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Artikel: Typification of Edmond Boissier's Cruciferae (Brassicaceae) names enumerated in Flora Orientalis
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Notes. – The unicate in G-BOIS does not have collection number nor the day or the month, the year is 1847 and printed, the locality in Boissier's handwriting was later crossed out.

As in some other cases involving taxa (e.g., *Alyssum muelleri, Lepidium intricatum*) that were collected by Buhse in 1849 and described jointly with Boissier (Boissier & Buhse, 1860), pre-printed 1847 labels were used by Boissier and to which he added some or all collection data. Therefore, the specimens of such collections in G-BOIS are considered duplicates of the same collections at LE that have the full and correct collection information in the protologues of those taxa.

In some of such cases the discrepancy in the labels in G-BOIS and LE is minimal, or in the case of *M. trichocarpa* they are substantial. Despite that, such labeling errors are not given any importance, just as in the numerous other cases that involved collections of other collectors throughout this work.

Botschantsev (1972: 1039) listed the type at LE and gave the full locality data as in the protologue. Image of the LE01037309 duplicate and several of its close-ups were kindly sent by Dr. D. A. German, and it consists of two plants (upper half) mounted on the same sheet with Bunge's collection of the same species from Shahrud, Persia. None of the collection or annotation labels of that duplicate has Boissier's annotation, indicating that he did not examine it. Therefore, the duplicate in G-BOIS, on which alone Boissier drafted the species description, has to be recognized as the holotype.

Malcolmia runcinata var. *glabra* Boiss., Fl. Orient. 1: 223. 1867.

Type: "Hab. ad Mohammera Mesopotamiae (Noë!)".

Lectotypus (designated here): **Iran:** "Mohammera in pascuis", III.1851, *Noë 85* (G-BOIS [G00332182]). **Syntypus: Iran:** "Mohammera in fossoso", IV.1851, *Noë 1049* (G-BOIS [G00332183]).

= ***Strigosella intermedia*** (C.A. Mey.) Botsch. in Bot. Zhurn. (Moscow & Leningrad) 57: 1040. 1972.

Note. – Boissier (1867a) only gave the general area and collector but did not give the collection number, and therefore lectotypification of the name is needed because both collections in G-BOIS equally qualify.

Malcolmia strigosa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 70. 1842.

≡ ***Strigosella strigosa*** (Boiss.) Botsch. in Bot. Zhurn. (Moscow & Leningrad) 57: 1039. 1972.

Type: "[Aucher-Eloy] N. 4068, Ispahan".

Holotypus: Iran: "Ispahan", s.d., *Aucher-Eloy 4068* (G-BOIS [G00332184]; iso-: BM [BM000522155, BM000522156], G [G00446075, G00446076], K [K000693586], KW [KW000128011], LE, P [P02272553]).

Note. – Boissier based his description solely on the unicate in his herbarium. No duplicate was found in the Candolle's herbarium to justify the typification of the name, and the duplicate at P was not annotated by Boissier.

Strigosella cabulica Boiss., Diagn. Pl. Orient. ser. 2, 1: 22. 1854.

Type: "Hab. in regno *Cabulico* propè *Pushut* (W. Griffith N° 13)".

Holotypus: Afghanistan: "Pushut", s.d., *Griffith 13* (G-BOIS [G00330470]; iso-: B [B100241270], K [K000693592, K000693593, K000693595], LE).

Notes. – Both Rechinger (1968) and Jafri (1973) listed more than one herbarium as the type, and Botschantzev (1972) cited the duplicate at LE as an isotype.

Boissier (1854) did not examine more than the unicate in his herbarium. He annotated the duplicate at B as *Malcolmia cabulica,* but that annotation was made after his description of the species as *Strigosella*.

Boissier in *Flora Orientalis* treated the species as *Malcolmia cabulica* (Boiss.) Hook. f. & Thomson (in J. Proc. Linn. Soc., Bot. 5: 156. 1861).

The collection *Griffith 1542* corresponds to number *13* in Griffith's journal, as indicated on K000693592 and K000693595, and most likely also number *1374* on the B duplicate and number *1452* on K000693593.

Pseudodraba hystrix (Hook. f. & Thomson) Al-Shehbaz et al. in Pl. Diversity Evol. 129: 73. 2011.

= *Malcolmia ciliaris* Boiss., Fl. Orient. Suppl.: 44. 1888, **syn. nov.**

Type: "Hab. in Affghaniâ loco non indicato (Hulton!)".

Holotypus: Afghanistan: *sine loco,* s.d., *Aitchison s.n.* (G-BOIS [G00332185]).

Notes. – The identity of *Malcolmia ciliaris* remained a mystery since its publication about 140 years ago. Rechinger (1968) and Zohary et al. (1980) did not mention the species, and Al-Shehbaz et al. (2014) indicated that the status of the species is unknown.

An examination of the holotype reveals beyond any doubt that the plant belongs to the monospecific *Pseudodraba* Al-Shehbaz et al.

The collector was listed in the protologue as Hulton, instead of Aitchison on the unicate in G-BOIS.

Malcolmia ledebourii Boiss., Fl. Orient. 1: 224. 1867.

Type: "Hab. in Transcaucasiâ ad Baku (C.A. Mey!), in apricis trans Araxem ad amnem Karasu (Szow!)".

Lectotypus (first step designated by Dorofeyev, 2012: 450; second step designated here): **Azerbaijan:** "Baku", III–IV.1830, *Meyer 1653* (G-BOIS [G00332186]; isolecto-: LE). **Syntypus: Turkey:** "In siccis campestribus et apricis trans Araxem ad amnem Karasu", 29.II.1828, *Szovits 1* (G-BOIS [G00332187], LE).

= ***Neotorularia conturtiplicata*** (Stephan ex Willd.) Hedge & J. Léonard in Bull. Jard. Bot. Natl. Belgique 56: 394. 1986.

Notes. – Boissier based the species description on the unicates in his herbarium. Therefore, a second-step lectotypification is needed to correct Dorofeyev's erroneous designation from LE to G-BOIS.

The isolectotype and lectotype differ in the collection number respectively *Meyer s.n.* and *Meyer 1653,* no date is indicated on the lectotype and the locality of the isolectotype is listed as "In collibus et en campis prope Baku".

Malcolmia torulosa var. *contortuplicata* Boiss., Fl. Orient. 1: 225. 1867.

Type: "Hab. cum typo in Palaestinâ (Boiss.!), Persiae prov. Aderbidjan (Auch. exs. 4169 C!)".

