia et glandulis sessilibus obsita. Capitula 3–8 breviter ± dense racemosa; pedunculi 7,5–10 mm longi, interdum solitarii. Involucrum cylindricum, 3–4 mm diametro; involucri phylla pallide brunnea, apice (in sicco) purpurea; exteriora 3 × 1,5 mm, ovata, acuta vel acuminata; interiora 8–9 × 2 mm, oblonga, acuta, sparse pubescentia et ciliata. Flores 4–5, primum flavi, marcescentes rubescentes, 8–9 mm longi. Achaenia 5–6,5 mm longa, oblonga, glandulosa et pubescentia; pappus 8–10 mm longus, albidus.

Crescit in saxosis silic., in declivibus aridis.

Turcomania: Ashkhabad: Germab inter Skobelewka et Kulkulab, SINT. 1175 (typus *Staehelinae Sintenisii*)!
Afghanistan: **N**: Mazar-i Sharif: Boka Mazar, 2300 m, PABOT A-1173! – **SW**: Ghorat: Darreh Garmab inter Qala Shahrak et Sar-i Naorak, 2540 m, RECH. 18902! Kuh Cheling Safed Daraq S Parjuman, substr. calc., 2600–2800 m, RECH. 19112! – **SE**: Katawaz: 25 km NE Katawaz, 2180 m, FREITAG 3350. – **E**: Kabul: Hauz-i Mahiha, 2500 m, KOEIE 2384 (typus *Varthemiae platylepidis*)! Chakewardak, GILLI 3969! Panjshir: Kur-i Petau, substr. silic., 3100 m, PODLECH 12445! Darraj-i Zuria N Safed Jir, 3100 m, PODLECH 12561! Ghorband: In decl. orientalibus jugi Shibar, 2700 m, GILLI 3970! Gardez: In decl. occidentalibus jugi Altimur 23 km N Gardez, 2700–3200 m, RECH. 31840, FREITAG 1608. Ghazni: In jugo inter Sariab et Dasht-i Nawar, in saxosis calc., 3100 m, RECH. 37226! Jaji: Ad fl. Dobandi, 2720 m, LALANDE R-472-E 2! In valle Rosmaidan, 3150 m, LALANDE R-1051-E 6! Khost: Supra Hazar Darakht, 2400 m, FREITAG 1636. In decl. austro-orientalibus jugi Sata Kandao, substr. Tonschiefer, 2800–2200 m, RECH. 32131. – **NE**: Kataghan: Kuh-i Chungar W Pul-i Khumri, 1400–2500 m, FREITAG 6484, 6506. – **C**: Bamian: Band-i Amir, 3300 m, VOLK 2288!, 2827! Band-i Panir, 2950 m, PODLECH 22339. Band-i Zolfikar, 3000 m, DIETERLE 1401. Panjao: 50 km W Panjao, 3100 m, PABOT A-1457. Panjao: In faucibus inter Mollah Jakub et Dahan-e Siah Darreh, substr. flysch, 2800 m, RECH. 18643! Kuh-e Josha NW Panjao, 2900 m, RECH. 18771! Darrah-i Godar 32 km W Panjao, 2750 m, PODLECH 22295. Kotal-e Nalgis 17 km W Panjao, 3100 m, PODLECH 18927. Doab: In jugo Lorinj, 3300 m, KOELZ 13728! Behzud: Farakulum, 2500–3100 m, KOEIE 2547!, 2755!, 3303! Ghorband: In jugo Shibar, 3000 m, KOELZ 13505!; 2800 m, WDB. & EKB. W-9759! – Afghanistan, EDELB. E-2333.

Distr. gen.: Turcomania, Afghanistan, Syr-Darya, Pamir-Alaj, Tian Shan.

2. ***C. asperella*** (RECH. f. & KOEIE) GRIERSON in RECH. f., Fl. Iran. 145: 109 (1980).
Syn.: *Varthemia asperella* RECH. f. & KOEIE, Dan. Biol. Skr. 8, 2: 35, fig. 25 et 26 (1955). *Aster asperellus* (RECH. f. & KOEIE) LEINS & PODLECH, Mitt. Bot. Staatssammlung München 8: 182 (1970).
Icon.: Tab. 12.
Typus: KOEIE 2935, C, W!

Rami annotini 25–35 cm alti, papilloso-asperi, superne corymbose ramosa, capituliferi. Folia inferiora et mediana 15–30 x 4–15 mm, ovata, basi rotundata vel attenuata, apice acuta, margine leviter revoluta, remote argute serrato-dentata, dentibus utrinque 1–5, utrinque sparse papilloso-aspera, subtus glandulosa et prominenter nervosa; folia summa 10 x 3 mm, oblanceolata, integra, sursum decrescentia. Capitula 3–20, laxe corymbosa, interdum solitaria. Involucrum 5–6 mm diametro; phylla straminea, apice viridia, ± glabra, margine scabra, fimbriato-ciliata, exteriora 3 x 1 mm, ovata; interiora 6–7 x 1,5–2 mm, oblongo-lanceolata. Flores 7–10(–20), flavi, 8–10 mm longi. Achaenia 5–6 mm longa, oblonga, pubescentia; pappus 7–8 mm longus, albidus.

Crescit in rupium calc. vel silic. fissuris.

Afghanistan: **E**: Kabul: In decl. australibus jugi Salang, 1700–2600 m, FREITAG 3616, 3621, FOHLEN S-44-b, NEUB. 4405!, PODLECH 12214!, 15925, 19715, 19844. RECH. 31365!, 37446!, STAINTON 5070! S Istalif, 1900 m, GILLI 3965! Nijrao: Inter Gulbahar et Sarobi, 2750 m, GILLI 3968! Nijrao, 3000 m, VOLK 2329! Laghman: NW Kail, 2100–2500 m, ANDERS 10808! Panjshir: Ruka, 2000 m, KOEIE 2935 (typus *Varthemiae asperellae*)! Panjshir, NEUB. 4770! In valle Porandeh N Basarak, 2050–2500 m, GILLI 3966!, 3967! Mukeni, 2400 m, HDG. & WDB. W-5280! In faucibus vallis Dehkhawak, substr. silic., 2600 m, PODLECH 12504. Ghorband: 10 km W Pol-i Matak, PABOT A-1602 Ghorband, 1700 m, KOEIE 2787! Jaji: In decl. australibus M. Sikaram, 3200–3300 m, FREITAG 1791. Nuristan: Bragamata, 2200–2300 m, BRECKLE 5115. In valle Linar, 3650 m, THESIGER 1514 – **NE**: Kataghan: In valle Khinjan prope Gori Sokhra, 2000 m, ANDERS 4779!

Distr. gen.: Endem.

3. ***C. corymbulosa*** (BORNM.) GRIERSON in RECH. f., Fl. Iran. 145: 109 (1980).
Syn.: *Varthemia corymbulosa* BORNM., Feddes Repert. Beih. 108: 64, tab. 21, fig. 1 (1938).
Icon.: Tab. 13.
Typus: KERSTAN 2061, HAL!

Rami annotini 25–40 cm alti, simplices, albido-glanduloso-papillosi, apice corymboso-ramosi, capituliferi. Folia 15–25 x 3–8 mm, lineari-elliptica, basi apiceque acuta, margine integra, sparse glanduloso-papillosa, ceterum glabra. Capitula parva, 4 vel numerosa; corymbi interdum ramosi. Involucrum 6–8 x 3 mm, cylindricum; phylla appressa, ovata vel oblonga, apice rotundata vel subacuta, margine ciliata vix scariosa, dorso secus costam medianam pallida vel viridia. Flores 4–5(–7), flavi, 5–6 mm longi. Achaenia 3 mm longa, oblongo-ellipsoidea, pubescentia; pappus 5–6 mm longus, albus.

Afghanistan: **E**: Nuristan: In valle Bashgal inter Bragamata et Apsay, 2300 m, PODLECH

16667. In valle Bashgal, 2200 m, PODLECH 16174! In valle Mastuj infra Mastuj, 2000 m, KERST. 2061!
P a k i s t a n : Chitral: Brunshal, QAZILBASH! In faucibus Koghozi, 1680 m, SCHMID 2397!
Distr. gen.: Endem.

4. ***C. villosa*** (L.) GROSSH., Opred. Rast. Kavk. 441 (1949).
Syn.: *Chrysocoma villosa* L., Spec. Plant. 841 (1753). *Linosyris villosa* (L.) DC., Prodr. 5: 352 (1836). *Galatella villosa* (L.) REICHENB., Icon. Fl. Germ. 16: tab. 910 (1853).
Icon.: Tab. 14.
Typus: Sibiria, Tartaria, Herb. LINN 982/12, phot.!

Planta appresse albido-tomentosa. Caulis 15–35 cm altus, inferne plerumque simplex, superne corymbose ramosus. Folia 15–25(–40) x 2–7(–10) mm, basi attenuata, apice acuta. Capitula 4–20, pedunculis foliatis suffulti, pauci- (5–10)-flori. Involucrum 4–5 mm latum; phylla ovato-oblonga, straminea, exteriora 2,5 x 1 mm, albido-tomentosa, interiora 7–8 x 1,5–2 mm, ciliata. Corolla 7,5–8 mm; laciniae 2–2,5 mm longae. Achaenia 3–4 mm longa, dense sericea; pappus 7–9 mm longa. – Floret VIII.–IX.

P e r s i a : W: Azerb.: In valle Rebus prope Rezaiyeh, 1600 m, FARBOODNIA & ZEHZAD 4018!
Distr. gen.: Europa orientalior, Rossia europaea australis, Tauria, Caucasia, Persia, Asia centralis.

6. *Erigeron*

auctore K. H. RECHINGER, Wien

Erigeron L., Spec. Plant. 863 (1753).

Lit.: F. VIERHAPPER, Monographie der alpinen Erigeron-Arten Europas und Vorderasiens, Beiheft zum Botanischen Centralblatt 19,2: 385–560 (1906). V. P. BOTSCHANZEV, Erigeron in Flora URSS. 25: 191–288 (1959). A. J. C. GRIERSON, Erigeron in P. H. DAVIS, Flora of Turkey 5: 124–132 (1975).

Herbae annuae vel biennes vel perennes. Caules erecti, simplices vel saepius ramosi, foliati. Folia simplicia, oblanceolata vel lanceolata vel spathulata, plerumque integra (in speciebus nostris). Capitula heterogama, radiata, subcorymbose rarius subracemose disposita vel ± solitaria. Involucrum hemisphaericum; phylla 2–3-seriata, irregulariter imbricata, herbacea. Receptaculum nudum. Flores radiantes plerumque numerosi, ligulis angustis, roseis vel purpureis vel albis; flores disci flavi, corollis quinquelobis. Flores feminei eligulati (inter flores radiantes femineos et flores disci hermaphroditos) in speciebus nonnulis evoluti (Subgen. *Trimorpha*), corollis brevibus filiformibus. Styli rami appendicibus brevibus obtusis usque subacutis. Achaenia oblanceolata, ± compressa; pappi setae paucae vel numerosae, flores disci ± aequantes; series extima e pilis vel squamis composita interdum evoluta.

Erigeron ist seit jeher als eine systematisch schwierige Gattung bekannt. Diese Schwierigkeiten haben verschiedene Ursachen. Das wichtigste Merkmal, das Vorhandensein oder Fehlen von zungenlosen, weiblichen Blüten, das über die Zuteilung zu einem der beiden Subgenera entscheidet, ist oft nicht leicht festzustellen, besonders dann, wenn es sich um schonungsbedürftiges oder schlecht erhaltenes Herbarmaterial handelt. Manchmal sind auch die zungenlosen, weiblichen Blüten nur in geringer Zahl pro Köpfchen vorhanden und können dann leicht übersehen werden. Eine weitere Schwierigkeit liegt darin, daß offenbar gewisse vegetative Merkmale, besonders reichere oder schwächere, bzw. fehlende Verzweigung und damit die Köpfchenzahl, die offenbar der Erbanlage nach mit zum Merkmalsbestand einzelner Arten gehören, unter ökologisch extremen Verhältnissen doch von Standortsbedingungen beeinflußt werden. Unabhängig davon gibt es in beiden Untergattungen homologe Ausbildungen, z. B. viel- und einköpfige, groß- und kleinköpfige, rosa- und blauviolettblütige, ± kahle und ± behaarte Sippen. Ob und in welchem Maß etwa Hybridisierung an dem Polymorphismus der iranischen Erigeronten beteiligt ist, läßt sich vorläufig nicht abschätzen. Eine weitere Schwierigkeit ergibt sich durch den Mangel einer kritischen Bearbeitung der Gattung für das sino-himalayische Gebiet. GRIERSON hatte zwar eine solche geplant, mußte sie aber wegen andrer, vordringlicherer Arbeiten zurückstellen. Einen weiteren Unsicherheitsfaktor bilden die zahlreichen, in neuerer Zeit von BOTSCHANTZEV aufgestellten *Erigeron*-Arten aus den zentralasiatischen Hochgebirgen, die ich zumeist nur aus den Beschreibungen kenne. Die vorliegende Bearbeitung ist daher nur als ein erster Versuch aufzufassen, einen Einblick in diese schwierigen, aber interessanten Formenkreise zu gewinnen. Wie immer in derartigen Fällen, wären eingehende Feldstudien und Kulturversuche dringend erwünscht. GRIERSON ist ein großer Teil des hier bearbeiteten Herbarmaterials vorgelegen. Er hat jedoch nur vereinzelte Bestimmungen geliefert und ist auf die Gliederung der komplizierten Formenkreise von *Erigeron acer* s.l. und *E. uniflorus* nicht eingegangen.

1a. Flores feminei eligulati evoluti (subgen. *Trimorpha*) 2

b. Flores feminei eligulati nulli (subgen. *Erigeron*) 6

2a. Ligulae roseae 3

b. Ligulae coeruleo-violaceae vel malvaceae 5

3a. Planta nana, 3–4 cm alta. Involucri phylla 3–4 mm longa . . . . 2. *E. nannogeron* RECH. f.

b. Planta elatior, si exceptione nana, involucri phylla longiora 4

4a. Planta atrovirens, ± glabra. Folia crassiuscula, caulina superiora basi ± lata sessilia. Flores radiantes 160–180. . . . . 3. *E. semibarbatus* DC.

b. Planta laete viridis vel ± cinerascens, ± hirsuto-pubescens. Folia tenuia, caulina superiora basi attenuata sessilia. Flores radiantes 60–120. Species eximie polymorpha (vide subspecies) . . . . 1. *E. acer* L.

5a. Caulis oligo- (interdum mono-)cephalus; capitula mediocria. Ligulae in sicco coeruleae, conspicuae, numerosae, involucro subtriplo longiores; involucrum 12–15 mm diametro . . . . 4. *E. cyanactis* RECH. f.

b. Caulis polycephalus, ramosissimus, leptocladus; capitula minuta. Ligulae malvaceae, breves, ± inconspicuae. Involucrum 8–10(–12) mm diametro . . . . 5. *E. leptocladus* RECH. f.

6a. Planta omnino glabra, nana. Involucrum 9–13 mm diametro; phylla 30–36. Flores marginales non radiantes. . . . . 15. *E. lonchophyllus* HOOK.

b. Plantae vario modo hirsutae vel pubescentes, humiles vel ± elatae. Involucrum majus, pleiophyllum 7

7a. Caulis monocephalus, 5–10(–15) cm altus 8

b. Caulis etsi interdum humilis normaliter pleiocephalus, in speciminibus macris tantum exceptione monocephalus[1]. 9
8a. Folia basalia spathulata. Involucrum purpurascens. Flores rosei vel purpurei . . . . 14. *E. uniflorus* L.
b. Folia basalia oblongo-linearia. Involucrum atratum, indumento autem albido. Flores albidi vel coeruleo-violascentes . . . . . . 13. *E. petroiketes* RECH. f.
9a. Ligulae in sicco intense coeruleo-violacei, involucro plusquam duplo usque subtriplo longiores . . . . 8. *E. cedretorum* RECH. f.
b. Ligulae in sicco roseae, breviores, minus numerosae 10
10a. Planta regionis silvaticae sino-himalayicae, multiramosa, polyphylla, foliis heteromorphis, eis ramorum quam caulinis abrupte minoribus angustioribusque. Involucrum absque floribus 8–10 mm diametro . . . . 6. *E. anisophyllus* RECH. f.
b. Plantae regionis alpinae et nivalis, pauciramosae oligophyllae 11
11a. Caules 3–15 cm alti 12
b. Caules elatiores 13
12a. Indumentum hirsuto-pubescens, eglandulosum. Involucri phylla ± 40 (Afghanistan) . . . . 12. *E. plesiogeron* RECH. f.
b. Indumentum hirsuto-villosum, pilis glanduliferis copiose intermixtis. Involucri phylla 60–90 (Persia) . . . . 9. *E. hyrcanicus* BORNM. & VIERH.
13a. Capitulum floribus expansis 25–40 mm diametro. Ligulae 15–20 mm longae . . . . 7. *E. multiradiatus* (DC.) C. B. CLARKE
b. Capitulum floribus expansis 20–25 mm diametro. Ligulae multo breviores 14
14a. Caulis oligocephalus (vel simplex). Ligulae intense rosei, involucro dimidio longiores. Pappus 3,5–5 mm longus . . . . 11. *E. caucasicus* STEV.
b. Caulis pleiocephalus. Planta in sicco atrata, valde glabrescens. Ligulae pallide roseae, involucro paulo vel vix longiores. Pappus 6–7,5 mm longus . . . . 10. *E. pseuderiocephalus* M. POP.

1 conf. imprimis *E. caucasicum, E. plesiogeron, E. hyrcanicum, E. pseuderiocephalum.*

Synopsis subgenerum

Subgen. **Trimorpha**
1. *E. acer*
2. *E. nannogeron*
3. *E. semibarbatus*
4. *E. cyanactis*
5. *E. leptocladus*

Subgen. **Erigeron**
6. *E. anisophyllus*
7. *E. multiradiatus*
8. *E. cedretorum*
9. *E. hyrcanicus*
10. *E. pseuderiocephalus*
11. *E. caucasicus*
12. *E. plesiogeron*
13. *E. petroiketes*
14. *E. uniflorus*
15. *E. lonchophyllus*

Subgen. ***Trimorpha*** (CASS.) M. POP., Acta Inst. Bot. Acad. Sci. URSS. Ser. 1, 7: 10 (1948).

Syn.: *Trimorpha* CASS., Dict. Sciences Nat. 37: 462 (1825).

Flores eligulati feminei evoluti.

1. ***E. acer*** L., Spec. Plant. 863 (1753).
Syn.: *Trimorpha vulgaris* CASS., Dict. Sciences Nat. 37: 462 (1825).

Herba perennis, habitu, foliorum forma, indumento variabilis. Caulis usque ad 50 cm altus, ± hirsuto-pubescens, superne ramosus, oligo- vel polycephalus, multi-, rarius paucifoliatus. Folia utrinque hirsuto-pubescentia vel glabrescentia; basalia usque ad 12 × 1,5 cm, oblanceolata vel oblongo-spathulata, basi attenuata vel subpetiolata, apice acuta vel obtusa, margine plerumque integra; folia caulina oblanceolata vel elliptica. Involucrum 10–15 mm diametro; phylla 2–3-seriata, 3–8 mm longa, anguste lineari-lanceolata, plerumque quam discus breviora, glandulosa et/vel hirsuto-pubescentia. Flores radiantes 60–120; ligulae erectae, 3–5 × 0,2–0,3 mm, purpurascenti-roseae vel albae; flores feminei eligulati, 2,5–3,5 mm longi; flores disci 4,5–5 mm longi. Achaenia 2–2,5 × 0,35 mm, oblanceolata, sparse pubescentia.

Distr. gen. speciei: Per Europam et Asiam late dispersus.

Die systematische Gliederung dieses weit verbreiteten Formenkreises bietet große Schwierigkeiten. Vergleichende Untersuchung eines verhältnismäßig reichen Herbarmaterials zusammen mit Naturbeobachtungen haben mich dazu geführt, außer den bereits von GRIERSON (in schedis) unterschiedenen Arten *E. acer* und *E. pseuderiocephalus* noch drei weitere Sippen im Artrange zu unterscheiden, nämlich die beiden durch blaue Randblüten von den übrigen iranischen Trimorphen verschiedenen Arten *E. leptocladus* RECH. f. (Waldstufe von Nuristan, Chitral) und *E. cyanactis* RECH. f. (Hochgebirgsstufe von Badakhshan, Wakhan und Chitral). Von den rosablütigen Trimorphen habe ich nach einigem Zögern noch den ungewöhnlich kleinköpfigen *E. nannogeron* RECH. f. (Gebirge von Ost-Afghanistan) als Art abgetrennt.

Die Zusammenhänge zwischen allen übrigen Sippen erscheint mir derart eng, daß eine spezifische Unterscheidung nicht zu rechtfertigen war. Anschließend an den europäischen *E. acer* subsp. *strictus*, der nach der übereinstimmenden Auffassung der meisten Autoren in Asien nicht vorkommt, sind zunächst die drei sowohl mit subsp. *acer* als auch miteinander zunächst verwandten Unterarten *pycnotrichus*, *asadbarensis* und *phaeocephalus* zu besprechen. Alle vier – einschl. subsp. *acer* – weichen in ziemlich subtilen Merkmalen voneinander ab. Ihre Areale schließen sich, zusammen genommen, östlich an dasjenige des subsp. *acer* und verwandter europäischer Sippen an. Die Subsp. *pycnotrichus* scheint die weiteste Verbreitung der drei genannten, asiatischen Sippen zu haben; sie reicht von Anatolien bis in die gebirgigen Teile von Pakistan. Die Areale der beiden übrigen Unterarten werden davon umschlossen, subsp. *asadbarensis* mit Verbreitungszentrum im Elburs und subsp. *phaeocephalus* in den Gebirgen des mittleren und nördlichen Afghanistan. Morphologisch etwas leichter faßbar ist die in den Gebirgen von Kerman endemische subsp. *lalehzaricus*. Auch das Areal der die nordostpersischen Gebirge bewohnenden, durch lang strahlende Randblüten ausgezeichneten subsp. *arctophilus* wird von dem der subsp. *asadbarensis* und der subsp. *pycnotrichus* umschlossen, sofern sich die Areale der zuletzt genannten Unterarten überhaupt ausschließen. Endlich bleibt die aus eng begrenztem Gebiet bekannte subsp. *Staintonii* zu erwähnen, die auf Grund einer Aufsammlung in den höchsten Gebirgen von Chitral in NW Pakistan aus einer Höhe von etwa 3900 m beschrieben wurde.

Schwierig ist oft die Deutung von Kümmerformen, sei es aus Hochgebirgslagen, sei es von dürren Standorten; sie konvergieren meist durch niedrigen Wuchs und Verminderung der Köpfchenzahl.

Eine auffällige Rasse des *E. acer,* die weitere Beachtung verdient, liegt mir in zwei Individuen vor: Iraq, M. Helgurd, Sarchal, 2200 m, 4.–7. VI. 1960, HADAČ 2099 und 2167; Kleine Rasen bildend. Stengel aufsteigend, bis zu den Köpfchen beblättert, nur 4–7 cm hoch, einköpfig. Grundblätter zahlreich, rosettig, schmal lineal-lanzettlich, spitz, sehr kurz gestielt, bis auf den bewimperten Blattrand kahl. Köpfchen ± 15 mm im Durchmesser, von den obersten Stengelblättern gestützt, mit deutlichem Übergang zu Hüllblättern, ähnlich wie bei subsp. *lalehzaricus.* Hüllblätter dunkelgrün, fast kahl, nur am Grund borstig gewimpert. Randliche Zungenblüten anscheinend rosa, nicht zahlreich, wenig hervortretend.

1a. Ligulae involucro ± duplo longiores .... subsp. *arctophilus*
b. Ligulae breviores 2
2a. Folia ± linearia, angustissima. Capitula saepe folio suffulta ... subsp. *lalehzaricus*
b. Folia latiora lanceolata. Capitula numquam folio suffulta 3
3a. Humilis, pleiocaulis, oligophyllus, caulibus profunde furcatis. Folia spathulata .... subsp. *Staintonii*
b. Elatiores, oligocaules, polyphylli. Folia lanceolata 4
4a. Involucrum atratum. Pappus intense roseo-brunnescens ... subsp. *phaeocephalus*
b. Involucrum viride. Pappus ± pallidus 5
5a. Caulis stricte erectus, polyphyllus. Synflorescentia subracemosa, ramis abbreviatis .... subsp. *asadbarensis*
b. Habitu vario. Synflorescentia subcorymbosa vel corymboso-racemosa .... subsp. *pycnotrichus*

– – subsp. ***asadbarensis*** (VIERH.) RECH. f., comb. et stat. nov.
Syn.: *Trimorpha asadbarensis* VIERH., Beih. Bot. Centrbl. 19, 2: 454 (1906).
Icon.: Tab. 15.
Typus subspeciei: KOTSCHY a. 1843 Nr. 481, holotypus W!; isotypus G-BOISS!

Caulis erectus, (20–)30–40(–50) cm altus, usque in synflorescentiam multifoliatus, in summa parte tantum breviter subracemose pauciramosus. Involucrum pallide viride, cinerascenti-hirsutum; phylla ± 50, ad 6–6,5 × 1 mm. Flores ligulati, pallide rosei, 60–80; ligulae c. 3 mm longae, involucrum paulo superantes. Pappus pallidus.

Persia: N: Maz.: In decl. borealibus jugi Kandavan, 2400–2500 m, ALAVA 13989!, RECH. 48302!, WDB. 2102! Pol-e Zanguleh, 2200–2600 m, RECH. 6342! „Kuh-e Tunnel", 2400–2500 m, TERME & al. 39932-E! In pratis vallis Lar, 2400 m, WDB. & ASSADI 13317! – W: Azerb.: Kuhha-ye Sabalan, AUCH. 4746! In decl. borealibus Kuhha-ye Sabalan, „radar road", 2650 m, LAMOND & TERME in RECH. 44139! Inter Sarab et Kuhha-ye Sabalan, 3000 m, TERME 13176!, 13724-E! In saxosis (Tonschiefer) ad rivulum prope Habashi Bala N Qotur, 1950 m, RECH. 49578! In valle Mirzagol inter Habashi Bala et Todan, 2500 m, ZEHZAD & SIAMI 3639! Kiyamaki Dagh: Kenar Dagh, 2600–3200 m, RENZ in RECH. 56971! Khamseh: Ad radices M. Qeydar inter Arghin et Dashti, 1980–2200 m, ALAVA 14224! Kurd.: Ad radices Kuh-e Hamzeh Arab SE Bijar, secus rivulum, 2000 m, RECH. 42541! Ham.: In montibus distr. Silakhor, STR.! – C: Tehr.: Shemshak, PAG 6793-E! M. Tuchal prope Shahrestanak, 2200 m, BORNM. 7493! Pas Qaleh prope Darband, 2000 m, RECH. 1075! Gach Sar, 2100 m, FURSE 2670! Inter Gach Sar et Gajereh, 2200–2300 m, TERME & MATINE 36657!, 36659! In decl. merid. M. Damavand, 2000–3500 m, SCHMID 6421! Najafdar „50 km Firuzkuh", 2150–2750 m, TERME & al. 39949-E! Qazv.: In humidis prope Asadbar, KY. 481! Inter Karaj et Chalus, JARDINE 886!, BABAKHANLOU & AMIN 4493!

Distr. gen. subspeciei: Endem. (montes Elburs et montes Persiae occidentalis).

In typischer Ausbildung ist die subsp. *asadbarensis* durch relativ hohe, straffe, reichbeblätterte Stengel und stark verkürzte Infloreszenzäste gut gekennzeichnet; die Zungenblüten sind kurz, der Pappus blaß. Es gibt jedoch stellenweise Pflanzen, die zwischen subsp. *asadbarensis* und subsp. *pycnotrichus* intermediär sind.

Hieher gehört wahrscheinlich auch *E. matthiolifolius* PARSA, Kew Bull. 1948: 208, „S. Pers. Elika, 2600 m", PARSA 301; der Fundort „Elika" oder Ileka liegt jedoch keineswegs in Süd-Persien, sondern nördlich vom Kandavan-Paß in Mazandaran. Dies ist ein neuerlicher Hinweis darauf, daß der Sammler nicht PARSA, sondern offenbar GAUBA ist.

– – subsp. ***pycnotrichus*** (VIERH.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 33: 430 (1975).
Syn.: *Trimorpha pycnotricha* VIERH., Beih. Bot. Centrbl. 19, 2: 456 (1906). *Erigeron orientalis* auct. p.p. nec BOISS.
Icon.: VIERH., l.c.: tab. 3, fig. 4. – Tab. nostr.: 16.
Typus (lectotypus) subspeciei: Cilicia: Bulgar Magara, KOTSCHY „303.30-c", W!

Planta habitu variabilis. Indumentum breve, subhirsuto-pubescens, pilis brevibus glanduliferis immixtis. Caulis (3–)10–30 cm altus, pluri- vel ± multifoliatus, plerumque sat breviter ramosus, ± oligocephalus. Folia basalia non semper manifeste rosulata, breviter petiolata, lanceolata, acuta. Involucrum viride; phylla 40–60, anguste lineari-lanceolata, valde acuta; indumentum subhirsutum, ± densiusculum, glandulis paucis immixtis. Flores ligulati plerumque 40–60, ligulis 2–4 mm longis.

Persia: **N**: Gorgan: Loveh, IRANSHAHR & ZARGANI 15123-E! Golestan, ABAI 12243-E! Maz.: In decl. borealibus jugi Kandavan, 2600 m, RECH. 6765! Gilan: Espeyli, LINDS. 1400! – **W**: Azerb.: Liqvan, BUHSE! Gardaneh Almas inter Asalem et Khalkhal, 2350–2400 m, TALEBI 10470!, WDB. & ASSADI 18485! Chalil Kuh, in faucibus NW Silvana, 1750–2000 m, RECH. 48910!, 48911! Prope Tabriz, Mehnatabad, BUNGE! Kuh-e Mishow Dagh prope Yam, 1800–2400 m, TERME in RECH. 43882! Kaleybar, TERME 13154-E! Khamseh: 35 km S Soltaniyeh, 2050–2200 m, TERME & MOUSSAVI 16438 p.p.! Ham.: Ad rivulos M. Alvand, 2100–3600 m, HAUSSKN.! Bakht.: Sabzekuh, HAUSSKN.! – **S**: Fars.: In montibus 27 km E Yasuj, 2650 m, SOJÁK 6642!, 6643! – **E**: Khor.: In montibus inter Neyshabur et Mashhad, BUNGE! – **C**: Tehr.: M. Tuchal, 2000–3800 m, SOJÁK 7038! Semn.-Damgh.: 90 km a Semnan versus Sari, 2180–2320 m, TERME & al. 39537! Kuh-i Nizva: Shahmirzad (Bashm) Kuh, in decl. australibus, 2500 m, WDB. 1333! Yazd: Deh Bala BIGGS 13188!

Turcomania: In montibus circa Cheirabad, LITW.! Gök Tepe prope Cheirabad, 2100 m, GUDKOVA!

Afghanistan: **NW**: Sangcharak: Safed Sang, 3000 m, KOELZ 14008! Herat: Obeh, LINDB. 90/1962! – **SW**: Ghorat: Qala Shahrak, 2000 m, RECH. 19150! – **E**: Kabul: In decl. merid. jugi Salang, 1900–2200 m, RECH. 31324! Paghman, 2100–2800 m, ANDERS 4114!, CHAW.-MUST.!, GILLI 3910!, 3911!, KOEIE 2310!, NEUB. 876/1950!, 898/1950!, 3232!, VOLK 961 p.p.!, 2176 p.p.! Panjshir: Gulbahar, VOLK 1006 p.p.! Basarak, 2200 m, GILLI 3912! Dalandur supra Ghondjou, LINDB. 1020/1960! Laghman: NW Kail, 2100–2500 m, ANDERS 10783! Maidan: Hauz-i Mahiha, 2500 m, KOEIE 2385! 2 km E Qalai Gul Bek, 2800 m, ANDERS 4281! Darrah-i Sanglakh infra Ahangaran, 2400 m, PODLECH 32223! In valle Siah Sang supra Zarkharid, 2950 m, ANDERS 4622 p.p.! Nuristan: Chapadarrah Wersek, 1300–1900 m, ALPAY in ANDERS 11339 p.p.! In valle Rangul, 3300 m, THESIGER 1446! In valle Kantivo inter Brubruts et jugum Mamgel, 2500–2900 m, KERST. 963! – **NE**: Kataghan: Hesar prope Baghlan, in juniperetis, 1800 m, KUKKONEN 7509! – **C**: Behzud: Farakulum, 2700 m, KOEIE 3277! Doab: Ao Khorak-i Bala, 2700 m, KOELZ 13803!

Pakistan: Chitral: Chitral Gol W Chitral, 3000 m, STAINT. 2676 p.p.! Tirich Mir: Barum Gol, Och Anzog, 3600 m, WDB.!

Distr. gen. subspeciei: Montes Anatoliae, Persiae, Afghanistan, Turcomaniae, Pakistan borealis.

Die habituelle Variabilität der Unterart wird durch die 7 Individuen des Holotypus in W trefflich illustriert. Die Begrenzung dieser weit verbreiteten Rasse ist nicht immer leicht. Die Zusammenhänge mit der europäischen subsp. *acer* sind, wie bereits VIERHAPPER, l.c.: 457 erwähnt, eng; zur Unterscheidung dienen die durchschnittlich größeren Köpfchen und längeren Ligulae der subsp. *pycnotrichus*. In Afghanistan ist die Trennung von der durch großen Anthokyanreichtum gekennzeichneten subsp. *phaeocephalus* nicht immer scharf.

HAUSSKNECHT (M. Alvand, WENDELBO 1333, WENDELBO & ASSADI 18485 und TERME & al. 39537) sind niedrige, nur wenige Zentimeter hohe Gebirgsformen mit wenigen Köpfen, wie solche auch z. T. auf dem Typusbogen der Unterart (W) vertreten sind; dagegen sind ABAI 12243-E und BIGGS 13188 hochwüchsig, zum Teil über 30 cm hoch, mit stark korymboser Verzweigung; sie können nur mit Vorbehalt zu subsp. *pycnotrichus* gestellt werden. Letzteres gilt auch für LITWINOW s.n.

— — subsp. ***phaeocephalus*** RECH. f., subsp. nova.
Icon.: Tab. 17.
Typus subspeciei: RECHINGER f. 18389, W!

Caules plerumque plures, 20–30 cm alti, plerumque a medio tenuiter subcorymbose erecto-ramosi, foliati. Folia anguste lanceolata, ± acuta, erecto-patentia vel cauli ± appressa. Involucrum atroviride, saepe atropurpurascens. Ligulae intense roseae, angustae, paulo prominentes. Pappus brunnescenti-rosaceus.

Afghanistan: **SE**: Kandahar: Siah Sang, 3150 m, ad rivulos, GRIFF.! – **E**: Kabul: Olang, 2500 m, PODLECH 11552! Paghman: Chap Darrah W Paghman, 3200 m, PODLECH 22264! Paghman, 2600 m, KOELZ 12063!, VOLK 961 p.p.!, WDB. 4383! Panjshir: 6–10 km supra Kur Petau, 3100 m, PODLECH 12439!, 12479! Chimar, 2800 m, HDG. & WDB. 5393! N Basarak, 2350 m, GILLI 3918! In faucibus Deh Khawak, 2600 m, PODLECH 12507! Darrah-i Zuria N Safed Jir, 3200 m, PODLECH 12541! Nijrao: Inter Gulbahar et Sarobi supra Shekhan, 3100 m, GILLI 3916! Laghman: Alishang, Darrah Rastyon, WDB. & EKB. W-9711! In jugo Unai, 3000–3200 m, HDG. & WDB. W-4553!, BRECKLE 2705! Maidan: Hauz-i Mahiha, 2600 m, KOEIE 2409! Darrah-i Sanglakh, 2400 m, PODLECH 19474! Zarkharid, 2850 m, ANDERS 4622 p.p.! Darrah-i Siah Sang, 3000 m, BRECKLE 2321-b! Jaji: In decl. australibus M. Sikaram supra Kotkai, 2450 m, BRECKLE 2035! Nuristan: Netshingel, 3500–4000 m, EDELB. 1700! Inter Kotal-e Agok et Waigel, NEUB. 885/1951! Pashki in valle Parun, 2300 m, EDELB. 1337!, SCHEIBE 153! Kuh-e Adrugal inter Waigel et vallem Pech, 2700–3300 m, LARSSON 76 in BRECKLE 5576! – **NE**: Wakhan: Baba Tangi, in glarea rivi, 3000 m, HUSS 24-a! Kataghan: In decl. borealibus jugi Salang, 2200 m, RECH. 31646! Badakhshan: Chambuk Bala, ad rivum, 1800 m, HDG. & WDB. W-9451! Hazrat Said in valle Kokcha, substr. calc., 1850 m, FREY F-120! – **C**: Bamian: Inter Bamian et Band-i Amir, 2850 m, ANDERS 4395!, RECH. 18166! Band-i Amir, 2800–3000 m, ANDERS 4490!, DIETERLE 1032!, 1302! PABOT 1329!, PODLECH 12094!, 15996!, 19586!, 18311!, UOTILA 14832! Band-i Panir, 2800 m, 14. VII. 1962, RECH. 18389! In decl. borealibus jugi Hajigak, in glarea rivi, 2600 m, BRECKLE 2321-a! Bamian, LINDB. 222/1957! Mandigak inter jugum Deraz Kol et Panjao, 2800–3280 m, RECH. 18663! Ak Robat, 3050 m, DIETERLE 450! Kuh-i Baba, in decl. borealibus, 2700 m, THESIGER 54! Sard Darra, in trichophoreto atrichi, 3350 m, GILLI 3914! Ghorat: Dorahi Tarbulak inter Panjao et Lal, 2700 m, RECH. 18800! Behzud: Inter Farakulum (Dahan-e Abdullah) et Behzud, 3000 m, PODLECH 18747! Inter Behzud et Unai, in humidis, 2800 m, HDG. & WDB. W-5045!
Pakistan: Chitral: Yarkhun, 3200 m, in humidis, STAMM & WÖHRL 145! – Kurram: In valle Kurram, AITCH. 963 (vel 943?)!

Distr. gen. subspeciei: Endem.

Die subsp. *phaeocephalus* hat ihr Verbreitungszentrum in den zentral- und ostafghanischen Gebirgen. Sie ist von subsp. *pycnotrichus* besonders durch den Anthokyanreichtum verschieden.

– – subsp. ***lalehzaricus*** RECH. f., subsp. nova.
Icon.: Tab. 18, 19.
Typus subspeciei: BORNMÜLLER 3979, W!

Caules plerumque plures, (10–)20(–30) cm alti, subregulariter foliati, a medio vel jam infra subcorymbose pauciramosi, in parte inferiore ± glabrescentes. Folia omnia oblanceolato- vel lineari-lingulata, inferiora valde glabrescentia, acutiuscula ± approximata, superiora ciliata, ramos fulcrantia, saepe valde elongata et acuta, capitula attingentia. Involucrum atroviride, valde hirsutum. Ligulae intense roseae, bene prominentes. Pappus stramineus, demum paulo brunnescens.

Persia: S: Kerm.: Kuh-e Laleh Zar, in salicetis, 3500 m, 14. VII. 1892, BORNM. 3979!; 2800–4000 m, SOJÁK 8442–8447!!, STARM. 147!, GABRIEL 235! Qanat Marvan S Kuh-e Laleh Zar, 2900–4000 m, SOJÁK 8435–8437!!, FOROUGHI & ASSADI 16317! Kuh-e Nasr, 3800 m, BORNM. 3981! Kuh-e Hezar, Dar Zangi, 3527 m, GABRIEL 191!

Distr. gen. subspeciei: Endem. (Kerman).

Die Rasse ist gekennzeichnet durch die Schmalblättrigkeit, starkes Verkahlen und durch die Tendenz, ein- bis wenigköpfige (Hochgebirgs-?)Formen auszubilden, bei denen die obersten Laubblätter unmittelbar an die Köpfchen herangerückt sind (z. B. SOJÁK 8436, 8437) bzw. die äußeren Hüllblätter laubblattartig ausgebildet sind (SOJÁK 8435). Diese Tendenz besteht bei keiner der übrigen Rassen der subsp. *acer*.

– – subsp. ***Staintonii*** RECH. f., subsp. nova.
Icon.: Tab. 20.
Typus subspeciei: STAINTON 3231, holotypus W!; isotypus BM!

Humilis, pluricaulis; caules 8–10(–15) cm longi, arcuato-ascendentes, plurimi profunde furcati, 2–3(–5)-foliati, breviter hirsuto-villosi, in pedunculos longe nudos abeuntes. Folia basalia rosulata, petiolo laminam ± aequante suffulta; lamina 10–30 x 8–15 mm, ovato- vel elliptico-spathulata, basi in petiolum ± breviter attenuata, apice obtusa vel subacuta; folia caulina infima basalibus similia; media ramificationes fulcrantia minora, angustiora, ± late sessilia, apice acuta vel acuminata; summa valde diminuta, lanceolata, acuta; indumentum foliorum parce breviter ad margines densius hirsutum. Capitulum floribus inclusis in statu compresso ± 15 mm diametro. Involucrum 10–12 mm diametro; phylla 50–60, longissima 12 mm longa, viridia vel ± purpurascentia, anguste lanceolata, acuta, dorso parce hirsuto-villosa, papillis minutissimis basi et in summis pedunculis parce immixtis. Corolla rosea; flores ligulati 30–50; ligulae breves, angustissimae; flores disci numerosi, ± 5 mm longi. Pappi setae 4,5–5 mm longae.

Afghanistan: E: Jaji: Safed Kuh, M. Sikaram, ad rivulum, 2600 m, HDG. & WDB. W-9016!
Pakistan: Chitral: Urak An W Chitral, 3900 m, in declivibus saxosis, 9. IX. 1958, STAINTON 3231!

Distr. gen. subspeciei: Endem.

E. acer subsp. *Staintonii* ist charakterisiert durch den niedrigen, vielstengeligen Wuchs, die meist tiefgabeligen, bogig aufsteigenden Stengel, die ± spateligen Grundblätter und durch die nicht zahlreichen, kleinen, schmalen Ligulae. Die Belege wurden von GRIERSON ausdrücklich als „*E. acer* L. subsp." bezeichnet. Andernfalls wäre ich geneigt gewesen, in ihnen eine besondere Art zu sehen.

– – subsp. ***arctophilus*** (RECH. f.) RECH. f., stat. nov.
Syn.: *E. arctophilus* RECH. f., Anz. Öst. Akad. Wiss. Math.-Nat. Kl. 88: 258 (1951). *E. ursinus* RECH. f., Österr. Bot. Zeitschr. 97: 223 (1950) non EATON (1871).
Icon.: Tab. 21.
Typus subspeciei: RECHINGER f. 6137, G!, W!

Plerumque pluricaulis, 30–50 cm altus; caulis furcatus vel pauciramosus, ramis subnudis ± elongatis, laxe subhirsutus. Folia rosularia bene evoluta, ad 10 x 2 cm, basi in petiolum lamina breviorum attenuata, apice obtusiuscula; folia caulina pauca, decrescentia, acuta. Involucrum 5–6 mm longum, viride; phylla viridia, apicem acutum versus sensim longe attenuata, ± sparse longe pilosa et brevissime papillosa. Ligulae numerosae, intense roseae, involucrum et discum longe superantes. Pappus pallidus.

Persia: N: Gorg.: Shahkuh, KOELZ 16466! Golestan, ABAI 12242-E!, 12244-E! In decl. borealibus M. Shahvar prope Hajjilang, 2400–2600 m, RECH. 6137! – W: Azerb.: Chalil Kuh, in faucibus N Selvana, 1750–2000 m, RECH. 48912! – E: Khor.: Kuh-i Binalud, 1300–2100 m, TERME & TEHRANI 35117-E! Kuh-e Hazar Masjed, 2400–2550 m, TERME & al. 36672-E! Gulul Sarani Prot. Region: Kopet Dagh, in montibus calc. ad confines turcomanicas, 2400–2900 m, RECH. 53472! – C: Qazv.: Takht-i Suleiman, 2150–3200 m, TERME 13750-E! Damgh.-Semn.: 90 km a Semnan versus Sari, Parvar Prot. Region, 2300 m, TERME & al. 39510! Shahr.-Bust.: 30 km NW Shahrud inter Tash et Chahar Bagh, 2400 m, ASSADI & MASOUMI 21165! M. Sefid Khok, 2400 m, SCHMID 5957! Khush Yailaq, Gardaneh-ye Olang, 2000 m, TERME & al. 39548!

Distr. gen. subspeciei: Endem. (montes Persiae boreo-orientalis et borealis).

Die subsp. *arctophilus* hat von den im Flora Iranica-Gebiet vertretenen Rassen des *E. acer* die längsten Strahlenblüten.

Drei habituell sowie durch die große Zahl weit vorragender, lebhaft rosa Zungenblüten ähnliche Belege liegen aus verschiedenen Teilen von Afghanistan vor:
E: Nuristan: Kushtos, 2000 m, NEUB. s. n.! – NE: Kataghan: in decl. borealibus jugi Salang, 3000 m, UOTILA! Badakhshan: Ad lacum Shiva („Koul Choghnan, grande moraine"), LINDB. 886/1960!

2. ***E. nannogeron*** RECH. f., spec. nov.
Icon.: Tab. 22.
Typus: BRECKLE 4581, W!; isotypus Herb. BRECKLE!