Lectotypus (designated here): **Iran:** "Aderbidjan", s.d., *Aucher-Eloy 4169C* (G-BOIS [G00332188]; isolecto-: BM [BM001172165], G [G00446077, G00446078], P [P00747217, P05415964, P05415965], W [W0075698]). **Syntypus: Israel:** "Palestina incultis", 1846, *Boissier s.n.* (G-BOIS [G00332189]).

= ***Neotorularia torulosa*** (Desf.) Hedge & J. Léonard in Bull. Jard. Bot. Natl. Belgique 56: 395. 1986.

Notes. – The native distribution range of *Neotorularia torulosa* extends uninterrupted from Morocco into all SW Asia and eastward into China.

The twisted fruit, recognized by Boissier in *Flora Orientalis* as characteristic of his var. *contortuplicata,* varies within a given population and sometimes even on the same plant.

Malcolmia torulosa var. *leiocarpa* Boiss., Fl. Orient. 1: 225. 1867.

Type: "Hab. cum typo prope Gaza (Boiss!), in deserto Palmyrae (Bl!), Assyriâ ad Euphratem (Chesn. exs. 131!), Persiâ australi ad Ispahan (Auch. exs. 4155!), ad Schiraz (Ky!), ad Yezd (Bunge!)".

Lectotypus (designated here): **Iran:** "Ispahan", s.d., *Aucher-Eloy 4166* (G-BOIS [G00332190]; isolecto-: G [G00446079], K [K000694000], P [P05445998, P00747215]). **Syntypi: Iran:** "Prope urbem Schiras", V.1842, *Kotschy 126a* (G-BOIS [G00332191]). **Palestine:** "propè Gaza", 1846, *Boissier s.n.* (G-BOIS [G00332192]); "Expedition to the Euphrates", 1836, *Chesney 131* (P [P00747222], W [W0075699]).

= ***Neotorularia torulosa*** (Desf.) Hedge & J. Léonard in Bull. Jard. Bot. Natl. Belgique 56: 395. 1986.

Notes. – Only four of the six syntypes were located in G, G-BOIS, and P, and the remaining couple (Blanche and Bunge) must have been misplaced or examined by Boissier in other herbaria.

The type *Aucher-Eloy 4155* in the protologue instead of *4166* was overlooked by Boissier (1888), as there is no other collection of Aucher-Eloy from Isfahan for the above variety.

Malcolmia aculeolata (Boiss.) Boiss., Fl. Orient. 1: 226. 1867.

≡ ***Sisymbrium aculeolatum*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 75. 1842.

Type: "[Aucher-Eloy] Ispahan absque numero".

Holotypus: Iran: "Ispahan", s.d., *Aucher-Eloy s.n.* (P [P05384929]; iso-: W [W18890303536]).

Notes. – There is no material in the Geneva herbaria of the species with *Aucher-Eloy s.n.* It is certain that Boissier (1842a) based his description on the unicate P05384929 that he annotated, and he did not examine the duplicate at W. Unfortunately, Boissier (1867a, 1888) never mentioned the type collection of the species. Hedge (1968: 325) was correct in stating that the type is *Aucher-Eloy s.n.,* though he did not indicate the herbarium housing that collection. However, the listing of the type as *Schimper 124* from Sinai by Jafri (1973) is erroneous, and that collection was not cited in the original publication though listed, among others, in *Flora Orientalis.*

The initial placement of the species in *Sisymbrium* by Boissier (1842a) is currently accepted both on morphological (Warwick & Al-Shehbaz, 2003) and molecular grounds (Warwick et al., 2002). Although, the species was transferred by him to *Malcolmia,* its lack of the branched

trichomes and decurrent stigmas stands against such assignments. Furthermore, the placement in *Torularia* by Hedge (1968) or *Neotorularia* by Léonard and Hedge (in Leonard, 1986) is not acceptable because it has simple instead of the branched trichomes characteristic of the last genus.

Malcolmia bungei Boiss., Fl. Orient. 1: 226. 1867 [nom. illeg.].

≡ *Dontostemon grandiflorus* Bunge in Arbeiten Naturf. Vereins Riga 1: 147. 1847.

≡ ***Strigosella grandiflora*** (Bunge) Botsch. in Bot. Zhurn. (Moscow & Leningrad) 57: 1044. 1972.

Note. – *Malcolmia bungei* is illegitimate because Boissier in *Flora Orientalis* listed the earlier published *Dontostemon grandiflorus* as a synonym (see German et al., 2006).

Malcolmia bungei var. *glabrescens* Boiss., Fl. Orient. 1: 226. 1867.

Type: "Hab. in Affghaniâ (Griff. ex Hook), Belutschiâ prope Gurghina (Stocks!)".

Lectotypus (designated here): **Pakistan:** "Beloutchistan. Gurghina", 1851, *Stocks 975* (G-BOIS [G00332194]; isolecto-: K [K000693600, K000693601, K000693602]).

= ***Strigosella behboudiana*** (Rech. f. & Esfand.) Botsch. in Bot. Zhurn. (Moscow & Leningrad) 57: 1042. 1972.

Note. – An extensive search for the Griffith syntype in the major herbaria consulted was unsuccessful.

Malcolmia angulifolia Boiss. & Orph. in Boiss., Diagn. Pl. Orient. ser. 2, 5: 19. 1856.

≡ ***Malcolmia orsiniana*** subsp. ***angulifolia*** (Boiss. & Orph.) Stork in Svensk Bot. Tidskr. 66: 245. 1972.

Type: "Hab. in *Parnasso* propè *Trypia-Spitia* in speluncâ alt. 5500' cl. Guicciardi et Prof. Orphanidès 1854, eodem loco anno 1855 cl. Guicciardi ex Heldreich".

Lectotypus (designated by Stork, 1972a: 241): **Greece:** "In m. Parnassi reg. Tripia Spilaea, abietina in antro", VIII.1855, *Guicciardi s.n.* (G-BOIS [G00332195]; isolecto-: C [C10008867], K [K000693572], LD [LD1031045], P [P00868504], W [W1940-0019434]). **Syntypus: Greece:** "Legi in monte Parnasso prope Trypia-Spitià", 5500' [1680 m], 3–15.VII.1854, *Orphanidès 2555* (G-BOIS [G00332196], JE [JE00001304, JE00001305]).

Notes. – Both JE syntypes lack the collection number, but the other data are the same as the G-BOIS duplicate.

Guicciardi s.n. was distributed as *Heldreich 2975*.

Malcolmia graeca Boiss. & Spruner in Boiss., Diagn. Pl. Orient. 1: 71. 1843.

Type: "Hab. in rupestribus *Graeciae, Athenae* in monte *Lycabetto, Acrocorinthus,* etc. Fl. Aprili".

Lectotypus (designated by Stork, 1972b: 37): **Greece:** "Attica", s.d., *Spruner s.n.* (G-BOIS [G00332197]; isolecto-: B [B100241258], BM, BR, E [E00438498], K [K000693569], L, P, W [W0075696, W0075697]).

Note. – Unfortunately, none of the other syntypes cited in the protologue was located in G-BOIS or the other major herbaria consulted.

Malcolmia graeca var. *integrifolia* Boiss., Fl. Orient. 1: 228. 1867.

Type: "Hab. in montibus Atticae Lycabetto (Boiss!) et Corydalo Heldr!), Parnasso prope Arachova (Heldr. Fl. Gr. exs. 139!), Malevo (Orph!), prope Tripolizza (Heldr!)".

Lectotypus (designated by Stork, 1972b: 37): **Greece:** "in rupestribus Atticae", 21.IV.1842, *Boissier s.n.* (G-BOIS [G00332200]). **Syntypi: Greece:** "In m. Parnassi reg. infr. pr. Arachova", IV.1857, *Guicciardi s.n.* (G-BOIS [G00332203]); "In saxosis apricis m. Corydali, Atticae", 12.IV.1852, *Heldreich 139* (G-BOIS [G00332199], WAG [WAG0004240]); "Inter segetes près de Tripolizza", 11.V.1844, *Heldreich 139* (B [B100241254], BM [BM000750024], G [G00446080, G00446081, G00446084], G-BOIS [G00332198], K [K000693571], P [P05423338]); "in monte Malevo", 22.VI.–4.VII.1850, *Orphanides 2978* (G-BOIS [G00332201]); *ibid. loco,* 22.IV–4.V.1857, *Orphanides 3399* (G-BOIS [G00332202]).

= ***Malcolmia graeca*** subsp. ***bicolor*** (Boiss. & Heldr.) Stork in Opera Bot. 33: 39. 1972.

Notes. – The lectotype is a collection folder of two sheets, of which one has a complete label and one with Lycabettus only.

It is quite evident that Boissier's concept in *Flora Orientalis* of *Malcolmia graeca* var. *integrifolia* encompasses the principal variation among all three of the currently recognized subspecies as critically studied by Stork (1972b). Unfortunately, the lectotype sheet was not annotated by her, and none of the duplicates in the Geneva herbaria has the locality as Athens

(see Stork, 1972b: 37), though Attica is the peninsula that currently encompasses Athens.

Distributed syntypes carrying Heldreich's numbers or exsiccatae *139* are applied to different collections and, therefore, they should not be relied upon without careful evaluation.

The *Guicciardi s.n.* collection was distributed as *Heldreich 139*.

Malcolmia bicolor Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 6: 10. 1846.

≡ ***Malcolmia graeca*** subsp. ***bicolor*** (Boiss. & Heldr.) Stork in Opera Bot. 33: 39. 1972.

Type: "Hab. in schistosis regionis excelsioris *Taygeti, Neraidovoum, Hagios Elias,* etc. copiosa. De Heldreich. Floret Junio".

Lectotypus (designated by Stork, 1972b: 39): **Greece:** "Taygète: rocailles schisteuses dans la partie inférieure de la région des sommités, en montant au Hagios-Elias depuis le Pentaplou", 6000'–6500' [1830–1980 m], VI–VII.1844, *Heldreich 240* (G-BOIS [G00332204]; isolecto-: BM [BM000750021], E [E00438497], G [G00371820, G00332202, G00371834], GOET [GOET002634], K [K000693576, K000693578], L, MO [MO3833277], OXF, P [P05423379, P05423390, P05423392], WAG [WAG0004239], ZT [ZT00008155]). **Syntypus: Greece:** "In saxosis. au Neraïdarvouno (partie du Taygète au-dessus d'Anavryti du Lacedemoniu) région de sapins", 5000'–6000' [1520–1830 m], 21.VI.1844, *Heldreich 240* (B [B100241256], G-BOIS [G00332205], P [P04718503, P05423376, P05423386, P05423389], WU [WU0076029]).

Notes. – The collection date on the lectotype sheet is 11 June 1844, whereas that on the unnumbered duplicates is VI–VII.1844. Both, however, were collected from an elevation of 6000–6500'.

The G-BOIS duplicate G00332205 was collected on 21 June 1844 from elevation of 5000–6000', though it carries the same collection number *(240)* as the lectotype. It is considered here as a syntype and interpretation of the lectotype is stretched as presented by Stork (1972b).

The four syntypes at P do not have a collection number.

Malcolmia veluchensis Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. ser. 2, 6: 10. 1859.

Type: "Hab. in regione abietinâ montis *Veluchi Aetoliae* cl. Samaritani et Guicciardi; hùc prob. quoque referenda planta ex monte *Ziria Peloponnesi* sub N° 164 Fl. Graec. exs. a cl. Prof. Orphanidés evulgata".

Lectotypus (designated by Stork, 1972b: 40): **Greece:** "In reg. abietina m. Veluchi ad Sympettericò", 3.VIII.1857, *Samaritani & Guicciardi 2160* (G-BOIS [G00332206]). **Syntypus: Greece:** "in regione media montis Ziriae prope Trikala", 10–22.VI.1851, *Orphanides 164* (BM [BM000750020, BM001171162, BM001172163], BR [BR0000006993559], G-BOIS [G00332207], K [K000618639], P [P05423377, P05423380, P05423388], W [W0075695]).

= ***Malcolmia graeca*** subsp. ***bicolor*** (Boiss. & Heldr.) Stork in Opera Bot. 33: 39. 1972.

Note. – The lectotype is a collection folder of two sheets one of which has the above label data and the other is unlabeled.

Malcolmia micrantha Boiss. & Reut. in Boiss., Fl. Orient. Suppl.: 45. 1888.

Type: "Hab. in rupestribus montis Buffavento Cypri 1200' (Ky. Suppl. 407!), in graminosis calcareis Mesopotamiae ad Mardin (Haussk.!)".

Lectotypus (designated by Stork, 1972b: 18): **Turkey:** "In grami. calc. c. Mardin", IV.1867, *Haussknecht 53* (G-BOIS [G00332208]; isolecto-: BM [BM000522149], BR [BR0000006993221], JE [JE00001614], K [K000693605], W [W0075693]). **Syntypus: Cyprus:** "Crescit in rupestribus montis Buffavento", 1200' [366 m], 3.IV.1859, *Kotschy suppl. 407* (W [W0075694]).

= ***Malcolmia chia*** (L.) DC., Syst. Nat. 2: 440. 1821.

Notes. – The JE isolectotype was annotated by Dvořák in 1972 as a lectotype, but apparently such lectotypification was never published.

A search in the G-BOIS and Geneva herbaria for Kotschy's syntype did not materialize and it must be misplaced because Stork (1972b: 18) examined it.