Caespites minutos formans. Planta pluricaulis, nana, omnino indumento brevi hirsuto-pubescente canescens, glandulis minutis brevistipitatis immixtis. Caules pauci, ascendentes vel fere prostrati, 30–50 mm longi, superne breviter pauciramosi, 1–3-cephali, flexuosi, paucifoliati. Folia utrinque hirsuto-pubescentia, glandulis minutis immixtis; basalia rosulata, petiolo lamina breviore incluso (10–)15–25 x 2–4 mm, lanceolata, utrinque attenuata, apice acuta; folia caulina pauca, decrescentia, anguste lanceolata, summa capitula ± attingentia. Involucrum (4–)5 mm diametro; phylla indistincte 2-seriata, ± 30, 3–4 mm longa, anguste lineari-lanceolata, valde acuta, saepe purpureo-apiculata, longitudine paulo inter se diversa, canescenti-viridia, breviter hirsuta et minute glandulifera, interiora ± late hyalina. Flores involucrum paulo, pappum non superantes, ut videtur rosei, non radiantes; flores feminei eligulati, omnes evoluti, ± 2 mm longi. Achaenia nondum matura; pappus pallidus, ± 3 mm longus.

Afghanistan: E: Ghazni: Dasht-e Nawar, 3150 m, TONČEV in FREITAG 4121! Dasht-e Nawar „Tonfläche in der Beckenmitte", 16. VIII. 1976, BRECKLE 4581! 1 km E Bazar-e Malestan, 2950 m, PODLECH 19333!

Distr. gen.: Endem.

E. nannogeron hat unter allen mir bekannten *Erigeron*-Arten die kleinsten Köpfe, die kürzesten Hüllen und die kleinsten Blüten. Ein weiterer Vergleich erübrigt sich daher. Von GRIERSON (in sched.) wurde der Beleg FREITAG 4121 als „*E. acer* L. subsp." bezeichnet. Die Dimensionen liegen jedoch außerhalb der Variationsbreite des *E. acer;* Kümmerformen dieser Art haben immer wesentlich größere Hüllen und Blüten. PODLECH 19333 unterscheidet sich bei vollkommener Übereinstimmung in den übrigen Merkmalen von den beiden anderen Belegen durch Zurücktreten des kurz borstigen Induments im unteren Teil der Pflanze.

3. ***E. semibarbatus*** DC., Prodr. 5: 292 (1836).
Syn.: *E. alpinus* L. var. *semibarbatus* HOOK. f., Fl. Brit. Ind. 3: 255 (1881).
Icon.: Tab. 23.
Typus: India orientalis, ROYLE.

Basi subinduratus, pluricaulis. Caules sat validi, (10–)15–20(–25) cm alti, superne breviter 1–4-ramosi, tota longitudine ramis inclusis dense multifoliati, breviter hirsuti, papillis glanduliferis plerumque crebre immixtis. Folia basalia lanceolata, petiolo laminam ± aequante suffulta; lamina (20–)40–60 x (10–)12–15 mm, basi in petiolum longe attenuata, apice obtusiuscula vel acuta; folia caulina basi semiamplexicauli attenuata rarius dilatata sessilia, plerumque 6–10, oblongo-lanceolata, ± acuta, superiora paulatim decrescentia, ut ramealia capitulis ± approximata, eaque in statu juvenili quidem involucrantia; indumentum breviter hirsutum et glanduloso-papillosum. Capitulum floribus inclusis ± 20 mm diametro. Involucrum absque floribus in statu compresso 12–15 mm diametro; phylla ± 60, anguste lineari-lanceolata, apicem versus longe sensim attenuata, longissima 8 mm longa, dorso ± parce vel densius albo-hirsuta, basin versus subvillosa, papillis minutis glanduliferis ± parce immixtis. Flores in vivo pallide purpurei vel albidi, in sicco saepe coeruleo-violascentes; flores ligulati radiantes numerosi, 160–180, ligulis c. 5 mm longis; flores feminei eligulati evoluti, ore pubescentes; flores disci tubulosi, c. 4 mm longi. Pappi radii 5 mm longi.

Afghanistan: E: Nuristan: Inter Kushtos et jugum Ashpi, 2500 m, NEUB. 667/1951! Inter Bragamata (Barge Matal) et Apsai, 2100–2350 m, POLECH 16662! Chapa Darrah inter Wersek et Kandar, 1700–2000 m, ANDERS 10569! Bragamata (Barge Matal), 2050–2200 m, ANDERS 5016!, BRECKLE A-647! – NE: Munjan: Munjan, 2550 m, EDELB. 1453!
Pakistan: Chitral: Yarkhun, 3750 m, BOWES LYON 995! Drosh, 3300 m, BOWES LYON 178! Lowari Range, 2700 m, GATACRE 17258! Tirich Mir, Och Anzog, 3600 m, HEEN in WDB.! Shokor Shal! 3500 m, WDB.! – Swat: M. Ilam, 2100–2400 m, R. R. STEW. 24362-a!

Distr. gen.: Montes Himalaya occidentales, Afghanistan orientalis (Nuristan).

Sämtliche hier zitierten Belege wurden von GRIERSON bestimmt. Bei aller Variabilität ist die Art habituell durch die reichliche, bis nahe an die Köpfchen heranreichende Beblätterung gekennzeichnet; dies gilt auch bis zu einem gewissen Grad noch von einköpfigen Hochgebirgsformen. Stark abweichend ist ein wahrscheinlich aus Kashmir stammender Beleg mit der Etikette „Khelenmargh, 3500 m, com. NEUBAUER s. n." mit Stengelblättern, die bis auf kurze Randwimpern fast kahl sind und an der Basis 10–20 mm Breite erreichen.

4. ***E. cyanactis*** RECH. f., spec. nova
Icon.: Tab. 24.
Typus: STAINTON 2960, holotypus BM!; isotypus W!

Perennis, laete viridis. Caules subsinguli vel pauci, (7–)25–35 cm alti, ascendentes vel suberecti, simplices vel furcato-pauciramosi, foliati, patule crispule pilosi et imprimis superne breviter glandulosi. Folia herbacea, laete viridia, imprimis margine et subtus secus costam medianam longiuscule crispule pilosa; folia basalia rosulata, lanceolata vel oblanceolato-subspathulata, in petiolum lamina breviorem sensim attenuata, obtusiuscula vel acutiuscula, (20–)30–70 x (5–)8–12 mm; folia caulina angustiora, acutiora, erecto-patentia vel cauli subappressa, basi plerumque paulo attenuata sessilia; folium summum anguste lineare, valde acutum, a capitulo remotum. Involucrum in statu compresso 12–15 mm diametro; phylla 6–8 mm longa, indistincte biseriata, angustissime linearia, sensim longissime attenuata, valde acuta, viridia, angustissime pallide marginata, longitudine inter se paulo diversa, brevissime glandulosa. Flores radii numerosi, involucro subduplo longiores, in vivo coeruleo-violacei vel malvacei (sec. collectores), in sicco coerulei, ligulis angustissimis, discum 3–3,5 mm superantes. Flores feminei eligulati evoluti, non numerosi; flores disci lutei. Pappi setae ± 5 mm longi, straminei, vix brunnescentes.

Afghanistan: NE: Munjan: In valle Anjuman prope pagum Anjuman, 3100 m, PODLECH 12381! Wakhan: In decl. orientalibus jugi Pamir, 4000 m „in feinerdigem Material zwischen großen Steinen", ROEMER 344! Sarhad, ANDERS 7179! Badakhsh.: Ishkashim (Ishkamish), LINDB. 574/1959!
Pakistan: Chitral: Ad glacies Pechus, 4000 m, STAMM & WÖHRL 410! Khot An inter fluvios Mastuj et Turikho, in pratis udis, 3000 m, STAINT. 2837! Mastuj, Baroghil Track, Shost, 3000 m, in fruticetis, STAINT. 2960! Tirich Gol, in pratis udis, BOWES LYON 1076!

Distr. gen.: Endem.

Unter den Arten des Subgen. *Trimorpha* sehr auffällig durch die im Trockenzustand blaue Farbe der zahlreichen, langen Ligulae, die grüne, armblättrige Hülle aus besonders schmalen, spitzen, in der Länge wenig unterschiedlichen Hüllblättern ohne längere Haare und die armköpfigen Stengel; auch das überaus spärliche, aus ziemlich langen, krausen Haaren bestehende Indument der Stengel und Blätter verdient Erwähnung.

In der Blütenfarbe und im Habitus ähnlich ist *E. cedretorum* RECH. f., bei dem jedoch die zungenlosen weiblichen Blüten fehlen.

5. ***E. leptocladus*** RECH. f., spec. nova.
Icon. Tab. 25.
Typus: STAINTON 3086, W!

Perennis, valde glabrescens usque subglaber. Caulis tenuis, tenax, 20–35 cm altus, a medio circiter tenuiter ± longe patule subcorymbose ramosus; rami foliis valde diminutis obsiti. Folia viridia, plana, subglabra, margine scabridule subciliata, inferiora plerumque rosulata, in petiolum laminam circiter aequantem longe attenuata, lanceolata, acuta, ad 30 x 8 mm, florendi tempore interdum ± emarcida; folia caulis principalis brevius petiolata, angustius lanceolata, valde acuta, erecto-patentia; folia ramorum abrupte diminuta, anguste lineari-lanceolata, basi attenuata sessilia, acutissima, patula. Involucrum in statu compresso absque floribus 8–10(–12) mm diametro; phylla ± 5 mm longa, subbiseriata, viridia, subglabra, angustissime pallide marginata, angustissime linearia, valde acuta. Flores in vivo pallide malvacei, in sicco pallide violacei; ligulae paulo prominentes, 1,5(–2) mm longae, angustissimae; flores feminei eligulati evoluti; flores disci ± 5 mm longi. Achaenia immatura c. 3 mm longa; pappus stramineus vel pallide brunnescens, ± 5 mm longus. – Planta serotina, floret mensibus VII.–VIII.

Afghanistan: E: Nuristan: Kuh-e Adrugal inter Waigel et vallem Pech, LARSSON 35 in BRECKLE 5535! Inter Kotal-e Agok et Waigel, NEUB. 918/1951! In valle Adutch NW Atershuker, 2300 m, KERST. 1030! Gusalak in valle Kurder, NEUB. 818/1951!, 825/1951! In valle Bashgal inter Bragamata (Barge Matal) et Dewana Baba, 2500 m, BRECKLE 3426! Inter Bragamata (Barge Matal) et Apsai, BRECKLE 3230! Bragamata (Barge Matal), in pratis vallis orientalis, 2000–2450 m, ANDERS 4942!, 5012!, 5035! – **NE**: Wakhan: 11 km E Baba Tangi, 3150 m, GREY-WILSON & HEWER 1414!

Pakistan: Chitral: Drosh Gol, 2400 m, in alveo rivi, BOWES LYON 157! Mastuj, 2400 m, in ripa lapidosa rivi, STAINT. 3086! Golen Gol, 1950 m, BOWES LYON 17! – Swat: Sho Nullah, 2100–2400 m, RAHMAN 120! Madyan, 1350 m, R. R. STEW. 24442!

Distr. gen.: Endem. (Nuristan, Chitral).

Habituell dem *E. anisophyllus* RECH. f. ähnlich, der, im Großen gesehen, im selben Gebiet vorkommt. *E. anisophyllus* hat jedoch längere, deutlich hervortretende Ligulae, und ihm fehlen die bei *E. leptocladus* vorhandenen, zungenlosen weiblichen Blüten.

Subgen. ***Erigeron***

Syn.: Sect. *Euerigeron* (DC.) M. POP., Not. Syst, Leningrad 16: 388 (1954).

Flores eligulati feminei deficientes.

6. ***E. anisophyllus*** RECH. f., spec. nova.

Icon.: Tab. 26.
Typus: RECHINGER f. 19433, W!

Perennis, in parte inferiore parce hirsuto-puberulus, in parte superiore valde glabrescens. Caulis 25–30 cm altus, a basi crebre tenuiter ramosus, rami inferiores e basi ± arcuata ascendentes, quasi caules secundarios formantes, dimidiam vel fere totam longitudinem caulis primarii attingentes, saepe iterum ramosi; caules ramique crebre regulariter foliati. Folia basalia subrosulata, petiolo c. 10 mm longo suffulta; lamina late lanceolata, 15–20 x 7–10 mm, basi cuneata, apice obtusiuscula vel subacuta, margine integra vel obsoletissime breviter remote crenato-serrata, rarius remotissime serrata, utrinque subtus subdensius breviter hirsuto-pubescens; folia caulis primarii ± anguste lanceolata, 20–30 x 5–8 mm, basi longe sensim attenuata, apice ± breviter vel subaequaliter attenuata, acuta, margine integra vel ± obsolete breviter serrata, nervis lateralibus inferioribus prolongatis costae medianae subparallelis subtrinervia; folia ramorum abrupte minora et angustiora, anguste lineari-lanceolata, integra, acuta. Capitulum floribus expansis 20–25 mm diametro. Involucrum in statu compresso absque floribus 8–10 mm diametro; phylla ± 60, longissima ad 5 mm longa, angustissime lanceolata, apice longe attenuata, angustissime pallide marginata, atroviridia, dorso breviter disperse hirsuta, saepe fere omnino glabrescentia. Flores radii 40–60, in sicco coeruleo-violascentes; ligulae 4–5 mm longae; flores feminei eligulati nulli; flores disci numerosi, ± 4,5 mm longi. Achaenia matura non visa, immatura 2 mm longa; pappus 3,5–4 mm longus.

Afghanistan: E: Jaji: Supra Kotkai, in cedretis, 2500 m, FREITAG 1677!, 1812! Nuristan: Kushtos, 2000 m, NEUB. s.n.!, EDELB. 1111! In valle Bashgal prope Kamdesh, 1800–2000 m, PODLECH 32176! Inter Kamdesh et Kushtos, 2000 m, NEUB. 3291! Dewagal Darrah W Chalas, 1900–2600 m, ANDERS 11133! In parte superiore vallis fluvii Pech, culta e seminibus in horto Halensi, KERST. F-34! In valle Parun prope Pashki, in nemoribus, 2200 m, SCHEIBE 153! In valle Rangul prope Gadwol, 1970 m, KERST. 1126! Chapadarrah prope Wersek, 1300–2000 m, ALPAY in ANDERS 11339 p.p.! Distr. Kunar, HEWER 1384!
Pakistan: Swat: Kalam, substr. granit., 2200 m, RECH. 19433! Ushu, 2400 m, RECH. 19522!, Utror, 2500 m, RECH. 19536!

Distr. gen.: Endem.

Habituell besteht eine Ähnlichkeit mit dem zum Subgen. *Trimorpha* gehörigen, im selben Gebiet vorkommenden *E. leptocladus* RECH. f., der jedoch kurze, blasse Strahlenblüten hat.

E. anisophyllus ist ausgezeichnet durch die kleinen, ± kahlen Hüllen, durch die langen Strahlenblüten, die weitgehende Neigung zum Verkahlen, die ± reiche Verzweigung und die an den Ästen abrupt kleineren und schmäleren Blätter.

7. ***E. multiradiatus*** (LINDL. in DC.) C. B. CLARKE, Compos. Ind. 56 (1876).
Syn.: *Stenactis multiradiata* LINDL. in DC., Prodr. 5: 299 (1936).
Icon.: Tab. 27.
Typus: In Indiae montibus bor.-occid., WALLICH 2969, K.

Caules 20–30 cm alti, plures, validi, hirsuti, simplices vel superne pauciramosi, regulariter foliati; folia ramorum reducti. Folia basalia longiuscule petiolata, lanceolata, obtusiuscula, mox marcescentia; folia caulina oblongo-lanceolata, erecto-patentia vel cauli appressa, inferiora obtusiuscula, superiora angustiora, acuta, omnia integra, interdum leviter late undulata, laxe hirsuta vel ± glabra. Capitulum floribus expansis inclusis 25–40 mm diametro. Involucrum depresso-semiglobosum, umbonatum, in statu compresso 12–15 mm diametro; phylla hirsuta vel rigide ciliata, usque ad 8 mm longa, 1,5 mm lata, linearia, acuta. Flores radiantes numerosissimi, pluriseriati; ligulae usque ad 15–24 mm longae; flores disci numerosi, corolla 4 mm longa; flores feminei eligulati nulli.

Afghanistan: E: Nuristan: In jugo Urura, 3000–3900 m, NEUB. 578/1951!, 606/1951! Kuh-e Adrugal inter Waigel et vallem Pech, 3300 m, LARSSON 91 in BRECKLE 5591!
Pakistan: Kurram: In valle Kurram, AITCH. 784!

Distr. gen.: Afghanistan, Pakistan, India.

8. ***E. cedretorum*** RECH. f., spec. nova.
Icon.: Tab. 28.
Typus: RECHINGER f. 30653, W!

Rhizomate brevi perennis, viridis, breviter laxe pubescens, (ut videtur) eglandulosus. Caules 20–35 cm alti, validiusculi, erecti, regulariter foliati, plerumque in tertia parte superiore in ramos 2–5 erectos monocephalos paucifoliatos divisi. Folia viridia, herbacea, omnino breviter laxe pubescentia; folia basalia 30–40 x 8–12 mm, subrosulata, oblanceolata, subspathulata, integra vel obsolete late crenata, in petiolum lamina breviorem longe sensim attenuata, obtusiuscula; folia caulina media vix, superiora paulatim decrescentia, basi lata subsemiamplexicauli sessilia, subundata, oblanceolato-ligulata, erecto-patentia, inferiora et media apice rotundata et apiculata, superiora tantum acutiuscula. Pedunculi erecti, validi, infra capitula ut involucra densiuscule hirsuto-pubescentes et breviter glanduliferi. Involucrum umbilicatum, in statu compresso 12–15 mm diametro; phylla 5,5–6,5 mm longa, subbiseriata, subaequalia, viridia, hirsuto-pubescentia (et breviter glandulosa), anguste lanceolato-linearia, acuta. Flores ligulati numerosissimi, intense coeruleo-violacei, ligulis speciosis ± 7 mm longis, planis; flores feminei eligulati nulli; flores disci 5–6 mm longi. Pappus stramineus, ± 5 mm longus.

Pakistan: Swat: Shangla, in apertis cedretorum (*C. deodara*), 2050 m, 2. VI. 1965, RECH. 30653!

Distr. gen.: Endem.

Die Art ist durch die lang und reichstrahligen, trocken intensiv blauvioletten Randblüten, sowie durch die durchaus mit breiter Basis sitzenden, etwas gewellten Stengelblätter eindeutig gekennzeichnet. Habituell erinnert *E. cedretorum* etwas an *E. cyanactis*, der aber dem Subgen. *Trimorpha* angehört und als feuchtigkeitsliebende Hochgebirgspflanze ökologisch völlig verschieden ist.

9. ***E. hyrcanicus*** BORNM. & VIERH., Beih. Bot. Centrbl. 19,2: 473 (1906).
Icon.: BORNM., Bull. Herb. Boissier Sér. 2, 7: tab. 1 (1907). – Tab. nostr.: 29.
Typus (syntypi): BORNMÜLLER 7495, G! W! et 7487, 7499.

Humilis, pluricaulis. Caules 5–15 cm alti, erecti vel leviter curvati, mono- vel interdum oligocephali. Folia basalia oblongo- vel elliptico-spathulata, obtusa, longe petiolata; lamina 10–25 x 6–12 mm; folia caulina 3–6, basi ± attenuata sessilia, late vel anguste lanceolata, ± acuta. Indumentum hirsuto-villosum, in caulibus et foliis e pilis longis eglandulosis numerosis, pilis glanduliferis brevioribus copiose intermixtis. Capitulum in statu compresso 15–20 mm diametro; phylla 60–70, lineari-lanceolata, ± acuminata, media longissima, 6–8 x 0,7–0,9 mm, atroviridia vel atropurpurascentia, pilis longioribus eglandulosis et brevioribus glanduliferis imprimis basin versus dense villosa. Corolla intense rosea, colore in sicco persistente vel alba; flores ligulati, ± 150; ligulae 4,5 x 0,8 mm, flores disci tubulosi, numerosi; flores feminei eligulati nulli. Pappi setae ± 4,5 mm longae.

Persia: N: Maz.: Distr. Kojur in saxosis M. Uloj, 3200–3400 m, RECH. 6515 p.p.! Kuh-i Nizva, in cacumine occidentali, in decl. borealibus, 3200 m, WDB. 1269! – C: Tehr.: 48 km NNE Tehran, 3000 m, FURSE 3191! M. Damavand, in fauce prope Junesar, 2700 m, BORNM. 7499! M. Hazarband, 3000 m, GAUBA 675! Qazv.: In decl. australibus jugi Kandavan, 2700–3800 m, SOJÁK 8441!, GAUBA 1813. In jugo Gardaneh Bary inter Gach Sar et Garab, 2800–2900 m, BORNM. 7487, 7495! Takht-i Suleiman, in saxosis metamorph. supra refugium, 3500 m, KLEIN 2204!; 4300—4600 m, TERME 15104-E! Shahr.-Bust.: Kuh-i Kakashan, in saxosis calc., 3000 m, KOELZ 16379!

Distr. gen.: Endem.

10. ***E. pseuderiocephalus*** M. POP., Acta Inst. Bot. Acad. Sci. URSS. Ser. 1, 7: 10 (1948).
Syn.: *E. discernendus* RECH. f., Dan. Biol. Skr. 8, 2: 6 (1955).
Icon.: RECH. f., l.c.: fig. 1 et 8a (sub. *E. discernendo*); Fl. URSS. 25: tab. 14, fig. 4 (1959). – Tab. nostr.: 30.
Typus: Montes Seravschan, LE.

Suffruticoso-caespitosus, multicaulis; caules (20–)40–60 cm alti, ± stricte erecti, in summa parte breviter pauciramosi, dense foliati, crispule pubescentes; planta in sicco atrata, glabrescens. Folia 30 x 5 mm, basalia petiolata, oblongo-lanceolata, acuta vel obtusiuscula, integra; folia caulina anguste oblongo- vel lineari-lanceolata, cauli ± appressa, superiora valde diminuta, angustissima, laxe breviter eglanduloso-pilosa. Involucrum polyphyllum, 6–7 mm longum, in statu compresso 12–15 mm diametro, depresso-semiglobosum, umbonatum; phylla subaequalia, angustissime lineari-lanceolata, viridia vel atropurpurea, apicem acutum versus sensim longe attenuata, pilis longis crispulis ± laxe villosa, pilis brevioribus ganduliferis immixtis. Ligulae albidae vel pallide roseae, tenuiter filiformes, involucro paulo vel vix longiores. Flores feminei eligulati nulli. Achaenium 3 mm longum; pappus 6–7,5 mm longus, in sicco fuscescens.

Afghanistan: NE: Munjan: Sanglich, 3450 m, KOELZ 12607 (typus *E. discernendi*)! Wakhan: Darya-e Baroghil, 3300 m, ANDERS 7828! Darya-e Istmoch, 3400–3800 m, ANDERS 8157! In valle Qazi Deh, 3200 m, ROEMER 146! In valle Kishnikan, in glareosis granit., 3600–4000 m, GAMERITH 92!, 64! Baba Tangi, in glarea rivi, 3000 m, HUSS 24-b! Inter Darya-e Aq Jelga et Mirza Murad, 3700 m, ANDERS 7737! In valle Badjigaz N Baharak, 3350 m, ANDERS 7799! Darya-e Shkanstat, 3600 m, ANDERS 7802! In valle Issik, 4025 m, HUSS 314!
Pakistan: Chitral: Inter Mastuj et Baroghil, 2700 m, STAINT. 2939! Showar Shun E jugi Baroghil, 3750 m, STAINT. 3004! In glareosis ad glacies aeternas Chatiboi, 3500 m, STAMM & WÖHRL 130! Tirich Mir: Och Anzog, 3600 m, R. HEEN in WDB.! Shokor Shal, 3500 m, WDB.! Barum, 3600 m, STAINT. 2776!

Distr. gen.: Afghanistan, Pakistan (Chitral), Pamir-Alaj.

Die Art fällt im getrockneten Zustand durch den dunkel bräunlichen bis grünlichen Farbton der Stengel, Blätter und Hüllen auf; die Blätter sind etwas dicklich und ziemlich kahl.

11. ***E. caucasicus*** STEV., Mém. Soc. Nat. Mosc. 4: 63 (1813).

In ditione nostra tantum occurrit:

– – subsp. ***venustus*** (BOTSCH.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 33: 430 (1975).
Syn.: *E. venustus* BOTSCH., Not. Syst. Leningrad 16: 387 (1954). *Aster pulchellus* WILLD., Spec. Plant. 3: 2019 (1803). *Erigeron pulchellus* (WILLD.) DC., Prodr. 5: 287

(1836) non MICHAUX f. (1803). *E. pulchellus* (WILLD.) DC. var. *leucactis* BOISS., Fl. Or. 3: 164 (1875).
Icon.: Tab. 31.
Typus: Armenia, B-WILLD 15842.

Perennis, parce vel dense pilosus, pilis glanduliferis interdum intermixtis. Caulis 5–35 cm altus, ± erectus, simplex vel ramosus. Folia basalia 2–15 x 0,5–1,5 cm, oblanceolata vel spathulata, apice acuta vel obtusa, basi attenuata vel subpetiolata, margine integra; folia caulina 1–7 x 0,3–1,5 cm, lanceolata, basi attenuata vel rotundata et semiamplexicaulia. Capitula solitaria vel plura (usque 6) laxe corymbosa. Involucrum 1,75–2,25 cm diametro, viride vel purpureo-suffusum, parce vel dense pilosum, interdum glandulosum; phylla 6–10 x 0,75 mm, lineari-lanceolata, acuminata. Flores radiantes 70–200, plerumque intense rosei, raro albi, ligulae (6–)8–15 x 1–1,5 mm. Flores disci 3,5–5 mm. Flores feminei eligulati nulli. Achaenia 2,5–3 mm longa, pubescentia; pappus brunnescens, 3,5–5 mm longus.

Persia: N: Gilan: Kuh-e Zardchin prope Damesh, 1750–2250 m, TERME & DARYADEL 15093-E! – W: Azerb.: Gardaneh Almas inter Asalem et Khalkhal, 2100 m, SOJÁK 8438!, 8439! Kuhha-ye Sabalan, 3450 m, REJAMAND 6737!, BUHSE! In decl. borealibus Kuhha-ye Sabalan, 3500–3700 m, LAMOND 4748 & TERME in RECH. 44155! Shahbil, 4300 m, FOROUGHI & ASSADI 13917! Meshgin Shahr, 3600 m, IZADYAR 13796-E! Qareh Dagh, Aliabad 20 km SW Kaleybar, 2300–2500 m, LAMOND & TERME in RECH. 44314! In montibus prope Nabi Jan, 2500–2730 m, TERME & al. 39166! Inter Sar-i Chaman et „Guirkhlar", 2200–2600 m, TERME 13787-E! – C: Shahr.-Bust.: Kuh-e Abr (Kuh-e Qatri), 2500 m, in apertis quercetorum *(Qu. macranthera)*, WDB. & FOROUGHI 12935!

Distr. gen. subspeciei: Anatolia boreo-orientalis et orientalis, Persia.

Die Art ist durch kräftigen Wuchs und große Köpfchen mit reichlich strahlenden Randblüten auffällig. Einzelne Belege neigen durch Mehrköpfigkeit und kürzere Strahlenblüten etwas zu subsp. *caucasicus*, wie z. B.: TERME & DARYADEL 15093-E und LAMOND & TERME in RECH. 44314.

12. ***E. plesiogeron*** RECH. f., spec. nova.
Icon.: Tab. 32.
Typus: RECHINGER f. 32316, W!

Humilis, subcaespitoso-induratus. Caules 3–8 cm longi, arcuato-ascendentes, subflexuosi, pauciramosi, plerumque bi- vel tricephali, specimina macra tantum monocephala. Folia basalia oblongo-spathulata, obtusa vel obtusiuscula vel subacuta, petiolo laminam subaequante vel paulo longiore suffulta; lamina 15–20 x ± 10 mm; folia caulina 3–6, basi ± attenuata sessilia, inferiora oblongo-spathulata, superiora basi breviter attenuata, apice acuta. Indumentum hirsuto-pubescens, canescens, eglandulosum, in foliis subtus secus costam medianem et margine densius, ceterum ubique subaequale. Capitulum floribus inclusis in statu compresso 18–22 mm diametro. Involucrum absque floribus ± 15 mm diametro; phylla ± 40, anguste lineari-lanceolata, longe sensim attenuata, longissima c. 8 mm longa, atroviridia, purpurascentia, laxe appresse eglanduloso-pilosa. Corolla in sicco roseo-violacea, non decolorans; flores feminei eligulati nulli; flores ligulati valde numerosi, ad 200; ligulae c. 3 mm longae; flores disci tubulosi, c. 4 mm longi. Pappi radii ± 4,5 mm longi.

Afghanistan: E: Kabul: In decl. australibus jugi Salang, in saxosis granit., 3300 m, RECH. 37065!, 37449! Jaji: In rupium fissuris inter Dre Kalla et Qasim Khel, 3100 m, 11. VII. 1965, RECH. 32316!

Distr. gen.: Endem.

Die Art, die habituell entfernt an *E. uniflorus* erinnert, ist trotz ihres niedrigen Wuchses meist 2–3-köpfig; eine Ausnahme machen die zwergigen Belege unter Nr. 37449. Im übrigen ist *E. plesiogeron* durch das grauliche, drüsenlose Indument, die großen Köpfe mit äußerst zahlreichen Strahlenblüten und die sehr dünn behaarte Hülle ausgezeichnet.

13. ***E. petroiketes*** RECH. f., Dan. Biol. Skr. 8, 2: 8 (1955).
Icon.: l.c.: fig. 3 et 8a. – Tab. nostr.: 33.
Typus: KOELZ 12752, W!

Plerumque pluricaulis; caules (3–)5–10(–15) cm alti, monocephali, inferne dense, superne internodiis ± elongatis laxius foliati. Indumentum breve, hirsutum, papillis glanduliferis brevissimis sat sparse immixtis. Folia basalia petiolo 1–3 cm longo in laminam insensibiliter transeunte suffulta; lamina (10–)30(–40) mm longa, 1,5–3 mm lata, anguste oblongo- rarius subspathulato-linearis, saepius ± acuta, integerrima; indumentum breve, hirsutum, subtus densius, supra laxius, pilis brevibus glanduliferis sat rare immixtis; folia caulina similia, angustiora, acutiora. Involucrum in statu compresso 12–15 mm diametro; phylla 4–10 x 0,5–1,2 mm, latiuscule lanceolata, acuta, aterrima, dorso pilis longis crispulis, in sicco flavescentibus dense villosum, phyllis apice tantum ± denudatis. Flores radiantes 5–7 mm longi, ± 100, albidi vel roseo-coeruleo-violascentes, involucro paulo longiores, subfiliformi-convoluti; flores feminei eligulati numerosi. Achaenia juvenilia c. 2 mm longa; pappus sordide albus, flavescens, c. 3 mm longus.

Afghanistan: E: Panjshir: Darreh Rastagal supra Mukeni, in decl. siccis, 3700 m, HDG. & WDB. W-5181! M. Mir Samir, 4350 m, JACQUEMOUD 1441!; 4700 m, JACQUEMOUD 1464! Nuristan: In jugo inter vallem Suyengal et Shashgal, 4500 m, BRECKLE 2996-a! Darrah-i Suyengal, 4350 m, PODLECH 16472! Darrah-i Pushol, 3600 m, PODLECH 16403! In jugo Wanasgul, 4500 m, THESIGER 1598! – NE: Munjan: In jugo Munjan, in glareosis humidis, 4050 m, KOELZ 12752! In jugo Parun-Munjan, 4000 m, EDELB. 1271!; 3600 m, KOELZ 12665! In decl. orientalibus jugi Anjuman, 4300 m, PODLECH 12424! Wakhan: Eilag Spurditsh in valle Warg, in glareosis, 3300–4200 m, GRATZL 8!, 13! Prope Sargaz, 2930–4550 m, ANDERS 8002! Inter Kotal-i Qara Qalechal et Zemestan-e Baharak, 3300–4050 m, ANDERS 7281! In valle W Darya-e Uch Jelga versus Kol-e Chaqmaqtin, ANDERS 7494! NW Kol-e Chaqmaqtin, 4200–4400 m, ANDERS 7593! In valle Toli Bay, tributario fl. Darya-e Istmoch, 4000 m, ANDERS 8157 vel 8137! In jugo Warm versus vall. Spadgiz, 4600 m, GREY-WILSON & HEWER 1579!, 1592! In valle Futur, 3400–3700 m, ROEMER 76! In decl. borealibus M. Noshaq ad glacies Qazi Deh, 4580 m, AICHHORN 39 in BRECKLE 3816! In valle Issik, 4400 m, HUSS 421! In glareosis schist. vall. Khandud, RENZ 11! In glareosis graniticis vallis „Hamdud“ (Khandud?), 3500 m, DRASLAR! Kotal-e Wazit, in cobresietis, 4650 m, BRECKLE 1329!, 1330!, 1372! In glareosis granit. vallis Kishnikhan, 3600–4000 m, GAMERITH 85! Kataghan: In decl. borealibus jugi Salang, HAYON!; 3200–3400 m, HDG. & EKB. W-9565!, W-9850! Pakistan: Chitral: Inter glacies Chatiboi et Pechus, 4000–4200 m, STAMM & WÖHRL 204! Yarkhun, 3300 m, in pascuis, BOWES LYON 927! In jugo Baroghil, 3750 m, STAINT. 2971! In jugo Shera Shing W Drosh, 4200 m, STAINT. 3207! Tirich Mir: Barum Gol, prope glacies, 4500 m, WDB.! Och Anzog, 3600 m, WDB. Zapotili, 3700 m, WDB.! Maymano Shal, 4600 m, JÖRSTAD in WDB.! Agram Arkari Gol W Tirch Mir, in salicetis, 3150 m, STAINT. 2638!

Distr. gen.: Afghanistan, Pakistan (Chitral), montes Asiae centralis (Pamir-Alaj, Tien Shan).

E. petroiketes ist unter den zahlreichen, engeren und weiteren Verwandten des *E. uniflorus* L. durch die Korrelation von schmalen Blättern mit dunkler, fast schwärzlicher Hülle mit dichter, krauser, weißlicher Behaarung verhältnismäßig leicht erkennbar.

14. ***E. uniflorus*** L., Spec. Plant. 864 (1753).
Typus (syntypi) speciei: Lapponia et Helvetia, Herb. LINN 994/23.

Perennis; caules singuli vel pauci, 3–10(–15) cm alti, monocephali. Folia basalia 15–30 x 3–5 mm, spathulata, obtusa, integra, parce hirsuto-pubescentia vel ciliata, eglandulosa; folia caulina 10–20 x 2–3 mm, lanceolata vel oblanceolata, acuta. Capitula in caulibus semper singula; involucrum 7–10(–15) mm diametro; phylla plerumque purpurascentia, pilis longiusculis albis eglandulosis hirsuta vel imprimis basin versus ± villosa. Flores radiantes c. 60; ligulae 4–5 x 0,5–0,6 mm, albae vel roseae vel purpureae. Flores feminei eligulati nulli. Corollae disci 3 mm longae. Achaenia 2 mm longa, pubescentia; pappus 4 mm longus.

I r a q : Kurd.: Arbil: M. Algurd Dagh, 3600 m, RECH. 11873!, GILLETT 12356!
A f g h a n i s t a n : **E**: Kabul: M. Paghman, 2600 m, VOLK 961-a ! In decl. australibus jugi Salang, 4000 m, FREITAG 3656!; 3300–3700 m, BRECKLE 1510!, 2642!, PODLECH 32088! Panjshir: In valle Chetok ad meridiem montis Mir Samir, 4600 m, BRECKLE 796! – **NE**: Kataghan: Khost-o Fereng in valle Echani, 3500 m, PODLECH 11862! Farkhar, in decl. occidentalibus jugi Piu, 4450 m, PODLECH 12652-a! – **C**: Bamian: Band-i Amir, Kuh-i Yak Ruja, 3500 m, DIETERLE 601! Kuh-i Baba, Dara Bod Chur supra Qala Nau („Sommersiedlung"), 4080 m, BRECKLE 2567! Fuladi, in glareosis, 4300 m, BRECKLE 1560!
P a k i s t a n : Chitral: Tirich Mir: Barum Gol infra Zapotili, 3700 m, WDB. s.n. Inter jugum Dorah et Gabur, 3300–4000 m, KERST. 1531!

Distr. gen. speciei: Circumpolaris et in montibus Europae et Asiae.

Unter *E. uniflorus* s.l. werden hier alle diejenigen Belege angeführt, die sich keiner der beiden unterschiedenen Unterarten zuordnen lassen. Viele der afghanischen Belege kommen der subsp. *elbursensis* nahe, ohne völlig mit dieser übereinzustimmen. Ihre Deutung bleibt einer Revision des gesamten, über die eurasiatischen Gebirge weit verbreiteten Formenkreises vorbehalten.

– – subsp. ***daënensis*** (VIERH.) RECH. f., stat. nov.
Syn.: *E. daënensis* VIERH., Beih. Bot. Centrbl. 19, 2: 514 (1906).
Icon.: VIERHAPPER, l.c.: tab. 5, fig. 12 (1906). – Tab. nostr.: 34.
Typus subspeciei: KOTSCHY 761, H!, holotypus W!

Humilis, plerumque pluricaulis, ± caespitosus. Caules 5–10 cm alti, erecti, monocephali. Folia basalia elliptico- vel obovato-spathulata, 10–30 x (2–)3–4 (–5) mm, obtusa, longiuscule petiolata; folia caulina 2–6, anguste lanceolata, acuta; folia margine et in faciebus crispule hirsuta, demum faciebus paene glabrescentia. Capitulum in statu compresso 15–18 mm diametro; phylla 40–60, media longissima 7–9 x 0,5–0,8 mm, ± purpurascentia, dense albo-hirsuto-lanata. Indumentum omnino e pilis longis eglandulosis consistens, pilis brevioribus glanduliferis in caule immixtis. Flores ligulati 60–100, ligulae 3–4 x 1–1,2 mm; flores tubulosi numerosi; flores feminei eligulati nulli. Pappi setae 4,5–5 mm longae.

Persia: S: Fars.: Kuh-e Dinar (Kuh Daëna), 4000 m, REMAUDIÈRE 5255-E!, KY. 761! Supra Sisakht, 3400–4000 m, SOJÁK 6363!, 6347!

Distr. gen. subspeciei: Anatolia, Persia austro-orientalis.

Diese Unterart ist durch die spatelförmigen Blätter, die relativ großen Köpfe mit meist dicht und lang weißlich rauh wolligen Hüllen und die den Wollhaaren am Stengel beigemischten Drüsenhaare gekennzeichnet.

– – subsp. ***elbursensis*** (BOISS.) RECH. f., stat. nov.
Syn.: *E. elbursensis* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 11: 1 (1849) „*elbrusensis*".
Icon.: VIERH., Beih. Bot. Centrbl. 19, 2: tab. 4, fig. 1 (1906). BORNM., Bull. Herb. Boissier Ser. 2, 7. – Tab. nostr.: 35.
Typus subspeciei: KOTSCHY 488, H!, W!

Nanus, pluricaulis, caespites parvos formans. Caules subnulli usque ad 5 cm longi, erecti vel ascendentes, monocephali. Folia basalia anguste oblongo- vel lineari-spathulata, 2–4 mm lata, capitula saepe aequantia vel superantia; folia caulina 1–3, folia margine dense ciliata, faciebus glabrescentia. Capitulum in statu compresso 8–12 mm diametro; phylla 30–50, 5–6 x 1–1,3 mm, virescentia, apicem versus purpureo-suffusa, breviter hirsuta. Indumentum caulis foliorumque e pilis longioribus eglandulosis consistens, pilis brevioribus glanduliferis in caule intermixtis. Flores ligulati ± 80, ligulae 25 x 0,7 mm. Pappi setae 3,5 mm longae. Flores feminei eligulati nulli.

Persia: N: Maz.: Kamarband prope Ileka, 3200–3650 m, TERME & al. 39943-E! Distr. Kojur, in saxosis M. Uloj, 3200–3400 m, RECH. 6515 p.p.! Mastechal, 3750–3850 m, KLEIN 2019-b!, 2077!, 2927! Kuh-i Nizva, 3000 m, BEHB. & AELL. 5463-E!; in cacumine occidentali, 3300 m, WDB. 1273! In solo schistoso circa lacum in alpibus Hazarchal, in partibus occidentalibus, KY. 488! Hazarchal, 3850 m, KLEIN 2327! In jugo Kandavan, 2700–3800 m, SOJÁK 8440! Takht-e Suleiman, Tang-e Galu, 3350–4000 m, KLEIN 2147!, TERME 13759-E! – C: Tehr.: In decl. orientalibus M. Damavand, 4220 m, GRANT 16535!; in decl. australibus, 3800–4000 m, GILLI!, WDB. 1673! M. Tuchal, 2500–4000 m, SOJÁK 8432!, 8434!, BORNM. 7501! Shahr.-Bust.: Kuh-i Kakashan, 3000 m, KOELZ 16376! In decl. australibus M. Shahvar, 3500–3800 m, RECH. 5979!

Distr. gen. subspeciei: Endem.

Die subsp. *elbursensis* ist durch niedrigen Wuchs, Vielstengeligkeit, relativ geringes Indument und schmale Blätter verhältnismäßig gut gekennzeichnet.

15. ***E. lonchophyllus*** HOOK., Fl. Bor.-Americ. 2: 18 (1834).
Syn.: *E. armeriaefolius* TURCZ. ex DC., Prodr. 5: 291 (1836).
Icon.: Tab. 36.
Typus: Sasketchewan, DRUMMOND.

Perennis, pumilus, omnino glaberrimus. Caules singuli vel plures, simplices vel rarius bi- vel tricephali, 20–30 mm alti; plerumque trifoliati. Folia omnia linearia, 10–20 x 1,5–2 mm, crassiuscula, enervia, primaria lineari-subspathulata, obtusa, minora, cetera indistincte purpureo-petiolata, apicem versus insensibiliter dilatata, apice acutiuscula; folia caulina similia, angustiora, capitula saepe aequantia. Involucrum in statu compresso 9–13 mm diametro, pallide flavescenti-viride, glaberrimum; phylla 30–36, longissima 6 mm longa, valde inaequilonga, exteriora multo breviora, angustissime linearia, peranguste membranaceo-marginata, purpureo-apiculata. Flores non radiantes, marginales albi, disci flavi (fide collectore); corolla tubuloso-filiformis, ± 3,5 mm longa. Pappus stramineus, 3–4 mm longus; flores feminei eligulati nulli.

Pakistan: Chitral: Tirich Mir: Barum Gol, ad glacies merid. Barum, 4500 m, WDB.!; 3000 m, in graminosis, STAINT. 2781!

Distr. gen.: Sibiria, America borealis, Montes Asiae centralis, Himalaya occid., Chitral.

Die Bestimmung des STAINTONschen Beleges stammt von GRIERSON. Aus dem selben Gebiet liegen mit der Angabe „Barum Gol, Camp 2 by South Barum Glacier, 4500 m, WENDELBO s.n." zwei Bogen im Herbar Oslo vor, die von GRIERSON als *E. uniflorus* L. „glabrate form" bestimmt wurden und die in den meisten Merkmalen mit den STAINTONschen Belegen übereinstimmen. Einige Individuen haben jedoch etwas größere, reicherblütige Köpfchen und manche zeigen an den Hüllen Spuren einer Behaarung. Ein Individuum ist darunter, das zwar ebenso schmalblättrig und weißblütig wie *E. lonchophyllus* ist, aber strahlende Randblüten und an Stengel, Blättern und Hülle das normale Indument des *E. uniflorus* aufweist. Möglicherweise handelt es sich um Hybriden der beiden Arten.

Species excludenda

Erigeron sanguineus PARSA, Kew Bull. 1948: 208 (1948) = ***Pentanema indicum*** (L.) LING *(Inuleae)*.

Species delenda

Erigeron elegans PARSA, Kew Bull. 1948: 208 (1948) = ***Hieracium*** sp. (caulis foliaque) et ***Erigeron*** sp. (capitula).

7. *Lachnophyllum*

auctore A. J. C. GRIERSON, Edinburgh

Lachnophyllum BUNGE, Rel. Lehm. 151 (1851).

Herbae annuae, erectae, pilis glanduliferis et simplicibus dense obsitae. Caulis ramosus, foliatus. Folia alterna, oblonga, ovata vel spathulata, integra. Capitula heterogama, radiata, ad extremos ramos solitaria vel plura in racemos sat distantes disposita. Involucrum pluriseriatum, imbricatum. Flores radiantes biseriati; ligulae prominentes, plerumque demum valde revoluti vel circinatae. Flores disci tubulosi, anguste campanulati, quinquelobi. Antherae basi minute sagittatae; appendices terminales ovati, acuminati. Styli appendices (florum hermaphroditorum) acuminati. Receptaculum nudum, alveolatum. Achaenia florum radii et disci fertilia, anguste oblanceolata, apice abrupte in collum breve contracta; pappus subbiseriatus, setis basi in annulum connatis sed separatim deciduis. – Plantae serotinae.

1. Folia caulina ovato-oblonga. Capitula in ramulis patentibus crasse pedunculata, singula. Involucri phylla externa lanceolata, squarroso-refracta. Pappi setae 50–60 .... 1. *L. gossypinum* BUNGE
b. Folia caulina lineari-lingulata. Synflorescentia racemoso-paniculata. Involucri phylla externa lineari-oblonga, non squarrosa. Pappi setae 25–30 ... . 2. *L. Noëanum* BOISS.

1. ***L. gossypinum*** BUNGE, Rel. Lehm. 151 (1851).
Icon.: Tab. 37.
Typus: Turkestan, LEHMANN.