Malcolmia micrantha was recognized as a distinct species in the *Flora of Turkey* by Cullen (1965: 461), but as critically examined by Stork (1972b), the name is perfectly at home in *M. chia*.

Malcolmia meyeri Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 71. 1842.

– *Hesperis crenulata* sensu C.A. Mey., Verz. Pfl. Casp. Meer.: 187. 1831 [non DC.].

≡ ***Zuvanda meyeri*** (Boiss.) Askerova in Bot. Zhurn. (Moscow & Leningrad) 70: 523. 1985.

Type: "[Meyer] 1641. In montibus Talüsch prope pagum Swant, in glareosis (alt. 670 hexap.)".

Holotypus: Azerbaijan: "Talüsch", 20.VI.1830, *Meyer 1641* (G-BOIS [G00332209]; iso-: KW [KW000127980], LE, P [P05415917]).

Notes. – Dvořák (1972a), who proposed the name *Zuvanda* as subgenus of *Maresia* Pomel, did not list the type of *Malcolmia meyeri*. However, Askerova (1985), raised that subgenus to a genus and gave the type collection as above. Her listing is basically compatible with the protologue of Meyer (1831), the listing of Boissier (1867a), and specimens in both LE and G-BOIS, though the holotype above is without a collection date.

Furthermore, Dorofeyev (2012: 376) typified the species based on a specimen at LE, and that typification is rejected here. The name does not need typification because Boissier based the species description solely on the unicate in his herbarium and did not examine or annotate any specimen elsewhere. Therefore, the G-BOIS specimen is the holotype, and the LE duplicate, which was not examined, is the isotype.

Dorofeyev (1994) transferred the species to *Strigosella* of the tribe *Euclidieae,* but the total lack of branched trichomes and the presence of auriculate leaves do not support such generic assignment. Then he (Dorofeyev, 2002) placed the species in the genus *Moricandia* DC. of the *Brassiceae*, a tribe distinguished primarily by having segmented fruits and conduplicate cotyledons. None of these characters is present in *Zuvanda* and, therefore, such tribal assignment is unsupported by morphology and molecular data (see Al-Shehbaz, 2012).

Malcolmia conringioides Boiss., Fl. Orient. 1: 230. 1867.

≡ *Conringia nana* Boiss., Diagn. Pl. Orient. ser. 2, 5: 25. 1856.

Type: "Hab. inter Astragalos montis *Manschura* Antilibani cl. Kotschy alt. 6500'".

Holotypus: Syria: "In humosis vallis Martsch Manschura", 6000' [1830 m], 8.VI.1855, *Kotschy 85* (G-BOIS [G00446070]; iso-: B [B100241266], BM [BM001172161], E [E00384093], K [K000693606], KW [KW000127970], MPU [MPU022358], P [P05415834, P05415838, P05415843], W [W0075702]).

= ***Zuvanda exacoides*** (DC.) Askerova in Bot. Zhurn. (Moscow & Leningrad) 70: 524. 1985.

Notes. – There is a single sheet in G-BOIS, and it has three labels handwritten by Boissier with minimal information, including just Syria and *Kotschy s.n.* (two labels) and one with no. *85,* just as in the printed label distributed to the various herbaria above.

The mentioning of Manschura in the original protologue and printed label supports treating the sheet as one collection with highly abbreviated information, just as in many of Boissier's own collections or material from other collectors.

The original publication gives the altitude as 6500' instead of 6000' in the printed label, and that was most likely a typographical error.

Boissier in *Flora Orientalis* cited under the new name *Malcolmia conringioides* the type collection of *Conringia nana* Boiss. *(Kotschy 85),* among two others as: "Hab. in cultis Damasci et in Antilibano (Gaill!), in dumosis vallis Mandschura Antilibani (Ky exs. 85!), in Libano ad Zachle (Labill!)", and thereby he avoided creating a later homonym of *Malcolmia nana* (DC.) Boiss. Therefore, the type of both taxa is the same.

Hesperis L., Sp. Pl.: 663. 1753.

Tribe: *Hesperideae* Prantl.

Note. – An Eurasian genus of about 50 species centered in the Caucasus and neighboring SW Asia and E Europe.

Hesperis breviscapa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 67. 1842.

Type: "[Aucher-Eloy] N. 135, Olympus Armenus".

Holotypus: Turkey: "in Olympo Armeniae", 1837, *Aucher-Eloy 135* (G-BOIS [G00332210]; iso-: G [G00371654, G00371729], K [K000075644 plant on left, K000693653 plant on right], P [P00234971, P02272556]).

Note. – The name does not need lectotypification because Boissier based the species description on the unicate in G-BOIS and did not study or annotate any of other six duplicates cited above.

Hesperis kotschyi Boiss., Diagn. Pl. Orient. ser. 2, 5: 21. 1856.

Type: "Hab. in praeruptis calcareis ad latus orientale montis *Gisyl tepe Tauri Cilicici* cl. Kotschy".

Holotypus: Turkey: "Iter Cilicicum in Tauri alpes 'Bulgar Dagh.' Loca praerupta in devexis orientalibus calcariis montis Gisyl Deppe", 20.VII.1853, *Kotschy 236g* (G-BOIS [G00332211]; iso-: GOET [GOET002616], KW [KW000127978], P [P00234974, P02272569], W [W0075692], WAG [WAG0004247]).

Notes. – It is certain that Boissier (1856) drafted the species description on the unicate in his herbarium alone and, therefore, it is safe to treat that unicate as the holotype.

Furthermore, he did not cite a collection number in that publication, though Boissier in *Flora Orientalis* listed *Kotschy 256,* an obvious typographical error for *236g,* when he synonymized *H. kotschyi* under the later-published *H. humilis* (see below).

Hesperis humilis Boiss., Fl. Orient. 1: 231. 1867 [nom. illeg.].

≡ ***Hesperis kotschyi*** Boiss., Diagn. Pl. Orient. ser. 2, 5: 21. 1856.

Type: see the following notes.

Notes. – *Hesperis humilis* is illegitimate because Boissier listed the earlier published *H. kotschyi* in synonymy.

By listing "*H. kotschyi* Boiss. Diagn. Ser. II, V, p. 21 non Fenzl Pug.", Boissier (1867a: 231) erroneously considered *H. kotschyi* a later homonym of *H. kotschyana* Fenzl (Pug. Pl. Nov. Syr. 13. 1842) and, therefore, proposed *H. humilis* as a replacing name.

Hesperis armena Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 63. 1842.

Type: "[Aucher-Eloy] N. 123, Olympus Armenus".