Caules plerumque robusti, 15–60(–80) cm alti, sparse vel dense pilis longis albis gossypinis et glandulis breviter stipitatis obsiti. Folia 7,5–45 x 3–15(–20) mm, oblonga vel ovata, basi semiamplexicaulia, auriculata, apice obtusa, margine integra, crispa, utrinque gossypino-lanata et glandulosa. Capitula 10–17,5 mm lata; pedunculi longi, foliis squamiformibus remotis obsiti; phylla c. 6-seriata, exteriora herbacea, 2–2,5 x 0,5 mm, glandulosa et leviter lanata; interiora subsquarrosa, 0,75–8 mm longa, margine scariosa. Flores radiantes 30–35; tubus basalis 4–4,5 mm longus; ligulae lavandulaceae, 3–3,5 x 0,6–0,8 mm. Flores 6–6,5 mm longi, disci flavi („malum redolentes" fide KOELZ). Achaenia 2–2,5 mm longa, ± dense sericea; pappus 4,5–5,5 mm longus, albidus.

T u r c o m a n i a : Ashkhabad, LITW. 1408! Mekrowa, SINT. 1174!
A f g h a n i s t a n : NW: Maimana: Daulatabad, 400 m, PODLECH 19817 – E: Nuristan: Inter valles Don et Pishok, KERST. 1265! – NE: Kataghan: 25 km NNE Baghlan, 500 m, FREITAG 3834! 10 km S Pul-i Khumri versus Doshi, 800 m, PODLECH 19751! W Kunduz, NEUB. 116/1950! Dahane Kayan, 1000 m, ANDERS 4713. Farkhar, 1250 m, PODLECH 12701! Badakhsh.: Ad confl. fluviorum Kishm et Kokcha, PODLECH 12749! 8 km S Jurm, PODLECH 12723! Faizabad, 1400 m, PODLECH 12738! Rustak, 600 m, KOELZ 13130! – C: Bamian: Qala Sarkari, 2100 m, KOELZ 13931!
P a k i s t a n : Chitral: Inter Chitral et Ayun, KERST. 2069!

Distr. gen.: Turcomania, Afghanistan, Pakistan, Syr-Darya, Pamir-Alaj.

2. ***L. Noëanum*** BOISS., Diagn. Pl. Or. Nov. Ser. 2, 3: 17 (1856).
Icon.: Tab. 38.
Typus: Kerrind prope Kermanshah, NOË, G-BOISS!

Bienne. Caulis 15–75 cm altus, ascendens, crasse flagelliformis, inferne dense foliatus, simplex vel basi patule ramosus, superne anguste paniculatus; planta patule hispido-lanata et glanduloso-pilosa. Folia inferiora 25–35 x 8–11 mm, oblongo-spathulata, integra, obtusiuscula, basi cordato- semiamplexicauli sessilia; folia ramealia brevia, anguste linearia. Ramuli foliosi, 1–3-cephali. Capitula pauca, thyrsoideo-paniculata, brevissime pedunculata, multiflora; involucrum 10–17 mm diametro; involucri phylla pluriseriata, inaequalia, appressa, glandulosa, externa 5 x 0,75 mm, lineari-oblonga, acuta, pallide erubescentia; interna 9 x 1,5 mm, scariosa, longe acuminata, pappo sublongiora. Ligulae c. 70, violaceae, parvae, 5 x 0,5 mm, revolutae, pappum vix superantes. Achaenium 2,5–3 mm longum, compressiusculum, pubescens, superne in collum brevissimum attenuatum; pappus 4,5–5,5 mm longus, setis 25–30, albis, scaber, achaenio triplo longior.

Persia: W: Kermansh.: Ravansir ad radices M. Shahu, in valle Nauderbent prope Kermanshah, HAUSSKN.! Karand prope Kermanshah, NOË! Lur.: Dow Rud, 1500 m, KOELZ 18517.

Distr. gen.: Anatolia orientalis, Palaestina, Persia occidentalis,

8. *Chamaegeron*

auctore A. J. C. GRIERSON, Edinburgh

Chamaegeron SCHRENK, Bull. Acad. Scienc. Petersbg. 3: 107 (1845).

Herbae annuae vel biennes. Caules prostrati vel ascendentes vel erecti, multiramosi, foliati, glandulosi et interdum villosi vel pilosi. Folia alterna, oblanceolata vel obovata, margine integra vel dentata. Capitula heterogama, radiata, in extremis ramis solitaria vel in racemos pedunculatos composita. Involucri phylla 2–3-seriata, imbricata, glandulosa, series extima herbacea. Flores radii uniseriati vel biseriati, ligulae quam discus paulo longiores, demum valde revolutae vel spiraliter contortae. Flores disci tubulosi, anguste campanulati, apice 4–5-lobi. Antherarum basis obtusa, integra. Styli appendices (florum hermaphroditorum), acuminati. Receptaculum nudum. Achaenia florum radii et disci fertilia oblonga vel elliptica, compressa; pappus uniseriatus, setis basi in annulum connatis et simul deciduis.

1a. Capitula 80–100-flora. Ligulae 2- vel pluriseriatae ....2. *Ch. keredjensis* (BORNM. & GAUBA) GRIERSON
b. Capitula 25–40-flora. Ligulae uniseriatae 2
2a. Folia obovata. Ligulae quam tubus basalis circiter duplo longiores .... 1. *Ch. Bungei* (BOISS.) BOTSCH.
b. Folia lineari-lanceolata. Ligulae quam tubus basalis minus quam duplo longior.. 3
3a. Caules prostrati vel ascendentes. Indumentum glandulosum et imprimis ad basin caulis tenuiter villosum............. 3. *Ch. asterellus* (BORNM.) BOTSCH.
b. Caules erecti. Indumentum omnino glandulosum .... 4. *Ch. oligocephalus* SCHRENK

1. ***Ch. Bungei*** (BOISS.) BOTSCH., Not. Syst. Leningrad 16: 383 (1954).
Syn.: *Erigeron Bungei* BOISS., Fl. Or. 3: 164 (1875).
Icon.: Tab. 39.
Typus: Persia: „In monte Kerat Kuh inter Herat et Thebes“, BUNGE, G-BOISS!

Caules 15–45 cm alti, foliati, a basi ramosi, tenuiter patule hirsuti et glandulosi. Folia inferiora 15–20(–30) x 5–8(–10) mm, obovata, basi attenuato-subpetiolata, apice acuta et apiculata, utrinque 1–3-dentata, aliquantum revoluta, utrinque parce hirsuta et glandulosa; folia superiora ad summum 1 mm longa, oblanceolata, integra. Capitula 6–8 mm diametro, ad extremos ramos solitaria; involucri phylla elliptico-oblanceolata; exteriora tenuiter acuminata 3–4,5 × 0,5–0,7 mm, glandulosa. Flores radii c. 20; tubus basalis 1,5 mm longus; ligulae 2,75–3 × 0,5–0,6 mm. Flores disci c. 20, c. 2,5–3 mm longi. Achaenia 1,3–1,5 mm longa, tenuiter sericea; pappus 2,75–3 mm longus, setis c. 20, albidis.

Persia: W: Esf.: Esfahan, 1600 m, STR. Kuh-e Sofeh, STAPF! Arak: M. Rasvand, STR.! – E: Khor.: Kuh-i Karat inter Herat et Tabas, BGE.! Khorasan, AITCH. 789!, CZERNJAK. 220. – Takht-i Suleiman: Ahamadabad, PICHLER.
Turcomania: Kushka, POPOV.
Afghanistan: E: Nuristan: Bashgal, Darrah-i Pengar, 3200 m, PODLECH 16458.

Distr. gen.: Endem.

2. ***Ch. keredjensis*** (BORNM. & GAUBA) GRIERSON, comb. nova.
Syn.: *Erigeron keredjensis* BORNM. & GAUBA, Feddes Repert. 16: 300 (1937).
Icon.: Tab. 40.
Typus: GAUBA 676, B = GAUBA 1295, W!

Biennis (?). Caules ascendentes vel erecti, 40–70 cm alti, valde ramosi, glandulosi et sparse villoso-hirsuti. Folia 20–40 × 3–5 mm, oblanceolata vel spathulata, basi subattenuata, apice acuta, margine utrinque 1–2-dentata, leviter revoluta, utrinque glandulosa et pilosa, crassiuscula; folia superiora lineari-lanceolata, integra. Capitula 7,5–10 mm diametro, usque ad 10 ad extremos ramos laxe subracemosa; involucri phylla 3–5 × 0,5–0,75 mm, elliptico-oblanceolata, acuminata, glandulosa. Flores radii c. 50, bi- vel pluriseriata, tubo basali 1,75–2 mm longo; ligulae purpurascentes, 2,5 × 0,5 mm. Flores disci c. 30, corolla 3 mm longa. Achaenia 1,5 mm longa, subglabra; pappus 3 mm longus, albidus, setis 20–25.

Persia: C: Qazv.: Vessieh ad ripam fl. Karaj supra pagum Karaj, 1600 m, GAUBA 676=1295!

Distr. gen.: Endem.

3. ***Ch. asterellus*** (BORNM.) BOTSCH., Not. Syst. Leningrad 16: 383 (1954).
Syn.: *Aster asterellus* BORNM., Beih. Bot. Centrbl. 60-B: 181 (1940).
Icon.: Tab. 41.
Typus: BORNMÜLLER 3985, B!

Herba humilis, prostrata vel ascendens, caulibus pluribus diffuse ramosis, glandulosis et imprimis prope basin tenuiter villosis. Folia 7,5–30 × 1–2 mm, linearia vel anguste lanceolata, basi attenuata, apice acuta, integra, imprimis subtus glandulosa et sparse villosa, textura sat tenui. Capitula 4–6 mm diametro, ad extremos ramos terminalia. Involucri phylla 3–6 × 0,5–0,75 mm, elliptico-lanceolata, acuminata, glandulosa, exteriora viridia, interiora saepe rubescentia. Flores radii 25–30; tubus basalis 1,5 mm longus; ligulae purpurascentes, 2,75 × 0,3–0,4 mm. Flores disci 10–15; corolla 2,75 mm longa. Achaenia 1 mm longa, sparse sericea; pappus 2,75–3 mm longus, albidus, setis c. 20.

Crescit in stepposis salsis.

Persia: S: Fars.: Prope „Andacum“ (Ardekan?), ALEXEENKO 867. Kerm.: In glareosis inter Rabor et Kuh-e Hazaran (Hasar), 3000 m, BORNM. 3985! Inter Kerman et Neyriz, 2600 m, BORNM.

3986! Kuh-e Laleh Zar prope Shirinak, 2900 m, BORNM. 3987. Prope Bardesir, 2650 m, BORNM. 3986-b.

Distr. gen.: Endem.

4. ***Ch. oligocephalus*** SCHRENK, Bull. Phys.-Math. Acad. Scienc. Petersbg. 3: 107 (1845).
Syn.: *Erigeron Stocksianum* BOISS., Diagn. Pl. Or. Nov. Ser. 2, 3: 8 (1856). *Aster lacunarum* AITCH. & HEMSL., Journ. Linn. Soc. 19: 168 (1882) tab. 16. *Erigeron oligocephalus* FEDTSCH., Rast. Turkest. 731 (1915).
Icon.: Tab. 42.
Typus: Kazakhstan?: In vallibus montium May-dshalyrgan, 29. V. 1843, SCHRENK, LE.

Caules plerumque usque ad 10 cm longi, sed interdum ad 30 cm attingentes, plerumque ramosi, interdum simplices, basi glabri, superne glandulosi. Folia 5–40 x 0,5–2,5 mm, lineari-lanceolata, basi attenuata, apice acuta, margine integra, leviter revoluta, imprimis subtus sparse glandulosa, textura subcarnosa. Capitula 5–7 mm diametro, ad extremos ramos solitaria; involucri phylla 3–5 x 0,5–1,3 mm, elliptico-lanceolata, acuminata, glandulosa, interiora saepe rubescentia. Flores radii 10–17; tubus basalis 2–2,3 mm longus; ligulae purpurascentes, 2,5–3 x 0,5 mm. Flores disci 10–12; corolla 2,8–3,3 mm longa. Achaenia 1,75–2 mm longa, sparse sericea; pappus 3–3,5 mm longus, sordidus, setis 25–30.

Persia: C: Tehr.: Lashkarak 34 km a Tehran, 1650 m, AMIN & BAZARGAN 4490! Semn.-Damgh.: 15–25 km a Semnan versus Firuzkuh, 1400 m, HEDGE, WDB. & al. 14730!
Turcomania: Ashkhabad: Suluklü, SINT. 922! Kushk, FEDTSCH. & al. 930.
Afghanistan: NW: Maimana: In jugo Burchao, 2745 m, KOELZ 14131 ! Herat: Herat, BUNGE! – E: Kabul: Botkhak, NEUB. 367/1951! Inter Kabul et jugum Unai, 2110 m, GILLI 3906! Ad lacum Kargha, 2000 m, BRECKLE 4815. Kabul, GILLI 3905! Nangarhar: Jalalabad, 600 m, BRECKLE 4962, GRIFF. Logar: In montibus Salawat, 3050 m, LALANDE R 498-E6! Urgun: Urgun, 2150 m, NEUB. 1949/1987. Gardez: Sakh Kala, 2850 m, LALANDE R 539-E4! – C: Bamian: Band-i Amir, NEUB. 480/1951! Shahr-e Shak, 2260 m, GILLI 3907! Bamian, VOLK 2244=2816!, NEUB. 413/1951! Panjao: Panjao, 2700 m, KOEIE 2693! Ghorat: Qala Sakawa, 2500 m, KOEIE 3279! Doab: Kamard, 1830 m, KOELZ 13590! – Afghanistan, GRIFF. Herb. Late East Ind. Comp. 3120!
Pakistan: Kurram: Kaiwas, 2135 m, LACE! Kurram, 1200–1800 m, AITCH. 306. – Quetta: Urak, Landra, 2135 m, LACE 3898! – Bal.: Maslakh, KHAN M/10!

Distr. gen.: Persia, Turcomania, Afghanistan, Pakistan, Kazakhstan.

9. *Psychrogeton*

auctore A. J. C. GRIERSON, Edinburgh

Psychrogeton BOISS., Fl. Or. 3: 156 (1875).
Syn.: *Erigeron* Sect. *Conyzastrum* BOISS., Fl. Or. 3: 163 (1875). *Erigeron* subsect. *Pseudoconyzastrum* RECH. f., Dan. Biol. Skr. 8: 17–25 (1955).

Lit.: A. J. C. GRIERSON, Notes from the Royal Botanic Garden Edinburgh 27: 101–147 (1967).

Perennes, saepe lignescentes ± caespitosae, basibus residuis foliorum emarcidorum tunicatis et cataphyllis provisae, rarius annuae vel biennes. Caules saepius 10–15 cm, rarius ad 90 cm alti, uni- vel saepius pleiocephali. Folia basalia lanceolata vel oblanceolata vel obovata vel rotundata, integra vel dentata vel subpinnatifida, suborbiculata, petiolata vel subpetiolata; folia caulina integra vel dentata. Involucrum 10–15 mm diametro; phylla 2–3-seriata, imbricata vel subeaqualia, exteriora herbacea, interiora scarioso-marginata. Flores feminei tubulosi vel ligulati, ± numerosi; ligulae albidae vel flavae, demum rubescentes vel purpurascentes, prominentes vel breves, pappum vix excedentes, raro quam styli eorum multo breviores. Flores disci hermaphroditi (sed plerumque functione masculi) pauci vel numerosi, tubulosi, 5-lobi, pappum aequantes. Achaenia plerumque dimorpha, ea florum femineorum obovata vel oblanceolata, ea florum hermaphroditorum linearia, vacua, raro eis florum femineorum similia; pappus simplex, vel imprimis in achaeniis, sterilibus setis nullis exterioribus, raro manifeste duplex.

1a. Flores feminei ligulati; corollae quam pappus ad minimum ultra 1,5 mm longiores 2
b. Corollae florum femineorum (ligulatae vel tubulosae) quam pappus breviores vel aequilongi vel paulo longiores 5
2a. Caules 15–20 cm alti, pleio- usque polycephali, capitulis laxe racemosis vel corymbosis. Folia caulina bene evoluta, subsetoso-pilosa et grosse dentata . . . . 17. *Ps. Pseuderigeron* (BUNGE) NOVOPOKR. ex NEVSKI
b. Caules vel pedunculi plerumque quam 15 cm humiliores (raro 30 cm attingentes), mono- vel oligocephali. Folia caulina parva 3
3a. Plantae non caespitosae, radicibus tenuibus, verisimiliter biennes. Caulis flaccidus, 20 cm altus. Folia ± orbiculata. Capitula 8 mm diametro . . . . 3. *Ps. rotundifolius* GRIERSON
b. Plantae lignoso-caespitosae, radicibus crassis, evidenter perennes 4
4a. Folia lanceolata, integra. Indumentum laxe pilosum, infra capitula subsetosum. Ligulae semper flavae . . . . 1. *Ps. cabulicus* BOISS.
b. Folia obovata vel oblanceolata, ± grosse dentata, raro integra. Indumentum imprimis ad capitulorum basin lanato-tomentosum, rarius plantae subglabrae. Ligulae albidae vel flavae . . . . 2. *Ps. andryaloides* (DC.) NOVOPOKR. ex KRASCH.
5a. Caulis 15–30(–90) cm altus, corymbose vel racemose pleio- vel polycephalus 6
b. Caules vel pedunculi quam 15 cm plerumque humiliores, mono- vel oligocephali 7
6a. Florum femineorum corollae $1/2$–$2/3$ styli longitudinis attingentes. Flores hermaphroditi disci 6–12 per capitulum . . . . 19. *Ps. nigromontanus* (BOISS. & BUHSE) GRIERSON
b. Florum femineorum corollae stylos ± aequantes. Flores hermaphroditi disci 10–35 per capitulum . . . . 18. *Ps. Aucheri* (DC.) GRIERSON
7a. Caudex crasse lignosus, plerumque ramosus et dense caespitosus 8
b. Caudex tenuis, nec (vel parce) ramosus nec caespitosus 15

8a. Indumentum cinerascenti- vel albido-tomentosum, glandulosum vel eglandulosum 9
b. Indumentum pilosum vel glandulosum nec autem tomentosum 10
9a. Indumentum appresse albo-tomentosum, eglandulosum. Pedunculi 1–3-cephali. Capitula ad 10 mm diametro .... 6. *Ps. candidissimus* (RECH. f. & EDELB.) GRIERSON
b. Indumentum cinerascens, non arcte appressum, glandulis nitentibus immixtis. Pedunculi monocephali. Capitula 10–15 mm diametro .... 4. *Ps. amorphoglossus* (BOISS.) NOVOPOKR.
10a. Plantae plerumque c. 10 cm alti. Indumentum omnino fere glandulosum 11
b. Plantae plerumque 5 cm (raro ad 20 cm) altae. Pili eglandulosi aut ubique inter glandulas aut margine vel subtus tantum sed semper obviae 12
11a. Florum femineorum corollae tubus superne longitudinaliter fissus, subligulatus. Folia caulina pauca, integra. Involucrum subimbricatum .... 7. *Ps. Alexeenkoi* KRASCH.
b. Florum femineorum corollae tubus tota longitudine tubulosus, nec fissus. Folia caulina numerosa, grosse dentata. Involucrum manifeste imbricatum .... 8. *Ps. lumbricoides* (GILLI) GRIERSON
12a. Caulis saepe 2–3-cephalus. Involucri phylla subaequilonga 13
b. Caulis monocephalus. Involucri phylla inaequilonga, imbricata, exteriora quam interiora manifeste breviora 14
13a. Indumentum densum, glanduliferum flavescens. Folia basalia grosse inciso-dentata. Rami capituliferi minute paucifoliati. Capitula 7–10 mm diametro. Involucri phylla 3–4 × 0,6–0,8 mm, anguste lineari-lanceolata. Flores hermaphroditi 3 mm longi .... 9. *Ps. shahrestanicus* RECH. f.
b. Indumentum laxiusculum parce glanduliferum, canescenti-virens. Folia basalia crenato-dentata vel subintegra. Rami capituliferi foliis pluribus 10–20 mm longis obsiti. Capitula 10–15 mm diametro. Involucri phylla 12–20(–40) × 0,8–1 mm. Flores hermaphroditi 4,5–5,5 mm longi .... 10. *Ps. obovatus* (BENTH.) GRIERSON
14a. Folia manifeste dentata. Folia caulina nulla vel singula, linearia, bracteiformia. Involucri phylla linearia, c. 0,5 mm lata. Florum hermaphroditorum corolla setosa .... 12. *Ps. drabiformis* GRIERSON
b. Folia crenata vel repando-dentata. Folia caulina plura. Involucri phylla oblonga, subacuta, c. 1 mm lata. Florum hermaphroditorum corolla glabra .... 11. *Ps. sphaeroxylon* (GILLI) GRIERSON
15a. Indumentum lanato-tomentosum glandulis paucis immixtis .... 5. *Ps. Olgae* (REGEL & SCHMALH.) NOVOPOKR.
b. Indumentum pilosum et glandulosum nec autem tomentosum 16
16a. Folia inferiora lineari- oblanceolata, integra .... 14. *Ps. Aellenii* (RECH. f.) GRIERSON
b. Folia inferiora oblanceolata, crenata vel dentata 17
17a. Stylus florum femineorum quam corolla duplo longior .... 16. *Ps. chitralicus* GRIERSON

b. Stylus florum femineorum quam corolla paulo longior 18
18a. Caules floriferi quam 5 cm elatiores, plerumque 2–3-cephali ....
.... 13. *Ps. persicus* (BOISS.) GRIERSON
b. Caules floriferi quam 5 cm humiliores, monocephali ....
.... 15. *Ps. chionophilus* (BOISS.) KRASCH.

1. ***Ps. cabulicus*** BOISS., Fl. Or. 3: 156 (1875).
Syn.: *Diplopappus turkestanicus* REGEL & SCHMALH., Acta Horti Petrop. 5: 615 (1978). *Erigeron Edelbergii* RECH. f. & KOEIE, Dan. Biol. Skr. 8: 18 (1955). *E. Koelzianus* RECH. f., l.c.: 18. *E. dolichostylus* BOTSCH., Fl. URSS. 25: 278, 588 (1959).
Icon.: RECH. f. & KOEIE, l.c.: fig. 9 et 15a sub *Erigeron Edelbergii.* – Tab. nostr.: 43; 75, fig. 1.
Typus: GRIFFITH 1052, G!, K!

Caudex lignosus, ramosus; caules ± erecti, 5–30 cm alti, plerumque semel vel bis ramosi rarius simplices. Indumentum molliter vel rigide pilosum, glandulis sessilibus immixtis vel nullis, capitula versus sensim rigidius et copiosius. Folia basalia 30–100 × 5–10 mm, petiolo 10–50 mm longo, basi attenuata, apice acuta, margine plerumque integra, rarissime utrinque dente unico provisa; folia superiora similia, decrescentia ± sessilia. Capitula 12–17,5 mm diametro, ad extremos ramos singula. Involucrum 3-seriatum, phylla 6–6,5 × 0,8–1 mm, subaequalia, lineari-lanceolata, acuminata. Flores feminei ligulati, 30(–100), flavi; tubus basalis 3–3,5 mm longus; ligulae 2–3 × 0,6–2 mm. Flores disci hermaphroditi 4–4,75 mm longi. Achaenia fertilia 3,2–3,6 × 0,6–1,2 mm, anguste obovata, tenuiter sericea; pappus duplex; setae exteriores c. 0,8 mm longae, setae interiores 25–35, scabrae, 4–4,5 mm longae.

Turcomania: M. Kopet Dagh prope Risarash, 2700 m, LITW. 1492!
Afghanistan: **SW**: Herat: Band-e Farsi 10 km SW Farsi, 3200 m, FREITAG 6848! – **E**: Kabul: In montibus supra Paghman, 3350 m, FREITAG 3582! In decl. australibus jugi Salang, substr. granit., 3200–3600 m, RECH. 37074-b!, EKBERG W-9553. Kuh-i Qhalandaran, 3700 m, HDG. & WDB. W-4495! Nuristan: Netshingel, 4000 m, EDELB. 2007! – **NE**: Wakhan: In valle Toliboy, 4085 m, PETOCZ 10 in BRECKLE A-3910. Kataghan: In decl. borealibus jugi Salang, 2900 m, FREITAG 3191! Khost-o Fereng, in valle Khawush, 3800 m, PODLECH 11753. Badakhsh.: Distr. Khumbuk SW Robat, 3000 m, HDG. & WDB. W-9404. Distr. Khash, 3050 m, KOELZ 12983 (typus *Erigeron Koelziani*)! Dad Ali, LINDB. 705/1959! – **C**: Bamian: Band-i Amir, 2920–3200 m, HAGER 12!, BRECKLE A-2429, RECH. 18266!, 18405! Inter Band-i Amir et jugum Shahtu, 3300 m, BRECKLE A-2493! 15 km E Band-i Amir, 3350 m, KUKKONEN 7268a!, -b! Band-i Haybat, 2920 m, DIETERLE 1145. Kuh-i Jidda Khawak, 3300 m, DIETERLE 380. 2 km S Band-i Amir, 2950 m, DIETERLE 651. 64 km W Bamian versus Band-i Amir, 3800 m, GREY-WILSON & HEWER 944! Kuh-i Baba, 3700–4080 m, BRECKLE A-2588!, WEILER in GILLI 3929! GILLI 3928! In decl. borealibus jugi Shahtu, 2800–3000 m, RECH. 36367! In jugo Hajjigak, 3470–3700 m, BRECKLE A-1125!, GRIFF. 1052! Panjao: Inter Panjao et jugum Shahtu, 2800–3000 m, RECH. 36278! Doab: In jugo Lorinj, 3050 m, KOELZ 13736! Deh Kundi: Sar-i Nil, 3000 m, EDELB. 1941 (typus *Erigeron Edelbergii*)!

Distr. gen.: Turcomania, Afghanistan, Tadjikistan, Kirgiz.

Ps. cabulicus ist to be recognised by its woody rootstock, entire (or almost entire) margined lanceolate leaves, simple or often branched peduncles, pilose or stiffly pubescent indumentum which becomes setulose at the base of the capitula and by its constantly yellow ligules. It differs conspicuously from *Ps. andryaloides*, which it most closely resembles, in habit, leaf shape, indumentum and often in flower colour.

2. ***Ps. andryaloides*** (DC.) NOVOPOKR. ex KRASCH., Acta Inst. Bot. Acad. Scienc. URSS. Ser. 1, 3: 343 (1937) in obs.
Syn.: *Conyza andryaloides* DC., Prodr. 5: 377 (1836).
Icon.: Tab. 75, fig. 2.

Suffruticoso-caespitosus, nanus. Indumentum sparse vel dense lanato-tomentosum, glandulis subsessilibus nitentibus, raro subnullum. Folia basalia 25–70 × 5–15 mm, lanceolata vel oblanceolata vel obovata vel elliptica, petiolo ± distincto 10–30 mm longo, basi attenuata, apice acuta vel obtusa, margine ± grosse dentata, interdum integra, nervis imprimis subtus prominentibus. Caules monocephali, rarius prope basin ramosi, 5–10(–20) cm alti, erecti, imprimis basin versus tomentosi, folia 1–3 linearia vel oblanceolata 5–10 mm longa ferentes. Capitula 10–15 mm diametro; involucrum 2–3-seriatum, imbricatum; phylla 5–8 × 1 mm, lanceolata, costa mediana viridi, marginibus pallidis; phylla exteriora parce vel ± dense tomentosa. Flores feminei 40–70(–100); tubus basalis 2–4 mm longus, albus vel flavescens, 2–5,5 × 0,7–1,2 mm. Flores disci hermaphroditi, 3,8–4,2 mm longi. Achaenia fertilis 2,8–3 × 0,8 mm, oblanceolata, tenuiter sericea; pappus achaeniorum fertilium simplex, albus, setis 20–50, 2,6–4 mm longis, scaber; pappus achaeniorum sterilium duplex.

1a. Plantae plerumque cinereae vel albido-tomentosae 2
b. Plantae plerumque glabrae et glandulosae.... var. *denudatus* (BOTSCH.) GRIERSON
2a. Ligulae albidae .... var. *andryaloides*
b. Ligulae flavae .... var. *Poncinsii* (FRANCH.) GRIERSON

– – var. ***andryaloides***
Syn.: *Erigeron andryaloides* (DC.) BENTH. ex CLARKE, Comp. Ind. 52 (1876). *E. stenodon* RECH. f. & EDELB., Dan. Biol. Skr. 8: 23 (1955).
Typus: „India prov. bor. occid.“, ROYLE, G, K!

P e r s i a : E: Khor.: Kuh-i Binalud: 20 km NE Neyshabur, 2300–2800 m, SOJÁK 8426.
A f g h a n i s t a n : E: Kabul: Kabul, HONIGBERGER! Paghman, 2743–3300 m, ANDERS 4081!, FREITAG 988-a!, 3596!, GILLI 3925!, HDG. & WDB. W-4409!, KOELZ 11117!, VOLK 337. In decl. australibus, 3200–3900 m, BRECKLE A-576!, A-2643!, A-1515!, FREITAG 3654!, RECH. 37074-a!, 37463!, LINDB. 1011/1960! In jugo Unai, 3700–3800 m, BRECKLE A-548!, A-2729! Panjshir: In valle Panjshir, 4100 m, HDG. & WDB. W-5446! Prope Shabun, ANDERS 9846 p.p.! Nijrao: Nijrao, 3300 m, VOLK 2354! Gardez: In jugo Altimur (Tera Kotal), 2800 m, HDG. & WDB. W-8874. Jaji: Safed Kuh, M. Sikaram, 3000–3300 m, AITCH. 496!, FREITAG 1779!, HDG. & WDB. W-8952. Kotkai, 3200 m, BRECKLE A-2064!, FREITAG 1779. In decl. australibus Safed Kuh, 3300–3500 m, RENZ!, ANDERS 3422! Nuristan: In valle Suyengal, 4200 m, BRECKLE A-3109!, A-3138-a! Darrah-i Pushol, 3600 m, PODLECH 16406. In valle Kantivo, 2500–3000 m, KERST. 964! In valle Wanasgul, 3660 m, THESIGER 1567!, 1582-A! Chetras, 3000 m, EDELB. 852 (typus *Erigerontis stenodontis*)! Kamdesh, 2500 m, GILLI 3926! – NE: Wakhan: In valle Issik, 4400 m, HUSS 413.

Inter Kotal-e Qara Qabchal et Zemestan-e Baharak, 3300–4550 m, ANDERS 7281-a. Inter Langar et Qabrestan-e Baza'i Gumbaz, 3650–3850 m, ANDERS 7410. In valle Warg, 3300–4200 m, GRATZL 6! In valle Kishnik, 4200 m, GRATZL 35!, 48! In valle prope lacum Chaqmaqtin, 4050 m, GREY-WILSON & HEWER 1556! Kataghan: In valle Farkhar, in valle Piu superiore, 3900 m, GROETZBACH 67.
Pakistan: Chitral: Ad glaciem aeternam Chatiboi, 4360 m, STAMM & WÖHRL 113! Chitral, 3350 m, HARRISS 16249! Birir, 2590 m, BOWES LYON 686! Ojhor, 3655 m, BOWES LYON 861! Reshun inter Chitral et Mastuj, 1829 m, STAINT. 2441! Istar, 3350 m, STAINT. 2490! Chitral Gol, 3045 m, STAINT. 2676 p.p.! Barum Gol SE Tirich Mir, 3500–3650 m, STAINT. 2676 p.p.!, WDB.! Arkari Gol W Tirich Mir, 3350 m, STAINT. 2636!

Distr. gen. varietatis: Persia orientalis, Afghanistan, Pakistan, Kashmir, India boreo-occidentalis.

– – var. ***Poncinsii*** (FRANCH.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 115 (1967).
Syn.: *Aster Poncinsii* FRANCH., Bull. Mus. Hist. Nat. Ser. 2, 7: 345 (1896). *Erigeron Poncinsii* (FRANCH.) BOTSCH., Bot. Journ. URSS. 42: 776 (1957). *E. minjanensis* RECH. f., Dan. Biol. Skr. 8: 20 (1955). *E. paghmanicus* RECH. f., l.c.: 32. *E. sanglichensis* RECH. f. & EDELB., l.c.: 20.
Icon.: Tab. 44.
Typus varietatis: Vallée du haut Oxus, PONCINS, P!

Afghanistan: **E**: Kabul: In jugo Salang, 2700–3000 m, RECH. 31581!, LAMOND 2205! Paghman, 3000–4000 m, NEUB. 883 (typus *Erigerontis paghmanici*)!, NEUB. 884! Nijrao: Bagrami, 2800 m, NEUB. 330! Panjshir: In decl. occidentalibus jugi Anjuman, 4100 m, HDG. & WDB. W-5450! Nuristan: In summo jugo Urura, 3900 m, NEUB. 593! Darrah-i Suyengal, 4350 m, PODLECH 16473. – **NE**: Munjan: Darrah-i Parshui, 3700 m, FREY 233! In jugo Munjan, 3655 m, KOELZ 12693 (typus *Erigerontis minjanensis*)! Weran, 3000 m, EDELB. 1469! Sanglich, 3000–3600 m, EDELB. 1491 (typus *Erigerontis sanglichensis*)! In decl. orientalibus jugi Anjuman, 4100 m, PODLECH 12337! Wakhan: NW Kol-e Chaqmaqtin, 4000–4100 m, ANDERS 7528! Inter Baharak et jugum Dalez, 3300–4250 m, ANDERS 7278! Darya-e Istmoch, 4000–4200 m, ANDERS 8096. Inter Sargaz et Kotal-e Istmoch, 2940–4550 m, ANDERS 8015. In valle Dowansu, 4100–4250 m, ANDERS 7690! In valle Khandud, 4000–4200 m, RENZ 37! Dario Wazit, 4500 m, BRECKLE A-1246! Kataghan: In valle Andarab superiore, 3100 m, PODLECH 11237. Khost-o Fereng, in valle Echani, 3400–3800 m, PODLECH 11814, 11860. In valle Kala, 3900 m, PODLECH 11758. NE Kotal-e Yawnu, 3300 m, PODLECH 11712. – **C**: Behzud: Behzud, 3000 m, HDG. & WDB. 5027!, 5213!
Pakistan: Chitral: Inter Chatiboi et glaciem aeternam Pechus, 4000–4200 m, STAMM & WÖHRL 416! Tirich Mir: Shokor Shal, 3500 m, WDB.!

Distr. gen. varietatis: Afghanistan, Pakistan, Asia centralis.

– – var. ***denudatus*** (BOTSCH.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 117 (1967).
Syn.: *Erigeron Poncinsii* (FRANCH.) BOTSCH. var. *denudatus* BOTSCH., Fl. URSS. 25: 276 (1959).
Icon.: Tab. 45.
Typus varietatis: Non indicatus.

Afghanistan: **E**: Kabul: In jugo Unai, 3120 m, BRECKLE A-2288! Paghman: Chap Darrah 9 km supra Paghman, 2550 m, PODLECH 18141. Panjshir: Gulbahar, VOLK 1006 p.p.! Skabun, 2300–3000 m, ANDERS 9846 p.p.! Darrah-i Chetok S M. Mir Samir, 4900 m, BRECKLE 781! Nuristan: Darrah-i Pushol, 3600 m, PODLECH 22100-a. In valle Suyengal superiore, 4700 m, RESHAD in BRECKLE A-3089! Inter vallem Suyengal et Shashgal, 5150 m, BRECKLE A-3011! – NE: Wakhan: In valle Khandud, 3900–4000 m, RENZ 4! In valle Sargaz, 4200 m, BRECKLE A-1461 p.p.! Ad glaciem aeternam Qazi Deh, 4300 m, AICHHORN in BRECKLE A-3848. In valle Qazi Deh, 2400 m, ROEMER 208! – C: Bamian: Darrah Bud Chur infra lacum Kaptalsang, 4600 m, BRECKLE A-2524!

Distr. gen. varietatis: Afghanistan, India boreo-occidentalis, Kashmir, Tadjikistan.

3. ***Ps. rotundifolius*** GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 118 (1967).
Icon.: GRIERSON, l.c.: tab. 4 (1967). – Tab. nostr.: 46; 75, fig. 3.
Typus: HEDGE & WENDELBO W-3742, E!, W!

Caudex tenuis, vix lignosus; planta flaccida, biennis (?). Indumentum sparse pilosum, pilis usque ad 1 mm longis et imprimis ad pedunculum glanduloso-papillosum. Caulis decumbens, 15–25 cm longus, foliaceus, superne ramosus, 1–2-cephalus. Folia basalia 30–35 mm longa et lata, suborbicularia, herbaceo-membranacea, basi truncata vel breviter attenuata, irregulariter crenato-dentata; petiolus (3–) 5–7 cm longus; folia caulina orbiculata vel obovata, 20–35 x 15–25 mm, sursum decrescentia, subpetiolata vel sessilia, apice apiculata, integra. Capitula 5–7,5 mm diametro; involucrum biseriatum; phylla subaequalia, 3–4 x 1–1,2 mm, oblanceolata, apice purpurascentia, costa mediana viridi, margine albida, membranacea. Flores feminei 12–15, ligulati; tubus basalis 1,8–2 mm longus; ligulae albae, 1,5–3 x 1,2–2 mm, obovatae, apice minute trilobae. Flores disci hermaphroditi albi, 4 mm longi. Achaenia fertilia (immatura) 2 x 0,4 mm, oblanceolata, sparse sericea; pappus simplex, setis c. 15, scabris, 2,8–3 mm longis.

Afghanistan: NW: Maimana: Darreh Zang prope Belchiragh, 1400 m, HDG. & WDB. W-3742!, LINDB. 431/1959!

Distr. gen.: Endem.

Ecologically this species is unusual in growing in the mouths of caves and under overhanging rocks, whereas other species of *Psychrogeton* occupy dry stony situations. This habitat preference is reflected in the lax nature of the specimens of *Ps. rotundifolius* and in the soft texture of the leaves. It does not appear to have any very close relatives in the genus.

4. ***Ps. amorphoglossus*** (BOISS.) NOVOPOKR., Not. Syst. Leningrad 7: 136 (1938).
Syn.: *Erigeron amorphoglossus* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 6: 80 (1845). *E. zerdanum* BOISS., l.c.: 82 (1846). *Heterochaeta leucophylla* BUNGE, Mém. Acad. Imp. Scienc. Petersbg. 7: 325 (1854). *Erigeron leucophyllus* (BUNGE) BOISS., Fl. Or. 3: 171 (1875). *E. chionophilus* BOISS. var. *araneoso-floccosus* RECH. f., Ann. Nat. Mus. Wien 55: 265 (1944). *E. bizgensis* RECH. f., Phyton 2: 129 (1950). *E. mollissimus* RECH. f. & KOEIE, Dan. Biol. Skr. 8, 2: 13 (1955). *E. shahvaricus* RECH. f., Phyton 2: 128 (1950). *E. Stapfianus* RECH. f., Phyton 2: 127 (1950).
Icon.: Tab. 47; 75, fig. 4.
Typus (syntypi): KOTSCHY 348, BM!, W; KOTSCHY 759, E!, BM, K, W; AUCHER-ELOY 3108, G, K!

Lignoso-caespitosus, humilis; indumentum cinerascens, aliquantum detersile, tomentosum, glandulis sessilibus nitentibus immixtis. Folia basalia 15–25 × 7,5–15 mm, petiolo 10–30 mm longo, ovata vel lanceolata vel oblanceolata, basi attenuata, margine integra vel utrinque 2–3-dentata, apice obtusa vel acuta. Caules erecti vel ascendentes, 3–10(–20) cm longi, plerumque monocephali, foliis 3–4 lineari-lanceolatis 5–10 mm longis obsiti. Capitula 10–15 mm diametro; involucrum 2–3-seriatum; phylla subaequalia vel imbricata, 7–10 × 0,6–0,8(–1,2) mm, lineari-lanceolata vel oblanceolata, apice plerumque purpurascentia. Flores feminei 30–40, pappum ± aequantes, 4,5–5 mm longi, dimidium superius floris fere liguliforme, ovatum, apice modo 2–3-lobum. Flores hermaphroditi 4–5 mm longi. Achaenia fertilia 3–5,5 × 0,6–1 mm, anguste oblanceolata, sparse sericea et glandulosa; pappus 4–5 mm longus, simplex vel duplex; setae grossae, barbellatae.

Iraq: Kurd.: Arbil: M. Qandil, RECH. 11165! Algurd Dagh, 3000–3800 m, RECH. 11448!, HALEY 164!

Persia: **N**: Maz.: In decl. borealibus Kuh-i Nizva, 3300 m, WDB. 1276! Mastechal, 3850–4174 m, KLEIN 2002! 2019! 2503! Ileka, 3500–4000 m, TERME 15102-E! – **W**: Ham.: M. Alvand, 2100–3300 m, TERME & MOUSSAVI 16403! STR.! Esf.: In montibus prope Damaneh, STR.!, RENZ in RECH. 47647! Chehel Dokhtaran Kuh, 2800 m, WDB. 1749! Qashqai: Kuh-e Surmandeh (Kuh-e Alijuq) N Semirom, 2700–3900 m, RECH. 47563! Bakht.: Zard Kuh, AUCH. 3108! Lur.: Oshtoran Kuh, IRANSHAHR 13460-E! Gahar, 2745 m, KOELZ 17925! Kuh-i Nur, 3660–3690 m, HAUSSKN.! – **S**: Fars.: Kuh-e Dinar ad fontem Chashmeh Pias, KY. 759 (typus *Conyzae amorphoglossae*)! Kuh-e Dinar, 3400–4000 m, SOJÁK 6317!, 6340! RIAZI 10258, REMAUDIÈRE 5253-E! Kuh-e Bul, STAPF 1291 (typus *Erigerontis Stapfiani*)! Kerm.: Kuh-e Laleh Zar, 3000–4200 m, BORNM. 5060!, MOUSSAVI & TEHRANI 33825-E! Kuh-e Jupar, 3000–3600 m, BORNM. 5058! In montibus 20 km SW Rayen, 3700 m, EDMONDSON & MILLER 1581. – **E**: Khor.: Kuh-e Bezg, 2300 m, RECH. 1471 (typus *Erigerontis chionophili* var. *araneoso-floccosi* et *E. bizgensis*)! – **C**: Tehr.: M. Damavand, KY. 348! M. Tuchal, 2000–4000 m, TERME 13160-E!, SOJÁK 7062!, 7086!, 8428, 8429, 8433, WDB. & COBHAM 12301. 55 km NE Tehran, 3200 m, CRONQUIST 10705! In saxosis calc. jugi Dizin inter Shemshak et confl. fl. Karaj, 3100–3250 m, RECH. 57225. Qazv.: Asadbar versus Gardaneh Bary, 2700–2900 m, BORNM. 7488! In decl. australibus jugi Kandavan, SOJÁK 8427! In valle fl. Karaj prope Germab, 3200 m, GAUBA 1296! Shahr.-Bust.: In decl. australibus M. Shahvar, 3500–3900 m, RECH. 6010-b (typus *Erigerontis shahvarici*)! Shahmirzad versus Chashm, IRANSHAHR & ZARGANI 15122-E!

Afghanistan: **E**: Kabul: In jugo Unai, 2800–3800 m, BRECKLE 2729-a, GREY-WILSON & HEWER 1109!, RECH. 18570!, 36021! Gardez: Nozi, 3050 m, KOELZ 11999! Safed Kuh, in jugo Altimur, 3200 m, LAMOND 2342!, RECH. 31841! Ghazni: In faucibus Say Khoshkak inter Okak et Behzud, 3150 m, RECH. 17845! M. Saperlebuli SE Dasht-i Nawar, 3200–4200 m, W. RECH. 37350-a!, FREITAG 1486. Jaji: In jugo Sirkei inter Dre Kalla et Shinkai, 3000 m, LAMOND 2512! Inter Dre Kalla et Qasim Khel, RECH. 32288! Nuristan: In valle Suyengal, 4500 m, BRECKLE A-2983! – **NE**: Wakhan: In valle Qazi Deh, 3400 m, WOJTUSIAK! – **C**: Bamian: Band-i Amir, 2850 m, RECH. 18276! Kuh-e Jak Ruya, 3500–3550 m, DIETERLE 968, 1251. Kuh-e Jidda Kawak, 3300 m, DIETERLE 952. Kuh-i Baba, 3700 m, GILLI 3924! Darrah Bod Chur SW Bamian, 4500 m, BRECKLE 2612! Panjao: 37 km SW Panjao versus jugum Waras, 2600 m, RECH. 36567! In jugo Shibar, 3000 m, HDG. & WDB. W-4217!, 4776! Doab: In jugo Lorinj, 3655 m, KOELZ 13796! Behzud: Farakulum, 2700–3000 m, KOEIE 2528 (typus *Erigerontis mollissimi*)!

Distr. gen.: Anatolia, Iraq, Persia, Turcomania, Afghanistan, Tadjikistan, Uzbekistan, Kazakhstan.

A very variable species which most closely approaches *Ps. andryaloides*. It may be separated from the latter by its entire or slightly denticulate leaves and by its ligules which are never distinctly longer than the pappus.

5. ***Ps. Olgae*** (REGEL & SCHMALH.) NOVOPOKR. ex NEVSKI, Acta Inst. Bot. Acad. Scienc. URSS. Ser. 1, 4: 278 (1937).
Syn.: *Erigeron Olgae* REGEL & SCHMALH., Descr. Pl. Nov. Fedtsch. 44 (1882). *E. Wendelboi* RECH. f., Nytt Mag. Bot. 3: 230 (1954).
Icon.: Tab. 48; 76, fig. 2.
Typus: Kirgiz, in Kokaniae montibus, in trajectu Dschiptik, ad glaces Schtachurowski, ad lacum Iskander, Kitschi Alai, 2135–3655 m, O. FEDTSCHENKO, LE!