Holotypus: Turkey: "In Olympus Armeniae", s.d., *Aucher-Eloy 123* (G-BOIS [G00332214]; iso-: BM [BM000522165, BM000522179, BM000946228], E [E00148084], G [G00371702, G00371705, G00371711], K [K000075646, K000075645], P [P00234994, P02272560]).

Notes. – Dvořák annotated G00371705 in 1972 as the lectotype, but that sheet, which is part of the G general herbarium, was not examined by Boissier, and that designation remained unpublished. However, Dvořák (1973a: 168) listed *Aucher-Eloy 123* and *173* as the type collections, but the latter number was never cited by Boissier (1842a).

The name does not need typification because Boissier did not examine or annotate any of the 11 duplicates cited above and based the species description only on the unicate in his herbarium.

Hesperis violacea Boiss., Diagn. Pl. Orient. 5: 81. 1844.

Type: "Hab. in regione alpinâ *Cadmi* orientalis suprà *Colossam* ubi Junio 1842 floriferam legi [Boissier], e *Cariae* et *Lyciae* montibus attulit quoque Ch. Pinard".

Lectotypus (designated here): **Turkey:** "Caria", 1843, *Pinard s.n.* (G-BOIS [G00332217]; isolecto-: BM [BM000522193], G [G00371707, G00446091], GOET [GOET002614, GOET002615], JE [JE00002539], K [K000693658, K000693659, K000693660], KW [KW000127974], P [P00234992, P05413631, P05413632, P05413635, P05413636], W [W0075691, W18890310406], WAG [WAG0004238]).
Syntypi: Turkey: "Cacumina Cadmi suprà Colossam", VI.1842, *Boissier s.n.* (G-BOIS [G00332215]); "Caria", 1842, *Pinard s.n.* (G [G00371709, G00371732]) (Fig. 8, p. 52; 11, p. 55).

= ***Hesperis bicuspidata*** (Willd.) Poir., Encycl. Suppl. 3: 195. 1813.

Notes. – The lectotype is a collection folder of five sheets (Fig. 8, p. 52), two of them labeled and collected in 1843. The G-BOIS syntype is a collection folder of two sheets, of which one only is labeled with locality and date.

Pinard collected the species in Caria both in 1842 and 1843, though rather few duplicates of the 1842 collection exist (the above two from the Moricand (Fig. 11, p. 55) and Candolle's herbaria, respectively). It is unknown if Boissier examined Pinard's collections of 1842.

Hesperis reuteriana Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 20. 1856.

Type: "Hab. in Armeniâ propè *Ispir* cl. Huet du Pavillon. Fl. Junio".

Holotypus: Turkey: "Ispir", VI.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332218]; iso-: BM [BM000522178], FI [FI005659], G [G00446092, G00446606], JE [JE00002526], K [K000693657], P [P05149899, P05413628]).

= ***Hesperis bicuspidata*** (Willd.) Poir., Encycl. Suppl. 3: 195. 1813.

Notes. – The holotype is a collection folder of three sheets, one labeled as above, one with "Ispir & Baubout" without date and one with "Baibout" and V.1853 indicated.

Boissier in *Flora Orientalis* correctly reduced *H. reuteriana* to synonymy of *H. bicuspidata,* though the name was unaccounted for by Cullen (1965).

Hesperis unguicularis Boiss., Diagn. Pl. Orient. ser. 2, 5: 21. 1856.

Type: "Hab. in *Armeniâ* cl. Calvert".

Holotypus: Turkey: "Erzeroum", 1853, *Calvert 93* (G-BOIS [G00332219]; iso-: JE [JE00002543]).

= ***Hesperis bicuspidata*** (Willd.) Poir., Encycl. Suppl. 3: 195. 1813.

Notes. – It seems that only the above two duplicates are available for *H. unguicularis* in the major herbaria consulted. Although Dvořák (1965: 416), correctly indicated that the holotype is at G (for G-BOIS) and isotype is at JE, he (Dvořák, 1973a: 117) reversed action by indicating that the type, rather than isotype, is at JE. Boissier did not examine or annotate the JE sheet, and therefore it makes perfect sense to treat the G-BOIS material as the holotype.

Dvořák (1965, 1973b) recognized the species as a distinct instead of reducing it to synonymy of *H. biscuspidata,* but the differences between them are trivial, and it is more sound to recognize the latter as a variable species accommodating the former.

Hesperis leucoclada Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 69. 1842.

≡ ***Sisymbrium leucocladum*** (Boiss.) D.A. German & Al-Shehbaz in Phytotaxa 334: 96. 2018.

Type: "[Aucher-Eloy] N. 4123, Ispahan".

Lectotypus (designated here): **Iran:** "Ispahan", s.d., *Aucher-Eloy 4123* (G-BOIS [G00332220]; isolecto-: BM [BM000522181, BM000522182], G [G00446088, G00446089], K [K000693872], KW [KW000127972], LE [LE00013085], P [P02272565, P02272566, P02272567], W [W0050812]).

Notes. – In addition to the specimen in G-BOIS, Boissier (1842a) based the species description on the duplicate P02272565 that he annotated. Therefore, the lectotypification of Dvořák (1968a, 1968b), which was based on W0050812 that Boissier never examined and which was recently maintained by German & Al-Shehbaz (2018), cannot be accepted.

The generic placement of *Hesperis leucoclada* has been controversial, and Dvořák (1968a) compared it more with members of the tribe *Brassiceae* largely because he misinterpreted the incumbent cotyledons with slightly depressed inner one as somewhat conduplicate and eventually placed the species in monospecific *Gynophorea* Gilli almost solely on having stipitate vs sessile fruit. About a week after the above publication, Dvořák (1968b) retained the species in *Hesperis,* as was originally placed by Boissier (1842a). The species is quite anomalous in *Hesperis* because it does not have the decurrent stigmas, branched trichomes, and uniseriate multicellular glands characteristic of almost all species of the genus.

Another more realistic placement of *H. leucoclada* was proposed by Khosravi (2003) based on molecular studies and a closer look at morphology. He transferred the species to the Iranian-endemic *Pseudofortuynia* Hedge, but neither he nor Hedge (1968) realized that they were dealing with the same species that they assigned to the tribe *Brassiceae*. Except for their purple instead of yellow flowers and stipitate vs sessile fruits, a critical closer examination of the type collections at G and W of *Hesperis leucoclada* and *Pseudofortuynia esfandiari* Hedge reveals that, they are indistinguishable from *Sisymbrium* in every morphological character and therefore should be united with it. It is interesting to note that Boissier & Buhse (1860) described *S. hesperidiflorum* (see below) and compared it with *S. subspinescens* Bunge, then Boissier in *Flora Orientalis* reduced it to synonymy of *Hesperis leucoclada*.

In conclusion, *H. leucoclada* was recognized as a member of the tribe *Hesperideae* (Dvořák, 1968b), a member of the tribe *Brassiceae* (Dvořák, 1968a; Hedge, 1968; Khosravi, 2003), and *Sisymbrieae* (German & Al-Shehbaz, 2018, and herein). Therefore, the recent synonymy by the last authors of *Pseudofortuynia* with *Sisymbrium* is fully justified.

Sisymbrium hesperidiflorum Boiss. & Buhse in Nouv. Mém. Soc. Imp. Naturalistes Moscou 12: 22. 1860.

Type: "Im Gebirge von Jesd, Thal Derrehgoum, 23 April 1849 (florens et fructiferum). [Buhse] No 1296".

= ***Sisymbrium leucocladum*** (Boiss.) D.A. German & Al-Shehbaz in Phytotaxa 334: 96. 2018.

Notes. – No material of this species was located in all of the Geneva herbaria and LE (German & Al-Shehbaz, 2018).

These authors followed Boissier in *Flora Orientalis* in treating the two taxa as conspecific.

Hesperis glabra Boiss. & Noë in Boiss., Diagn. Pl. Orient. ser. 2, 5: 22. 1856 [nom. illeg.] [non Royle].

≡ ***Hesperis boissieriana*** Bornm. in Beih. Bot. Centralbl., Abt. 2, 27: 300. 1910.

Type: "Hab. in *Kurdistaniâ* propè *Van,* cl. Noë, Junio 1849".

Holotypus: Turkey: "Kurdistan. Zwischen Van und Jehuri", VI.1849, *Noë 160* (G-BOIS [G00332221]).

Note. – No duplicates of the type collection were found in the herbaria consulted.

Hesperis thyrsoidea Boiss., Fl. Orient. 1: 234. 1867.

Type: "Hab. in rupestribus faucium prope Baibout Armeniae (Bourg!), in monte Berytdagh Cataoniae (Haussk!)".

Lectotypus (designated here): **Turkey:** "Taurus Cataonicus. Berytdagh in ipso Popul.", 6000' [1830 m], 10.VIII.1865, *Haussknecht s.n.* (G-BOIS [G00332222];

isolecto-: JE [JE00002541]). **Syntypus: Turkey:** "Dans les ravins près Baibout", 2.VII.1862, *Bourgeau 132* (G-BOIS [G00791931], P [P00234985, P02272559, P04661335]).

Notes. – Boissier in *Flora Orientalis* based the species description only on the G-BOIS and JE duplicates of both syntypes above. The fragmentary W0032956 specimen has a preprinted label with Haussknecht's handwritten information "In dumetis popul. Bewul. m. Berytdagh Cataoniae. alt. 7000 ped. die 7.8.1865" that differs in the elevation and day of collection and, therefore, is not considered here as part of the type collection. Based on these facts, the listing of Dvořák (1968b: 273) of that sheets as part of the type collection is erroneous.

The three Bourgeau syntypes at P do not have a collection number and the G-BOIS syntype is a collection folder of two sheets.

Cullen (1965: 455) placed *H. thyrsoidea* as a synonym of *H. cappadocica* E. Fourn. (Bull. Soc. Bot. France 13: 351. 1868) because he interpreted the publication date of the latter name as 1866 instead of 1868. For exact publication dates of that journal, see Leussink (1985).

Hesperis pulmonarioides Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 68. 1842.

Type: "[Aucher-Eloy] N. 129, Alep et Nardin".

Lectotypus (designated by Dvořák, 1966b: 183): **Syria:** "Alep", s.d., *Aucher-Eloy 129* (G-BOIS [G00332224]; isolecto-: BM [BM000522194], K [K000693667], P [P00234984, P02272578, P02272579]).

Notes. – Description of the species was emended by Dvořák (1966b), and his lectotypification of the species is justified because Boissier annotated P02272578 and thus based his species description on that sheet and the unicate in his herbarium. Dvořák annotated P00234984 as the lectotype but did not cite that in his publications.

Fournier (1866) and Cullen (1965) recognized *H. pulmonarioides* and confirmed its occurrence in Turkey, though the latter author indicated that the species also grows in the Syrian desert.

Hesperis quadrangula Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 67. 1842.

Type: "Hujus specimen cum *H. tristi* ex Odessa sub [Aucher-Eloy] nº 149 mixtum recepi, an ex eâdem regione oriunda est?".

Holotypus: Ukraine: "Odessa", s.d., *Aucher-Eloy 149* (G-BOIS [G00332223]; iso-: BM [BM001254062], G [G00446093]).

Notes. – The isotype at G was part of the Moricand herbarium. Furthermore, there is no duplicate of this collection at P, and it is safe to conclude that the G-BOIS unicate is the holotype.

Boissier (1842a) did not provide the data on the type collection between the diagnosis and full description, as he normally did for other Aucher-Eloy novelties, but for this species the data (see above) was mentioned on the last two lines of the species entry.

The status of *H. quadrangula* remains unresolved, and several authors (e.g., Dvořák, 1973b; Czerepanov, 1995; Mosyakin & Fedoronchuk, 1999) did not list the species as part of the flora of Ukraine. By contrast, Fournier (1866) listed the name in synonymy of the Turkish-Syrian endemic *H. pulmonarioides*. Therefore, it is safe to conclude that Aucher-Eloy made mistake in the type locality of the species.

Hesperis nivalis Boiss. & Hausskn. in Boiss., Fl. Orient. Suppl.: 45. 1888.

Type: "Hab. ad nives montis Sawus Persiae austro-occidentalis 12000' (Haussk.!)".

Holotypus: Iran: "ad nives m. Sawers, dit Kuh Kilugek", 12000' [3660 m], VII.1868, *Haussknecht s.n.* (G-BOIS [G00332225]; iso-: JE [JE00002540]).

Note. – Dvořák (1968b: 273) listed a W duplicate of the type collection, but despite repeated search it was not found.

Hesperis scabrida Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 64. 1842.

Type: "[Aucher-Eloy] N. 166, Mesopotamia".

Holotypus: Sine Patria: "Mesopotamia", 1835, *Aucher-Eloy 166* (P [P00234982]; iso-: G-BOIS [G00332226]).

Notes. – Boissier (1842a) based his species description solely on the holotype that he annotated and from which he took fragments consisting of a leaf and two fruiting lateral branches.

The exact type locality of *H. scabrida* remains unknown, as Mesopotamia sensu Boissier includes the areas between the Tigris and Euphrates rivers in Turkey, Syria, and Iraq.

The specimens cited by Cullen (1965) under this species were shown by Dvořák (1972b) to be *H. novakii* Dvořák and *H. unguicularis*. Furthermore, Dvořák (1980: 1041) doubted the occurrence of *H. scabrida* in Iraq and suggested that the type was probably collected from Syria or Turkey.