Caudex tenuiter lignosus, simplex vel ramosus; planta nana, indumento parce lanato-tomentoso glandulis intermixtis. Folia basalia 10–20 × 5–10 mm, oblanceolata vel spathulata, basi in petiolum ad 2,5 mm longum attenuata, margine integra vel parce crenato-dentata et subcrispata, apice acuta vel subacuta. Caules plures, purpurascentes, monocephali, ad 10 cm alti, folia 1–5 parva ± sessilia proferentes. Capitula c. 15 mm diametro; phylla 7–8 × 0,5–1,5 mm, 3-seriata, subaequalia, lineari-lanceolata, dense albo-tomentosa et glandulosa; exteriora viridia, apice acuminata, purpurea. Flores feminei 30–40, pappi setas ± aequantes, c. 5,6 mm longi, in tertia parte superiore ligulati, integra vel apice minute 2–3-loba. Flores hermaphroditi c. 5 mm longi. Achaenia fertilia 3–4 × 0,8 mm, anguste oblanceolata, marginibus parce breviter pilosa; pappus simplex; setae 50–70, tenues, capillaceae, c. 6,5 mm longae.

Afghanistan: E: Panjshir: W Mir Samir, 4700 m, JACQUEMOUD 1462. Nuristan: Darrah-i Suyengal, 4900 m, PODLECH 16490, RASOUL 217 in BRECKLE A-3617, BRECKLE A-2996-b!, A-3087!, A-3114! – NE: Wakhan: In valle Issik, 4760 m, HUSS 477! In valle Badjens, ROEMER 384! Kataghan: In valle Piu in valle Farkhar, 4450–5000 m, PODLECH 12652, GRÖTZBACH 61. Pakistan: Chitral: Tirich Mir, Barum Gol, Jamishi Ghochar, 4000 m, WDB. (typus *Erigerontis Wendelboi*)! Barum Gol, 4500 m, WDB.! Marmano Shal, 3700 m, WDB.! Chitral, BOWES LYON 38-A!

Distr. gen.: Afghanistan, Pakistan, Tadjikistan, Kirgiz.

The slender habit of this plant, the white tomentum, the capitula that resemble (apart from the lack of exserted ligules) those of *Erigeron uniflorus*, the proportions of the female flowers, the capillaceous pappus and almost glabrous achenes combine to make this a readily distinguishable species.

6. ***Ps. candidissimus*** (RECH. f. & EDELB.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 125 (1967).
Syn.: *Erigeron candidissimus* RECH. f. & EDELB., Dan. Biol. Skr. 8: 13 (1955).
Icon.: Tab. 49; 76, fig. 5
Typus: EDELBERG 1295, C, W!

Lignoso-caespitosus, humilis. Indumentum appresse albo-tomentosum, eglandulosum. Folia basalia 5–20 × 5–10 mm, oblanceolata vel ovata vel elliptica, basi in petiolum 5–15 mm longum attenuata, margine integra vel utrinque 2–3-dentata, apice acuta vel obtusa; nervi laterales prominentes. Caules 2–6(–12) cm longi, ascendentes, monocephali vel 2–3-cephali, folia nonnulla oblanceolata, 5–7 × 1–2 mm attingentia proferentes. Capitula c. 10 mm diametro; phylla 3–4-seriata, imbricata, 2 × 0,6 mm, lineari-lanceolata, exteriora late acuta, interiora 5 × 1 mm, ± acuminata, straminea, sparse tomentosa. Flores 50 tubulosi vel vix ligulati, c. 3,6 mm longi, apice minute

3-lobi. Flores hermaphroditi c. 4 mm longi. Achaenia fertilia 3 × 0,6 mm, lineari-oblanceolata, tenuiter sericea; pappus simplex vel setis exterioribus nonnullis, setae interiores c. 25, capillaceae, saepe apice barbellatae, 3,6–4 mm longae.

Afghanistan: **E**: Laghman: Alishang supra Bangali, 1800 m, WDB. & EKB. W-9608 Infra Daulat Shah, 1650 m, GREY-WILSON & HEWER 1056! Nijrao: Bagrami, NEUB. 310! Nuristan: Pashki, EDELB. 640! Kategel, 1600–2400 m, KERST. 1220! Inter Kulatan et Gultscheilam, 1500 m, KERST. 1270! Gusalak, NEUB. 824!, 808! Kushtos, 2000 m, NEUB. 3366! In valle Bashgal, 2100–2300 m, ANDERS 4993!, BRECKLE A-669!, 2839!, PODLECH 16182. Darrah-i Pengar, 3300 m, PODLECH 16373. – **C**: Deh Kundi: Deh Kundi, 2900 m, EDELB. 1295!

Distr. gen.: Endem.

Ps. candidissimus may almost always be distinguished by its tomentum alone, which is white, eglandular and closely appressed. The leaves are small and the lateral veins faintly prominent. The peduncles are simple or branched in a distinctive fashion and the capitula are usually much smaller than those of *Ps. amorphoglossus.*

7. ***Ps. Alexeenkoi*** KRASCH., Acta Bot. Inst. Acad. Scienc. URSS. Ser. 1, 3: 343 (1937).
Syn.: *Erigeron karatavicus* PAVLOV, Vestn. Akad. Nauk Kazakhstan SSR. 52: 49 (1949). *E. kermanensis* RECH. f., Phyton 2: 133 (1950). *E. polyadenus* RECH. f. & KOEIE, Dan. Biol. Skr. 8: 15 (1955). *E. Alexeenkoi* (KRASCH.) BOTSCH., Fl. URSS. 25: 271 (1959).
Icon.: Tab. 50; 75, fig. 9.
Typus: Wakhan URSS: In valle fl. Pamir pr. castellum Langargischt, 3150 m, ALEXEENKO 3287, LE!

Perennis, caespitosus, erectus; caudex lignosus, incrassatus, foliorum residuis comosus. Indumentum dense glandulosum, e glandulis subsessilibus pilis nonnullis longioribus intermixtis consistens. Folia basalia 15–30 × 5–15 mm, obovata vel spathulata vel elliptica, basi in petiolum ad 25 mm longum attenuata, margine integra vel parce crenato-dentata, apice obtusa vel acuta. Caules monocephali, raro basi ramosi, foliis paucis vel folio singulo parvo oblanceolato. Capitula 10–15 mm diametro, late obconica; phylla 3–4-seriata, 5–8 × 0,4–1 mm, imbricata, straminea, costa mediana viridi, interdum purpureo-suffusa, margine anguste hyalina. Flores feminei 30–40, pappum ± aequantes, 4–5,25 mm longi, in parte inferiore 2–3 mm longo tubulosi, superne liguliformes; ligula 0,2–0,3 mm lata, apice rotundata vel acuta vel 2–3-loba. Flores hermaphroditi, 4–5,2 mm longi. Achaenia fertilia 3,8–4,2 × 0,8–1 mm, oblanceolata, sparse sericea et glandulosa; pappus simplex, 3,8–5,2 mm longus, setis 30–40, minute scabridis.

Persia: **S**: Fars.: Kuh-e Dinar supra Sisakht, 3400–4000 m, SOJÁK 6330! Kuh-e Dinar, Gardaneh Sichani, BEHB. 1239-E! Kerman: Kuh-e Hazaran (Hesar), FAMOURI 2583-E!; 4000–4400 m, BORNM. 5055. Kuh-e Faramarz prope Khormuj, 2800–3400 m, MOUSSAVI & TEHRANI 35000.

Afghanistan: **E**: Panjshir: Darreh Rastagal, 3200 m, HDG. & WDB. W-5230! Ghazni: Inter Okak ad altoplanitiem Dasht-i Nawar et Ghazni, 3400 m RECH. 37409-a!, -b! M. Saperlebuli ad marginem austro-orient. Dasht-i Nawar, 3200–4200 m, W. RECH. 37350-b! In montibus ad Dasht-i Nawar, 3100 m, FREITAG 5887! Nuristan: In valle Shashgal inferiore, 3400 m PODLECH 16352. – **NE**: Munjan: In valle Anjuman superiore, 3300 m, PODLECH 12407! In valle Rakhui, 3700 m, PODLECH 12654! Wakhan: Darrah-i Sargaz N Sargaz, 4200 m, BRECKLE 1461 p.p. In glareosis granit. vallis Khandud, 4450 m, DRASLAR. – **C**: Bamian: Band-i Amir ad lacum Band-i Panir,

2800 m, RECH. 18403! Kuh-i Baba, KOEIE 2643 (typus *Erigerontis polyadeni*)!; 4265–4570 m, GRIFF. 911!
Pakistan: Chitral: Laspur, 3960 m, BOWES LYON 38!, 95!

Distr. gen.: Persia, Afghanistan, Pakistan occidentalis, Uzbekistan.

A distinct, highly glandular species closely related to *Ps. lumbricoides*. The latter is more leafy, has more noticeably imbricate phyllaries and eligulate female flower corollas.

8. ***Ps. lumbricoides*** (GILLI) GRIERSON, Notes. Roy. Bot. Gard. Edinb. 27: 127 (1967).
Syn.: *Erigeron lumbricoides* GILLI, Feddes Repert. 68: 69 (1963).
Icon.: Tab. 51; 76, fig. 1.
Typus: GILLI 3923, W!

Suffruticoso-caespitosus, humilis, erectus vel ascendens, collo annulato. Indumentum densum, glandulosum, e pilis subsessilibus glanduliferis tantum compositum, pilis eglandulosis nullis. Folia basalia 10–20 x 6–13 mm, obovata vel oblanceolata vel spathulata, basi cuneata, in petiolum 10–20 mm longum attenuata, margine grosse dentata, apice acuta vel obtusa, nervis subtus prominentibus. Caules ad 10 cm longi, simplices vel basi ramosi; rami monocephali, folia 6 vel plura linearia vel oblanceolata ad 2 cm longa, utrinque grosse 1–2-dentata proferentes. Capitula 7,5–14 mm diametro; phylla 3–4-seriata, imbricata, 3,5–6 x 0,6–1 mm, exteriora viridia, interiora straminea, membranacea, costa mediana viridi, margine ciliata vel fimbriata. Flores feminei c. 50, tubulares, 3–3,5 mm longi, eligulati, apice 3–4-lobi. Flores hermaphroditi 4,6–4,8 mm longi. Achaenia fertilia 2,6–2,8 x 0,6 mm, oblanceolata, dense sericea; pappus 4 mm longus, simplex; setae c. 20, barbellatae.

Afghanistan: E: Kabul: Charikar, 1900–2200 m, RECH. 31302! In valle Maidan 2400 m, RECH. 36006! Paghman: In valle Paghman, 2300–4050 m, CHAW.-MUST.!, FREITAG 988, GILLI 3923!, HDG. & WDB. W-4353!, W-5080, RECH. 17161!, VOLK 2176 p.p.! Panjshir: Gulbahar, NEUB. 917! Darreh Rastagal, 3200 m, HDG. & WDB. W-5230-b! In valle Panjshir, NEUB. 3089!, BRECKLE A-1810! Nijrao: Bagrami, NEUB. 308!

Distr. gen.: Endem.

9. ***Ps. shahrestanicus*** RECH. f., spec. nov.
Icon.: Tab. 52.
Typus: RECHINGER f. 36736, W!

Humilis, suffruticoso-caespitosus, basi crasse lignosus; collum residuis petiolorum parce comosum. Indumentum e pilis longioribus crispulis eglandulosis et e pilis brevioribus glanduliferis et e papillis brevissimis glanduliferis numerosis compositum; planta omnino sordide flavescenti-virens. Folia basalia rosulata, forma magnitudineque variabilia, obovato-spathulata vel oblongo-lanceolata, in petiolum quam lamina breviorem sensim attenuata, antice rotundata vel rotundato-truncata et grosse inciso-dentata vel -serrata vel rotundato-attenuata et ± indistincte dentata vel subintegra; lamina 12–30(–40) x 8–15 mm; folia caulina inferiora basalibus similia sed multo minora, longiuscule petiolata; superiora basi attenuata sessilia, valde decrescentia, oblongo-obovata vel oblongo-lanceolata, obtusiuscula. Caules floriferi tenues, 4–11 cm longi, plurifoliati, simplices vel saepe superne tenuiter pauciramosi, 1–3-

cephali; rami 10–25 cm longi, minute paucifoliati. Capitula in statu compresso 7–10 mm diametro; involucri phylla ± 30, 2(–3)-seriata, subaequilonga, anguste lineari-lanceolata, viridia, 3–4 × 0,6–0,8 mm, herbacea, viridia, anguste membranaceo-marginata. Flores feminei c. 50, quam pappus paulo longiores, breviter anguste ligulati; ligulae albidae, pallide rosaceae, ± revolutae. Flores hermaphroditi 3 mm longi. Achaenia fertilia (submatura) 2 mm longa, oblanceolata, parce antrorse setulosa. Pappus 3 mm longus, simplex, 12–15-radiatus.

Afghanistan: C: Deh Kundi: In fissuris rupium granit. 30 km NE Shahrestan, 33° 10′ N, 66° 35′ E, 2200 m, 1. VII. 1967, RECH. 36736! In fissuris rupium granit. in declivibus australibus jugi Waras, 2900 m, 34° 07′ N, 66° 48′ E, RECH. 36689!

Distr. gen.: Endem.

This species has been acknowledged as new by GRIERSON. *Ps. shahrestanicus* is related to *Ps. primuloides* M. POP. (Pamir-Alaj) and can be distinguished from it by the broader capitula, 1–3 heads per stem and shorter flowers and achenes.

10. ***Ps. obovatus*** (BENTH.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 130 (1967).
Syn.: *Brachyactis obovata* BENTH., Hook. Icon. Pl. 12: 7 (1872). *Erigeron obovatus* (BENTH.) BOISS., Fl. Or. 3: 167 (1875). *E. latisquamus* BOISS., Fl. Or. 3: 167 (1875).
Icon.: Tab. 53; 75, fig. 5.
Typus: KOTSCHY 546-a, K!, W.

Suffruticoso-caespitosus, humilis, erectus vel ascendens. Indumentum densiuscule pilosum, glandulis subsessilibus intermixtum. Folia basalia 15–35 × 10–25 mm, spathulata vel obovata vel suborbicularia, basi in petiolum latum 15–30 mm longum attenuata, margine crenato-dentata, interdum subintegra, apice obtusa vel acuta. Caules plures, 10–20 cm alti, capitula 1–3 et folia c. 6, c. 10–20 mm longa ferentes. Capitula 10–15 mm diametro, late obconica; involucri phylla 1–2(–3)-seriata, subaequalia; exteriora 8–10(–14) × 1,2–2(–4,5) mm lata, lanceolata vel oblanceolata, viridia; interiora 0,6–0,8 mm lata, lineari-lanceolata, straminea, costa mediana viridi. Flores feminei 10–20, tubulosi, 3,6–4,8 mm longi, 4–5-lobi vel breviter ligulati, lobis 2–3 quam ceteris longioribus. Flores hermaphroditi 4,5–5,5 mm longi. Achaenia florum femineorum et hermaphroditorum aequalia, 3,2–4,4 × c. 0,8 mm, elliptico-oblanceolata, sericea et glandulosa; pappus duplex, setis exterioribus c. 0,6 mm longis, interioribus c. 25, crassis, 4,5–5,5 mm longis, scabris.

Iraq: Kurd.: „Kurdistania Assyriaca", KY. 546-a!
Persia: W: Esf.: Kuh-e Sofeh, 2000 m, WDB. 908! Khunsar, 2800 m, IRANSHAHR 13444-E! Arak: M. Rasvand, STR.! Bakht.: Galli Sur Galichir, 2135 m, KOELZ 18075! Lur.: Ilam, 1700–1900 m, JACOBS 6832! – S: Fars.: Kuh-e Dinar, 2250 m, RIAZI 6761, KY. 960! Emamzadeh Pushan, 1650 m, WDB. & FOROUGHI 17795. Kuh-e Kakun, BEHB. 1220-E! Supra Pa Na'l Jangal (Mian Jangal), SOJÁK 5357!, 5401!, 5429!, 5438!, 5443! Kerm.: Kuh-e Jupar, 2100–2600 m, BORNM. 5061!, FOROUGHI & ASSADI 16187. Kuh-e Sarzeh, 2500 m, EDMONDSON & al. 2105. – E: Khor.: Kuh-e Shah Jahan 20 km SE Esfarayen, SOJÁK 8457. – C: Tehr.: In fauce ad pagum Darband prope Tehran, KY. 407! Kavir Prot. Region: Shah Kuh, in ditione Karavan Sarai Shah Abbas, 1100–1300 m, RECH. 46147! Yazd: Shirkuh prope Deh Bala, 2700 m, FOROUGHI & ASSADI 17916.

Afghanistan: **E**: Paghman: In valle Paghman, 2530 m, GILLI 3908! Gardez: M. Safed Kuh, in jugo Altimur, 2600–2700 m, RECH. 31910!, 32023! 6 km E Shashqala S viae versus Altimur, 2150 m, PODLECH 31417!

Distr. gen.: Endem.

Ps. obovatus is best to be recognized by its leaf shape, by the foliferous peduncles and by the achenes which are all apparently fertile. Taxonomically, it is one of the most isolated species of the genus.

11. ***Ps. sphaeroxylus*** (GILLI) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 131 (1967).
Syn.: *Erigeron sphaeroxylus* GILLI, Feddes Repert. 68: 88 (1963).
Icon.: Tab. 54; 76, fig. 7.
Typus: GILLI 3919, 3920, W!

Caudex crasse lignosus, superne ramosus, rosulas foliorum numerosos proferens, humilis, erectus vel ascendens. Indumentum ± dense pilosum vel villosum, glandulis subsessilibus intermixtum. Folia basalia 3–10(–25) × 2–5(–7,5) mm, rosulata, obovata vel spathulata, basi cuneata et interdum in petiolum ± distinctum attenuata, integra vel apice ± obtuso, interdum 3–5-crenata. Caules 2–3(–8) cm alti, monocephali, folia usque ad 6 oblonga vel oblanceolata ad 15 mm longa ferens. Capitula c. 10 mm diametro, late obconica; involucri phylla c. 2-seriata, 4–7 × 0,8–1 mm, imbricata, lineari-oblonga, apice obtusa vel subacuta, anguste scarioso-marginata. Flores feminei 20–30; corollae tubulares 3,2–3,6 mm longae; limbus 4-lobus, lobis 0,6–0,8 mm longis. Flores hermaphroditi 4–4,2 mm longi, lobis glabris. Achaenia fertilia 2,8 × 0,6 mm, elliptica vel oblanceolata, sparse sericea vel glandulosa; pappus duplex; setae exteriores paucae, c. 0,4 mm longae, interiores 15–20, c. 3–4 mm longae, inferne minute scabridae, superne incrassatae et barbellatae.

Afghanistan: **NW**: Maimana: Darrah Belchiragh, 1200 m, HDG. & WDB. W-3768! – **E**: Kabul: Chakewardak, 2300 m, GILLI 3921! Gardez: In jugo Altimur, 2800–3000 m, LAMOND 2342-A! – **C**: Bamian: Band-i Amir, 3700 m, BRECKLE 871. Kuh-e Jak Ruya, 3500 m, DIETERLE 1250. Kuh-i Baba, 3000 m, RECH. 18493! NE Bamian, 3040–3140 m, GILLI 3919!, 3920! In faucibus Paimuri, 2700 m, HDG. & WDB. W-4683! Doab: 96 km W Doshi versus Doab, 1450 m, GREY-WILSON & HEWER 902! Ghorband: In jugo Shibar, 2800 m, GREY-WILSON & HEWER 1696!

Distr. gen.: Endem.

This species is allied to *Ps. chionophilus* and *Ps. drabiformis* but is distinguished by its obovate-spathulate leaves which are rounded or toothed at the apex, its indumentum, the imbricate involucre of obtuse or subacute phyllaries, the glabrous lobes of the hermaphrodite flower corollas and the barbellate tips of the pappus setae.

12. ***Ps. drabiformis*** GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 133 (1967).
Icon.: Tab. 55; 76, fig. 8.
Typus: HEDGE & WENDELBO W-4208, E!

Dense suffruticoso-caespitosus, crasse lignosus, nanus, collo foliorum residuis dense tunicato. Indumentum ± dense pilosum et glandulosum, glandulis in facie superiore foliorum tantum evolutis. Folia basalia 6–12 × 4,7 mm, rosulata, spathulata, bellidiformia, basi attenuata vel subpetiolata, apice cuneata, 3–5-crenato-dentata. Caules monocephali, ad 25 mm alti, nudi vel folio unico bracteiformi 3–4 mm longo provisi. Capitula 7,5 mm diametro; involucri phylla 30–35, imbricata, 5–6 × 0,4–0,6 mm, 2–3-seriata, anguste lineari-lanceolata, acuminata, viridia, albido-marginata. Flores feminei c. 60, pappum aequantes vel eo paulo breviores, 2–2,5 mm longi, parte inferiore 1,4–1,6 mm longa tubulosa, limbo 4–5-lobo. Flores hermaphroditi 3 mm longi, lobis extus apice setulas nonnullas rigidas ferentibus. Achaenia fertilia 2 × 0,4 mm, anguste oblanceolata, sparse sericea; pappus simplex; setae 12–15, 2,4 mm longae.

Afghanistan: C: Bamian: In declivibus occidentalibus jugi Shibar, 3000 m, HDG. & WDB. W-4208! Inter Bulola et jugum Shibar, 2600–2800 m, RECH. 16803!

Distr. gen.: Endem.

Although closely related to *P. sphaeroxylus*, this species is always smaller in all its parts and more tightly caespitose. Its leaves are always toothed, its phyllaries narrower and acuminate and the hermaphrodite flower corolla lobes are bristled on the outside.

13. ***Ps. persicus*** (BOISS.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 134 (1967).
Syn.: *Erigeron persicus* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 6: 81 (1945).
Icon.: Tab. 56; 75, fig. 8.
Typus: KOTSCHY 498, BM, E!, K!, W.

Ascendens vel procumbens, perennis; caudex sublignosus, simplex vel superne ramosus; indumentum e pilis 0,6–1 mm longis simplicibus et glandulis sessilibus immixtis consistens. Folia basalia 15–35 × 7,5–12,5 mm, oblanceolata vel spathulata, basi dense pilosa, in petiolum ad 25 mm longum attenuata, margine integra vel dentibus nonnullis parvis provisa, apice acuta. Caules plures 7–22 cm longi, capitula ad 4 et folia numerosa 7,5–30 mm longa, oblanceolata ferentes. Capitula 10–13 mm diametro; involucri phylla 2–3-seriata, subaequalia, 5–7 × 0,6–1 mm, linearia, acuminata, exteriora omnino viridia vel apice purpurascentia, interiora straminea. Flores feminei 50–60; corollae tubulares 3,2–3,4 mm longae, pappum aequantes, apice 3–4-lobae. Flores hermaphroditi 4,2–4,8 mm longi. Achaenia fertilia 2,4–2,8 mm longa, elliptica vel oblanceolata, tenuiter sericea et glandulosa; pappus simplex; setae 30–40, capillares vel minute scabrae, 3,4–4,2 mm longae.

Iraq: Kurd.: Sul.: Pira Magrun, 3655 m, HAUSSKN. 522-b!
Persia: W: Kurd.: M. Shahu, HAUSSKN.! Ham.: Kuh-e Garri prope Nahavand, STR.! Bakht.: Ad nives Kuh-e Kukular (Kellal), HAUSSKN.! Lur.: Dow Rud, 2440 m, KOELZ 18364! – S: Fars.: Kuh Delu, KY. 498! Kerm.: Kuh-e Laleh Zar, 3800 m, STARM. 148!, 1262-E! – E: Khor.: Kuh-e Hazar Masjed prope Radkan, 2500–2700 m, TERME 36687 – Kala Kuh, 3200 m, SAWYER!

Distr. gen.: Endem.

This species may be distinguished by its indumentum and peduncles which bear several oblanceolate leaves. Dwarf specimens of *Ps. Aucheri* may be mistaken for *Ps. persicus* but they are generally coarser in habit, with corymbose inflorescenses and shorter indumentum. Confusion is also possible with *Brachyactis Roylei* (DC.) WENDELBO but this species may be recognised by the broader, more foliaceous phyllaries and because the achenes of female and hermaphrodite flowers are similar.

14. ***Ps. Aellenii*** (RECH. f.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 135 (1967).
Syn.: *Erigeron Aellenii* RECH. f., Phyton 2: 132 (1950).

Icon.: Tab. 57; 75, fig. 7.
Typus: RECHINGER f. & AELLEN 5133, G.!, W!

Humilis erectus vel ascendens; caudex tenuis sublignosus collo residuis foliorum incrassato. Indumentum pilis c. 0,5 mm longis tenuibus subvillosum, papillis minutis glanduliferis immixtis. Folia basalia 10–40 × 3–5 mm, ablanceolata vel spathulata, basi in petiolum 10–20 mm longum attenuata, margine integra, apice acuta vel subacuta. Caules simplices monocephali vel ramosi ad 4-cephali, folia nonnula 6–14 mm longa lanceolata vel oblanceolata ferentes. Capitula 10–14 mm diametro; involucri phylla c. 30, subaequalia, 5–6 × 0,8–12 mm, 2–3-seriata lineari-lanceolata, acuminata, viridia, apice purpurascentia. Flores feminei 30–35 tubulosi, 3,6–4 mm longi, apice trilobi. Flores hermaphroditi 3,6–4 mm longi. Achaenia fertilia (immatura) 2–2,5 mm longa, anguste oblanceolata, tenuiter sericea; pappus simplex, 3,5–4 mm longus; setae c. 35, capillaceae vel subscabrae.

P e r s i a : **E**: Khor.: M. Hazar Masjed, 2800 m, RECH. & AELL. 5133! – **C**: Shahr.-Bust.: M. Shahvar, 3500–3900 m, RECH. 6010-a!

Distr. gen.: Endem.

P. Aellenii is easily separated from the related *Ps. chionophilus* by its strictly entire leaves and by its capitula in which the phyllaries are more numerous.

15. ***Ps. chionophilus*** (BOISS.) KRASCH., Acta Inst. Bot. Acad. Scienc. URSS. Ser. 1, 3: 343 (1937).
Syn.: *Erigeron chionophilus* BOISS., Fl. Or. 3: 168 (1875). *E. nivalis* BOISS., Diagn. Pl. Or. Nov. Ser. 1, 6: 82 (1845) non NUTT.
Icon.: Tab. 58; 75, fig. 6.
Typus: KOTSCHY 800-a, BM!, G!, K, W.

Herbae tenues perennes ± erectae vel decumbentes. Caudex tenuis, irramosus, sublignosus, collo foliorum residuis comoso. Indumentum sparse villosum et glandulosum. Folia basalia 10–20 × 3–7 mm, oblanceolata vel spathulata, basi attenuata indistincte petiolata, margine utrinque prope apicem 2–3-crenato-dentata, apice obtusa. Caules monocephali, 30–45 mm longi; folia 5–7 × c. 1,5 mm, caulina 3–4, linearia vel lanceolata. Capitulum 10–12 mm diametro; involucri phylla 20–25, subaequalia, 1–2-seriata, c. 7 × 1 mm, lineari-lanceolata, acuta, viridia, apice purpurascentia. Flores feminei c. 20, tubulosi vel apice breviter ligulati, 2,6–3 mm longi. Flores hermaphroditi, 3–3,6 mm longi. Achaenia florum femineorum et hermaphroditorum plerumque similia, (immatura) 2,5 × 0,6 mm, oblanceolata, tenuiter sericea; pappus simplex, 2,4 mm longus; setae c. 30, scabrae.

P e r s i a : **S**: Fars.: Kuh-e Dinar, KY. 800-a!, 945!; 3600 m, REMAUDIÈRE 5254-E!

Distr. gen.: Endem.

This species is related to and may be regarded as a local and alpine derivative of *Ps. persicus*. *Ps. chionophilus*, however, differs sharply from the latter in its smaller size, its less abundant indumentum, its regularly monocephalous peduncles and in having fewer phyllaries. The achenes of the female and the hermaphrodite flowers are generally alike, both appearing to be fertile. In REMAUDIÈRE's specimen, however, the two sets of achenes are dissimilar.

16. ***Ps. chitralicus*** GRIERSON, spec. nov.
Icon.: Tab. 59.
Typus: BOWES LYON 126, holotypus BM!; isotypus W!

Herba biennis vel perennis, multicaulis. Radix tenuis; collum residuis foliorum numerosis plerumque dense comosum. Caules purpurascentes, 5–10(–15) cm alti, mono- vel oligocephali, pilis villosis patentibus et glandulis subsessilibus parce instructi. Folia basalia obovata vel oblanceolata, petiolo usque ad 20 mm longo incluso 15–50 mm longa, 5–13 mm lata, apice subacuta, basi attenuata, margine apicem versus utrinque 3–4-dentata, praesertim subtus villosa et breviter glandulosa; folia caulina 3–4, lineari-oblanceolata, 5–25 × 1,5–3 mm, integra. Capitula sub anthesi 10 mm, post anthesin 15 mm lata. Involucrum 2–3-seriatum; phylla subaequalia, 5–9 mm longa, 0,8–1,5 mm lata, lineari-lanceolata, acuminata, villosa, in sicco purpurascentia. Flores feminei numerosi, tubulosi, minute ligulati, 2–2,5 mm longi, stylis plus quam duplo longioribus exsertis. Flores hermaphroditi circiter 15, lutei vel postea atropurpurei, 5,5–6 mm longi. Achaenia immatura anguste oblanceolata, 2–2,5 × 0,4 mm, parce et minute pubescentia. Pappus simplex, albidus, setis circiter 35, capillaceis, 4,5–5,5 mm longis. – *Ps. chionophilo* KRASCH. affinis a quo imprimis differt pedunculis erectis et longioribus, stylis florum femineorum magis exsertis.

Pakistan: Chitral: Tirich Mir, Barum Gol „medial moraine of Main Barum Glacier", 3400 m, WDB.! Barum Gol, Golen (Krui Uts), 36° 1' N, 72° 10' E, in alveo, 3600 m, 27. VII. 1958, BOWES LYON 126! Ishprili Gol S Mastuj, in moraena glaciali, 4200 m, STAINTON 3126! – Swat: Distr. Ushu supra Batain, 2700–3000 m, R. R. STEW. & RAHMAN 25309!

Distr. gen.: Endem.

This species is related to *Ps. chionophilus* since, in common with this and *Ps. Aellenii* and *Ps. brachyspermus*, the achenes of the hermaphrodite flowers are commonly similar in shape to those of the female flowers. Sometimes they appear to contain fertile ovules but usually they are empty and rarely, as has been observed in WENDELBO's material, the hermaphrodite flower achenes are linear. In general, the achenes are larger than those of *Conyza* into which genus this new species was at first tentatively placed, principally because of the much exserted styles of the female flowers, a conyzoid character that is otherwise only represented in *Ps. nigromontanus*, a taller much branched species from Turkey, Persia und Iraq. Further, the habit of *Ps. chitralicus* is wholly unlike any species of *Conyza* known to the author but is characteristic of the majority of *Psychrogetons*.

17. ***Ps. Pseuderigeron*** (BUNGE) NOVOPOKR. ex NEVSKI, Acta Inst. Bot. Acad. Scienc. URSS. Ser. 1, 4: 278 (1937).
Syn.: *Heterochaeta Pseuderigeron* BUNGE, Mém. Acad. Scienc. Imp. Petersbg. 7: 325 (1854). *Erigeron Lehmannii* BOISS., Fl. Or. 3: 181 (1875) non SPR. *Aster Capusii* FRANCH., Ann. Scienc. Nat. Ser. 6, 16: 304 (1883).
Icon.: Tab. 60; 76, fig. 6.
Typus: In regione alpina montis Karatau, LEHMANN 618, LE!

Herba perennis, erecta vel ascendens; caudex elongatus, sublignosus, pluricaulis. Indumentum villoso-pilosum et glanduloso-papillosum. Caulis c. 30 cm alti, striati, rami ad 6, capitula plura proferentes. Folia basalia 40–50 × 15–20 mm, oblanceolata, basi in petiolum 40–50 mm longum attenuata, margine utrinque 5–6-dentata, apice acuta vel subacuta; folia caulina 25–75 × 7,5–20 mm, oblonga vel oblanceolata, indistincte petiolata. Capitula 10–15 mm diametro; involucri phylla 3–4-seriata, imbricata, lineari-lanceolata, acuminata, exteriora c. 4 × 0,5 mm, viridia, rigide pilosa; interiora c. 6 × 0,8 mm, straminea, apice purpurascentia, glandulosa. Flores feminei 60–70, ligulati, tubo basali 3,2–4 mm longo, ligulis prominentibus 3,6–4 × 0,75 mm, integris vel apice minute 2–3-lobis. Flores hermaphroditi, 5,5–6 mm longi. Achaenia fertilia 2,5 × 0,7–0,8 mm, oblanceolata, tenuiter sericea et glandulosa; pappus duplex; setae exteriores c. 0,6 mm longae, anguste paleaceae, interiores c. 25, capillaceae vel tenuiter scabrae, c. 4,5 mm longae.

Persia: **E**: Khor.: Kopet Dagh 48 km NNE Shirvan, Kuh-i Alam in vicinitate jugi Alam, 2600 m, EDMONDSON 1288! Gulul Sarani Protected Region: Kopet Dagh, ad custodelam, in juniperetis saxosis, 2300 m, RECH. 53449!
Turcomania: Kopet Dagh prope Ashkhabad, NIKITIN.

Distr. gen.: Persia, Turcomania, Kazakhstan, Tadjikistan.

Among the taller leafy-stemmed group of species in our area, which also includes *Ps. Aucheri* and *Ps. nigromontanus*, this is the only one that has prominent ligules.

18. ***Ps. Aucheri*** (DC.) GRIERSON, Notes Roy. Bot. Gard. Edinb. 27: 142 (1967).
Syn.: *Conyza Aucheri* DC., Prodr. 7: 281 (1838). *Erigeron khorassanicus* BOISS., Fl. Or. 3: 170 (1875) nec *E. Aucheri* BOISS., l.c. *Conyza Krausseana* REGEL & SCHMALH., Acta Horti Petrop. 5: 616 (1877).
Icon.: Tab. 61; 76, fig. 3.
Typus: AUCHER-ELOY 3109, G!, K!

Herba annua vel biennis (vel perennis?). Radix simplex, subindurata. Caules singuli vel plures, 15–90 cm alti, foliati, superne ramosi; capitula 8 usque numerosa, racemosa vel corymbosa vel paniculata. Indumentum rigide pilosum, glandulis subsessilibus nitentibus dispersis. Folia basalia florendi tempore saepe marcescentia, ad 70 × 20 mm, oblanceolata vel spathulata, basi in petiolum ad 50 mm longum attenuata, margine remote breviter dentata, apice acuta; folia caulina 20–30 × 3,5–6 mm, basi attenuata non distincte petiolata, margine integra, apice acuta. Capitula 10–14 mm diametro; involucri phylla c. 4 × 0,6 mm, lineari-lanceolata, 2–3-seriata, acuminata, subaequalia. Flores feminei numerosi, tubulosi, 3,6–4,4 mm longi, stylis aequilongis, limbo minute 3-lobo. Flores hermaphroditi 10–35, c. 4 mm longi. Achaenia fertilia, 2,4 × 0,6 mm oblanceolata vel anguste obovata, sericea; pappus duplex; setae exteriores 0,4 mm longae, interiores c. 30, 3,6–4 mm longae, scabridulae.

Persia: **W**: Ham.: M. Alvand, AUCH. 3109! – **E**: Khor: Kuh-e Binalud, 1900–2300 m, TERME 36689-E. Kuh-e Bezg, 2000 m, RECH. 1414! In silvis Bardu, KOELZ 16767! – **C**: Qazv.: Supra Garmab, 2600–2700 m, BORNM. 7490! Kopet Dagh, inter Quchan et Lotfabad, in jugo Allah Akbar, 1800 m, RECH. 1721!
Turcomania: Saandak, LITW. Ashkhabad, Suluklü, M. Messinew, SINT. 710!, 1034!
Afghanistan: **NW**: Maimana: In montibus 20 km SW Qaisar, 2100 m, FREITAG 6758! In jugo Burchao. 3050 m, KOELZ 14138! Herat: In jugo Sabzzak, 2300–2500 m. LINDBERG 653/1959!, FREITAG 6799! Sangcharak: Safedsang, 3050 m, KOELZ 14007! – **SW**: Ghorat: SW Sar-i Naorak, 2480 m, RECH. 18927! Kuh Cheling- Safed Daraq, 2700 m, RECH. 19109! – **E**:

Kabul: Qala-e Wazir inter Sar-i Chashma et Unai, 2900 m, RECH. 18086! In decl. australibus jugi Salang, 2300–2600 m, RECH. 31354!, LAMOND 2108! Paghman: In valle Paghman, 2900–4000 m, VOLK 947!, 2168!, NEUB. 894/1950!, 231!, 3231! Panjshir: Darrah-i Zuria N Safed Jir, 3000 m, PODLECH 12530. Inter introitum vallis Dehawak et Jishta, 2700 m, cult. Hort. Bot. Monacensis, PODLECH 12857. In valle Maidan prope Ql. Karim, 2720 m, PODLECH 18710. Hauz-i Mahiha, 2600 m, KOEIE 2410! Ghazni: Okak NE Dasht-i Nawar, 3000 m, RECH. 17677! – **NE**: Kataghan: In decl. borealibus jugi Salang, 2200–3000 m, RECH. 31645!, 31680!, 37050!, LAMOND 2228!, FOHLEN N9M!, FREITAG 3795!, KUKKONEN 7474!, NEUB. 4489!, PODLECH 12027. Ribat-e Pain, 2590 m, KOELZ 12825! In valle Khinjan, 2600 m, ANDERS 10974!, PODLECH 15953, VOLK 71/740. Darrah-i Do Shakh, 2700–3000 m, PODLECH 32335! Khost-o Fereng: In valle Echani, 2800 m, PODLECH 11842. In valle Khawush, 2500 m, PODLECH 11735. In valle versus jugum Yul ducentem, 2200 m, PODLECH 11932. Badakhshan: Doavi, LINDB. 670/1959! – **C**: Bamian: Kuh-i Baba, 2745 m, THESIGER 14! Bamian, 2500 m, NEUB. 4466! Inter Band-i Amir et Bamian, 2800–3000 m, RECH. 18180! Ad lacum Band-i Zolfikar, 2900–3000 m, DIETERLE 539, RECH. 18440! Bazar-e Yakawlang, 2750 m, DIETERLE 1276. In decl. borealibus jugi Ak Robat NW Bamian, 3000 m, DIETERLE 510. Kotal-e Dewali inter Yakawlang et Panjao, 3000 m, DIETERLE 729. In jugo Shibar, 2500–2700 m, RECH. 36924! Deh Kundi: Inter juga Waras et Khonak 65 km SW Panjao, 2600 m, RECH. 36634! Doab: In jugo Lorinj, 3050 m, KOELZ 13751! Ao Khorak-i Bala, 2745 m, KOELZ 13802! In jugo Sabz, 3050 m, KOELZ 13821! Behzud: Farakulum, 2700 m, KOEIE 3276! – Afghanistan, GRIFFITH 3118!
P a k i s t a n : Chitral: Barum, 3050 m, STAINTON 2784!

Distr. gen.: Persia, Turcomania, Afghanistan, Pakistan, Tadjikistan, Uzbekistan.

An examination of the type material shows that AUCHER 3109, fragmentary though it is, does have female flower corollas that are as long as their styles. BOISSIER was therefore in error in reducing his *Erigeron nigromontanus* to synonymy under *E. Aucheri* and in failing to recognise that his *E. khorassanicus* was identical with AUCHER's species.

19. ***Ps. nigromontanus*** (BOISS. & BUHSE) GRIERSON, Notes Roy. Bot. Gard, Edinb. 27: 144 (1967).
Syn.: *Erigeron nigromontanus* BOISS. & BUHSE, Nouv. Mém. Soc. Nat. Mosc. 12: 114 (1860), non M. POP. *Erigeron Aucheri* (DC.) BOISS., Fl. Or. 3: 170 (1875) quoad syn. *E. nigromontanus.*
Icon.: Tab. 62; 76, fig. 4.
Typus: KOTSCHY 686, BM!, E!, G, K!, W.

Herba annua vel biennis erecta. Radix simplex, subindurata. Caulis 15–90 cm altus, foliatus, superne paniculato-ramosus, capitula 7 usque plura proferens. Indumentum sparse vel dense subcanescenti-pilosum, pilis ad basin caulis saepe rigidis, sursum tenuioribus, crispatis, imprimis in pagina inferiore foliorum et in involucris glandulis subsessilibus nitentibus interspersum. Folia basalia ad 80 x 25 mm, oblanceolata, apice acuta, basi attenuata, subpetiolata, margine distincte breviter dentata; folia caulina ad 30 x 7,5 mm, margine integra vel utrinque 1–2-dentata. Capitulum 7,5–10 mm diametro; phylla subaequalia, 2–3-seriata, c. 4 x 0,5 mm, lineari-lanceolata, acuminata, costa mediana viridi, marginibus pallide stramineis. Flores feminei numerosi; corolla tubularis, 1,75–2 mm longa, $\frac{1}{2}$–$\frac{2}{3}$ styli longitudinis attingentes, limbo obliquo. Flores hermaphroditi 6–12 per capitulum, c. 3,5 mm longi. Achaenia fertilia c. 2 x 0,5 mm, oblanceolata, sparse pilosa; pappus simplex c. 3 mm longus, setis c. 20, scabridulis.

I r a q : Kurd.: Arbil: Hajji Omran, 1700 m, RECH. 11308!
P e r s i a : W: Khamseh: Inter Arghin et Dashti ad pedem M. Qeydar 35 km a Soltaniyeh, 1980–2200 m, ALAVA 14215!, TERME & MOUSSAVI 16438 p.p. Kurd.: N Sanandaj, 1830 m, FURSE 3444! Inter Sanandaj (Sihna) et Kermanshah, HAUSSKN.! Ham.: M. Alvand, PICHLER! Lur.: Dow Rud, KOELZ 18460! – S: Fars.: Kuh-i Dinar, KY. 686! Kuh Chah Siah, STAPF 2822! – „In humidis Giaurgael prope Marauli", HAUSSKN.!
A f g h a n i s t a n : C: Bamian: 40 km W Bamian versus Band-i Amir, 3070 m, KUKKONEN 7250!

Distr. gen.: Anatolia, Iraq, Persia, Afghanistan.

In addition to the shorter female corolla tubes which at once distinguish it from the closely related *Ps. Aucheri*, this species never appears to perennate, the indumentum is finer, the capitula contain fewer hermaphrodite flowers and the pappus is simple and finer.

10. *Brachyactis*

auctore A. J. C. GRIERSON, Edinburgh

Brachyactis LEDEB., Fl. Ross. 2: 495 (1845).

Herbae annuae vel biennes. Caulis erectus, foliatus, simplex vel ramosus. Folia alterna, dentata vel serrata, interdum integra. Capitula heterogama, disciformia (in nostris), in pedunculis brevibus axillaribus solitaria vel in racemos axillares disposita. Involucri phylla 2–3-seriata, exteriora foliacea. Flores feminei numerosi, tubulosi et breviter ligulati, ligulae plerumque quam pappus breviores. Flores hermaphroditi minus numerosi, tubulosi, anguste campanulati, superne 5-lobi. Antherae basi obtusae, integrae. Styli florum hermaphroditorum rami oblongi, complanati, appendicibus acuminatis. Receptaculum nudum. Achaenia anguste obovata, compressa, margine costata; achaenia florum femineorum et hermaphroditorum ambo fertilia; pappus subbiseriatus, setae exteriores quam interiores breviores et minus numerosae.

This genus is only doubtfully distinct from *Conyza* because of its habit, i.e. in having the capitula on axillary peduncles, its foliaceous involucral bracts and the acuminate style appendages. The radiate Himalayan *B. menthodora* BENTH. (*Erigeron anomalus* DC.) may belong to a different asteroid genus because of its prominent ligules and more abruptly dilated disc corollas.

1a. Herbae robustae. Folia ± regulariter serrata. Indumentum glandulosum et tenuiter pubescens. Capitula 15–20 mm diametro .... 1. *B. pubescens* (DC.) AITCH. & CLARKE
b. Herbae tenues. Folia grosse lobata vel dentata. Indumentum hirsutum et sparse glandulosum. Capitula 5–10 mm diametro .... 2. *B. Roylei* (DC.) WENDELBO

1. ***B. pubescens*** (DC.) AITCH. & C. B. CLARKE, Journ. Linn. Soc. 18: 68 (1881).
Syn.: *Conyza pubescens* DC., Prodr. 5: 381 (1836). *Brachyactis robusta* BENTH. in HOOK. Icon. Pl. 6: 1106 (1872). *Conyza Edelbergii* RECH. f., Dan. Biol. Skr. 8, 2: 25 (1955). *Erigeron Pyrami* BOTSCH., Bot. Zurn. 42: 777 (1957).
Icon.: Tab. 63.

Typus: „In Indiae or. provinc. boreali-occident.", ROYLE 133.

Annua vel biennis. Caulis robustus, 10–40 cm altus, glandulosus et sparse pubescens. Folia basalia 30–60 x 15–30 mm, elliptica, basi cuneata, in petiolum 30–40 mm longum attenuata, apice obtusa vel acuta; folia caulina 15–70 x 6–30 mm, elliptica vel oblonga, inferiora in petiolum ad 40 mm longum attenuata, margine breviter dentata vel serrata, apice obtusa vel subacuta, utrinque glandulosa et plerumque tenuiter pubescentia. Capitula 15–20 mm diametro, solitaria vel ad 5 in racemos axillares ad 70 mm longos disposita. Involucri phylla subaequalia, 5–8 x 0,75–2 mm, elliptica vel oblanceolata. Flores feminei c. 100, minute ligulati; corollae 2,75–3,5 mm longae. Flores disci 25–30; corollae 4,25–5 mm longae, flavae vel interdum rubrae. Achaenia 1,5–2,25 mm longa, sparse sericea; pappus 5–5,5 mm longus, albida.

Crescit ad ripas rivorum et in humidis lapidosis.

Afghanistan: E: Paghman: Inter Shakar Darrah et Hauz-e Chas, 2850 m, GILLI 3931! Supra Begtut, 2900 m, GILLI 3932! Nijrao: Surpa Shekhan inter Gulbahar et Sarobi, 3310 m, GILLI 3934!, 3935! Panjshir: Chimar, 2800 m, HDG. & WDB. W-5377! In faucibus vallis Dehkhawak, 2600 m, PODLECH 12852 p.p., 12869. In valle Panjshir superiore, PODLECH 12552! Basarak, 2800 m, GILLI 3930! Jaji: 10 km S Kotkai, 2650 m, FREITAG 1714. Nuristan: Netshingel, EDELB. 2056 (typus *Conyzae Edelbergii*)! In valle fl. Parun prope Pashki, 2300 m, KERST. 1375. In valle Bashgal E Garm Chashmeh, 3000 m, RASOUL 293 in BRECKLE A-3693! Darrah-i Pengar, 3100–3250 m, PODLECH 16316, 16565. Inter Waigel et vallem Pech, Kuh-e Adrugal, 2700–3300 m, LARSSON 74 in BRECKLE 5574. Chapadarrah, 3000–3500 m, ALPAY in ANDERS 11461. – **NE**: Badakhshan: Harkh prope lacum Shiva (Choghnan), LINDB. 871/1960!
Pakistan: Chitral: In jugo Baroghil, 3655 m, STAINTON 3026! Shishi (Lohigal An), 3800 m, BOWES LYON 137! Drosh (Dabari Gol), 3500 m, BOWES LYON 208!

Distr. gen.: Afghanistan, Pakistan, India boreo-occidentalis, Nepal.

2. ***B. Roylei*** (DC.) WENDELBO, Nytt Mag. Bot. 1: 62 (1952).
Syn.: *Conyza Roylei* DC., Prodr. 5: 381 (1836). *C. umbrosa* KAR. & KIR. in LEDEB., Fl. Ross. 2: 498 (1845). *Brachyactis umbrosa* (KAR. & KIR.) BENTH. in Hook. Icon. Pl. 12: 7 (1872). *Conyza wangtuensis* C. B. CLARKE, Compos. Ind. 61 (1876).
Icon.: Tab. 64.
Typus: In Indiae or. prov. boreali occid, ROYLE 135.

Annua. Caulis tenuis 6–30(–45) cm altus, glandulosus et hirsutus. Folia basalia 10–30 x 0,75–20 mm, interdum in petiolum ad 20 mm longum attenuata, grosse lobata vel dentata, dentibus utrinque ad 6, apice obtusa vel subacuta, utrinque sparse hirsuta; folia caulina inferiora similia, superiora minora, oblanceolata, integra vel utrinque dentibus 2. Capitula 5–10 mm diametro, solitaria vel usque ad 5, in racemos axillares ad 6 cm longos disposita. Involucri phylla 4–5 x 0,75–1,3 mm, oblanceolata, acuta, apice purpurascentia. Flores feminei c. 60, minute ligulati, corollae 2–2,5 mm longae. Flores disci 5–9 per capitulum; corollae 3–4 mm longae. Flores disci 5–9 per capitulum; corollae 3–4 mm longae. Achaenia 1,25–2 mm longa, sparse sericea; pappus 3–4 mm longus, albidus.

Crescit inter saxa, in praeruptis et inter frutices.

P e r s i a : S: Fars.: Kuh-e Dinar, in jugo Sichani, BEHB. 1242-E! Kerm.: Kuh-e Laleh Zar, 3500 m, BORNM. 3973!
A f g h a n i s t a n : E: Kabul: In montibus prope Paghman, 3000 m, GILLI 3933!, NEUB. 877! VOLK 2169. Panjshir: Parian, 2800 m, PODLECH 12305! In faucibus vallis Dehkhawak, 2600 m, PODLECH 12852 p.p. Jaji: Inter Ali Khel et Kabul, 2700 m, LAMOND 2529! Kafardara prope Dobandi, 2950 m, LALANDE R-1079-E4! Kotkai, 2500–2600 m, FREITAG 1819. Nuristan: Parun, 2200–2500 m, EDELB. 2380! – NE: Munjan: Rakhuy (tributario vallis Anjuman) ad lacum, 3800 m, PODLECH 12908. In valle Rakhui ad confl. vallis Siau, 3700 m, PODLECH 12655! Wakhan: Prukh, 3300 m, HUSS 169. In valle Issik, 3640 m, HUSS 266. Inter Sheshm et Deh Ghulaman, 3100–3150 m, ANDERS 7926. Inter Kharach et Sargaz, 2930– 3090 m, ANDERS 7979. Baharak, 3400 m, GREY-WILSON & HEWER 1468! In valle Badjen, 4100 m, ROEMER 362!
P a k i s t a n : Chitral: Tirich Mir, Barum Gol, Shokor Shal, 3500 m, WDB.! Mastuj, Baroghil track, 2745 m, STAINTON 2941! Yarkhun, 3050 m, BOWES LYON 918! – Swat: Ushu, HORRËUS DE HAAS 1195. – Quetta: Ziarat, 2520 m, LACE 4022!

Distr. gen.: Persia, Afghanistan, Pakistan, Asia Media, Nepal.

11. *Conyzanthus*

auctore A. J. C. GRIERSON, Edinburgh

Conyzanthus TAMAMSCH., Fl. URSS. 25: 583 (1959).
Syn.: *Aster* Sect. *Oxytripolium* (DC.) TORREY & A. GRAY, Fl. N. Amer. 2: 161 (1841). *Tripolium* Sect. *Oxytripolium* DC., Prodr. 5: 253 (1836).

Herbae annuae vel biennes vel perennes. Caules erecti foliati, imprimis superne ramosi. Folia alterna, lineari-lanceolata, integra. Capitula heterogama, disciformia, minuta, nonnulla vel numerosa paniculata; pedunculi foliati vel squamosi. Involucri phylla numerosa, imbricata, pluriseriata, acuminata. Flores feminei pluriseriati, ligulati, quam pappus breviores. Flores disci hermaphroditi tubulosi, quam feminei minus numerosi, quam pappus breviores, anguste campanulati, apice 4–5-lobi. Antherae minute sagittatae, appendicibus apicalibus acuminatis. Receptaculum alveolatum. Achaenia florum radii et disci ambo fertilia, anguste elliptica, ± compressa, 4-costata, basi annulata; pappus uniseriatus, albidus, quam achaenium 2–3-plo longior. – Typus generis: *C. graminifolius* (SPRENG.) TAMAMSCH.

1. ***C. squamatus*** (SPRENG.) TAMAMSCH., Fl. URSS. 25: 186 (1959).
Syn.: *Conyza squamata* SPRENG., Syst. Veg. 3: 515 (1826). *Aster squamatus* (SPRENG.) HIERON., Englers Bot. Jahrb. 29: 19 (1901)
Icon.: Tab. 65.
Typus: Uruguay, Monte Video, SELLO, P.

Biennis vel perennis. Caulis 30–150 cm altus, glaber, viridis, superne pallide striatus. Folia caulina 20–120 x 2,5–12 mm, lineari-lanceolata, basi semiamplexicaulis, integra vel minute dentata, apice acuta, glabra; folia superiora et ramealis 2–10 mm longa, ± acuminata. Capitula numerosa, 4–7 mm diametro. Involucri phylla 4–5-seriata, 2–5 x 0,4–0,6 mm, oblanceolata, ± acuminata, in parte superiore quidem viridia, glabra, margine scariosa. Flores feminei 20–25 mm longi; tubus basalis 2,5–2,75 mm longus, ligulae 1,25–1,50 x 0,2–0,3 mm, coerulescentes vel purpurei. Flores disci 7–15, flavi, 3,25–3,5 mm longi, plerumque 4-lobi. Achaenia 0,75–2 mm longa, sparse pubescentia; pappi setae c. 40, albido-rubescentes, 4,5–5 mm longae.

Crescit in fossis incilibus.

Persia: N: Gilan: 5 km S Astara, 0 m, CRISP 204. – W: Khuz.: Ahvaz, IRANSHAHR & TERME 14913-E! Molla Sani, SPETA!

Distr. gen.: America borealis et australis, Europa australis, Persia, Caucasus, Africa australis.

12. *Myriactis*

auctore K. H. RECHINGER, Wien

Myriactis LESS., Linnaea 7: 127 (1831).
Syn.: *Botryadenia* FISCH. & C. A. MEY., Index Sem. Horti Petrop. 2: 30 (1835).

Herbae biennes vel annuae, erectae, superne ramosae, foliatae. Capitula mediocria, longe pedunculata, laxe corymbosa. Involucrum hemisphaericum. 1–2-seriatum. Flores radiantes ligulati, bi- usque pluriseriati, feminei heterochromi; flores disci tubulosi, quinquelobi, hermaphroditi. Receptaculum nudum, tuberculatum. Achaenium compressum, calvum, marginatum; pappus nullus.

1. ***M. Wallichii*** DC., Prodr. 5: 309 (1836).
Syn.: *Botryadenia Gmelini* FISCH. & C. A. MEY., Ind. Sem. Horti Petrop. 2: 30 (1835). *Myriactis Gmelini* (FISCH. & C. A. MEY.) DC., Prodr. 5: 308 (1836).
Icon.: Fl. URSS 25, tab. 2, fig. 1 (1959) sub *M. Gmelini*. – Tab. nostr.: 66.
Typus: „In umbrosis excelsis Nepaliae borealis", WALLICH cat. 326, K.

Herba annua vel perennis; caulis 40 cm altus, superne laxe corymbose divaricate ramosus, sparse papilloso-hirtus. Folia 3–6 x 2–4 cm, oblongo-ovata vel rhombea, in petiolum cuneata, apice acuta vel acuminata, margine grosse dentata; folia suprema parva, lanceolata, integra. Pedunculi terminales, rigidi, monocephali. Involucrum hemisphaericum; phylla subbiseriata, appressa, herbacea, anguste scarioso-marginata, lineari-oblonga, obtusa vel acutiuscula. Ligulae lineares, albae, pluriseriatae. Achaenium glabrum, obovato-oblongum, erostre, umbone globoso terminatum.

Talish: Talish, HOHEN., C. A. MEY. Prope castellum Lenkoran, HOHEN.
Persia; N: Maz.: Distr. Nur: Kojur, in silvis, 500 m, BEHB. in GAUBA 1291! Now Shahr, SAB. 12067-E! Gilan: Asalem, IRANSHAHR 12109-E! Dinuchal, 500 m, SAB. in GAUBA 1292! – C: Tehr.: Darband, KY. 596!
Afghanistan: E: Kabul: Istalif, 1850 m, ANDERS 5334! Panjshir: Ruka, KOEIE 3280! Inter Badakhshi et Kail (Kayli), 1700–2100 m, ANDERS 10734! Nijrao: In valle Nijrao, VOLK 2370! Nangarhar: Darrah-e Nur, 1500–2000 m, ANDERS 9476!; 2600–2900 m, FREITAG 5990! SE Jalalabad in M. Safed Kuh orient., 2000 m, FREITAG 7418! Nuristan: In valle Waigel, 1800 m, EDELB. E-2389! Kuh-e Adrugal inter Waigel et vallem Pech, 2500 m, LARSSON 37 in BRECKLE

5537! Wama, KERST. 1323! Kushtos, 2000 m, NEUB. 3259! Kamdesh, 2000 m, NEUB. 3316! Dewagal Darrah, 1600–1700 m, ANDERS 11050! Darya-e Katigel 5 km S Pol-e Rustam, 1700 m, ANDERS 5164! Inter Ningalam et Darin, 1300–1900 m, NEUB. 980/1951! In valle Bashgal inter Bragamata et Kamdesh, 1700 m, BRECKLE A-3280! – **NE**: Kataghan: In decl. borealibus jugi Salang, 2000–1100 m, RECH. 31701! In valle Ashraf, NEUB. 4378! – ?Maz. „Golban forest", WALTON 297!

Pakistan: Swat: Kalam, substr. granit., 2200 m, RECH. 19474! Ushu, substr. granit., 2400 m, RECH. 19521! – Kurram: In valle Kurram, AFENDI 469! Shendtoi, 2400–3000 m, AITCH. 994.

Distr. gen.: Talish, Persia borealis, Pakistan, montes Pamir-Alaj et Himalaya.

13. *Conyza*

auctore A. J. C. GRIERSON, Edinburgh

Conyza LESS., Syn. Gen. Comp. 203 (1832).

Herbae annuae vel biennes vel perennes. Caulis erectus, 5–50(–100) cm altus, plerumque foliatus sed interdum oligophyllus. Folia sessilia vel petiolata vel ovata vel obovata vel lanceolata vel oblanceolata vel linearia, integra vel dentata vel pinnatifida, apice acuta vel obtusa. Capitula plerumque corymbosa vel paniculata interdum autem pauca. Involucrum 2–3-seriatum; phylla lineari-lanceolata, imbricata. Flores feminei numerosi, tubulosi vel breviter ligulati, pappum plerumque aequantes vel eo paulo longiores. Flores disci pauci hermaphroditi, infundibuliformes, 5-lobi. Achaenia obovata vel oblanceolata, subcompressa ea disci interdum oblonga et ut videtur sterilia; pappus simplex, setis 20–30 vel setulis exterioribus nonnullis.

1a. Indumentum caulis e pilis patulis setiformibus tantum consistens. Folia margine et secus costam medianam tantum setulosa, ceterum glabra, costa mediana involucri phyllorum plerumque indistincte transverse brunnescenti-fasciata . . . . 4. *C. canadensis* (L.) CRONQ.
b. Indumentum caulis e pilis validioribus et teneribus minoribus, glandulosis vel eglandulosis compositum 2
2a. Folia utrinque pilis brevibus crispis eglandulosis et glandulis numerosis obsita. Capitula 6–7 mm diametro, laxe corymbosi . . . . . . 1. *C. stricta* WILLD.
b. Folia non manifeste glandulosa 3
3a. Folia grosse dentato-serrata. Capitula in corymbos densos terminales disposita . . . . 3. *C. japonica* (THUNB.) LESS.
b. Folia integra vel paucidentata vel pinnatifida. Inflorescentiae laxe ramosae 4
4a. Axis principalis ramis lateralibus non superata. Capitula 12–16 mm diametro. Indumentum villoso-pilosum et minute puberulum . . . . 2. *C. aegyptiaca* DRYAND.
b. Axis principalis plerumque ramis lateralibus superata. Capitula 8–12 mm diametro. Indumentum e pilis patulis setiformibus e pilis compositum . . . . 5. *C. bonariensis* (L.) CRONQ.

1. ***C. stricta*** WILLD., Spec. Plant. 3: 1922 (1803).
Syn.: *C. triloba* DECNE., Ann. Scienc. Nat. Ser. 2, 2: 261 (1834). *Nidorella triloba* (DECNE.) DC., Prodr. 5: 321 (1836). *Erigeron trilobus* (DECNE.) BOISS., Fl. Or. 3: 168 (1875).
Typus: India, KLEIN, B-WILLD 15649.

In ditione nostra tantum occurrit:

– – var. ***pinnatifida*** (D. DON) KITAMURA in HARA, Fl. E. Himal. 337 (1966).
Syn.: *Erigeron pinnatifidus* D. DON, Fl. Nepal 172 (1825).
Icon.: Tab. 67.
Typus varietatis: Nepal, HAMILTON.

Herba perennis, erecta vel ascendens. Indumentum ± sparse appresse pubescens, in pedunculis magis densum et imprimis in superficie foliorum glandulis subsessilibus nitidulis immixtis. Caulis 15–60 cm altus, basi sublignescens. Folia 20–35 x 4–10 mm, oblanceolata, basi attenuata sessilia vel petiolo ad 1 cm longo suffulta, margine 3–5-loba vel calloso-dentata, apice acuta; folia superiora integra, capitula ad extremos ramos numerosi, laxe corymbosi, sub anthesin 5 mm, demum 7 mm diametro, involucrum phylla 2–3-seriata, subaequalis, c. 2,5 x 0,5 mm, lineari-lanceolata, exteriora viridia, interiora albida. Flores feminei numerosi, 2–2,5 mm longi, tubulosi, apice 2–3-lobi, quam pappus paulo breviores. Flores hermaphroditi pauci, corollis 2,5 mm longis. Achaenia florum femineorum c. 0,8 x 0,3 mm, elliptico-obovata, sparse glanduloso-pubescentia; achaenia florum hermaphroditorum oblonga, densius glandulosa; pappus simplex, setis c. 20, albidis, 2–2,4 mm longis, cum annulo basali ab achaenio facile secedentibus.

Afghanistan: E: Jaji: Sefed Kuh supra Kotkai, 2500–3000 m, ANDERS 11280. Nuristan: Infra Capakoh, 900 m, ANDERS 5242! Barikot, 1100 m, BRECKLE A-2791! Infra Jalala, 900 m, ANDERS 5227! 5 km supra Jalala = 51 km supra Chigha Sarai, 1020 m, PODLECH 16135!
Pakistan: Swat: Inter Mingora et Khawazakhiela, 850–950 m, RECH. 30528!, LAMOND 1681! Malakand, 800–900 m, RECH. 30444! Dera Ghazi Khan: Montes Sulaiman, Fort Munro, 1600–1800 m, RECH. 29729!, LAMOND 1388! – Quetta: In parte inferiore faucium Torkham supra Harnai, 900 m, RECH. 29507!

Distr. gen.: Morocco. Jordania, Afghanistan, Pakistan occidentalis, India, Arabia Petraea.

The degree of leaf lobing is variable throughout the range of the species but is more pronounced in western than in eastern examples where the leaves may be purely dentate. It is to be recognised by the fine appressed pubescence and the dense glandulosity of the leaves.

2. ***C. aegyptiaca*** DRYAND. in AITON, Hort. Kew. ed. 1, 3: 183 (1789).
Typus: Aegyptus.

In ditione nostra tantum crescit:

– – var ***lineariloba*** (DC.) HOCHR., Ann. Cons. Jard. Bot. Genève 11–12: 119 (1908).
Syn.: *C. lineariloba* DC., Prodr. 5: 385 (1836).
Typus (syntypi) varietatis: In insulis Madagascar Mauritii et Bourboniae, BOJER.

Herbae biennes erectae. Indumentum longe patule hirsutum et breviter puberulum. Caules robusti, 40–80 cm alti, superne ramosi; racemi terminales ad 10-cephali, Folia inferiora 50–60 cm longa; segmentis 3–4-jugis, 15 × 3,5 mm; segmentum terminale 30–40 × 5-8 mm; folia summa integra. Capitula 12–16 mm diametro. Involucri phylla imbricata, 2–3-seriata, ad 8 × 0,75 mm, linearia, acuminata. Flores feminei numerosi; corolla tubulosa. 2,5–3 mm longa, stylo exserto, c. 2 mm longo pappum aequante. Flores hermaphroditi pauci, 4,5–5 mm longi. Achaenia 1,25 × 0,4 mm, oblanceolata, sparse pubescentia; pappus simplex, c. 4,5 mm longus, setis 20–30, albidis vel pallide brunnescens.

A f g h a n i s t a n : E: Kabul: Munar Shakrie, NEUB. 383!
P a k i s t a n : Kurram: Inter Shinak et Badishkhel, AITCH. 484!

Distr. gen. varietatis: Afghanistan, Pakistan, India, Insulae Mascarenae, Africa tropica et australis.

The typical variety is a sprawling, less robust plant with oblong or oblanceolate leaves, the margins of which bear a few dentate or sub-pinnatifid teeth. Its capitula are smaller and are in groups of 2–6 at the ends of branches.

3. ***C. japonica*** (THUNB.) LESS., Syn. Gen. Comp. 204 (1823).
Syn.: *Erigeron japonicus* THUNB., Fl. Japon. 312 (1784).
Icon.: Tab. 68.
Typus: Japonia, THUNBERG.

Herba annua, erecta; radix tenuis, fibrosa. Indumentum patulum, villoso-hirsutum, insuper imprimis in parte superiore caulis et in superficie foliorum puberulum. Caules 15– 40 cm alti, singuli vel plures, superne patule ramosi, dense corymbosi, capitulis ad 10. Folia radicalia plerumque evoluta, 35–70 × 10–20 mm, in petiolum 10–30 mm longum cuneato-attenuata, elliptico-ovata vel spathulata, margine imprimis apicem versus regulariter saepe grosse dentata, apice acuta; folia caulina 25–50 × 5–15 mm, basi semiamplexicauli sessilia vel subpetiolata, oblonga vel spathulata, imprimis apicem versus serrato-dentata, apice acuta. Capitula 8–10 mm diametro; involucri phylla 2–3-seriata, subaequalia, 4–5 × 0,5–1 mm, lanceolata, viridia, pallide vel pupureo-marginata. Flores feminei numerosi; corolla tubulosa, 1,3–1,5 mm longa; styli purpurei, 3–3,2 mm longi. Flores hermaphroditi c. 20; corolla purpurascens, 2,8–3 mm longa. Achaenia c. 1 × 0,5 mm, obovata, compressa, sparsissime pubescentia; pappus simplex, 3–3,25 mm longus, albidus, setis c. 17, basi in annulum connatis.

A f g h a n i s t a n : E: Nuristan: Gusalak, 1000 m, EDELB. 1590! Kunar, VOLK 2438! Darya-e Kunar infra Jalala, 900 m, ANDERS 5228!
P a k i s t a n : Chitral: Bundai, HARRISS 16267! Ad pagum Chitral, 1525 m, STAINTON 2176! – Swat: M. Ilam, 1830–2135 m, R. R. STEWART 24363-a! Inter Khawazakhiela et Shangla, 1300–1900 m, RECH. 30602!, LAMOND 1711! – Kurram: Parachinar, 1800 m, AFENDI 117!

Distr. gen.: Afghanistan, Pakistan occidentalis, Japonia, Sina.

This annual species is to be recognised by the coarsely dentate leaves and tight terminal corymbs of capitula. The phyllaries are broader than in other *Conyza* species in this region and quite distinctly scarious-margined.

4. *C. canadensis* (L.) CRONQ., Bull. Torrey Club 70: 632 (1943).
Syn.: *Erigeron canadensis* L., Spec. Plant. 863 (1753). *E. myriocephalus* RECH. f. & EDELB., Dan. Biol. Skr. 8, 2: 6 (1955).
Icon.: Tab. 69.
Typus: „Habitat in Canada, Virginia, nunc in Europa australi".

Herba erecta, annua (vel biennis?). Indumentum sparse setuloso-hirsutum, foliis saepe ciliatis. Caules robusti, 30–90 cm alti, foliati, ± dense racemoso- vel paniculato-ramosi, polycephala. Folia 30–90 x 2–10 mm, anguste oblanceolata, sursum decrescentia, basi subpetiolato-attenuata, margine integra vel utrinque 1–3-dentata, apice acuta vel acuminata. Capitula c. 5 mm diametro; involucri phylla 3–4-seriata, 1,5–3 x 0,25 mm, lineari-lanceolata, straminea, costa mediana brunnescente, saepe indistincte transversaliter atrius fasciata. Flores feminei c. 25, ligulati, tubo basali c. 1,5 mm longo, ligulis purpureis trilobis 1,6 mm longis, pappo paulo longioribus. Flores hermaphroditi, c. 5, c. 2,5 mm longi. Achaenia 1,25 x 0,5 mm, pallide straminea, sparse puberula; pappus 2,5–3 mm longus, simplex, albidus.

Iraq: Diyala: Ruz, SUTHERLAND.
Talish: Lenkoran, HOHEN., Astara, HOHEN.
Persia: N: Gorg.: Gorgan, SHAR. 207! Bandar-i Gaz, SINT. 2115. Inter Gorgan et Aliabad, SPETA! 15 km NE Pahlavi Dezh, –25 m, BRECKLE & BHADRESA 5251. Nezamabad, KOELZ 16609! Maz.: Meyan Kaleh Peninsula, 25 m, REES 100! Inter Abbasabad et Shahi, 400 m, RECH. 2038! Babol, RECH. 5691! Khorramabad, STARM. 287! Karehsang in valle Haraz, 100 m, WDB. 1534. Inter Emarat et Siah Bisheh (Zardman), 500 m, WDB. 459. Inter Chalus et Shahsavar, BAKER 37! 27 km S Amol, 320 m, KUKKONEN 7833! Gilan: Hashtpar, 30 m, ROWSHAN 6615. Rasht, PAULSEN 2151. Khushavar, 0–50 m, CRISP 134. Lahijan. STARM. 246! LINDS. 746! – W: Azerb.: Rezaiyeh, ZEHZAD 1145! Ali Bolaghi, KNAPP. Kermansh.: Qasr Shirin, KOELZ 17054! – E: Khor.: Mashhad, 1150 m, KUKKONEN 7615! – C: Tehr.: In valle Hableh Rud prope Simin Dasht, AELL. & MANOUCH. 6040-E! Chitgar, 1320 m, RAHMANIAN 6642. Evin, BEHB. 13439-E! Qazv.: In jugo Kandavan, 2500–2700 m, TERME 14893-E! Manjil, 200 m, RIAZI 6618.
Turcomania: Ashkhabad, LITW. 1364!
Afghanistan: NW: Bala Murghab: Ad fl. Darya-i Murghab, 470 m, JAKES! – E: Kabul: Tang-i Gharu, Maipar, JÖRGENSEN 550. Kabul, 1770 m, GILLI 3909! Paghman, 1220 m, KOELZ 11615! Prope Khushak, 2200–2400 m, ANDERS 10124! Panjshir: Gulbahar, VOLK 1005! Basarak, PODLECH 12049. Laghman: Inter Badakhshi et Kail. 1700–2100 m, ANDERS 10695! In valle Alishang infra Daulatshah, 1400 m, FREITAG 7528!, PODLECH 17538. Urgun: Urgun, VOLK 71/762-b. Nuristan: Chetras, 2000 m, EDELB. 1213! Gusalak, EDELB. 126!, 204 (typus *Erigerontis myriocephali*)! Kushtos, 2000 m, NEUB. 3310! Dewagal Darrah prope Chalas, 1600–1700 m, ANDERS 11070! Bargamata, 2300–2450 m, ANDERS 5054! Darrah-i Pengar prope Dewana Baba, 2800 m, PODLECH 16648. In valle Bashgal prope Bashgal Nezha, PODLECH 32141. Inter Dewana Baba et Atati, 2700 m, BRECKLE A-3186! Darya-e Katigal, 1400 m, ANDERS 4892! Chapadarrah inter Wersek et Kandar, 1700–2000 m, ANDERS 10545!, ALPAY in ANDERS 11360. Sulaimanshah, 2000 m, ANDERS 10626. – NE: Kataghan: Kunduz, 440 m, YARMAL 2. Ad fl. Chal in valle Bangi supra confluentem fl. Farkhar, 550 m, PODLECH 16098. In valle fl. Andarab, ANDERS 5829, PODLECH 32031. Pul-i Khumri, 640 m, ANDERS 5612. Tang-e Warsaj, 1700 m, ANDERS 10921! Badakhshan: 6 km S Yawarzan, 1400 m, HDG. & WDB. W-9327.
Pakistan: Chitral: Brep N Mastuj, 2440 m, STAINTON 3075! – Swat: Kalam, 2200 m, RECH. 19444!, KAZMI 3482! Ushu, KAZMI 3574! Inter Khawazakhiela et Shangla, 1300–1900 m, RECH. 30562!

Distr. gen.: Per totum orbem terrarum.

The majority of specimens of *C. canadensis* being an annual species were collected in late summer. Forms such as EDELBERG 126 and 204, the types of *Erigeron myriocephalus*, were gathered in flower in March and possibly represent overwintering plants. *C. canadensis* is distinct not only by reason of its slender habit and small capitula: its indumentum consisting of fine setulose hairs and the midribs of the phyllaries which bear faintly discernible transverse dark markings make it well-nigh unmistakable.

5. ***C. bonariensis*** (L.) CRONQ., Bull. Torrey Club 70: 632 (1943).
Syn.: *Erigeron bonariensis* L., Spec. Plant. 863 (1753). *E. gusalakensis* RECH. f. & EDELB., Dan. Biol. Skr. 8, 2: 9 (1955), syn. nov. *E. linifolius* WILLD., Spec. Plant. 3: 1955 (1804). *Marsea bonariensis* (L.) BADILLO, Bol. Soc. Venez. Cienc. Nat. 10: 256 (1946).
Icon.: Tab. 70.
Typus: „Habitat in America australi".

Herba annua, erecta. Indumentum rigidum, patule pilosum vel setulosum et tenuiter appresse pubescens. Caules ad 60 cm alti, superne ramosi; axis principalis plerumque ramis lateralibus paniculas capitulorum laxos ferentibus superata. Folia inferiora 50–80(–120) x 5–10(–20) mm, oblanceolata, basi subpetiolato-attenuata, petiolo usque ad 30 mm longo, plerumque utrinque grosse 2–3-vel pluridentata, rarius integra, apice acuta vel apiculata; folia superiora 10–30 x 2 mm, linearia. Capitula sub anthesi, 7,5 mm diametro, fructificationis tempore 12 mm diametro. Involucri phylla 2–3-seriata, 3–4 x 0,4 mm, lineari-lanceolata. Flores feminei numerosi, tubulosi; corollae 3,5–4 mm longae, breviter ligulatae, apice trilobae. Flores hermaphroditi 3 mm longi. Achaenia 1,25–1,5 x 0,25 mm, oblonga, straminea, sparsissime puberula; pappus simplex, 3–4 mm longus, pure albus, setis c. 20.

Iraq: Kurd.: Mosul: N Mosul, 220 m, ANDERS 1582!
Persia: **N**: Gorg.: Zarrin Gol, 300 m, AMINI 6712. 15 km W Gorgan, – 10 m, UOTILA 19238! Mohammad Reza Shah Res.: Inter Tange-e Rah et Tang-e Gol, 400–600 m, RECH. 52551! Maz.: Emarat in valle Haraz, 400 m, WDB. 1496! Amol, 50 m, RIAZI 6707. 45 km S Amol prope Zardman, JARDINE 827! Now Shahr, IRANSHAHR 12212-E! Babol, RECH. 5641!, HEWER 4033. In valle Chalus, KLET 14869-E!, FOROUGHI 2788. In jugo „Lar Arnol", 120 m, REES 75! Gilan: Khushavar, CRISP 135! Asalem, 200 m, ESFAND. 6359-E! – **S**: Fars.: Gar Shapur et in angustiis Tange-e Chogan-e Olia, SOJÁK 5913! Kerman: Isin, SOJÁK 4529! 45 km ENE Hajjiabad, SOJÁK 4420! Sabzvaran (Jiroft), SOJÁK 4225!
Afghanistan: **SE**: Kandahar: Kandahar, 1010 m, PODLECH 16871. Ad fl. Arghandab 15 km W Kandahar, PODLECH 19610. – **E**: Kabul: Laghman, 1220 m, KOELZ 11615! Laghman: Shahidan inter Jalalabad et Sarobi, 710 m, PODLECH 28696. Nangarhar: Torkham, 570 m, KUKKONEN 7145! Jalalabad, 600 m, LINDB. 130/1962!, ANDERS 5373!, GILLI 3937! Khost: 20 km W Khost versus Gardez, 1200 m, DIETERLE 369. Khost. 1170 m, PODLECH 18652, VOLK 1084! Safed Golak, WALD 51! Nuristan: Dewagal Darreh NW Chauki Chambel, 1000 m, ANDERS 11019! Gusalak, 1000 m, EDELB. 151 (typus *Erigerontis gusalakensis*)! Kandai, RECH. 32450! Kushtos, 2000 m, NEUB. 3273! Inter Bragamata et Kamdesh, 1700 m, BRECKLE A-3274! 46 km NE Chigha Sarai S Barikot, 1050 m, BRECKLE A-2772! Barikot, 850 m, GILLI 3940!, BRECKLE A-2813! 10 km supra Kamdesh, 1680 m, PODLECH 16727. Shewa in valle Kunar inferiore, 600 m, GILLI 3936! – **NE**: Kataghan: Kunduz, 450 m, PODLECH 12912. Gultepa W Asqalan, 410 m, YARMAL 22.
Pakistan: Chitral: Drosh, 1250 m, BOWES LYON 702! – Swat: Inter Saidu Sharif et Malakand, 800 m, RECH. 19605! Bahrain, 1525 m, RAHMAN 122! – Peshawar: 3 km W Pabbi, 380 m,

KUKKONEN 7132! Peshawar, 400 m, UOTILA 17360!, AKRAM 10!, KAZMI 68! Nowshera 43 km E Peshawar, UOTILA 22641! – Kurram: Shalozai, KAZMI 3767! 3 km a Parachinar, KAZMI 4000! – Quetta: Quetta, 1830 m, DICK PEDDIE 25! Ad viam versus Sariab, 1700 m, LAMOND 914!

Distr. gen.: Per totum orbem terrarum.

The habit of this species in which the main axis is regularly overtopped by the lateral branches, the coarsely toothed lower leaves and the numerous capitula combine to distinguish is. *C. bonariensis* is also distinctive in its indumentum which consists of a mixture of strong spreading hairs and weaker appressed pubescence. As in the case of *C. canadensis*, this species is a summer-flowering annual but plants do occasionally overwinter and have been gathered in flower early in the season, e. g. EDELBERG 151 (in March), the type of *E. gusulakensis*. The latter is a short robust specimen with capitula (sub anthesi) 1 cm broad and phyllaries c. 5 mm long. The lateral branches have not developed and only the terminal panicle of the main axis is present. In other respects, however, the distinctive basal leaves and indumentum of the plant is typical. LAMOND 914 on the other hand is of more slender habit: branching has proceeded from the base of the plant and it lacks the accustomed overtopped habit, the lower leaves are entire but in respect to indumentum and capitulum form it is typical.

14. *Dichrocephala*

auctore K. H. RECHINGER, Wien

Dichrocephala DC., Prodr. 5: 371 (1838).

Herbae annuae, caulibus plerumque ramosis. Folia alterna, lyrato-pinnatisecta vel indivisa et grosse dentata. Capitula parva, globosa, heterogama, disciformia, ad extremos ramos laxe paniculata; involucrum parvum, ± hemisphaericum; phylla 1–2-seriata, subaequalia. Receptaculum obovoideum, nudum. Flores feminei albidi, numerosi, pluriseriati; corolla tubulosa, 2–3-loba. Flores hermaphroditi flavescenti-virides, minus numerosi; corolla anguste campanulata, 4–5-dentata. Achaenium compressum, bicostatum; pappus in achaeniis florum femineorum nullus, in hermaphroditis e setulis binis tenuibus consistens.

1. ***D. integrifolia*** (L. fil.) O.KUNTZE, Revis. Gen. 1: 133 (1891).
Syn.: *Hippia integrifolia* L. fil., Suppl. 389 (1781). *Cotula bicolor* ROTH, Catalecta Bot. 2: 116 (1800). *C. sonchifolia* M. B., Fl. Taur.-Cauc. 2: 328 (1808). *Grangea latifolia* POIR. in LAM., Encycl. Meth. Bot. Suppl. 2, 2: 826 (1812). *Dichrocephala latifolia* (LAM.) DC. in WIGHT, Contrib. 11 (1834). *D. sonchifolia* (M. B.) DC., Prodr. 5: 372 (1836). *D. bicolor* (ROTH) SCHLECHT., Linnaea 25: 209 (1852).
Icon.: LAMARCK, Tabl. Encycl. 4, 1: tab. 699 (1796). FIORI, Icon. Fl. Ital. fig. 3532 (1904). Tab. nostr.: 71.
Typus: Distr. India, Herb. LINN 1039/1.

Caulis 20–40 cm altus, albo-villosus. Folia ovata vel lyrato-pinnatisecta, oblonga, 3–15 × 2–10 mm, utrinque villosa; segmentum terminale, 25–50 mm longum et latum. Capitula 3–10, pedunculis ramosis suffulta. Involucrum 3–4 mm diametro; phylla plerumque 10, lanceolata, c. 1 mm longa. Flores feminei c. 0,5 mm longi, albidi; flores hermaphroditi 0,8–1 mm longi, flavescenti-virides. Achaenium 1–

1,25 mm longum, obovoideum, glabrum vel apice minute glandulosum; pappus achaeniorum florum hermaphroditorum 0,5–1 mm longus.

Talish: Inter Lenkoran et Astara, HOHEN., BUHSE.

Persia: N: Gorg.: Gorgan (Asterabad), KARELIN. Bandar-i Gaz, SHAR. 210! Gilan: Supra Ardajan (Ardehjan), 500–800 m, SCHMID 6622! Rasht, ALEXEENKO. 30 km S Astara, 0–50 m, CRISP 106! Inter Hashtpar et Asalem, 200–250 m, TERME & al. 39146! In valle Lisar, 120 m, ROWSHAN 6723! In valle Karganrud, 180 m, ROWSHAN 6628! In humidis Gilani, AUCH. 4722!

Distr. gen.: Asia et Africa tropica; in Italia, Anatolia boreali, Caucasia et Persia boreali inquilina.

15. *Grangea*

auctore K. H. RECHINGER, Wien

Grangea ADANS., Fam. 2: 121 (1763).

Herbae annuae prostratae ramosae. Folia sinuato-pinnatifida. Capitula discoidea, multiflora, axillaria et terminalia, mediocria, demum subglobosa; involucrum biseriatum. Receptaculum hemisphaericum, nudum. Flores feminei multiseriati; corolla filiformis, stylo bifido. Flores hermaphroditi stylo indiviso. Achaenium compressum, obovatum, in rostrum ± manifestum crassum apice cupulatum ciliolatum vel squamulosum productum.

1. ***G. maderaspatana*** (L.) POIR. in LAM. & POIR., Encycl. Meth. Bot. Suppl. 2, 2: 825 (1812).
Syn.: *Artemisia maderaspatana* L., Spec. Plant. 849 (1753).
Icon.: Tab. 72.
Typus: India.

Caules ramique 10–30 cm longi, flexuosi prostrati, appressiuscule cinereo-villosi. Folia 15–70 x 8–25 mm, ambitu ovato-oblonga, pinnatifida vel pinnatipartita; laciniae oblongo-spathulatae, obtuse dentatae, infimae in petiolum attenuatae, ceterae basi attenuata semiamplexicauli sessiles. Capitula in axillis supremis et terminalia sessilia; involucri phylla oblonga, appressa. Achaenium ± 1,5 mm longum; rostrum inflatum, obconicum, achaenio subcrassius.

Pakistan: Sind: Inter Amri et Laki, in inundatis ad ripas Indus fluminis, RECH. 28684! – Baluchistan, STOCKS.

Distr. gen.: Pakistan, India.

16. *Bellis*

auctore K. H. RECHINGER, Wien

Bellis L., Spec. Plant. 886 (1753).

Herbae humiles, saepe acaules, annuae vel perennes (nostrae). Folia rosulata vel alterna, basalia vel subbasalia, spathulata vel oblanceolata. Capitula heterogama, radiata, in scapis aphyllis pubescentibus solitaria. Involucrum hemisphaericum vel late campanulatum; phylla 1–2-seriata, herbacea, saepe nigrescenti-viridia, pubescentia. Receptaculum conicum, nudum. Flores radiantes uniseriati; ligulae albae vel roseae. Flores disci flavi; corolla 5-loba. Achaenia obovata, compressa, margine incrassata; pappus nullus.

1a. Herba annua, caule in parte inferiore foliato. Folia parva, plerumque 10–15(–30) mm longa, apicem versus paucidentata .... 2. *B. annua* L.
b. Herba perennis, foliis omnibus rosulatis. Folia plerumque quam 20 mm longiora, integra vel minute pauci- et pluridentata .... 1. *B. perennis* L.

1. ***B. perennis*** L., Spec. Plant. 886 (1753).
Syn.: *B. armena* BOISS., Fl. Or. 3: 174 (1875).
Icon.: HEGI, Ill. Fl. Mitteleur. 6, 1: tab. 258 (1916). – Tab. nostr.: 73.
Typus: Europa, Herb. CLIFF. 418/1!; Herb. LINN 1006/1.

Perennis. Folia plerumque rosulata, spathulata, 2–30 × 0,5–1,5 cm, apice obtusa vel late acuta, subabrupte in basin petioliformem attenuata, integra vel utrinque apicem versus usque ad 5-denticulata, utrinque sparse pubescentia. Capitula scapis 1,5–10(–25) cm longis suffulta. Involucrum 5–10 mm diametro; phylla 3–6 × 0,75–2,5 mm, ovato-lanceolata, apice obtusa vel acuta. Flores radiantes 30–50; ligulae 5–7 mm longae, albae, subtus saepe roseo- vel purpureo-suffusae. Flores disci 1,5–2 mm longi. Achaenium 1,3–1,5 × 0,7–0,8 mm leviter pubescens.

I r a q : Kurd.: Arbil: Diana prope Rawandiz, GUEST 706. Ad radices M. Baradost inter Shanidar et cavernam, 800 m, ERDTMAN & GOEDEMANS in RECH. 15622! E Salah ad-Din, HELBAEK 743! Mosul: S Sirsang, 1100 m, ANDERS 1370! Aqrah, POLUNIN 93! Sul.: 39 km W Sulaymaniyah, BARKLEY & BRAHIM 4463! In planitie prope Sulaymaniyah, THESIGER 339!, GRAHAM.
P e r s i a : N: Gorg.: Kulbad (N Behshahr), BUHSE. Inter Ziarat et Shahrud, BUNGE. Maz.: Hazar Jerib, SHAR. 183! Kuhha-ye Golgar prope Versk, 1900–2700 m, TERME 39914-E! Pol-e Safid, 1400 m, DOMANCHICK 31412! – W: Ham.: Borujerd, KOELZ 17062! Kermansh.: Karand, SHAR. 2544-E!, 2600-E! Bakht.: Peshmshurun, KOELZ 15110! Lur.: Khorramabad, BENT & WR. 411–103! Dow Rud, 1650 m, KOELZ 15827!, 17105!, 17143-a!
A f g h a n i s t a n : E: Kabul: Paghman, 2000–2200 m, PODLECH 31515!, ANDERS 5567!

Distr. gen.: Europa, Anatolia, Cyprus, Syria occidentalis, Azerbaijan, Persia borealis et occidentalis, Afghanistan (In Paghman inquilina, fide PODLECH).

2. ***B. annua*** L., Spec. Plant. 887 (1753).
Syn.: *B. dentata* DC., Prodr. 5: 304 (1836).
Icon.: FIORI, Icon.: Fl. Ital. fig. 3508 (1904). – Tab. nostr.: 74.
Typus (syntypi): Sicilia, Hispania, Gallia australis, Herb. LINN 1006/3.

Herba annua, tenerrima. Caulis 3–7 cm altus, parce puberulus, erectus vel decumbens, in tertia vel dimidia parte inferiore foliatus, simplex vel inferne 1–2-ramosus. Folia 10–15(–30) × 4–8 mm, infima breviter petiolata, oblongo- vel spathulato-subintegra; superiora spathulata, basi attenuata sessilia, apice obtusa, in parte superiore apicem versus paucidentata, prope basin ciliata, ceterum glabra, tenuia, saturate viridia. Capitula singula, longiscule pedunculata; involucrum 3–4 mm diametro; phylla 2,5–3 x 1–1,5 mm, lanceolata, breviter acuminata, viridia. Flores radiantes 20–30, albi; ligulae 4–5 mm longae; flores disci aurei; 1,5 mm longi. Achaenium 1,2–1,4 mm longum, pubescens.

Iraq: Kurd.: Kirkuk: Jarmo, HELBAEK 482!
Persia: W: Khuz.: 15 km a Masjed Soleyman versus Shushtar, 300 m, IRANSHAHR & TERME 14910-E! Ad ripam rivi prope Hoseyniyeh 28 km NNW Andimeshk, SOJAK 8326!, 8327!

Distr. gen.: Regio Mediterranea. Anatolia, Iraq, Persia austro-occidentalis.