Hesperis secundiflora Boiss. & Spruner in Boiss., Diagn. Pl. Orient. 1: 70. 1843.

≡ ***Hesperis laciniata*** subsp. ***secundiflora*** (Boiss. & Spruner) Breistr. in Mém Soc. Bot. France 33: 84. 1952.

Type: "Hab. in faucibus montis *Hymetti* propè *Athenas* inter frutices".

Lectotypus (designated here): **Greece:** "Hymettus", IV.1842, *Boissier s.n.* (G-BOIS [G00332229]; isolecto-: BM [BM000750011], G [G00446096, G00446097], GOET [GOET002618], HBG [HBG506202], JE [JE00002544], K [K000693651], KW [KW000127976, KW000127977], LD [LD1011478], PH [PH00014464], W [W00075688, W18890310416]). **Syntypus: Greece:** "Hymetti fauces", V.1842, *Spruner s.n.* (G [G00446094, G00446095], G-BOIS [G00332227], GOET [GOET002617], K [K000693652]) (Fig. 12, p. 56).

Notes. – As indicated by Mermoud (1980), it is not possible to pin down the exact dates of Boissier's 1842 trip to Greece, as he collected in Athens then Hymette before moving further in the fieldwork.

The problem of this species arises from placing all material of G-BOIS in two folders, the lectotype of which includes six plants in flower without a collection date (Fig. 12, p. 56), but all distributed duplicates, which have printed yellow labels, indicated a collection date in April 1842, and these are recognized as isolectotypes. The second folder in G-BOIS, the syntype, has three plants with developing fruit a collection date of May 1842.

Although Boissier (1843) did not give collectors names in his original description of the species, we agree with Tan & Suda (2002), who did not lectotypify *H. secundiflora,* in considering Boissier's and Spruner's collections as syntypes.

Hesperis secundiflora var. *scabricarpa* Boiss. & Spruner in Boiss., Diagn. Pl. Orient. 1: 70. 1843.

Type: "[Boissier] Hab. in faucibus montis *Hymetti* propè *Athenas* inter frutices. Varietas β multò rarior".

Holotypus: Greece: "Hymettus", s.d., *Boissier s.n.* (G-BOIS [G00332228]).

= ***Hesperis laciniata*** All., Fl. Pedem. 1: 271. 1785.

Note. – The variety was recognized by Dvořák (1971: 244) as a subspecies of *H. laciniata,* but basically in all morphological aspects, it is at home under *H. laciniata* subsp. *laciniata.*

Hesperis campicarpa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 66. 1842.

Type: "[Aucher-Eloy] N. 127, Taurus".

Holotypus: Turkey: "Mte. Tauris", s.d., *Aucher-Eloy 127* (G-BOIS [G00332231]; iso-: E [E00148104], FI [FI005662], G [G00371728, G00371742], K [K000693668, K000693669], P [P02272571]).

≡ ***Hesperis pendula*** subsp. ***campicarpa*** (Boiss.) F. Dvořák in Spisy Přír. Fak. Univ. J. E. Purkinje Brně 491: 113. 1968.

Notes. – Dvořák reduced the species to a subspecies of *H. pendula,* and further divided it into three varieties and two forms that he distinguished on the basis of overlapping differences in fruit length and cauline leaves shape, as well as on slight differences of the indumentum at sepal apex. It is beyond the scope of this study to evaluate those varieties and forms, and the types of three of which were not available for us and none was based on taxa described by Boissier.

Although *H. pendula* DC. is used here as the accepted name for the present, and following entries, it is an illegitimate later homonym of *H. pendula* Murr. (Novi Comment. Soc. Regiae Sci. Gott. 6: 38, tab. 6. 1776). The former name is so widely used for almost two centuries, and a proposal to conserve it and reject the latter has already been submitted (Al-Shehbaz & German, 2018).

Hesperis aucheri Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 66. 1842.

Type: "[Aucher-Eloy] N. 126, Sypilus".

Lectotypus (first step designated by Dvořák, 1968c: 119; second step designated here): **Turkey:** "In Mte. Sypilo", s.d., *Aucher-Eloy 126* (G-BOIS [G00332232]; isolecto-: FI [FI005661], G [G00446099, G00446100], K [K000693670, K000693671, K000693681], P [P00234978, P02272576, P02272577], W [W18890172300]).

= ***Hesperis podocarpa*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 65. 1842.

Notes. – The lectotype is a collection folder of two sheets, of which the labeled one has plants with densely hispid fruits, and this sheet was annotated by Dvořák in 1965 as the type of *H. aucheri.* By contrast, fruit of the unlabeled sheet are not hispid, and they belong to *H. pendula.*

A second step is needed to designate the plant with hispid fruit as the lectotype.

Boissier (1867a) and Cullen (1965) reduced *H. aucheri* to synonymy of *H. pendula,* whereas Dvořák (1968c) recognized it as a subspecies of the latter species. By contrast, Duran (2012) reduced it to synonymy of *H. podocarpa*.

Hesperis rupestris Boiss. & Noë in Boiss., Diagn. Pl. Orient. ser. 2, 1: 22. 1854 [nom. illeg.] [non Pall.].

Type: "Hab. ad *Bakker Maden Armeniae* meridionalis in fissuris rupium ubi floriferam Maio 1852 legit cl. Noë".

Holotypus: Turkey: "Bakker Madem in fissuris rupium", V.1852, *Noë 810* (G-BOIS [G00332233]; iso-: BM [BM001254063], G [G00446101], KW [KW000127975], LE [LE00013091], P [P00234979], W [P18890310423]).

= ***Hesperis pendula*** subsp. ***campicarpa*** (Boiss.) F. Dvořák in Spisy Přír. Fak. Univ. J. E. Purkinje Brně 491: 113. 1968.

Notes. – None of the duplicates above was annotated by Boissier and no other duplicates were found elsewhere. Therefore, it is safe to conclude that Boissier based the species description solely on the unicate in his herbarium.

Fournier (1866) treated *H. rupestris* as a variety of *H. pendula,* Boissier (1867a) reduced it and the previous entry to synonymy of *H. pendula,* Cullen (1965: 458) recognized it as a distinct species, and Dvořák (1968c) reduced it to synonymy of *H. pendula* var. *campicarpa.* Position of the last author is tentatively acccepted here.

The earliest homonym *H. rupestris* Pall. has recently been rejected by German (2013), whereas that of Rafinesque is an illegitimate combination in *Matthiola* (Candolle, 1821a). By contrast Kuntze's (1891) later homonym was based on the South American endemic *Eudema rupestre* Bonpl., and together with many New World *Brassicaceae,* they were transferred by him to *Hesperis,* a genus restricted to Eurasia.