Solidago virga-aurea L. – WENDELBO & SHIRDELPUR 14896

Tab. 2

Solidago virga-aurea L. – Edelberg 1311

Solidago virga-aurea L. – STAMM & WÖHRL 92

Tab. 4

Aster alpinus L. – TERME & MATIN 36686-E

Aster flaccidus BUNGE – STAMM & WÖHRL 187

Aster Aitchisonii BOISS. – HARSUKH 15382

Heteropappus altaicus (WILLD.) NOVOPOKR. var. *canescens* (NEES) SERG. – FURSE 3124

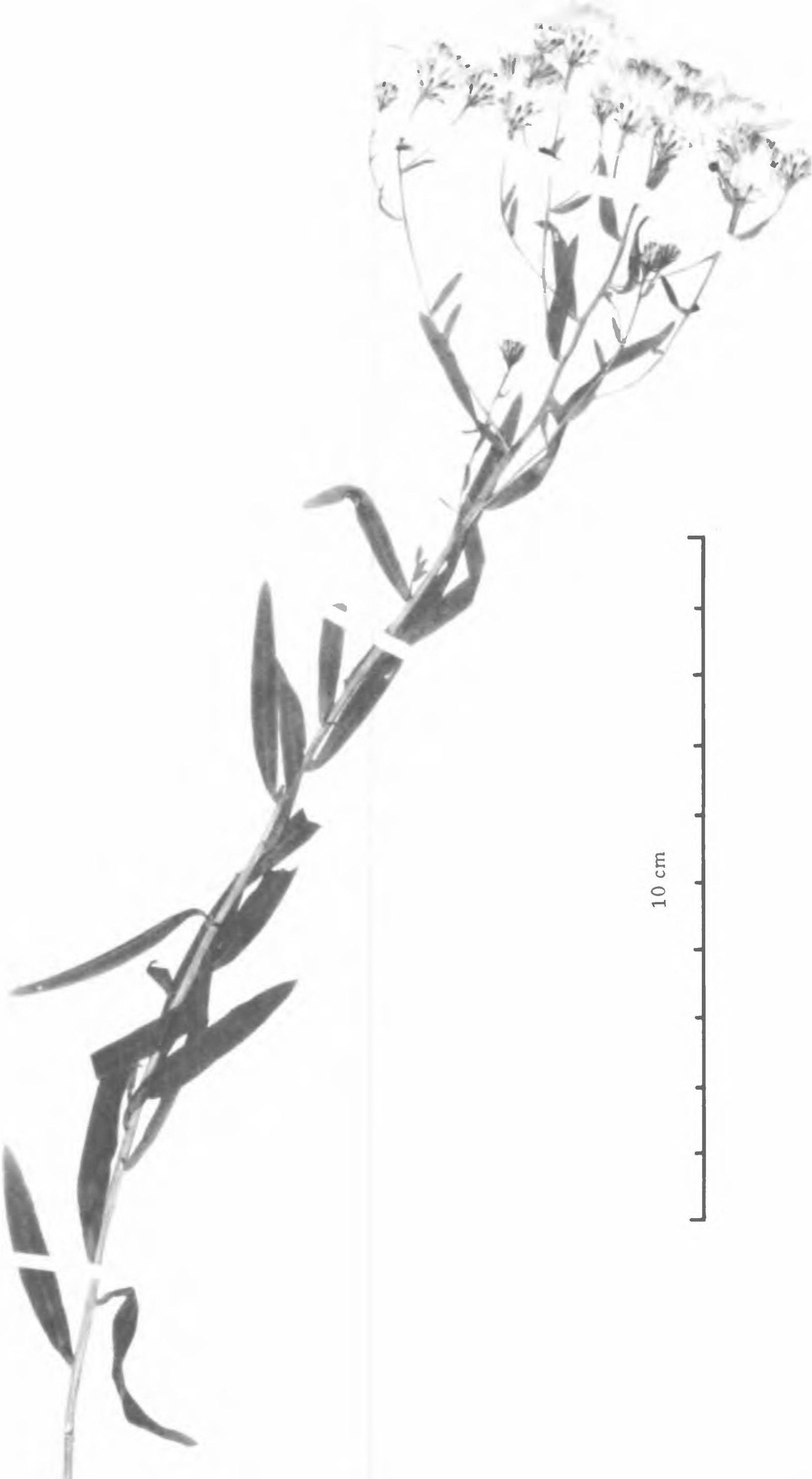
Tab. 8

Heteropappus altaicus (Willd.) Novopokr. var. *tenuicaulis* Grierson – Kerstan F-45

Tab. 9

Heteropappus altaicus (WILLD.) NOVOPOKR. var. *decrescens* GRIERSON – RECH. 30931

Tab. 10



Galatella punctata (Waldst. & Kit.) Nees – Terme 13161-E

Crinitaria Grimmii (REGEL & SCHMALH.) GRIERSON – KOEIE 2384

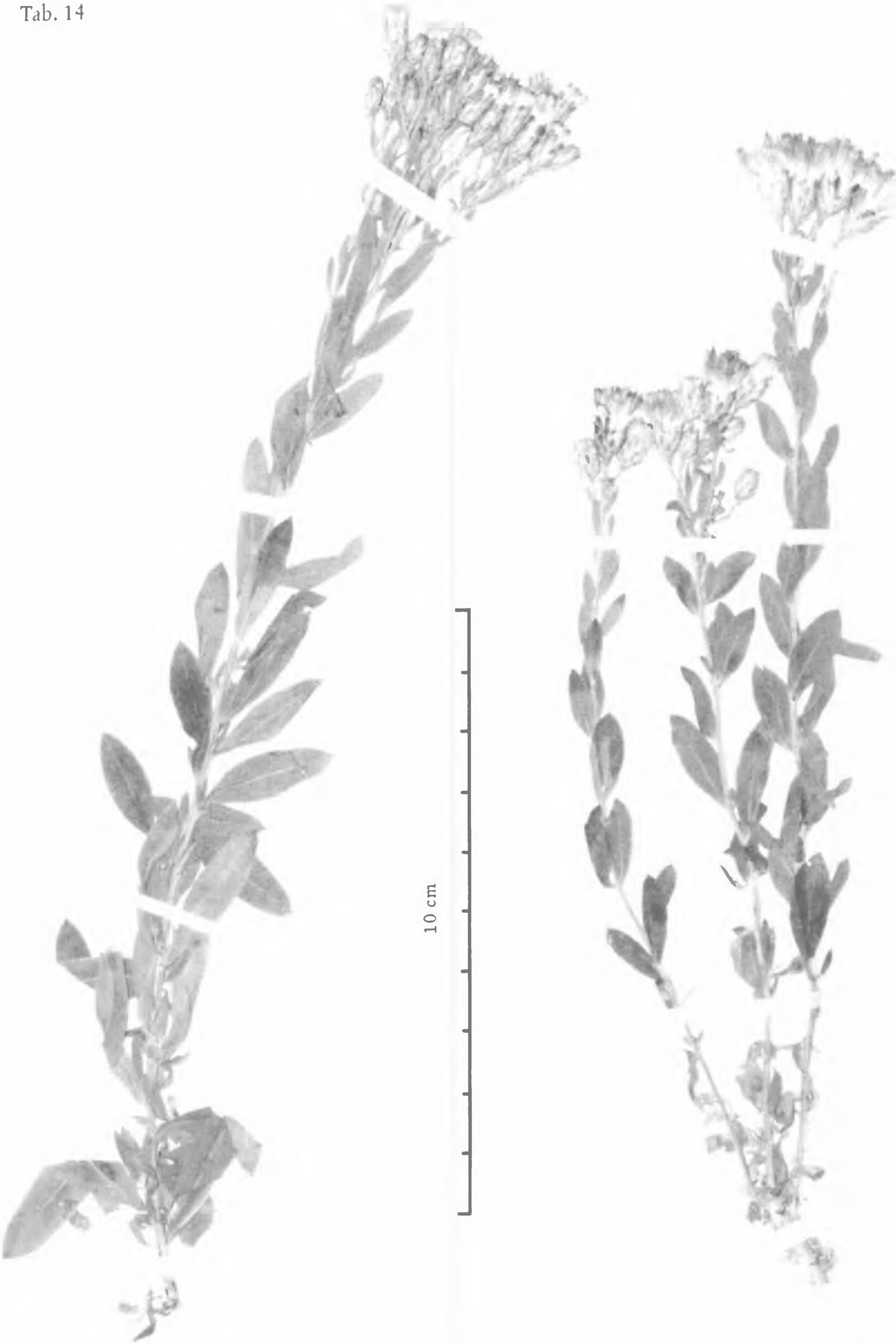
Tab. 12

Crinitaria asperella (RECH. f. & KOEIE) GRIERSON · KOEIE 2935

Tab. 13

Crinitaria corymbulosa (BORNM.) GRIERSON – PODLECH 16174

Tab. 14



Crinitaria villosa (L.) GROSSH. – FARBOODNIA & ZEHZAD 4018

Erigeron acer L. subsp. *asadbarensis* (VIERH.) RECH. f. – WENDELBO & ASSADI 13317

Erigeron acer L. subsp. *pycnotrichus* (VIERH.) GRIERSON – KOTSCHY 303.30c (Bulgar Magara)

Erigeron acer L. subsp. *phaeocephalus* RECH. f. – RECH. 18389

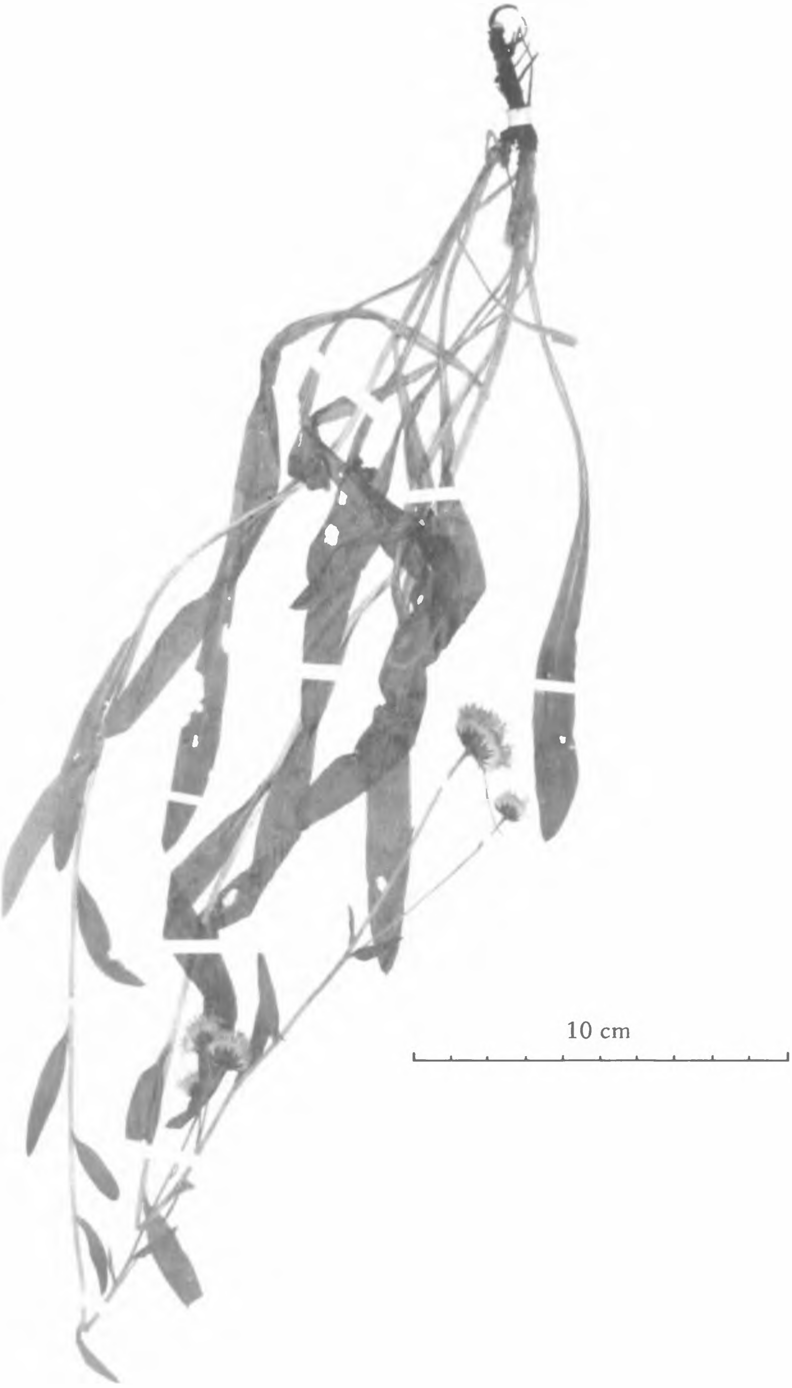
Tab. 18

Erigeron acer L. subsp. *lalehzaricus* RECH. f. – BORNM. 3979

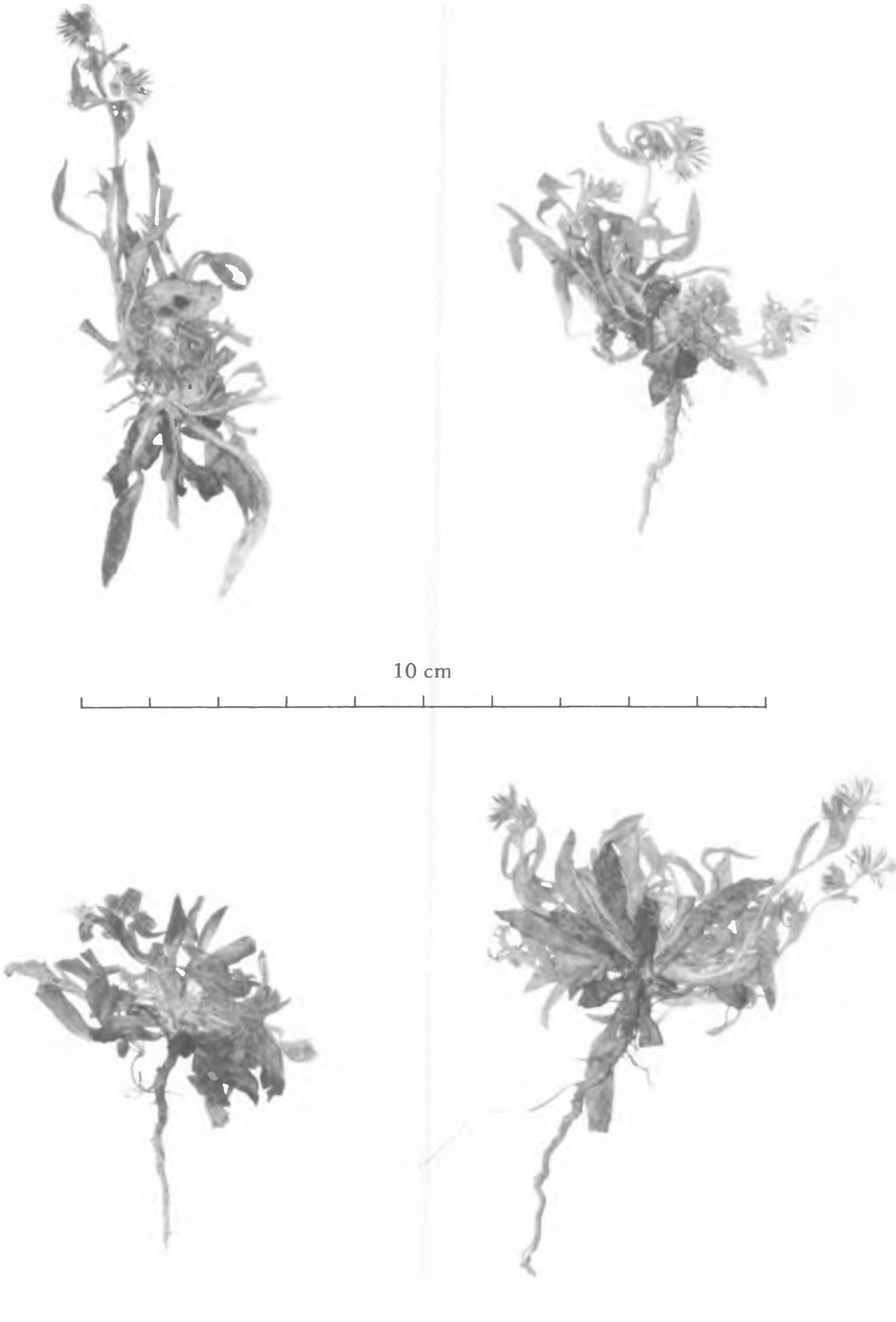
Erigeron acer L. subsp. *lalehzaricus* RECH. f. – SOJÁK 8437

Tab. 20

Erigeron acer L. subsp. *Staintonii* RECH. f. – STAINTON 3231



Erigeron acer L. subsp. *arctophilus* (RECH. f.) RECH. f. – RECH. 6137



Erigeron nannogeron RECH. f. – TONČEV in FREITAG 4121

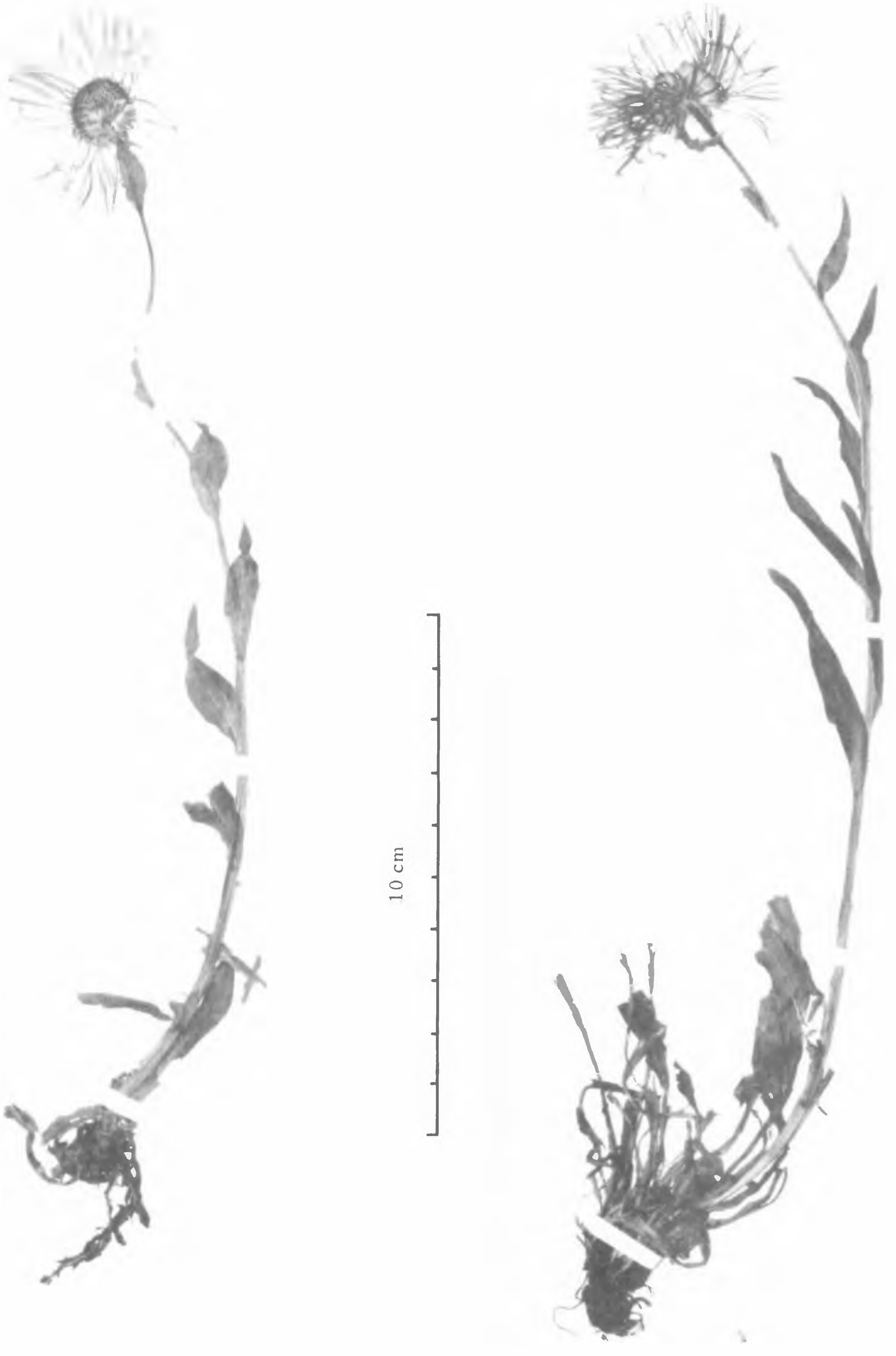
Erigeron semibarbatus DC. – BOWES LYON 178

Tab. 24

Erigeron cyanactis RECH. f. – STAINTON 2960

Erigeron leptocladus RECH. f. – STAINTON 3086

Erigeron anisophyllus RECH. f. – RECH. 19433



Erigeron multiradiatus (LINDL.) C. B. CLARKE – NEUB. 578 et 606/1951

Erigeron cedretorum Rech. f. – Rech. 30653

Erigeron hyrcanicus BORNM. & VIERH. – RECH. 6515 p.p.

Erigeron pseuderiocephalus M. Pop. – Stainton 2939

Erigeron caucasicus STEV. subsp. *venustus* (BOTSCH.) GRIERSON – LAMOND & TERME in RECH. 44314

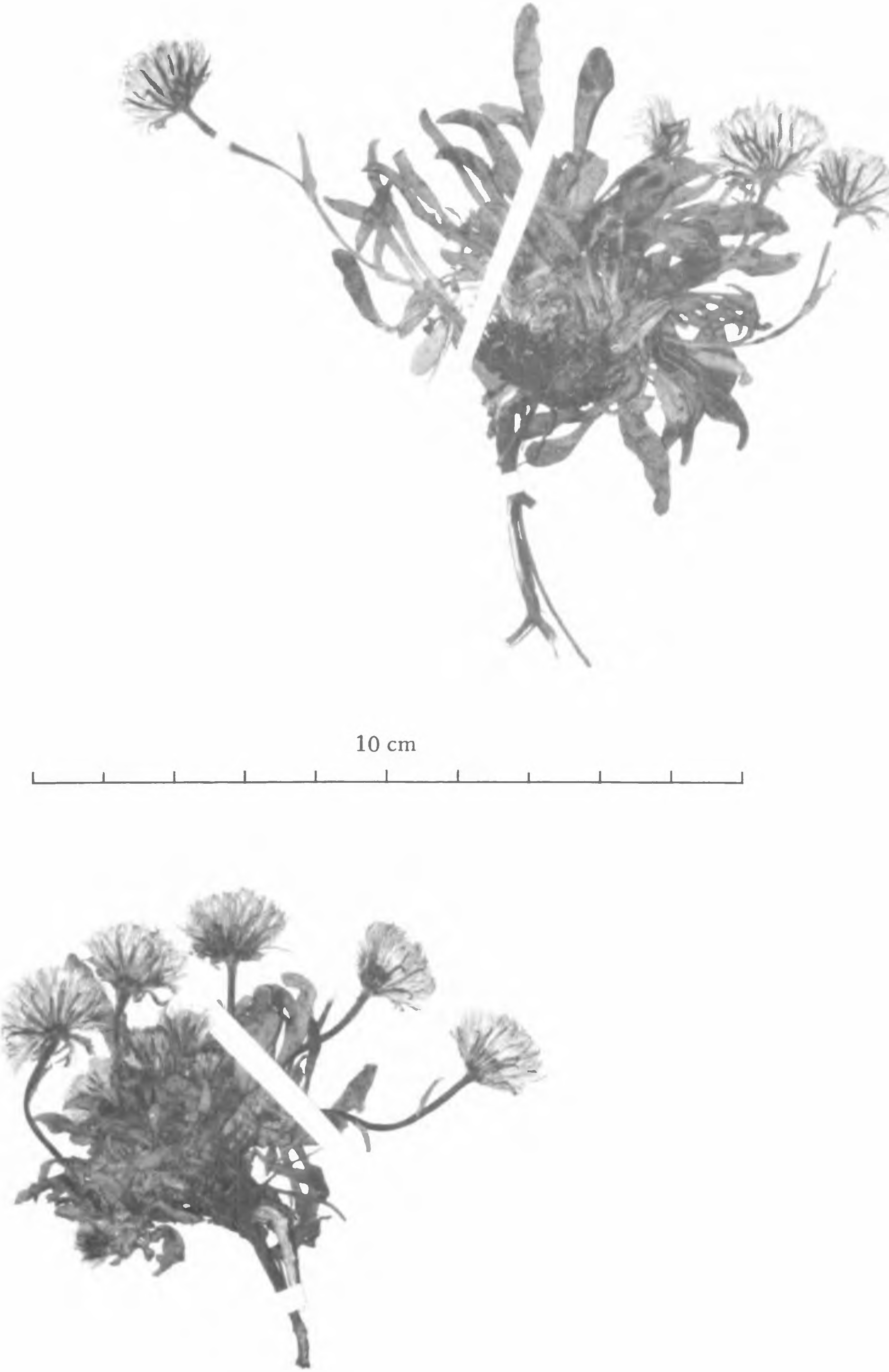
Tab. 32

Erigeron plesiogeron Rech. f. – Rech. 32316

Erigeron petroiketes Rech. f. – Breckle 1329

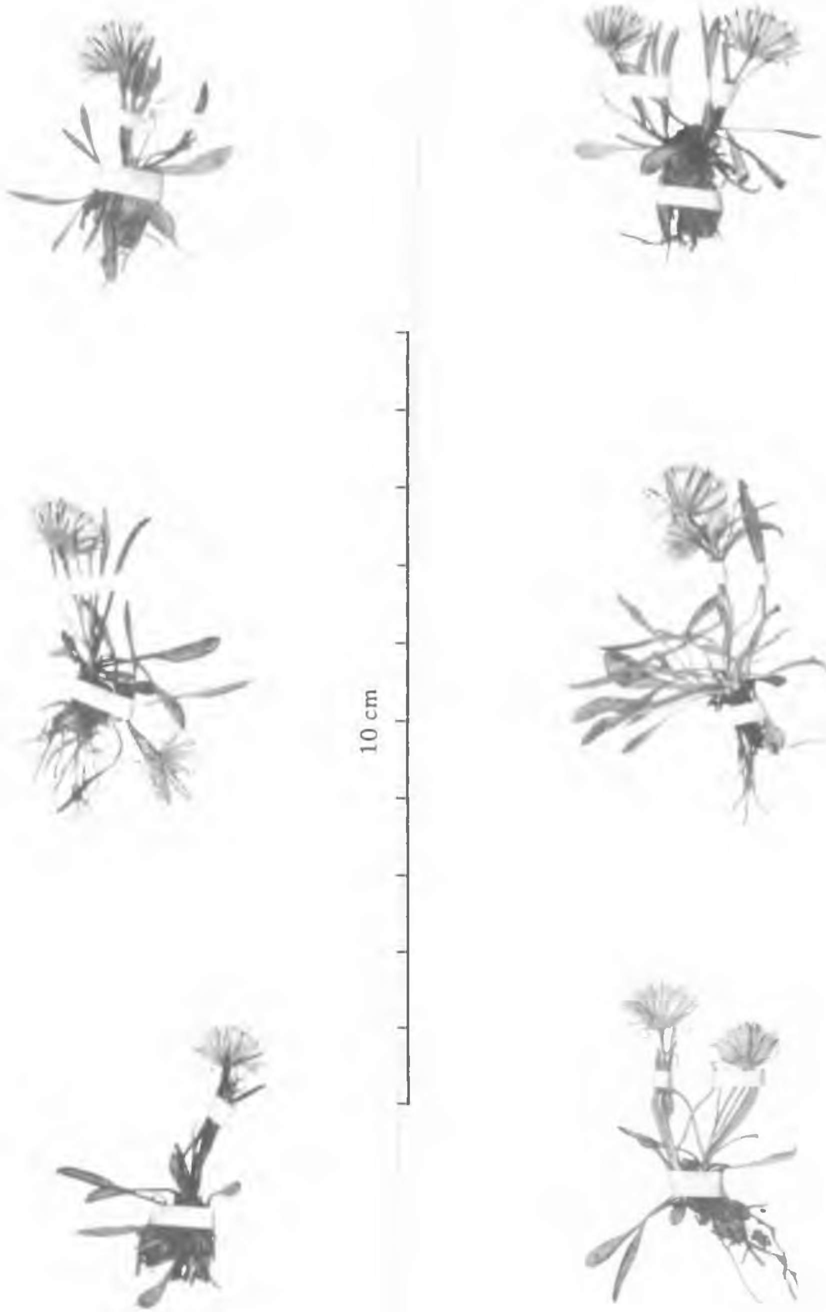
Tab. 34

Erigeron uniflorus L. subsp. *daënensis* (VIERH.) RECH. f. – SOJÁK 6347



Erigeron uniflorus L. subsp. *elbursensis* (Boiss.) Rech. f. – Rech. 5979

Tab. 36



Erigeron lonchophyllus Hook. – Stainton 2781

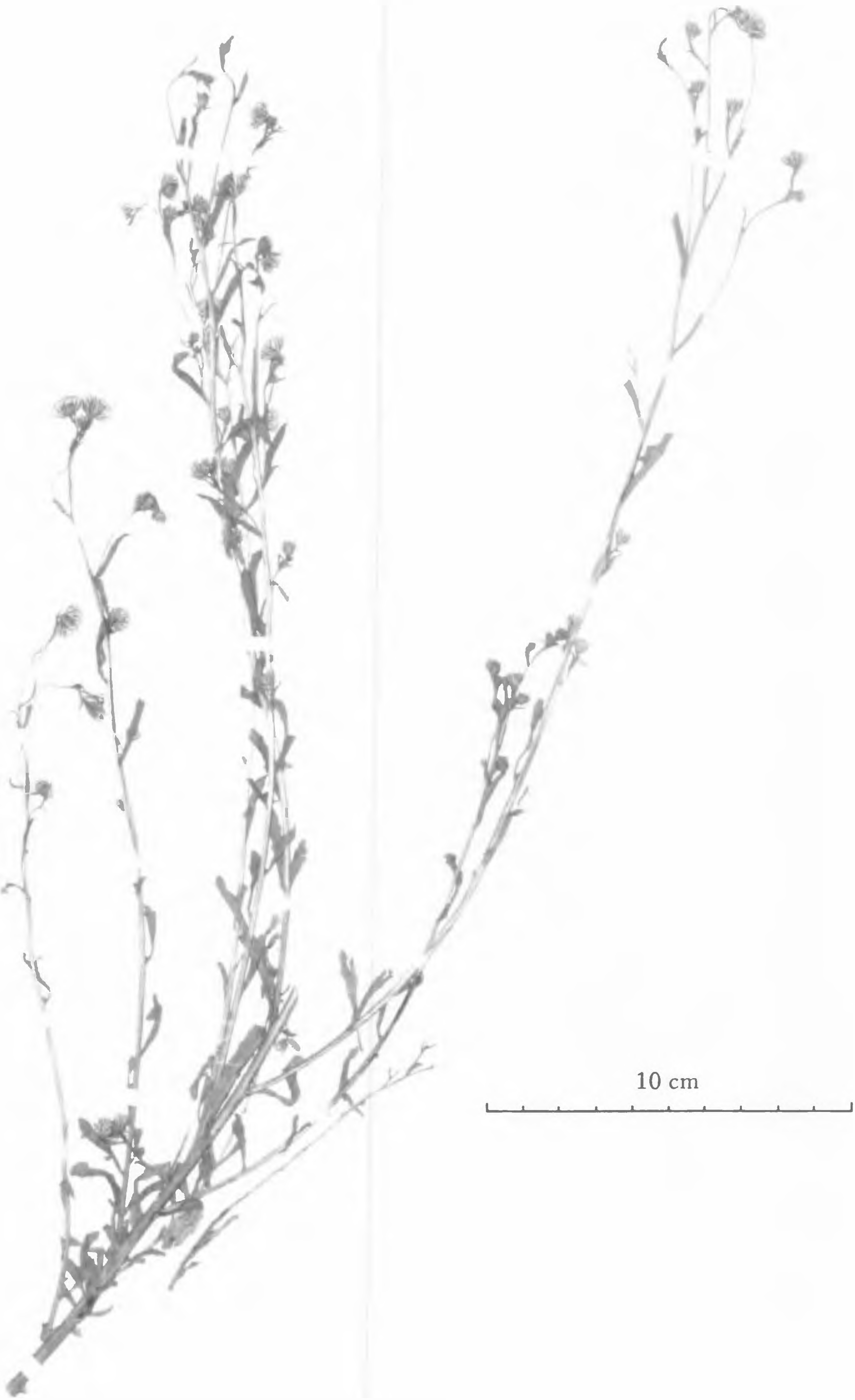
Lachnophyllum gossypinum BUNGE – FREITAG 3834

Tab. 38

Lachnophyllum Noëanum Boiss. – Haussknecht (Nauderbent)

Chamaegeron Bungei (BOISS.) BOTSCH. – STRAUSS (Rasvand)

Tab. 40



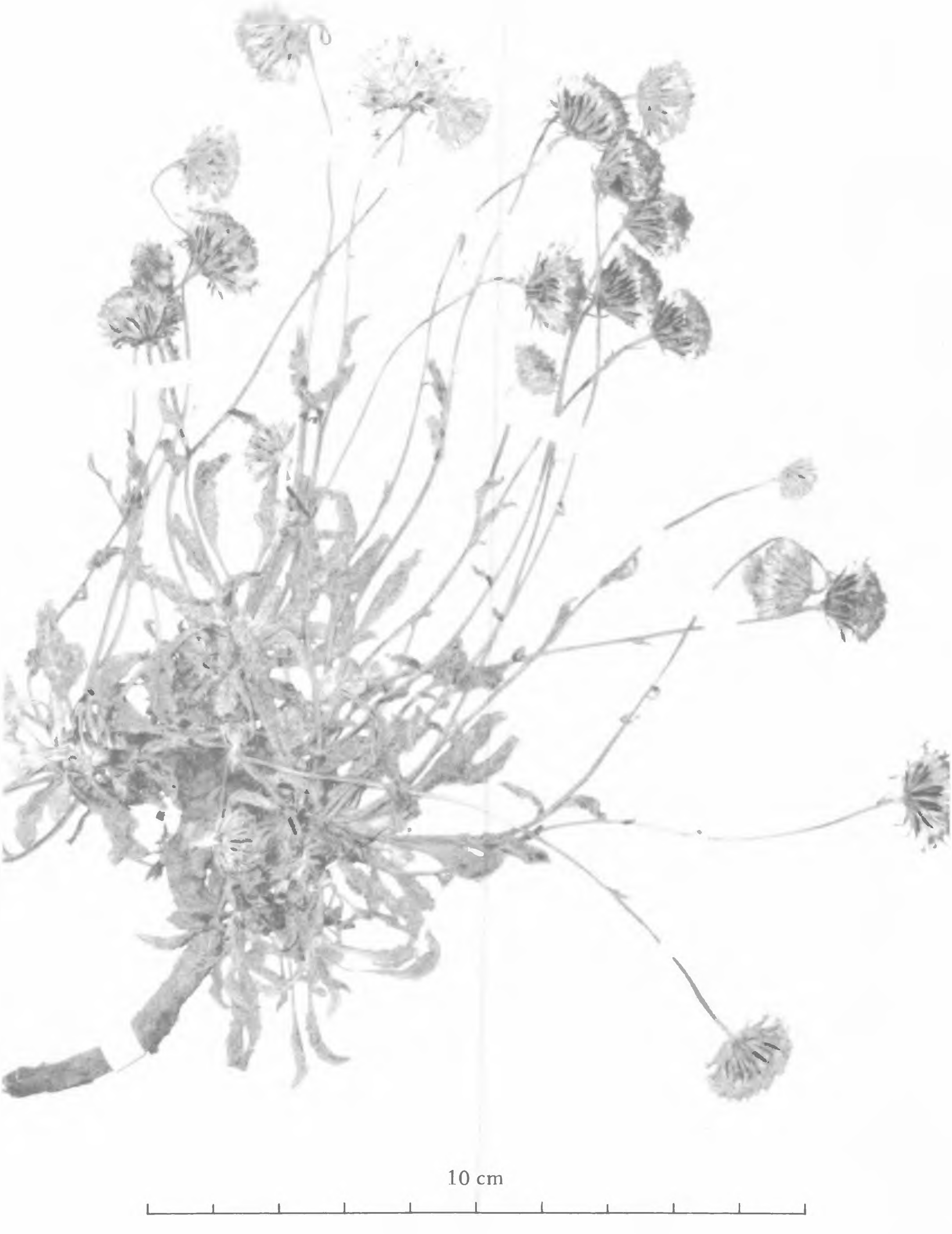
Chamaegeron keredjensis (BORNM. & GAUBA) GRIERSON – GAUBA 1295

Chamaegeron asterellus (BORNM.) BOTSCH. – BORNMÜLLER 3985

Chamaegeron oligocephalus SCHRENK – HEDGE, WDB. & al. 14730

Tab. 43

Psychrogeton cabulicus Boiss. – Rech. 36278



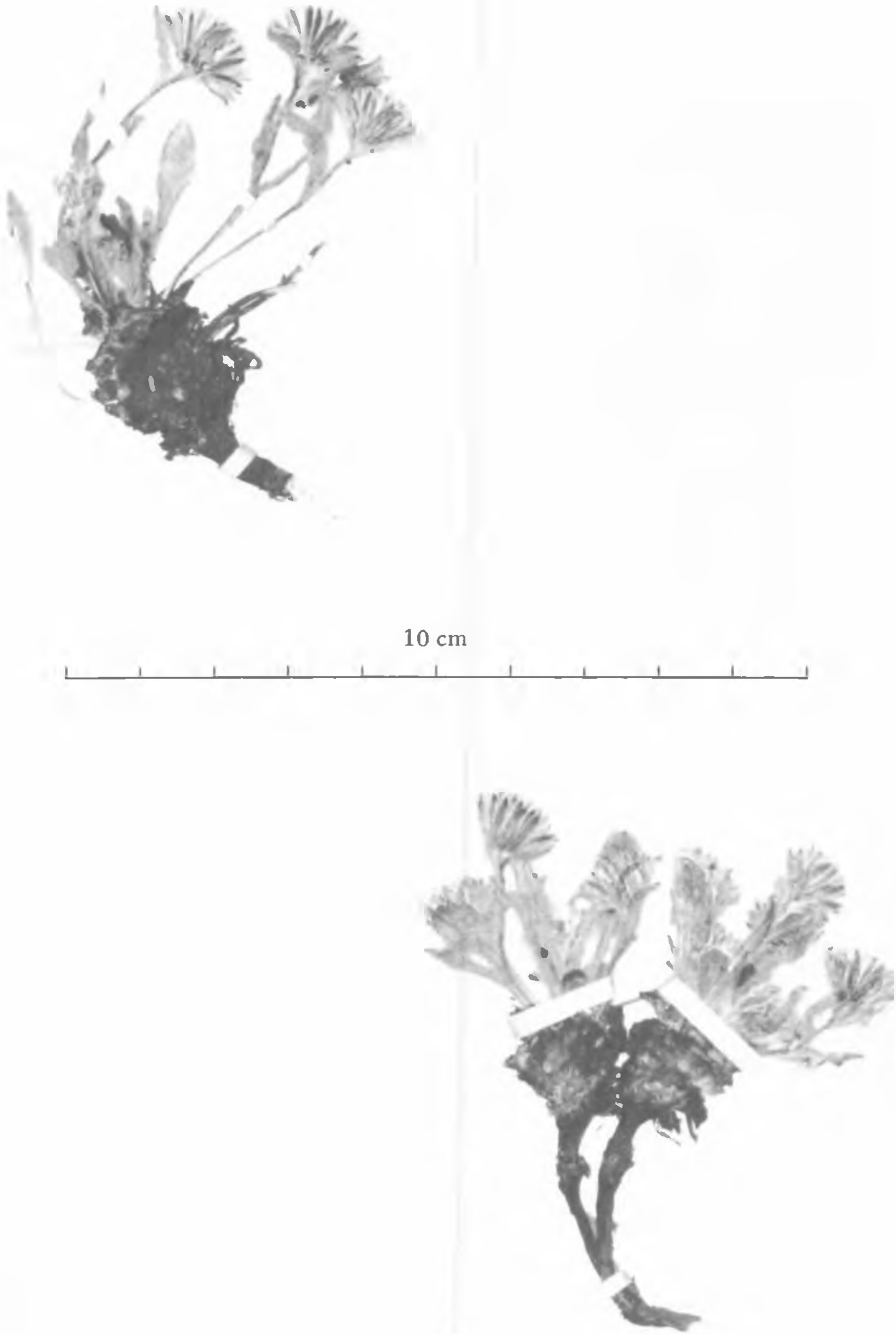
Psychrogeton andryaloides (DC.) Novopokr. ex Krasch. var. *Poncinsii* (Franch.) Grierson – Rech. 31581

Psychrogeton andryaloides (DC.) NOVOPOKR. ex KRASCH. var. *denudatus* (BOTSCH.) GRIERSON
ROEMER 208

Psychrogeton rotundifolius GRIERSON — HEDGE & WENDELBO W-3742

Psychrogeton amorphoglossus (Boiss.) Novopokr. – Rech. 36567

Tab. 48



Psychrogeton Olgae (REGEL & SCHMALH.) NOVOPOKR. ex NEVSKI – WENDELBO (Tirich Mir)

Psychrogeton candidissimus (RECH. f. & EDELB.) GRIERSON – GREY-WILSON & HEWER 1056

Psychrogeton Alexeenkoi KRASCH. – RECH. 37409-a

10 cm

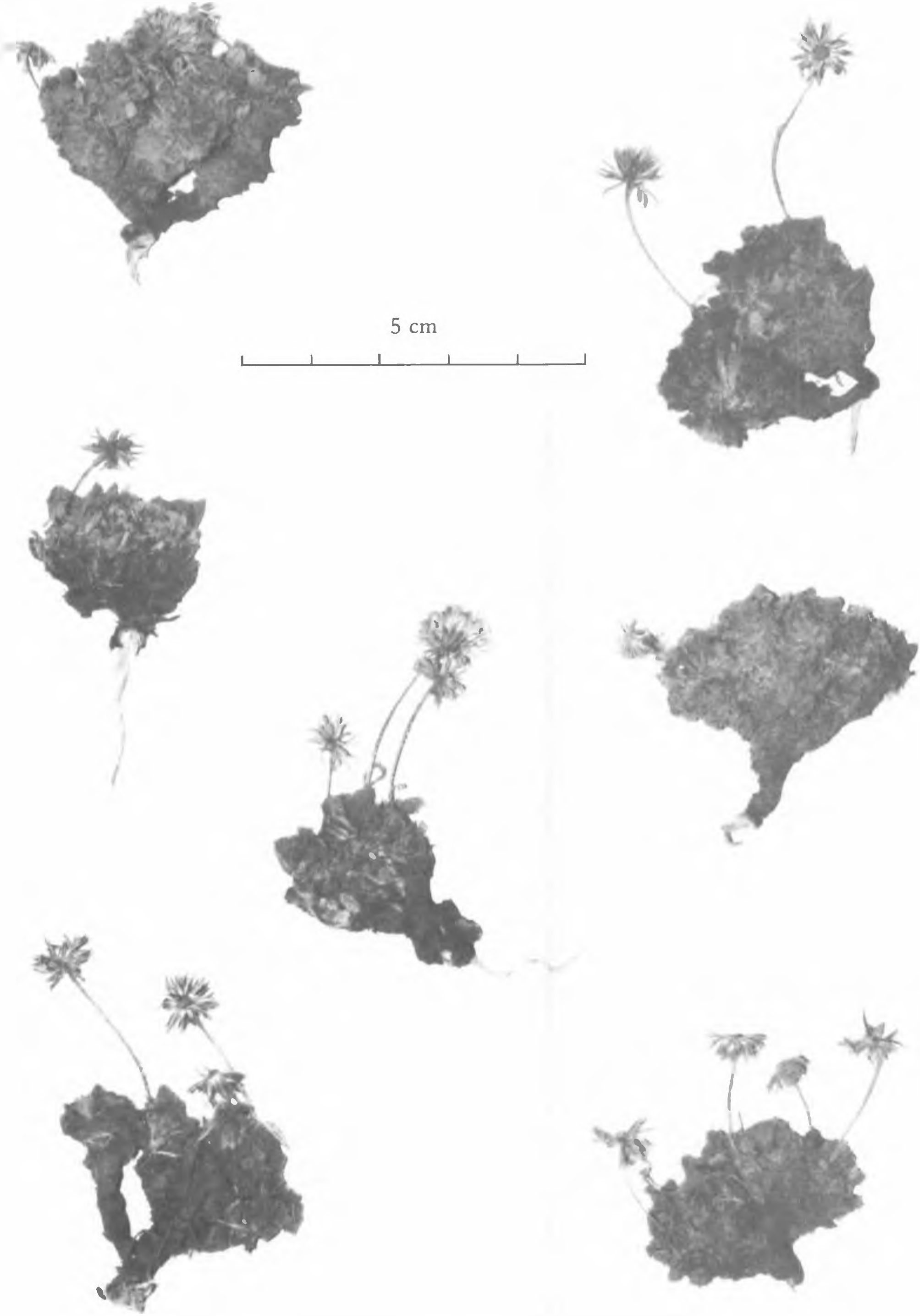
Psychrogeton lumbricoides (GILLI) GRIERSON – RECH. 36006

Psychrogeton shahrestanicus Rech. f. – Rech. 36736

Tab. 53

Psychrogeton obovatus (BENTH.) GRIERSON – RECH. 46147

Psychrogeton sphaeroxylus (GILLI) GRIERSON – RECH. 18493

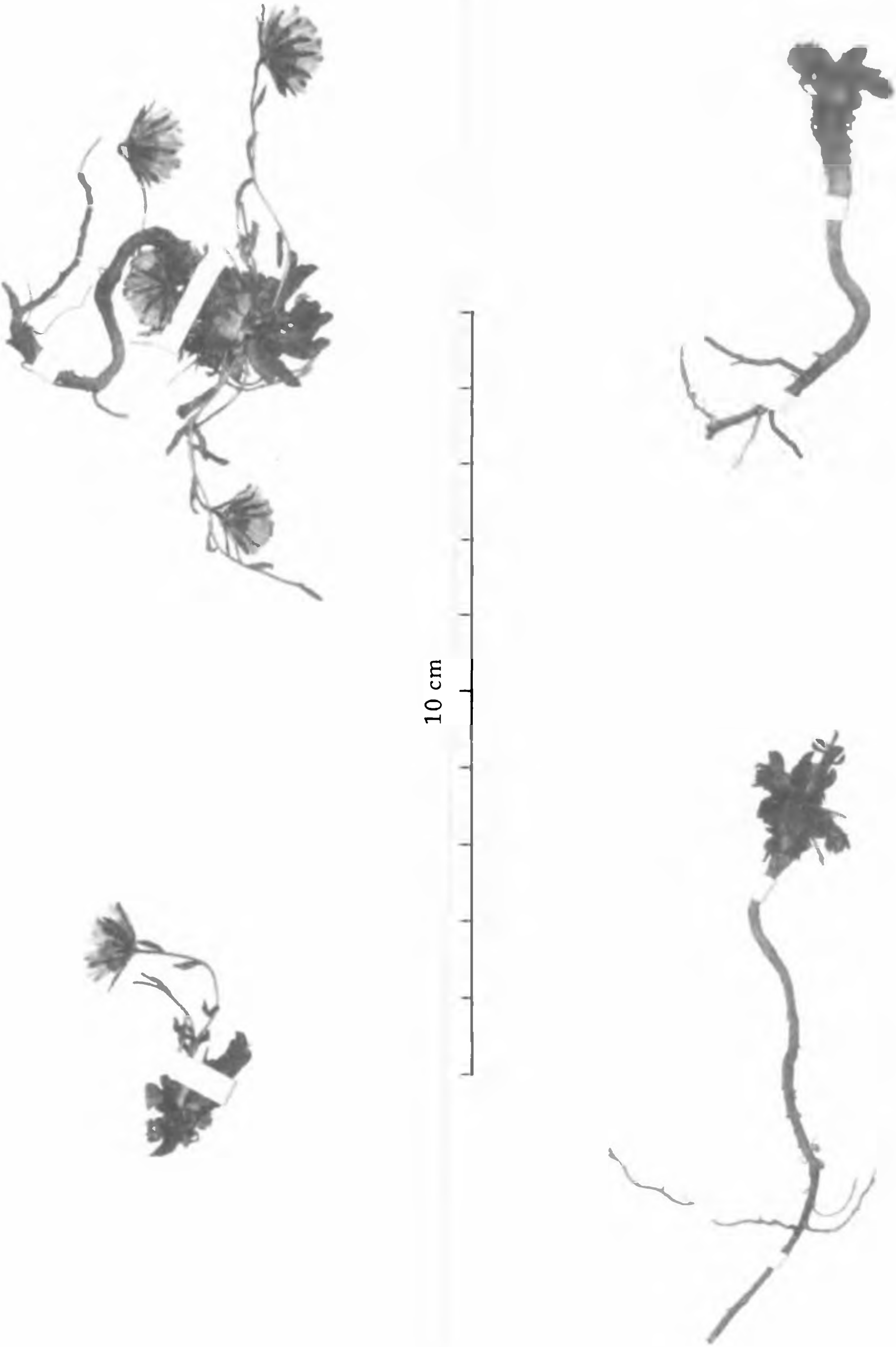


Psychrogeton drabiformis Grierson – Hedge & Wendelbo W-4208

Psychrogeton persicus (Boiss.) Grierson – Koelz 18364

Psychrogeton Aellenii (Rech. f.) Grierson – 1: Rech. & Aell. 5133; 2: Rech. 6010-a

Tab. 58



Psychrogeton chionophilus (Boiss.) Krasch. – Kotschy 800-a

Psychrogeton chitralicus GRIERSON – BOWES LYON 126

Psychrogeton Pseuderigeron (BUNGE) NOVOPOKR. ex NEVSKI – RECH. 53449

Psychrogeton Aucheri (DC.) GRIERSON – RECH. 18440

Psychrogeton nigromontanus (BOISS. & BUHSE) GRIERSON – RECH. 11308

Brachyactis pubescens (DC.) AITCH. & C. B. CLARKE – GILLI 3935

Tab. 64

Brachyactis Roylei (DC.) Wendelbo – Roemer 362

Conyzanthus squamatus (SPRENG.) TAMAMSCH. – ABBAS & BRAHIM 6176 (Baghdad)

Myriactis Wallichii DC. – RECH. 31701

Conyza stricta WILLD. var. *pinnatifida* (D. DON) KITAMURA – ANDERS 5227

Conyza japonica (THUNB.) LESS. – RECH. 30602

Conyza canadensis (L.) CRONQ. – BAKER 37

Tab. 70

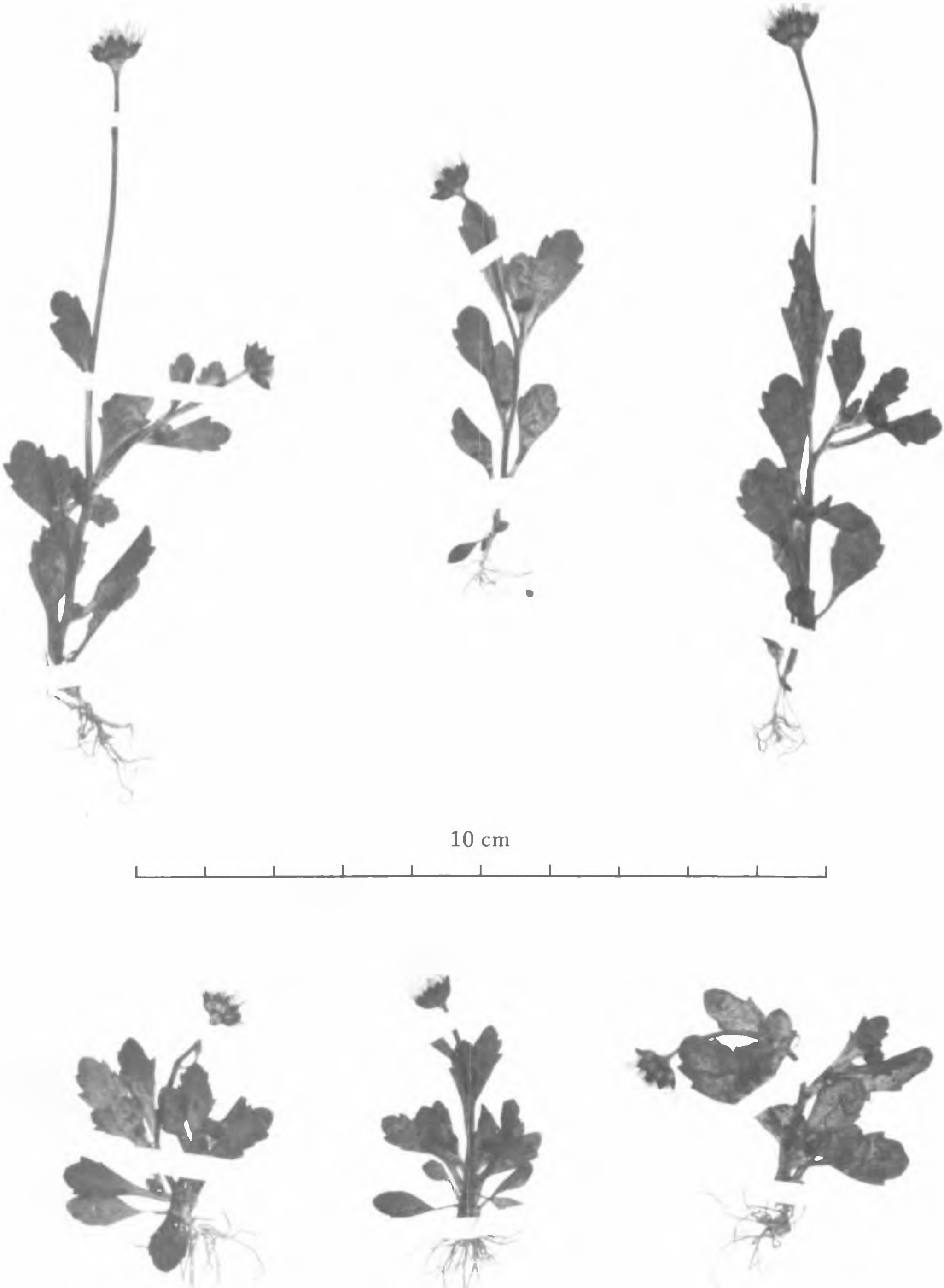
Conyza bonariensis (L.) Cronq. – Anders 11019

Dichrocephala integrifolia (L. fil.) O. KUNTZE – SHARIF 210

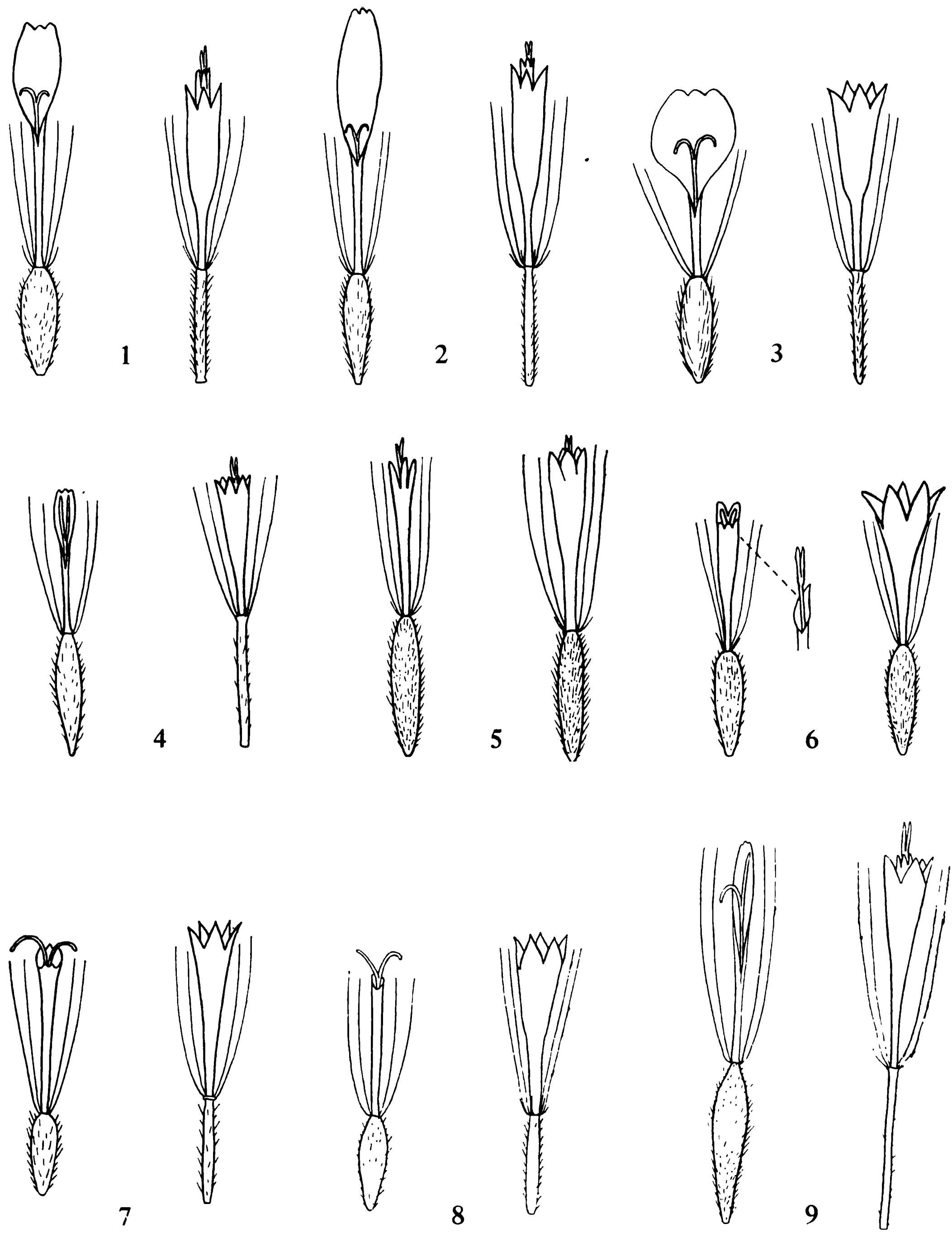
Tab. 72

Grangea maderaspatana (L.) Poir. – Rech. 28684

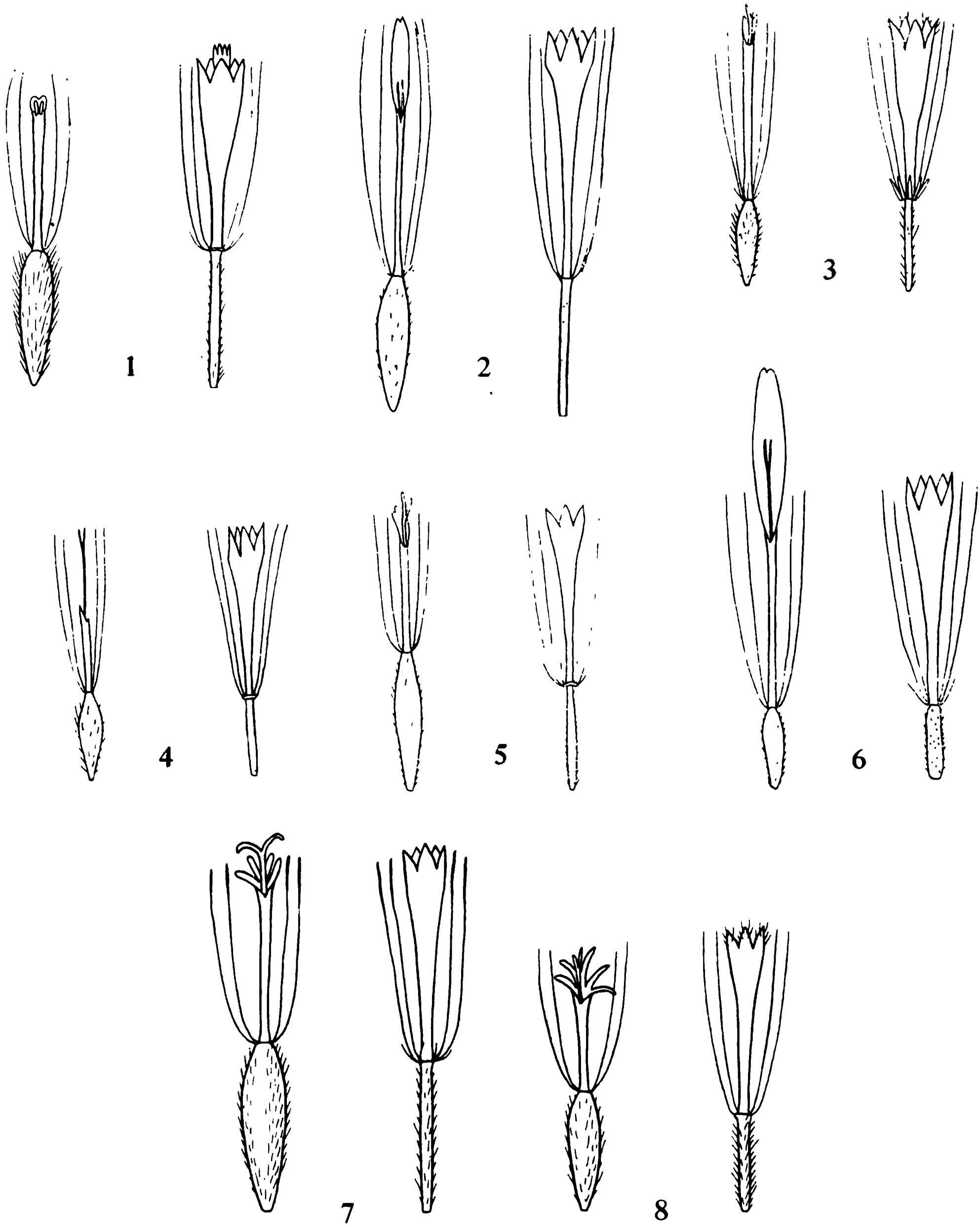
Bellis perennis L. – BENT & WRIGHT 411–103



Bellis annua L. – IRANSHAHR & TERME 14910-E



1: *Psychrogeton cabulicus* Boiss.; 2: *Ps. andryaloides* (DC.) Novopokr. ex Krasch.; 3: *Ps. rotundifolius* Grierson; 4: *Ps. amorphoglossus* (Boiss.) Novopokr.; 5: *Ps. obovatus* (Benth.) Grierson; 6: *Ps. chionophilus* (Boiss.) Krasch.; 7: *Ps. Aellenii* (Rech. f.) Grierson; 8: *Ps. persicus* (Boiss.) Grierson; 9: *Ps. Alexeenkoi* Krasch. (all x 6. The number of pappus setae reduced throughout)



1: *Psychrogeton lumbricoides* (GILLI) GRIERSON; 2: *Ps. Olgae* (REGEL & SCHMALH.) NOVOPOKR. ex NEVSKI; 3: *Ps. Aucheri* (DC.) GRIERSON; 4: *Ps. nigromontanus* (BOISS. & BUHSE) GRIERSON; 5: *Ps. candidissimus* (RECH. f. & EDELB.) GRIERSON; 6: *Ps. Pseuderigeron* (BUNGE) NOVOPOKR. ex NEVSKI; 7: *Ps. sphaeroxylus* (GILLI) GRIERSON; 8: *Ps. drabiformis* GRIERSON (figs. 1–6: x 6; 7–8: x 8. The number of pappus setae reduced throughout).

SYSTEMATISCHE ANORDNUNG DER FAMILIEN

Familien mit vorangestellter Continuatio - Nummer sind bereits erschienen.

	Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
PTERIDOPHYTA					
Equisetaceae	1	2	143	(2)	(2)
Lycopodiaceae	2	1	142	(1)	(1)
Marsileaceae	5	5	144	(4)	(4)
Ophioglossaceae	3	3	140	(6)	(6)
Polypodiaceae	4	4	141	(3)	(3)
Salviniaceae	6	6	145	(5)	(5)
GYMNOSPERMAE					
Cupressaceae	9	8	136	(8)	(8)
Ephedraceae	10	10	138	(10)	(10)
Pinaceae	8	9	135	(7)	(9)
Taxaceae	7	7	137	(9)	(7)
ANGIOSPERMAE					
Acanthaceae	138	110	84	86	135
Aceraceae	86	83	30a	42a	76
Aizoaceae	48	27	50	57	106
Alismataceae	16	127	115	124	146
Alliaceae	26	133	128	116	155
Amaranthaceae	45	23	93	92	112
Amaryllidaceae	27	134	128	114	162
Ampelidaceae	91	91	32	41	66
Anacardiaceae	81	81	46	43	75
Apiaceae	113	94	54	58	127
Apocynaceae	125	117	82	75	82
Aquifoliaceae	82	86	70	38	58
Araceae	22	143	120	122	158
Araliaceae	112	93	55	59	19
Aristolochiaceae	40	35	103	97	96
Asclepiadaceae	126	118	74	76	84
Asparagaceae	26	133	129	116	155,7pp.
Asperifoliaceae	129	104	80	79	142
, 122/II Asteraceae	146	126	61	65	131
Avicenniaceae	130	111	86	88	88
Balanophoraceae	42	20	102	103	63
Balsaminaceae	89	85	25	33b	140
Berberidaceae	54	40	3	13	96
Betulaceae	33	11	112	108	25
Bignoniaceae	137a	108a	76a	85a	86a
Boraginaceae	129	104	80	79	142
Brassicaceae	[illegible]	46	7	16	101
Buddleiaceae	123	115	75	77	80
Burseraceae	75	78	33	36	72
Butomaceae	17	128	116	124a	145
Buxaceae	80	31	105	104a	23
Caesalpiniaceae	68b	59b	38b	45b	13
Callitrichaceae	79	32	47	50b	117
Campanulaceae	145	125	62	66	130
Cannabaceae	37	17a	106	105	30
Capparidaceae	59	45	8	17	36

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
10	Caprifoliaceae	141	121	57	61	20
144/I	Caryophyllaceae	50	29	13	23	105
64	Celastraceae	83	87	35	39	60
28	Ceratophyllaceae	52	42	15	110	94
	Chenopodiaceae	44	22	92	93	111
46	Cistaceae	99	49	10	19	33
132	Commelinaceae	24	138	132	117	154
90/I, 122/II	Compositae	146	126	61	65	121
139a/III, 139b/III, 145/IV, 154/V						
2	Convolvulaceae	127	102	78	80	133
54	Cornaceae	114	92	56	60	18
97	Corylaceae	33	11	112	108	27
72	Crassulaceae	63	56	51	48	123
57	Cruciferae	60	46	7	16	101
123	Cucurbitaceae	144	124	48	55	42
77	Cupuliferae	33-4	11-2	111-2	108	25-7
8	Cuscutaceae	128	103	79	80a	141
39	Cynocrambaceae	111	25	91	105c	113
129	Cynomoriaceae	110a	20a	102	103	63
	Cyperaceae	20	139	134	126	169
136	Cytinaceae	41	36	101	96	98
29	Datiscaceae	101	54	49	56	43
104	Dioscoreaceae	28	137	131	115	164
	Dipsacaceae	143	123	60	64	129
30	Ebenaceae	121	100	69	72	68
48	Ehretiaceae	129	104	80	79	87
55	Elaeagnaceae	103	61	97	100	64
15	Elatinaceae	96	52	18	26	103
11	Ericaceae	116	99	63	67	51
89	Eriocaulaceae	23a	138b		125a	154a
6	Euphorbiaceae	78	30	104	104	49
140/I	Fabaceae	68	59	38	45	13-5
77	Fagaceae	34	12	111	108a	26
113	Ficoidaceae	48	27	50	57	106
99	Frankeniaceae	97	51	17	22	38
110	Fumariaceae	58	44	6	15a	100
41	Gentianaceae	124	116	76	78	118
69	Geraniaceae	70	74	26	33	138
17	Globulariaceae	137	108	85	87	142
134	Goodeniaceae	145a	125a	62a	66a	130a
70	Gramineae	19	140	135	127	170
47	Grossulariaceae	64	57	52	47	17
49	Guttiferae	95	55	19	27	54
18	Halorag(id)aceae	109	67	46	50	115
53	Hamamelidaceae	65	33	53	49	21
	Helleboraceae	53	39	1	11	90
92	Hippocastanaceae	87	84	30b	42b	77
31	Hippuridaceae	110	68	45	50a	116
19	Hydrangeaceae	64	57	52	47	16a
127	Hydrocaryaceae	108a	66a	44a	54	115a
80	Hydrocharitaceae	18	129	114	111	146

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2.ed.
49	Hypericaceae	95	55	19	27	54
25	Ilicineae	82	86	70	38	58
144/I	Illecebraceae	50	29	13	23	109
112	Iridaceae	29	135	126	113	163
121	Juglandaceae	32	13	109	107	28
75	Juncaceae	25	136	133	118	168
82	Juncaginaceae	14a	130	117a	125b	148
150	Labiatae	131	112	87	89	144
150	Lamiaceae	131	112	87	89	144
141	Lauraceae	56	37	98	98	11
140/I	Leguminosae	68	59	38	45	13-5
119	Lemnaceae	23	144	119	123	159
58	Lentibulariaceae	136	107	65	84	137
151/I	Liliaceae	26	133	128	116	155
106	Linaceae	71	72	23	31	47
45	Loganiaceae	123	115	75	77	79
116	Loranthaceae	39	19	100	101	61
51	Lythraceae	104	62	43	53	114
120	Malvaceae	93	69	20	28	46
133	Meliaceae	76	79	31	37	73
137	Menispermaceae	55	38	2	12	95
41	Menyanthaceae	124	116	76	78	119
	Mimosaceae	68a	59a	38a	45a	14
114	Molluginaceae	48	27	50	57	105
94	Monotropaceae	115	98	64	67a	52
153	Moraceae	36	15	107	105a	31
135	Morinaceae	143	123	60	64	129
109	Moringaceae	62	48	37	44	37
130	Myrsinaceae	117	97	67	70	67
32	Myrtaceae	107	64	40	52	55
86	Najadaceae	15	132	118	125	153
115	Nyctaginaceae	46	26	95	91	35
33	Nymphaeaceae	51	41	4	14	93
7	Oenotheraceae	108	66	44	54	115
52	Oleaceae	122	119	71	73	81
7	Onagraceae	108	66	44	54	115
126	Orchidaceae	30	141	125	112	167
5	Orobanchaceae	135	108	83	83	136
40	Oxalidaceae	69	73	24	33a	139
60	Paeoniaceae	53	39	1	11	89
146	Palmae	21	142	121	119	165
34	Papaveraceae	57	43	5	15	99
140/I	Papilionaceae	68c	59c	38c	45c	15
20	Parnassiaceae	64	57	52	47	126
128	Pedaliaceae	134	109	77	85	86
73	Periplocaceae	126	118	74	76	83
19	Philadelphaceae	64	57	52	47	16
35	Phytolaccaceae	47	24	90	94	110
15	Plantaginaceae	139	114	89	90	122
21	Platanaceae	66	34	110	106	22
108	Plumbaginaceae	119	95	88	68	121
70	Poaceae	19	140	135	127	170
101	Podophyllaceae	54	40	3	13	93

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker
124	Polygalaceae	77	80	12	21
56	Polygonaceae	43	21	94	95
	Pontederiaceae	24a	133a	–	116a
117	Portulacaceae	49	28	14	24
83	Potamogetonaceae	14	131	117	125a
9	Primulaceae	118	96	66	69
22	Punicaceae	105	65	42	53
93	Pyrolaceae	115	98	64	67a
136	Rafflesiaceae	41	36	101	96
	Ranunculaceae	53	39	1	11
149	Resedaceae	61	47	9	18
125	Rhamnaceae	90	90	36	40
	Rhizophoraceae	106	63	41	51
66/I, 152/II	Rosaceae	67	58	39	46
	Rubiaceae	140	120	58	62
84	Ruppiaceae	14	131	117	125a
	Ruscaceae	26	133	129	116
36	Rutaceae	73	76	28	34
65	Salicaceae	31	14	113	109
37	Salvadoraceae	84	88	72	74
155	Santalaceae	38	18	99	102
38	Sapindaceae	83	82	30	42
	Sapotaceae	120	101	68	71
42	Saxifragaceae	64	57	52	47
82	Scheuchzeriaceae	–	130	117a	125b
147/I	Scrophulariaceae	133	106	82	82
	Selaginaceae	137	108	85	87
	Simar(o)ubaceae	74	77	29	35
	Smila(ca)ceae	26	133	130	116
100	Solanaceae	132	105	81	81
59	Sparganiaceae	13	146	123	121a
88	Sphenocleaceae	145	125	62a	66
87	Staphyleaceae	85	89	30c	42c
156	Sterculiaceae	94	71	21	29
4	Tamaricaceae	98	50	16	25
39	Theligonaceae	111	25	91	105c
63	Therebinthaceae	81	81	46	43
95	Thymelaeaceae	102	60	96	99
148	Tiliaceae	92	70	22	30
127	Trapaceae	108a	66a	44a	54
71	Typhaceae	11	147	124	121
142	Ulmaceae	35	16	108	105b
	Umbelliferae	113	94	54	58
105	Urticaceae	37	17	106	105
11	Vacciniaceae	116	99	63	67
23	Vahliaceae	64	57	52	47
62	Valerianaceae	142	122	59	63
43	Verbenaceae	130	111	86	88
	Violaceae	100	53	11	20
74	Vitaceae	91	91	32	41
85	Zannichelliaceae	14	131	117	125
81	Zosteraceae	14	131	117	125a
98	Zygophyllaceae	72	75	27	32

Santalaceae

auctore A. POLATSCHEK, Wien

Lfg. Cont. No. 155 / Juni 19

FLORA IRANICA

FLORA DES IRANISCHEN HOCHLANDES UND DER UMRAHMENDEN GEBIRGE

PERSIEN, AFGHANISTAN, TEILE VON WEST-PAKISTAN, NORD-IRAQ, AZERBAIDJAN, TURKMENISTAN

von

Univ.-Prof. Dr.

KARL HEINZ RECHINGER

Erster Direktor des Naturhistorischen Museums in Wien (emeritus)

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Santalaceae

auctore A. POLATSCHEK, Wien

Santalaceae R. BROWN, Prodr. 350 (1810).

Herbae annuae vel perennes vel fruticuli. Folia sessilia, integra, lanceolata vel linearia, superiora saepe in bracteolas impares transeuntia, exstipulata. Flores hermaphroditi, actinomorphi; perianthium cum disco concretum, simplex, ± tubulosum, 4–5-lobum. Stamina aequo numero perianthii loborum, epitepala. Ovarium inferum, uniloculare. Flores solitarii vel in inflorescentias racemiformes vel paniculatas dispositi. Fructus nuciformis, nervosus, perianthio persistente.

1. *Thesium*

Thesium L., Spec. Plant. 207 (1753); Gen. Plant. ed. 5: 97 (1754).

Lit.: A. P. DE CANDOLLE, Thesium in Prodromus systematicis naturalis regnis vegetabilis 14: 637–672 (1857). E. BOISSIER, Thesium in Flora Orientalis 4: 1059–1067 (1879). E. G. BOBROV, Thesium in Flora URSS. 5: 412–431 (1936). R. HENDRYCH, Divisio generis Thesium L., cum specierum euroasiaticarum respectu praecipuo, Acta Horti Botanici Pragensis 17–24 (1962). R. HENDRYCH, Abriß der chorologischen Entwicklung der Gattung Thesium (Santalaceae) in der Paläoholarktis, Preslia 40: 28–51 (1968). R. HENDRYCH, Thesium in Flora Europaea (1964) and today, Preslia 48: 107–112 (1976).

Herbae annuae vel perennes vel fruticulosae, plerumque hemiparasiticae. Folia alterna, linearia vel lanceolata, acuta. Flores hermaphroditi, sessiles vel breviter pedicellati, bracteis (1–)3, solitarii vel in cymas axillares vel extraaxillares dispositi; perigonium hypocraterimorphum vel infundibuliforme, 4–5-fidum. Discus indistinctus. Filamenta basi cuiusque lobi inserta, basi barbata, linearia. Antherae oblongae, loculis longitudinaliter dehiscentibus. Ovarium inferum; stylus filiformis, stigma (in nostris) capitellatum, placenta filiformis, erecta, apice triovulata. Nux ellipsoidea, caduca, perigonii lobis saepius coronata. Semen unicum inversum. Embryo in apice albuminis carnosi rectus. Radicula supera.

1a. Herbae annuae vel biennes. 2
b. Herbae perennes 3
2a. Planta annua . . . . 5. *Th. humile* VAHL
b. Planta biennis. Inflorescentia racemosa. Cymae (flores) sessiles vel subsessiles . . . . 2. *Th. compressum* BOISS. & HELDR.
3a. Plantae stolones subterraneos breves vel ± elongatos proferentes. 4
b. Plantae estolonosae 7
4a. Inflorescentia secunda. 5
b. Inflorescentia vaga. 6

5a. Inflorescentia simpliciter racemosa. Perianthii lobi prope medium unilateraliter vel utrinque lobulo vel denticulo praediti ....3. *Th. himalense* ROYLE ex EDGEW.
b. Inflorescentia e racemis pluribus composita ....6. *Th. Kotschyanum* BOISS.
6a. Inflorescentia simpliciter racemosa ....4. *Th. Hookeri* HENDRYCH
b. Inflorescentia composite racemosa ....10. *Th. Szowitsii* A. DC.
7a. Inflorescentia secunda......................9. *Th. procumbens* C. A. MEY.
b. Inflorescentia vaga.. 8
8a. Perianthium 6–7 mm longum................. 7. *Th. macranthum* FENZL
b. Perianthium quam 5 mm brevius................................ 9
9a. Caulis costae et margines foliorum verrucis hyalinis breviter conicis obsitae............................ 1. *Th. arvense* HORVATOVSKY
b. Caulis costae et margines foliorum laeves, anguste hyaline marginatae ....8. *Th. multicaule* LEDEB.

1. ***Th. arvense*** HORVATOVSKY, Fl. Tyrnaviensis indig. 1: 27 (1774).
Syn.: *Th. ramosum* HAYNE, Journ. Bot. Schrader 1: 30 (1800).
Icon.: JÁV. & CSÁPODY, Icon. Fl. Hung. 116, fig. 928 (1930), habitus, fructus (sub *Th. ramoso*). Fl. URSS. 5: tab. 24, 4 (1936), fructus. – Tab. nostr. 1; Tab. 11, fig. 1.
Typus (neo-typus): Bazinii „in graminosis siccis“ na Bilovisku, J. L. HOLUBY s. n., PRC.

Perenne, radice c. 4 cm longa, fusiformi, ramosa, verticali; rhizoma estolonosum, multiceps. Caules erecti vel ascendentes, 19–30 cm alti, a medio ramosi, angulati, ± laxe aequaliter foliati, costae verrucis minutissimis hyalinis breviter conicis obsitae. Folia 19–50(–60) x 1–2,5(–3) mm, linearia, acuta, margine hyaline verruculosa, facie leavia, tenuia, infima squamiformia. Inflorescentia composite racemosa, vaga, elongata; racemus principalis plerumque 21–32-florus; racemi secundarii ad 15, raro nulli; cymarum pedunculi uniflori, fructiferi 6–8(–10) mm longi, erecto-patentes, angulis minute hyaline verruculosis, tenues. Bractea squamiformis, flore duplo longior, quam fructus longior, quam bracteolae multo longior, acuminata, margine minutissime hyaline verruculosa. Bracteolae squamiformes, florem ± aequantes, acuminatae, margine minutissime hyaline verruculosae. Flos sessilis. Perianthium floriferum 2,5–3 mm longum, campanulatum, laeve, intus glabrum; lobi 5, plani usque leviter concavi, tertiam circiter partem tubi longitudinis attingentes, oblongo-triangulares, obtusi, margine plani, apice incurvi, integri; perianthium fructiferum breviter tubulosum, a fructu bene distinctum, angustum; lobi margine apiceque involuti. Stamina fauci inserta, vix dimidium loborum aequantia. Filamentum antherae aequilongum, anthera pilorum fasciculo cum perianthio conjuncta. Stylus perianthio paulo brevior. Fructus 3–4(–5) mm longus, basi elongata sessilis, ovato-globosus; venae longitudinales oblique anastomosantes.

Crescit in graminosis saxosis, stepposis, declivibus saxosis calc. et schist. (Tonschiefer) inter (1100–)1500–2300(–3200) m.

I r a q : Kurd.: Arbil: M. Qandil in faucibus supra Pushtashan, 1500–2000 m, RECH. 11184!
T a l i s h : Swant, HOHEN.

Persia: N: Gorg.: 73 km NE Gonbad-e Kavus, 520 m, PABOT 7744! Minudasht, SHAR. 613!, 617! Kuh-e Aghaman, 1100 m, RENZ in RECH. 54012! Mohammad Reza Shah Res.: Almeh, 1500–1800 m, RECH. 53118! Maz.: Pol-e Zanguleh, 2400 m, GAUBA 2016! Gil.: Espeyli, LINDS. 1165! – W: Azerb.: Meshg Anbar prope Tabriz, 1300 m, MIRD. in GAUBA 2017! Prope Tabriz, BUNGE. Kuh-e Mishow Dagh prope Yam, 1800–2400 m, TERME in RECH. 43902!, GROSSH., FURSE 2288! In jugo Goja Bel 30 km SW Ahar, 1800 m, RECH. 40653! Inter Marand et Zonuz, 1500 m, LAMOND 3811! Ghogeh Dagh prope Bazorgan, 2200–2250 m, LAMOND 5019! In valle fl. Qotur W Khvoy versus fines turcicas, 1800–2100 m, RECH. 41603!, 49533!, LAMOND 3961! Kuh Kani Ziarat N Habashi Bala prope Qotur, 2300–3000 m, W. RECH. & RENZ 49740! 26 km NW Rezaiyeh versus Sero, 1600–1700 m, RECH. 42020! In colle argilloso SW Rezaiyeh, 1500 m, RECH. 49301! In jugo Qushchi inter Shahpur et Rezaiyeh, 1600–1800 m, RECH. 41921! Chalil Kuh, in faucibus NW Selvana, 1750–2000 m, RECH. 48884!; 1800–2600 m, RENZ in RECH. 48972! Chalil Kuh prope Razhan, 2600–3200 m, W. RECH. & RENZ 48771! Ser, KNAPP! M. Karnaru, KNAPP! Dizeh Siamek, KNAPP! Hasan Beyglu, KNAPP! Chahriq, KNAPP! 32 km a Band versus Mavana, 1550–1750 m, MATIN & DANESHPAJOUH 38497-E! 41 km NE Mianeh, 1400 m, PABOT 3856! Khamseh: Kuh Anguran 35–42 km SW Tashvir inter Manjil et Zanjan, 1900–2200 m, LAMOND & IRANSH. in RECH. 40916! In jugo Tarom 18–33 km SW Tashvir, 1300–2100 m, LAMOND 3509 in RECH. 41068!. LAMOND 3605 & IRANSH.! 18 km E Tashvir inter Manjil et Zanjan, 1300 m, IRANSH. 14229-E! Tasvir, 2000 m, IRANSH. 30361-E! – C: Tehr.: Lashkaraj ad fl. Jaji Rud, BRUNS. Damgh.-Semn.: Parvar Prot. Region: 68 km NE Semnan inter Shahmirzad et Fulad Mahalleh, 2200 m, RECH. 52323!
Turcomania: Kizyl-Arvat, Kara Kala in pratis subalpinis M. Sundsodagh, SINT. 1937!

Distr. gen.: Europa, Sibiria occidentalis, Iraq, Talish, Persia, Turcomania, Asia centralis usque ad Songoriam.

2. ***Th. compressum*** BOISS. & HELDR. in BOISS., Diagn. Pl. Or. Nov. Ser. 1, 12: 104 (1853).
Icon.: Tab. 2; Tab. 11, fig. 2.
Typus: In salsis hyeme inundatis planitiei Konyah inter urbem et montem Kara Dag, HELDREICH, G-BOISS.

Annuum, radice fusiformi verticali, radicibus secundariis fibrosis. Herba glabra, laevis, uni- vel pluricaulis, pallide viridis, 23–28 cm alta, succulenta. Caulis virgatus, 5–30 cm longus, ascendens vel erectus, simplex, in parte inferiore pauciramosus. Folia 12–20 x 1–2 mm, linearia, acuta, enervia. Inflorescentia simpliciter racemosa, valde elongata, ad $^2/_3$ longitudinis caulis attingens, densa, vaga, 30–50-flora. Cymae (flores) subsessiles usque sessiles. Bractea fere omnino squamiformis, quam flos evidenter brevior, quam fructus multo brevior. Bracteolae evidenter squamiformes, quam bracteae paulo breviores. Perianthium floriferum 1,5–2 mm longum, campanulatum, laeve, album; lobi 5, oblongo-lineares, concavi, apice incurvi, margine subincurvi, integri; perianthium fructiferum capitato-contractum, in verticem fructus sensim transiens, angustum, breve, c. $^1/_4$ fructus longitudinis attingens; lobi usque ad basin involuti. Stamina fauci inserta, quam perianthii lobi subbreviora. Filamentum antheram circiter aequans; anthera extus fasciculo pilorum cum perianthio conjuncta. Stylus quam perianthium brevior. Fructus 3 x 1,2 mm, oblongo-cylindricus, reticulato-venosus, nervis marginalibus validioribus.

Crescit in graminosis salsis humidis cum *Junco* sp. et *Glaucio maritimo* inter 1100 et 1300 m.

Persia: W: Azerb.: In latere orientali lacus Rezaiyeh prope Haft Chashmeh, 1280 m, WDB. & SHIRDELPUR 14945!

Distr. gen.: Anatolia, Persia boreo-occidentalis.

3. ***Th. himalense*** ROYLE ex EDGEW., Trans. Linn. Soc. 20: 88 (1846).
Syn.: *Th. himalense* ROYLE, Ill. Bot. Himal. Mount. 1: 322 (1839), nomen solum.
Icon.: Tab. 3; Tab. 11, fig. 3.
Typus (syntypi): Choupal, to the north of Choor (Chépal); Kunawar (Pauri in Gharwhal), ROYLE.

Perenne, radice obliqua, longe ramosa, stolones ± breves, breviter squamosos emittens. Herba pluri- vel multicaulis, surculi steriles partim evoluti. Caulis 5–17 cm longus, 0,5–1 mm crassus, fere procumbens usque ascendens (numquam erectus!), simplex, angulatus, laevis. Folia 10–20 × 1,5–2 mm, acuta, omnino laevia, indistincte nervosa, crassiuscula, inferiora quam media et superiora plerumque evidenter breviora, summa foliacea. Inflorescentia simpliciter racemosa, usque ad dimidium caulis longitudinis attingens, densa, vaga, 10–20-flora; cymae pedunculi 3–7 mm longi, erecto-patentes, angulati, laeves, uniflori. Bracteae inferiores foliis similes, superiores squamiformes, quam flos sive fructus circiter duplo longiores, margine hyaline conico-verruculosae, acutae. Bracteolae squamiformes, quam flos et fructus breviores. Pedicellus ± 1 mm longus. Perianthium floriferum 6 × 3 mm, campanulatum, album usque flavescenti-album; lobi 5, triangulares, margine interiore imprimis apicem versus dense breviter barbati, tertiam circiter partem tubi attingentes; lamina plana, marginibus lateralibus leviter, apice magis incurva, obtusa, utrinque vel unilateraliter medium versus lobulo minuto rotundato praedita; perianthium fructiferum breviter cylindrice contractum, sensim in fructus verticem transiens, dimidium circiter fructus longitudinis attingens; lobi superne arcte involuti, marginibus incurvis. Stamina fauci inserta, quam perianthii lobi paulo breviora; filamentum quam anthera duplo circiter longius; anthera extus pilorum fasciculo cum perianthio conjuncta. Pedicellus fructifer ± 1 mm longus. Fructus ovoideo-globosus, longitudinaliter venosus, venis anastomosantibus.

Crescit in dumosis siccis et humidis, in arenosis et in saxosis.

Afghanistan: **NE**: Wakhan: In valle Badjen, 4200 m, ROEMER 367!
Pakistan: Chitral: Inter Chatiboi et glaciem aeternam Pechus, 4000 m, STAMM & WÖHRL 173! In jugo Chumarkhan E Mastuj, 3600 m, STAINT. 2909!

Distr. gen.: Afghanistan boreo-orientalis, Pakistan boreo-occidentalis, montes Himalaya orientalis.

Fünf der insgesamt 7 Belege wurden von HENDRYCH als *T. Hookeri* bestimmt. Sie weichen aber in einer ganzen Reihe wesentlicher Merkmale von dieser Art ab: Einseitswendigkeit, kürzere Cymenstiele, Läppchen an den Blütenperianth-Zipfeln, Pflanze nicht aufrecht, Brakteen mit rauhem Rand u. a. m.

4. ***Th. Hookeri*** HENDRYCH, Nov. Bot. Horti Bot. Univ. Carol. Prag 109 (1962).
Icon.: Tab. 4; Tab. 11, fig. 4.

Typus (holotypus): India orientalis, montes Himalayenses boreo-occidentales, alt. 6000–10.000 ped., J. THOMSON, K.

Perenne; rhizoma obliquum, surculos subterraneos longos minute squamosos emittens. Herba 14–23 cm alta, laevis, glabra, pluricaulis. Caules oblique ascendentes, subflexuosi, simplices, 0,8–1 mm crassi, a basi laxe disperse foliati. Folia 24–38 × 2 mm, anguste lanceolata usque linearia, acuta, margine hyalina, laevia vel minutissime conico-verruculosa, uninervia, etiam inferiora foliacea. Inflorescentia simpliciter racemosa, elongata, ad $^3/_5$ caulis longitudinis attingens, laxa, vaga, 9–14-flora. Cymarum pedunculi uniflori, 10–14 mm longi, erecti vel valde patentes, leviter angulati, laeves. Bractea 16–35 × 0,8–2 mm, foliis similis, quam flos et bracteolae pluries longior. Bracteolae squamiformes, lineares, flores circiter aequantes. Pedicellus subnullus. Perianthium floriferum 5 × 4 mm, campanulatum, laeve, margine interiore breviter villosum; lobi 5, triangulares, acuti, margine plani, apice incurvi, medium versus utrinque vel unilateraliter lobulo minuto sed distincto praediti (ut in *Th. himalensi*, *Th. multicauli* et *Th. Kotschyano*) c. $^1/_3$ tubi longitudinis attingentes. Stamina fauci inserta, dimidium perianthii loborum attingentia; filamentum antherae c. aequilongum; anthera extus fasciculo pilorum cum perianthio conjuncta. Stylus quam perianthium brevior. Fructus adhuc ignotus.

Crescit in stepposis inter 2500 et 3500 m, etiam inter frutices (secus collectorem).

P a k i s t a n : Chitral: Yarkhun, 3000 m, BOWES LYON 962.

Distr. gen.: Afghanistan boreo-orientalis, montes Himalaya boreo-occidentales.

Die Bestimmung der Belege erfolgte nach der Erstbeschreibung, diese Belege waren auch vom Erstbeschreiber so bestimmt worden (man vergleiche auch die Anmerkungen bei *Th. himalense*). Auffallend war weiters, daß HENDRYCH bei seiner Erstbeschreibung die Läppchen an den Blüten-perianth-Zipfeln übersehen hat.

Keiner der vorliegenden Belege wies Früchte auf, auch in der Erstbeschreibung HENDRYCH's fehlt die Fruchtbeschreibung.

5. ***Th. humile*** VAHL, Symb. Bot. 3: 43 (1794).
Icon.: Tab. 5; Tab. 11, fig. 5.
Typus: „In cultis Tuneti", VAHL.

Annuum; radix tenuis, radicibus secundariis fibrosis. Herba multicaulis, 6–17 cm alta. Caules ± ascendentes, glabri, tota longitudine foliati. Folia 11–25 × 0,5–1 mm, anguste linearia, acuta, enervia, margine minute breviter conice verruculosa. Inflorescentia composite racemosa, densa, vaga, $^1/_3$–$^1/_2$ caulis longitudinis attingens, 25–30-flora. Cymae non pedunculatae, uniflorae. Flores sessiles. Bractea flore et fructu pluries longior, quam bracteolae multo longior, margine manifeste verruculosa. Bracteolae bracteis similes. Pedunculus nullus. Perianthii floriferum 1,5–2 mm longum, campanulatum, laeve, intus glabrum; perianthium floriferi lobi 5, triangulares, omnino plani, integri, c. $^1/_3$ tubi longitudinis attingentes; perianthium fructiferum eximie capitato-contractum, in verticem fructus sensim transiens, in comparatione cum fructu crassum, breve; lobi usque ad basin involuti. Stamina fauci inserta, quam perianthii lobi paulo breviores. Filamentum quam anthera longius; anthera extus fasciculo pilorum cum perianthio conjuncta; stylus quam perianthium paulo brevior.

Fructus basi attenuata sessilis 3,5–5 x 1,2–2,2 mm, elongato-cylindricus, reticulato-nervosus; venae longitudinales quam ceteri paulo magis distinctae.

Crescit in incultis siccis et in collibus calc.

Persia: W: Khuz.: 5 km W Behbehan, PABOT 605!

Distr. gen.: Regio Mediterranea, Insulae Canarienses, Anatolia, Syria, Libanon, Iraq, Persia occidentalis.

6. ***Th. Kotschyanum*** BOISS., Diagn. Pl. Or. Nov. Ser. 1, 7: 86 (1845).
Syn.: *Th. impressum* STEUD. ex DC., Prodr. 14: 649 (1857).
Icon.: Fl. URSS. 5: tab. 24, fig. 3 (1936). – Tab. nostr.: 6; Tab. 12, fig. 6.
Typus: KOTSCHY 416/418, lectotypus W!, isotypi E!, W!

Perenne, rhizoma obliquum, surculiferum. Planta 11–29 cm alta, basi lignescens, glabra, pluricaulis, basi ramosa. Caules recti vel subflexuosi, glauci, subcarnosi, erecti raro subascendentes, plerumque simplices, 1,2–2,5 mm crassi, subangulati, laeves, laxe foliati. Folia 20–40 x 1,5–3 mm, linearia, acuta, glabra, margine minutissime cartilaginoso-denticulata, uninervia, crassisuscula, omnia erecto-patentia, infima squamiformia. Inflorescentia composite racemosa, elongata, ad minimum dimidium caulis longitudinis attingens, densiuscula, secunda, 25-flora. Cymae pedunculi 3–5 mm longi, inferiores quidem biflori, superiores uniflori, (erecto-)patentes, subangulati, laeves. Bractea 15–38 x 1–3,5 mm, foliis similis, linearis, acuta, laevis, margine minutissime cartilagineo-denticulata. Bracteolae ± squamiformes, dimidiam bracteam aequantes, ceterum similes. Flores sessiles. Perianthium floriferum 6–8 mm longum, campanulatum, intus glabrum, laeve, extus viride, intus album; lobi 5, oblongi, plani, apice incurvi, dimidium tubi longitudinis non attingentes; perianthium fructiferum a fructu distinctum, angustum dimidium fructus longitudinis attingens; lobi apice tantum incurvi, paulo divergentes, marginibus lateralibus incurvis. Stamina perianthii lobis inserta, dimidium loborum attingentes; filamentum quam anthera duplo longius; anthera extus fasciculo pilorum cum perianthio conjuncta. Stylus perianthio duplo circiter longior. Fructus 5 x 3 mm, sessilis, ovoideo-globosus usque oblongo-ovoideus, reticulatus; venae oblique rarius transversaliter anastomosantes.

Crescit in steppis, in pratis siccis, substr. calc., serpentin. et in arenosis inter 1400 et 2700(–4000) m. In radicibus *Astragali* parasiticum.

Iraq: Kurd.: Mosul: Chiya-e Gara, KY. 487! Sul.: M. Avroman et M. Shahu, HAUSSKN.!
Persia: N: Gorg.: Mohammad Reza Shah Res.: In montibus prope Almeh, 1600–1700 m, TERME & MATIN 34917-E!; 2100 m, RENZ in RECH. 53191! – W: Azerb.: In argillosis 52 km a Siah Chaman versus Maragheh, 1600–1750 m, RECH. 56749! Ham.: Aq Bolagh-e Aqdaq 100 km N Hamadan, RIOUX & GOLV. 93! Kermansh.: Kuh-e Kinisht, STR.! Esf.: Esfahan, AUCH. 5292! 50 km W Esfahan, 2100 m, FURSE 1383! 130 km NW Esfahan, 2080 m, PABOT 8258! Inter Delijan et Esfahan, 1000–2000 m, SCHMID 5210! Bakht.: Gahar, KOELZ 17910-a! In decl. montium 12 km a Borujen versus Sefid Dasht, 2300–2700 m, RECH. 47095! 10 km E Shahr Kord, 2050 m, PABOT 3478! Tang-e Sayad Protected Reg.: M. Pirkuh 32 km E Shahr Kord, substr. calc., 2400–2700 m, RECH. 47153! Lur.: E Dow Rud, 2100 m, BENT & WR. 530–202! Ilam, 2300–2600 m, JACOBS 6816! M. Saverz, 3000 m, HAUSSKN.! Oshtoran Kuh (Shuturun Kuh), 2400 m, KOELZ 17828! Garmishan, IRANSHAHR 14225-E! – S: Fars.: Deh Bid, 2350–2450 m, PABOT 2372! 3,5 km E Yazd-e Khvast, 2150 m, PABOT 5797! Kuh-e Dinar prope Sisakht, 3400–4000 m, SO-

JÁK 6284!, 6328!, 6332!, 6361! In jugo Sichani, BEHB. 971-E! M. Sabz Pushan prope Shiraz, KY. 416.818! In jugo 160 km N Shiraz, 2120 m, KASY 418! Kuh-e Qarun, 2300–3350 m, TERME & IZADYAR 14226-E! – E: Khor.: In mont. serpentin. prope Robat-e Safid inter Mashhad et Torbat-e Heydariyeh, 1600–2000 m, RECH. 1513!, 4453!, 51333!, 55905!, RENZ & IRANSH. in RECH. 56005! M. Hazar Masjed inter Talqur et Gush, 1800 m, RECH. 5168! In decl. borealibus Kuh-e Binalud, 1900–2300 m, SCHMID 6247! Shah Jahan Protected Reg.: Dasht-e Shah Jahan N Hessari, 1400–1600 m, RECH. 53599! Gulul Sarani Protected Reg.: In montibus Kopet Dagh ad confines Turcomanicas, 2400–2900 m, RECH. 53489! – C: Tehr.: Evin, 1700 m, LAMOND 2789!, RECH. 39408! Supra Darakeh, 1700–2100 m, ALAVA 10581! M. Tuchal prope Manzariyeh, 1800–2200 m, ZHUMER 705!, ZHUMER & WALLE 524! Prope Shahrestanak, 2200 m, BORNM. 8196! Basti, 1800 m, RECH. 55299! M. Damavand supra Ab Ali, 1800 m, WDB. 756!, BAZARGAN & ARAZM 11625! Sad-e Latyan, 1800 m, BAZARGAN & ARAZM 11611! Rostamabad, 2400 m, DINI & ARAZM 11549! 35 km E Tehran, 1950 m, FURSE 1636! Homand, 2600 m, DINI & ARAZM 11550! Inter Firuzkuh et Eyvanki (Aivan-i Kif), 2150 m, DINI & ARAZM 11659! Kuh-e Mumaj prope Najafdar, 2140–2750 m, TERME & al. 39807-E! Darreh-e Pashan SE Firuzkuh, 2000 m, AMIN 11610! Qazv.: Pich Kuh prope Karaj, 1600–2200 m, RECH. 547! N Sirachal, 1700 m, RIEDL & HABIBI 37210-E! Kuh-e Sepahsalar prope Asara, TERME & IZADYAR 14227-E! Damgh.-Semn.: Inter Bashm et Sorkheh, RECH. s.n.! Kashan: 30 km S Robat-e Tork, SOJÁK 6866!, 6867! Mooteh Protected Reg.: Muteh (Mooteh), 1950 m, RECH. 46828!, BABAKHANLOU & AMIN 11636! Ad bifurcationem viae versus Muteh ducentis = 140 km NW Esfahan, 1950 m, RECH. 46780! Turcomania: Kopet Dagh inter Cheirabad et Chajek, CZERNJAK. 289.

Distr. gen.: Anatolia, Iraq, Persia, Turcomania.

7. ***Th. macranthum*** FENZL, Flora 26: 401 (1843).
Icon.: Tab. 7; Tab. 12, fig. 7.
Typus: Inter Orfa et Suerek, KOTSCHY; lectotypus: In montosis ad urbem Beredschig, Pl. Mesopot., 1841, KOTSCHY 122, W!

Perenne, estolonosum, 33–78 cm altum, laeve. Caules singuli vel bini, 1,8–3 mm crassi, aequaliter laxe foliati, a medio ramosi, ramis erecto-patentibus. Folia 10–40 x 0,7–1 mm, anguste elongato-linearia, acuta, enervia, laevia, rigidula, integra. Inflorescentia composite racemosa, elongata, vaga, diffusa, ramis ad 20, multiflora. Cymae pedunculi 2,5–4(–6) mm longi, inferiores 3-flori, erecto-patentes, superiores 2–3-, vel 2-flori, angulati, laeves. Bractea squamiformis, quam bracteolae duplo longior, quam flores autem brevior, laevis, apice minutissime cartilagineo-denticulata. Bracteolae squamiformes, quam flores manifeste breviores. Flores sessiles. Perianthium floriferum 6–7 mm longum, campanulatum, omnino glabrum; lobi 5, quam tubus 2–3-plo longiores; lamina apice margineque incurva, linearis, obtusa, integra; perianthium fructiferum a fructu bene distinctum, fructus longitudinem c. aequans; perianthii fructiferi lobi apice tantum incurvi, laxissime conniventes, marginibus lateralibus leviter incurvis. Stamina fauci inserta, c. dimidium loborum aequantia; filamentum quam anthera duplo longius; anthera extus pilorum fasciculo cum perianthio conjuncta. Stylus perianthio c. aequilongus. Fructus 6 x 3,5 mm, basi attenuata sessilis, elongato-cylindricus, reticulato-venosus.

Crescit in steppis substr. calc.

Iraq: Kurd.: Mosul: In quercetis jugi 8 km S Zakho, RECH. 12158!

Distr. gen.: Anatolia austro-orientalis, Iraq.

8. ***Th. multicaule*** LEDEB., Fl. Alt. 1: 276 (1829).
Icon.: LEDEB., Icon. Pl. Ross. 3: tab. 237 (1831), habitus, flos, fructus. – Tab. nostr. 8; Tab. 12, fig. 8.
Typus: In collibus arenosis ad fl. Irtysch supra fortalitium Buchtarminsk, MARSCHALL VON BIEBERSTEIN, LE.

Perenne, estolonosum. Caules plures, 25–36 cm alti, ascendentes usque erecti, glabri, laeves, angulati, in parte inferiore plerumque ramulos steriles emittentes. Folia 12–56 × c. 1–2 mm, linearia, enervia, laevia, tenuia, hyaline marginata, obtusa, infima squamiformia. Inflorescentia composite racemosa, in dimidio superiore caulis 3-multiramosa, vaga, laxa, 20–25-flora. Cymae pedunculi 15–24 mm longi, erecto-patentes, angulati, glabri, uniflori, superiores paulo breviores. Bractea foliacea, flore fructuque pluries longior, margine ut bracteolae minutissime conico-verruculosa. Bracteolae dimidiam bracteam plerumque aequantes. Flores sessiles. Perianthium floriferum 2,5–3 mm longum, campanulatum, laeve, intus glabrum; lamina plana, margine paulo inflexa; lobi 5, medium versus utrinque vel unilateraliter denticulo minuto lobuliformi praediti, apice subincurvi, tertiam circa partem tubi longitudinis attingentes; perigonium fructiferum capitato-contractum, in fructus verticem sensim transiens, angustum, breve; lobi usque ad basin involuti. Stamina fauci inserta, quam perianthii lobi paulo breviora. Filamentum quam anthera duplo longius; anthera extus fasciculo pilorum cum perianthio conjuncta. Stylus perianthio paulo brevior. Fructus 4–5 × 2 mm, basi attenuata sessilis, oblongo-cylindricus, reticulato-nervosus, nervis longitudinalibus magis distinctis.

Crescit in steppis montosis inter 2200 et 2650 m.

Afghanistan: **E:** Nuristan: Ashpi, EDELB. 1764! Bragamata (Barge Matal), 2450–2650 m, ANDERS 5087! – **NE:** Kataghan: In valle Khinjan, 2200 m, ANDERS 6543!

Distr. gen.: Afghanistan, Sibiria occidentalis, Asia centralis, Mongolia.

9. ***Th. procumbens*** C. A. MEY., Verz. Pfl. Cauc. 40 (1831).
Icon.: Fl. URSS. 5: tab. 24, fig. 13 (sphalm. 18) (1936), fructus. – Tab. nostr. 9; Tab. 12, fig. 9.
Typus: „In pratis Caucasi occidentalis, alt. 400–1200 hexap.", C. A. MEYER, LE.

Perenne, estolonosum, radix fusiformis, ramosa; collum crassum, ad 10 mm diametro. Planta rugulis minutis hyalinis breviter conicis scabra. Caules numerosi procumbentes vel leviter ascendentes, simplices, tenues, 0,3 mm crassi, scabriduli, tota longitudine aequaliter densissime foliati. Folia 10–20 × 0,5–1 mm, linearia, obtusa, tenuia, laevia, hyaline marginata, uninervia. Inflorescentia simpliciter racemosa, densa, secunda, c. 15-flora. Cymarum pedunculi brevissimi, multiflori. Bractea foliacea, flore fructuque plus quam duplo longior, quam bracteolae multo longior. Bracteolae fructu paulo longiores, squamiformes. Flores sessiles. Perianthium floriferum 2,5 mm longum, subinfundibuliforme, utrinque laeve. Perianthii floriferi lobi 5, triangulares, obtusi; lamina concava, apice incurva, c. $1/5$ tubi longitudinis attingens, 0,2–0,3 mm longa; perianthium fructiferum capitato-contractum, in verticem fructus sensim transiens, angustum, c. $1/5$ fructus longitudinis attingens; perigonii fructiferi lobi usque ad basin convoluti. Stamina tubo inserta, quam perianthii lobi subbreviora; filamentum anthera subduplo longius. Stylus perianthio subaequilongus. Fructus 2,5 x 1,2 mm, basi attenuata sessilis, ovoideo-globosus, reticulato-nervosus.

Crescit in steppis inter 1350 et 1900 m.

Persia: W: Azerb.: M. Gelosa S Shahpur, KNAPP! M. Sahand prope Isperechan, KNAPP!

Distr. gen.: Persia, Rossia europaea austro-orientalis, Caucasus, Azerbaijan.

10. ***Th. Szowitsii*** A. DC., Prodr. 14: 649 (1857).
Icon.: Fl. URSS. 5: tab. 24, fig. 11 (1936), cymae pedunculus cum fructu. – Tab. nostr.: 10; Tab. 12, fig. 10.
Typus (lectotypus): „In montibus Seidchadschi distr. Khoi prov. Aderbeidschan", SZOVITS, W!

Perenne; rhizoma obliquum, stoloniferum, 2–6 mm crassum. Planta glabra, pluricaulis; caulis erectus, 1–2 mm crassus, angulatus, aequaliter laxe foliatus, ramis 0–6. Folia 11–30 x 0,3–1(–2) mm, linearia, acuta, laevia, indistincte nervosa, rigidula, inferiora breviora. Inflorescentia pluries composita, usque ad dimidium caulis occupans, vaga, stricta, laxa. Cymae pedunculi dichotome ramosi, plerumque triflori, erecto-patentes, angulati, laeves. Bractea squamiformis, flore fructuque paulo longior, acuta, laevis. Bracteolae dimidium bracteae aequantes, iis ceterum similes. Pedicellus nullus. Perianthium floriferum 4–4,5 mm longum, campanulatum, glabrum, laeve; lobi 5, concavi, margine apiceque inflexi, integri, c. $^1/_3$ tubi longitudinis attingentes; perianthium fructiferum capitato-contractum, in fructus verticem sensim transiens, angustum, $^1/_4$ fructus longitudinis attingens; lobi margine apiceque involuti, conniventes. Stamina fauci inserta, c. $^3/_4$ loborum longitudinis attingentia. Filamentum quam anthera duplo longius; anthera extus pilorum fasciculo cum perianthio conjuncta. Fructus 5 x 2,2–3 mm, basi attenuata sessilis, ovoideo-globosus, reticulato-venosus, venis longitudinalibus oblique anastomosantibus.

Crescit in salsis, substr. „Tonschiefer", silic., etiam in quercetis, 1400–1900 m.

Persia: W: Azerb.: 2–12 km W Zonuz, 1500–1700 m, RECH. 41333! 26 km a Marand versus Zonuz, 1400 m, IRANSHAHR 14228-E! In montibus Seyyed Hajjin (Seid Khadschi) prope Khvoy, SZOV.! In jugo Qushchi inter Shahpur et Rezaiyeh, 1600–1800 m, RECH. 41890!, 49853! In valle fl. Qotur, in saxosis, Tonschiefer, 1600–1900 m, RECH. 49538!

Distr. gen.: Persia boreo-occidentalis, Transcaucasia.

Species dubiosae

Thesium afghanicum HENDRYCH, Acta Horti Bot. Prag. 109 (1962).
Typus: Afghanistan, Kurram Valley, AITCHISON 339, G.

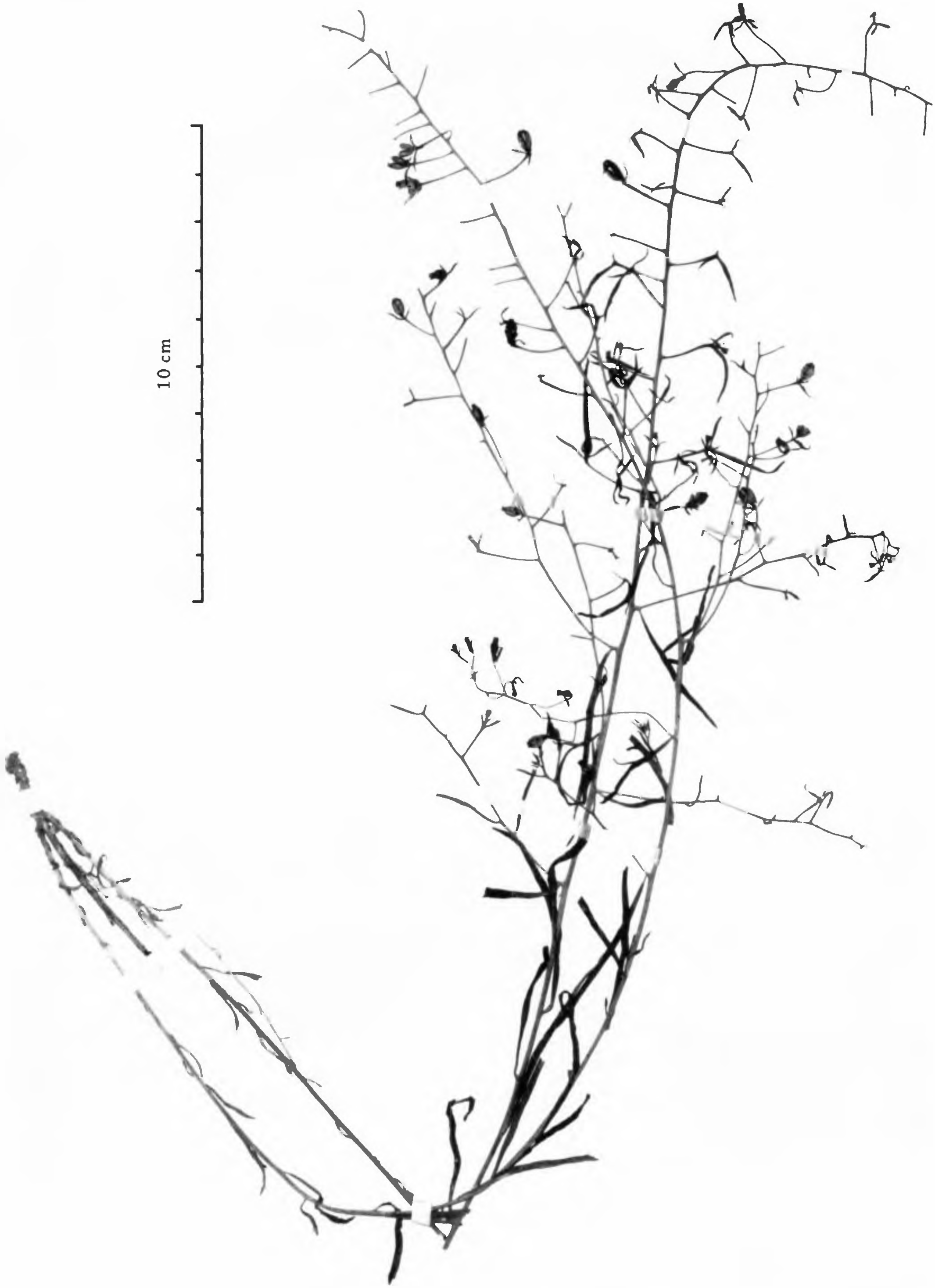
Weder der Typus noch zur Beschreibung passende Belege konnten bearbeitet werden. Nach der Beschreibung liegt *Th. afghanicum* jedoch zwischen *Th. Hookeri* und *Th. himalense*. Aus diesem Grund wurde auch *Th. afghanicum* nicht in den Bestimmungsschlüssel aufgenommen.

Osyris daruma PARSA, Kew Bull. 227 (1948).

Persia: **S**: Bal.: Markan: Chah Bahar, Tis, „P. 81" reste GAUBA.

Zu den Abbildungen

Sämtliche Tafeln wurden nach photographischen Aufnahmen der Akademischen Druck- u. Verlagsanstalt, Graz, hergestellt.



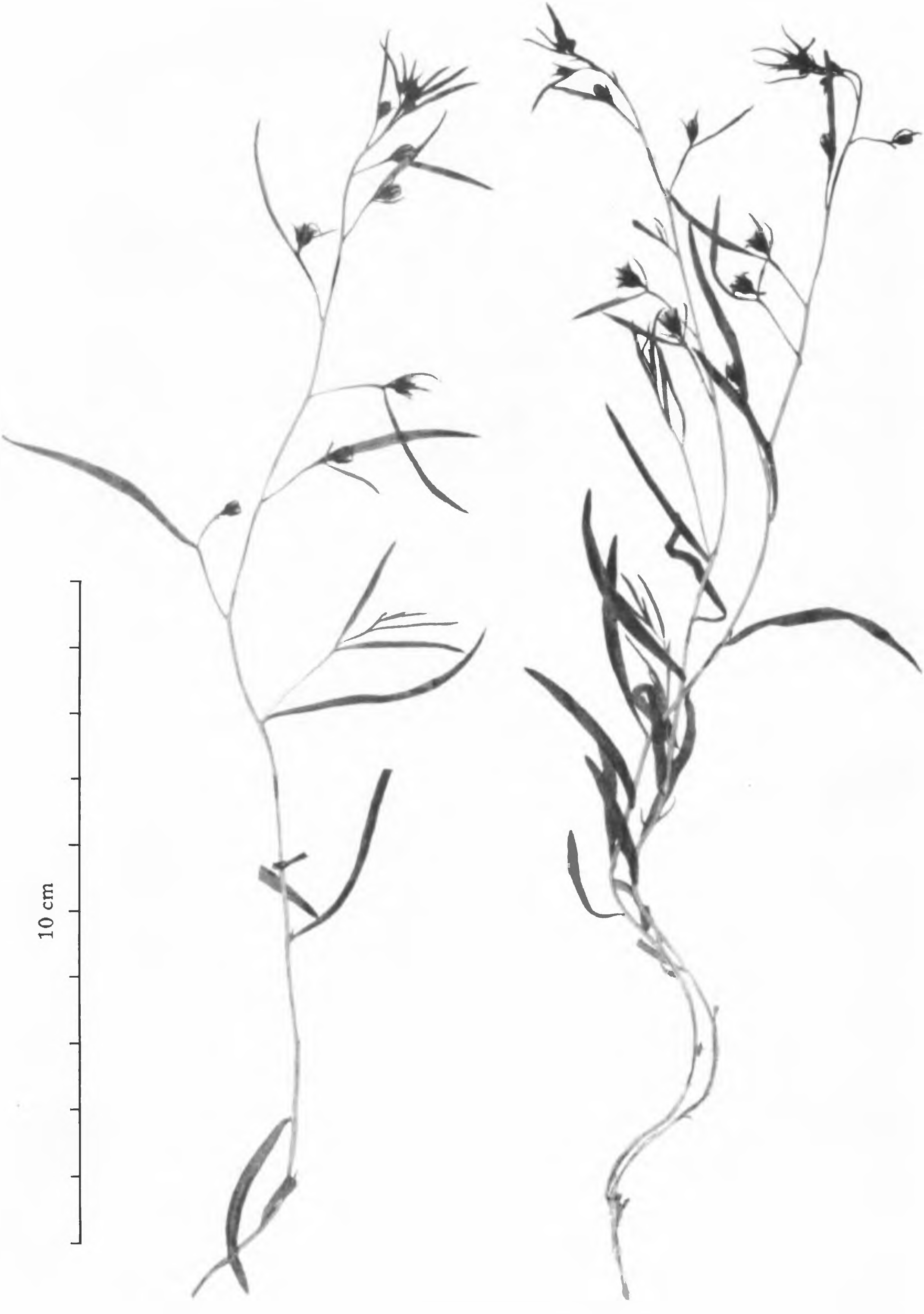
Thesium arvense HORVÁTOVSKY – RECH. 11184

Tab. 2

Thesium compressum Boiss. & Heldr. – Balansa 1039 (Cappadocia)

Thesium himalense ROYLE ex EDGEW. – STAINTON 2909

Tab. 4



Thesium Hookeri HENDRYCH – BOWES LYON 962

Thesium humile Vahl – Pabot 605

Thesium Kotschyanum Boiss. – Rech. 5168

Thesium macranthum Fenzl – Kotschy 122 (Beredschig)

Tab. 8

Thesium multicaule Ledeb. – Anders 5087

Thesium procumbens C. A. Mey. – Knapp (M. Gelosa)

Tab. 10

Thesium Szowitsii A. DC. – SZOVITS (prope Khvoy)

Tab. 11

1: *Thesium arvense* HORVÁTOVSKY – RECH. 11184; **2**: *Th. compressum* BOISS. & HELDR. – BALANSA 1039; **3**: *Th. himalense* ROYLE ex EDGEW. – STAINTON 2909; **4**: *Th. Hookeri* HENDRYCH – BOWES LYON 962; **5**: *Th. humile* VAHL – PABOT 605

6: *Thesium Kotschyanum* BOISS. – RECH. 5168; 7: *Th. macranthum* FENZL – KOTSCHY 122; 8: *Th. multicaule* LEDEB. – ANDERS 5087; 9: *Th. procumbens* C. A. MEY. – KNAPP; 10: *Th. Szowitsii* A. DC. – SZOVITS

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2.ed.
49	Hypericaceae	95	55	19	27	54
25	Ilicineae	82	86	70	38	58
44/I	Illecebraceae	50	29	13	23	109
112	Iridaceae	29	135	126	113	163
121	Juglandaceae	32	13	109	107	28
75	Juncaceae	25	136	133	118	168
82	Juncaginaceae	14a	130	117a	125b	148
150	Labiatae	131	112	87	89	144
150	Lamiaceae	131	112	87	89	144
141	Lauraceae	56	37	98	98	11
40/I	Leguminosae	68	59	38	45	13-5
119	Lemnaceae	23	144	119	123	159
58	Lentibulariaceae	136	107	65	84	137
51/I	Liliaceae	26	133	128	116	155
106	Linaceae	71	72	23	31	47
45	Loganiaceae	123	115	75	77	79
116	Loranthaceae	39	19	100	101	61
51	Lythraceae	104	62	43	53	114
120	Malvaceae	93	69	20	28	46
133	Meliaceae	76	79	31	37	73
137	Menispermaceae	55	38	2	12	95
41	Menyanthaceae	124	116	76	78	119
	Mimosaceae	68a	59a	38a	45a	14
114	Molluginaceae	48	27	50	57	1[illegible]5
94	Monotropaceae	115	98	64	67a	52
153	Moraceae	36	15	107	105a	31
135	Morinaceae	143	123	60	64	129
109	Moringaceae	62	48	37	44	37
130	Myrsinaceae	117	97	67	70	67
32	Myrtaceae	107	64	40	52	55
86	Najadaceae	15	132	118	125	153
115	Nyctaginaceae	46	26	95	91	35
33	Nymphaeaceae	51	41	4	14	93
7	Oenotheraceae	108	66	44	54	115
52	Oleaceae	122	119	71	73	81
7	Onagraceae	108	66	44	54	115
126	Orchidaceae	30	141	125	112	167
5	Orobanchaceae	135	108	83	83	136
40	Oxalidaceae	69	73	24	33a	139
60	Paeoniaceae	53	39	1	11	89
146	Palmae	21	142	121	119	165
34	Papaveraceae	57	43	5	15	99
40/I	Papilionaceae	68c	59c	38c	45c	15
20	Parnassiaceae	64	57	52	47	126
128	Pedaliaceae	134	10[illegible]	77	85	86
73	Periplocaceae	126	118	74	76	83
19	Philadelphaceae	64	57	52	47	16
35	Phytolaccaceae	47	24	90	94	110
15	Plantaginaceae	139	114	89	90	122
21	Platanaceae	66	34	110	106	22
108	Plumbaginaceae	119	95	88	68	121
70	Poaceae	19	140	135	127	170
101	Podophyllaceae	54	40	3	13	93

Cont. Nr.		Engler & Diels	Wettstein	De Candolle Boissier	Bentham & Hooker	Hutchinson 2. ed.
124	Polygalaceae	77	80	12	21	41
56	Polygonaceae	43	21	94	95	108
	Pontederiaceae	24a	133a	–	116a	155a
117	Portulacaceae	49	28	14	24	107
83	Potamogetonaceae	14	131	117	125a	150
9	Primulaceae	118	96	66	69	120
22	Punicaceae	105	65	42	53	57
93	Pyrolaceae	115	98	64	67a	50
136	Rafflesiaceae	41	36	101	96	98
	Ranunculaceae	53	39	1	11	91
149	Resedaceae	61	47	9	18	102
125	Rhamnaceae	90	90	36	40	65
	Rhizophoraceae	106	63	41	51	56
66/I, 152/II	Rosaceae	67	58	39	46	12
	Rubiaceae	140	120	58	62	85
84	Ruppiaceae	14	131	117	125a	151
	Ruscaceae	26	133	129	116	157
36	Rutaceae	73	76	28	34	70
65	Salicaceae	31	14	113	109	24
37	Salvadoraceae	84	88	72	74	59
155	Santalaceae	38	18	99	102	62
38	Sapindaceae	88	82	30	42	74
	Sapotaceae	120	101	68	71	69
42	Saxifragaceae	64	57	52	47	124
82	Scheuchzeriaceae	–	130	117a	125b	148
147/I	Scrophulariaceae	133	106	82	82	134
	Selaginaceae	137	108	85	87	–
	Simar(o)ubaceae	74	77	29	35	71
	Smila(ca)ceae	26	133	130	116	156
100	Solanaceae	132	105	81	81	132
59	Sparganiaceae	13	146	123	121a	160
88	Sphenocleaceae	145	125	62a	66	130
87	Staphyleaceae	85	89	30c	42c	78
156	Sterculiaceae	94	71	21	29	45
4	Tamaricaceae	98	50	16	25	39
39	Theligonaceae	111	25	91	105c	113
63	Therebinthaceae	81	81	46	43	75
95	Thymelaeaceae	102	60	96	99	34
148	Tiliaceae	92	70	22	30	44
127	Trapaceae	108a	66a	44a	54	115a
71	Typhaceae	11	147	124	121	161
142	Ulmaceae	35	16	108	105b	29
	Umbelliferae	113	94	54	58	127
105	Urticaceae	37	17	106	105	32
11	Vacciniaceae	116	99	63	67	53
23	Vahliaceae	64	57	52	47	125
62	Valerianaceae	142	122	59	63	128
43	Verbenaceae	130	111	86	88	88
	Violaceae	100	53	11	20	40
74	Vitaceae	91	91	32	41	66
85	Zannichelliaceae	14	131	117	125a	152
81	Zosteraceae	14	131	117	125a	149
98	Zygophyllaceae	72	75	27	32	48

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Cont.

Sterculiaceae

auctore K. H. RECHINGER, Wien

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Sterculiaceae

auctore K. H. RECHINGER, Wien

Sterculiaceae BARTLING, Ord. Nat. Pl. 255, 340 (1830).

Lit.: E. BOISSIER, Sterculiaceae in Flora Orientalis 1: 841–843 (1867). SULTANUL ABEDIN & ABDUL GHAFOOR in E. NASIR & S. I. ALI, Flora of West Pakistan 99 (1976). C. C. TOWNSEND, Sterculiaceae in Flora of Iraq 4: 221–227 (1980).

Arbores vel frutices rarius herbae perennes; indumentum plerumque stellatum. Folia plerumque alterna, indivisa vel palmata, stipulata. Inflorescentia axillaris vel rarius terminalis. Flores hermaphroditi vel polygami vel unisexuales, actinomorphi rarius zygomorphi. Sepala 3–5, basi ± connata, plerumque persistentia. Petala 5 vel nulla, hypogyna, contorto-imbricata, libera vel tubo staminali basi adnata. Stamina saepe in tubum connata, biverticillata vel omnia distincta, ea verticilli exterioris saepe nulla vel ad staminodia reducta; antherae biloculares, longitudinaliter dehiscentes vel rarius poris dehiscentes, raro apice connatae. Ovarium superum, sessile vel stipitatum, placentatione axili, 4–5(–10–12)-loculare et carpellatum, raro carpellum singulum; loculi bi- vel pluriovulati; ovula ascendentia vel horizontalia, anatropa. Styli carpellis isomeri, liberi vel in columnam stylarem ± connati. Fructus indehiscens vel vario modo dehiscens, siccus raro carnosus. Semina endospermio ± copioso; embryo rectus vel curvatus.

Die vorliegende Bearbeitung stützt sich wegen der Dürftigkeit des einschlägigen Materials weitgehend auf die zitierte Literatur.

1a. Perennis, herbacea .... 1. *Glossostemon* DESF.
 b. Arbores vel frutices vel suffrutices 2
2a. Ovarium et stamina androgynophoro suffulta .... 2. *Melhania* FORSSK.
 b. Androgynophorum nullum .... 3. *Helicteris* L.

1. *Glossostemon*

Glossostemon DESF., Mém. Mus. Hist. Nat. Paris 3: 238, tab. 2 (1817).

Herba perennis valida. Folia magna, indivisa, stellato-tomentosa. Flores corymbosi, axillares. Calyx 5-partitus. Petala 5, concava, longe cuspidata. Stamina numerosa, quina fasciculata, interiora ad staminodia angusta petaloidea reducta. Ovarium 5-loculare, loculis multiovulatis. Styli in columnam singulam coaliti, lobis stigmatosis 5, subulatis, conniventibus. Fructus capsula sicca, longe valide spinosa. Endospermium tenue.

1. ***G. Bruguieri*** DESF., l.c.: 239 (1817).
Icon.: TOWNSEND, Fl. Iraq 4: 222 (1980).
Typus: Circa Baghdad, OLIVIER & BRUGUIÈRE, P.

Herba valida, diffusa, c. 50 cm alta, ad 1,5 m diametro, omnino dense stellato-tomentosa. Stipulae ± 10 mm longae, lanceolatae, striatae. Folia petiolo crasso lamina breviore suffulta, c. 15–25 cm longa et fere aequilata, acute sublobata et subduplicato-dentata, palmatinervia. Flores numerosi, in corymbos axillares dispositi, purpurascentes. Pedunculi breves, 15–40 mm longi. Pedicelli subsimiles, tenuiores. Bracteae c. 20 mm longae, anguste lineares, flexuosae. Sepala 5, lanceolato-ovata, trinervia, ima basi connata, dorso dense stellato-tomentosa, petalis breviora. Petala 25 mm longa, anguste elliptico-lanceolata, longe cuspidata, intus prominenter nervosa, margine incurva. Stamina 30–40, quina fasculata, cum petalis alternantia; stamen intimum cuiusque fasciculi in staminodium angustum petaloideum permutatum; antherae 1,5 mm longae, ovatae, falcato-deflexae. Ovarium quinquangulare; stylus 3 mm longus. Capsula absque spinis 50 x 35 mm, *Daturae* similis; spinae validae, ad 25 mm longae. Semina c. 8 x 5 mm, trigona, maculata.

Iraq: Kurd.: Mosul: Mosul, WILLIAMS! Kirkuk: Kirkuk, BORNM. 1549, HAUSSKN. Inter Kirkuk et Kifri, CANDLER. Inter Kirkuk et Khanaqin, NÁB. obs. – Diyala: Quratu prope Khanaquin, AMIN EFFENDI 2620. Jabal Hamrin, MOCKLER, NÁB. 54, SUTHERLAND 204!

Distr. gen.: Iraq, Arabia.

2. *Melhania*

Melhania FORSSK., Fl. Aegypt.-Arab. 64 (1775).

Suffrutices stellato-pilosi. Folia indivisa, forma varia, serrato-crenata. Inflorescentia cymae axillares pauciflorae umbellatae vel flores solitarii. Flores bisexuales, actinomorphi, flavi. Bracteae 3, magnae, forma variae, sepalis plerumque longiores, in statu fructifero increscentes et persistentes. Sepala 5, basi coalita. Petala 5, magna, circa ovarium marcescentia. Stamina 5, staminodiis 5 ligulatis alternantia; antherae loculi paralleli. Carpelli 5, syncarpi; ovarium sessile, 5-loculare, loculis uni- vel multiovulatis; styli breves, 5-lobi, subulati, latere interiore stigmatosi. Capsula loculicida, 5-locularis, loculis mono- usque polyspermis.

1a. Bracteae lineares .... 1. *M. ovata* (CAV.) SPRENG.
b. Bracteae ovatae, cordatae vel reniformes 2
2a. Bracteae cordato-reniformes, longitudine latiores, quam sepala paulo longiores, in statu fructifero membranaceae et valde dilatatae .... 2. *M. Denhami* R. BR.
b. Bracteae ovatae, latitudine longiores, quam sepala minores, in statu fructifero nec membranaceae nec manifeste dilatatae .... 3. *M. futteyporensis* MUNRO ex MASTERS

1. ***M. ovata*** (CAV.) SPRENG., Syst. Veg. 3: 32 (1826).
Syn.: *Brotera ovata* CAV., Monad. Class. Diss. Dec. 5: 20 tab. 433 (1789).
Icon.: ABEDIN & GHAFOOR, Fl. West Pakistan 99: fig. 3-J (1976).
Typus: Africa orientalis.

Suffrutex profuse ramosus humilis pubescens. Folia 20–25 x 15–18 mm, late elliptico-ovata vel ovata, obtusa, crenato-dentata, utrinque pubescentia; petiolus 7–12 mm longus. Stipulae 6 mm longae, filiformes. Flores 15 mm diametro, axillares, solitarii vel 2–4-ni fasciculati, flavi. Pedicellus 1 mm longus. Bracteae c. 6 mm longae, lineares, persistentes. Sepala 8 x 2–3 mm, lanceolata, pubescentia, acuminata, persistentia. Petala obovata, quam sepala minora. Capsula c. 8 mm diametro, ovoidea vel pyramidalis, leviter acuminata, villosa.

Pakistan: Bal.: Beluchistan, STOCKS 618, fide BOISSIER (an spontanea?)

Distr. gen.: Pakistan (Baluchistan), Aethiopia, Insulae Capitis Viridis.

2. ***M. Denhami*** R. BR. in DENHAM & CLAPP., Voy. App. 232 (1826).
Icon.: ABEDIN & GHAFOOR, Fl. West Pakistan 99: fig. 3-G (1976).
Typus: Sudan (?)

Suffrutex humilis ad 60 cm altus, stellato-pilosus. Folia 20–40 x 10–20 mm, ovata vel ovato-oblonga vel -elliptica, utrinque stellato-pilosa, obtusa vel apiculata vel subtruncata; petiolus 10–20 mm longus. Stipulae 20–30 mm longae, subulatae. Inflorescentia 2–5-flora, pseudo-umbellato-cymosa vel flores solitarii. Pedunculus ad 10 mm longus. Flores 15–20 mm diametro; pedunculi 3–5(–10)-flori. Bracteae 5–8 x 7–8 mm, cordato-reniformes, demum membranaceae, reticulato-venosae, valde dilatatae, extus dense, intus sparse pilosae. Petala 7–10 x 4 mm, oblique obovata. Stamina c. 3 mm longa. Ovarium dense pilosum. Capsula 4 mm diametro, villosa. Semina obovata, brunneo-nigrescentia.

Pakistan: Bela: Prope fl. Hab, JAFRI 2632. 6 km ab Hab Chauki, AZIZ & HUSSAIN. Bela, ALI & al. Sonmiani, ALI & ABEDIN 709, 1192, 1301. 3 km a Sonmiani versus Uthal, QAISER & al. 707, ABEDIN 3691, 5543. – Karachi: Band Murad Khan, ALI & al. Paradise Point, ALI. 60 km a Karachi versus Thatta, ABEDIN 5215.

Distr. gen.: Pakistan (Baluchistan, Sind), Africa tropica, Arabia.

3. ***M. futteyporensis*** MUNRO ex MASTERS in HOOK. f., Fl. Brit. Ind. 1: 373 (1874).
Syn.: *M. tomentosa* STOCKS ex MASTERS in HOOK. f., l.c.: 373.
Icon.: ABADIN & GHAFOOR, Fl. West Pakistan 99, fig. 3-H (1976).
Typus: India.

Suffrutex humilis 40–70 cm altus, canescenti-pubescens. Folia 2–9 x 1–6 cm, lanceolata vel elliptico- vel ovato-lanceolata, non vel interdum indistincte 3-loba, serrato-crenata, utrinque subtus densius breviter canescenti-tomentella; petiolus 1–3 mm longus. Stipulae 4–8 mm longae, filiformes. Inflorescentia cyma 2–4-flora, pedunculo 1–5 cm longo suffulta. Flores 15–20 mm diametro. Pedicelli 5–10 mm longi, pubescentes, fructiferi elongati. Bracteae 8–16 x 5–10 mm, ovatae, cuspidatae. Sepala 8–18 x 3–4 mm, lineari-lanceolata, acuminata, extus pubescentia, persistentia. Petala 16 x 6–8 mm, oblique obovata. Stamina 8–10 mm longa; staminodia c. 15 mm longa. Ovarium subglobosum, villosum. Capsula 6–15 x 3,5–8 mm, oblongo-subglobosa, obtusa vel raro breviter rostrata, villosa. Semina angulata, muricata, nigra.

Pakistan: Chitral: Chitral, HASSAN DIN 197. – Swat: S Malakand versus Dargai, RECH. 30874!, BURTT 1506. – Peshawar: 3–8 km a Sakesar versus Nowshera, QAISER 2643, 2678 – Bela: 5 km a Hab Chauki versus Bela, 90 m, ABEDIN 3727.

Distr. gen.: Pakistan, India.

3. *Helicteris*

Helicteris L., Spec. Plant. 963 (1753); Gen. Plant. ed. 5: 411 (1754).

Frutices vel arbores humiles stellato-pubescentes. Folia alterna, indivisa, serrata, 3–7-costata. Stipulae deciduae. Inflorescentia cyma axillaris pauciflora fasciculata vel flores solitarii. Flores bisexuales, actinomorphi vel zygomorphi. Calyx tubulosus vel bilabiatus, 5-lobus; lobi erecti vel patentes, intus basi glandulosi. Petala 5, longe unguiculata, ungue interdum auriculato, petala bina ceteris plerumque majora, torta. Stamina (in specie nostra) 15; columna gynophoro adnata; staminodia cum pari staminum alternantia. Antherae biloculares; loculi divergentes, saepe confluentes, sessiles, extrorsae. Carpella 5, syncarpa; ovarium gynophoro suffultum, rectum vel spiraliter contortum, 5-lobum, 5-loculare, loculis multiovulatis; styli 5, liberi vel aliquantum connati, superne incrassati et stigmatosi. Capsula lignosa, spiraliter contorta vel recta, androgynophoro longo suffulta, maturitate in pseudofollicula secedens. Semina parva, tuberculata. Edospermium parcum.

1. ***H. isora*** L., Spec. Plant. 963 (1753).
Icon.: ABEDIN & GHAFOOR, Fl. West Pakistan 99: fig. 2 A–C (1976).
Typus: „Malabaria".

Frutex magnus vel arbor humilis. Folia 5–10 x 4–8 cm oblonga vel obovata vel orbiculata, basi oblique cordata vel rotundata, margine irregulariter dentata, apice saepe triangularia, acuminata, supra scabra; petiolus 3–8 mm longus, tomentosus. Stipulae lineares, 3–7 mm longae, tomentosae. Inflorescentia cyma axillaris 2–6-flora. Flores 30–35 mm longi, rubri, marcescendo plumbei. Pedicelli 3–6 mm longi, tomentosi. Bracteae 3–5 mm longae, tomentosae. Calyx 10–20 mm longus; dentes triangulares, gibbosi. Petala 20–35 mm longa, terna superiora quam bina inferiora longiora et angustiora, reflexa; unguis auriculatus. Stamina 15, quorum 10 fertilia quina binata; par quodque cum staminodiis 5 bifidis alternans; stamina exserta, 3–4 mm longa, abrupte reflexa; antherae ovatae, circa ovarium annulatum dispositae. Ovarium ovoideum vel conicum, 5-foveolatum, tomentosum, gynophoro 30–40 mm longo curvato tomentoso suffultum; stylus curvatus. Fructus 40–60 x 3–7 mm, cylindricus, longe rostratus, in folliculos 5 spiraliter contortos dense tomentosos secedens. Semina angularia.

Pakistan: Peshawar: 24 km NE Mardan S Machai, BURTT 1519.

Distr. gen.: Pakistan, India, Ceylon, Peninsula Malaica, Australia.