Hesperis podocarpa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 65. 1842.

Type: "[Aucher-Eloy] N. 125, Syria".

Lectotypus (designated by Dvořák, 1966a: 165): **Syria:** *sine loco,* s.d., *Aucher-Eloy 125* (G [G00371715 fruiting branch second from right]; isolecto-: P [P00234981]).

Notes. – The G [G00371715] specimen is a mixed collection, and Dvořák designated the lectotype of *H. podocarpa* on the branch from Syria, and correctly attributed the other three branches to *H. persica* from Iran. The two species are strikingly different in their pedicels and fruit base, and it is rather surprising that Boissier confused them and drafted his species description from both taxa.

Hesperis podocarpa differs from *H. persica* by having fruiting pedicels 8–10 mm long that are erect and appressed to stem basally and only reflexed at apex, and it has fruits substantially narrower at base. By contrast, *H. persica* has fruiting pedicels 5–6 mm long that are abruptly deflexed from base, and its fruits are equally wide throughout.

Other duplicates of *Aucher-Eloy 125* (incl.: G [G00371743], G-BOIS [G00332234], K [K000693675, K000693676], MPU [MPU013456], P [P02272575]) clearly belong to *H. persica*.

The G00332234 is the only unicate in G-BOIS, and one of us (IAS) erroneously annotated it in 2016 as *H. podocarpa.* The only other duplicate of the latter species examined in this study is P00234981, which Dvořák annotated in 1965 as the lectotype, and this specimen is mounted with P02272575 on the same sheet.

Hesperis persica Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 64. 1842.

Type: "[Aucher-Eloy] N. 4103, Aderbidjan".

Holotypus: Iran: "Aderbidjan", s.d., *Aucher-Eloy 4103* (G-BOIS [G00332235]; iso-: BM [BM000522183], G [G00371741, G00446102], K [K0006936754], MO [MO1618790], P [P00234980, P02272572]).

Notes. – Although Dvořák (1968b: 270) lectotypified the name based on a sheet in G, only the above G-BOIS sheet was used by Boissier to generate the species description. None of the other two G duplicates is from the Candolle's herbarium and none of the pair at P was annotated by him. Therefore, the name does not need lectotypification.

Dvořák annotated P [P02272572] in 1967 as the isotype.

Hesperis multicaulis Boiss., Diagn. Pl. Orient. 6: 10. 1846.

≡ ***Micrantha multicaulis*** (Boiss.) F. Dvořák in Rech. f., Fl. Iran. 57: 274. 1968.

Type: "Hab. in rupestribus montis *Sabst-Buschom* prope *Schiraz*. Kotschy No. 428".

Holotypus: Iran: "In rupestribus m. Sabst-Buschom pr. u. Schiras", 24.V.1842, *Kotschy 428* (G-BOIS [G00332236]; iso-: B [B100241426], BM [BM000522191, BM000522192], E [E00386192, E00386193], FI [FI005660], G [G00371888, G00371917, G00371922], K [K000693679], KW [KW000127973], LE [LE00013086, LE00013087], P [P02272561, P02272562, P02272563], W [W0051433], WAG [WAG0004276]).

Note. – The holotype specimen is a collection folder of two sheets one of which is unlabeled.

Hesperis flava Kotschy & Boiss. in Boiss., Fl. Orient. 1: 237. 1867 [nom. illeg.] [non Georgi].

≡ ***Hesperis dvorakii*** D.A. German in Turczaninowia 15(4): 13. 2012.

Type: "Hab. in faucibus argillosis ditionis Kassan Oglu Ciliciae Kurdicae ad pagum Backchadjik, alt. 4600! (Ky exs. 137!)".

Holotypus: Turkey: "Plantae in montibus Kassan Oghlu ad pagum Gorumse lectae. In faucibus argillosis versus pagum Baktschadschik", 4600' [1700 m], 23.V.1859, *Kotschy 137* (G-BOIS [G00332237]; iso-: B [B100261504, B100261505], BM [BM000522180], E [E00148082], G [G00446226], K [K000693680], LE [LE00013083, LE00013084], P [P00234973, P00747234, P00747235], S [S11-32404], US [US00100449], W [W0075689, W0075690]).

Notes. – Although B has two sheets of the type collection of *H. flava,* Dvořák (1967) apparently examined one, showed its photo, and captioned it as the type, actually only typical material.

He segregated the species into monospecific *Diplopilosa* Dvořák based on slight differences in flowers, fruit, and cotyledons. However, the genus has recently been synonymized with *Hesperis* by Al-Shehbaz (2012) and German (2012).

Nasturtiopsis Boiss., Fl. Orient. 1: 237. 1867.

Tribe: *Brassiceae* DC.

Notes. – A genus of two or three species of which the following is native to Egypt, Israel, Jordan, and NW Africa (Abdel Khalek & Bakker, 2007).

Molecular phylogenetic studies on *Nasturtiopsis coronopifolia* (Desf.) Boiss. by Warwick et al. (2010) assigned the species to the tribe *Brassiceae,* but the genus does not have conduplicate cotyledons and/or segmented fruits that are characteristic of that tribe.

Nasturtiopsis arabica Boiss., Fl. Orient. 1: 237. 1867.

Type: "Hab. in valle Atal Arabiae petreae (Schimp. exs. 192! sub *N. coronopifolio*), in deserto Tih Palaestinae contermino (Boiss!). Fl. Aprili".

Lectotypus (designated here): **Egypt:** "In valle Atal Arab. petr.", 27.III.1835, *Schimper 192* (G-BOIS [G00332238]; isolecto-: BM [BM001254075], E [E00126655], G [G00446103, G00446104, G00446105], HBG [HBG506145, HBG506236], K [K0000725057, K0000725058, K0000725059], MPU [MPU022356, MPU022357], W [W0075710, W0075711, W18890020447, W18890167962, W18890316262]). **Syntypus: Egypt:** "Arabia petraea, désert du Tih", III.1846, *Boissier s.n.* (G-BOIS [G00791848]).

Notes. – Schimper's syntype collection is designated as the lectotype, instead of Boissier's unicate, because it is more complete and represented by many duplicates.

The species was reduced by Greuter & Burdet (in Greuter & Raus, 1983) to a subspecies of *N. coronopifolia* (Desv.) Boiss., but the first author believes that it should be maintained as distinct because it is geographically and morphologically distinct.

Zerdana Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 84. 1842.

Tribe: *Anchonieae* DC.

Note. – *Zerdana* was recognized in the past 175 years as a monospecific genus endemic to SW Iran. It has recently been united with *Sterigmostemum* by German & Al-Shehbaz (2017) based on molecular phylogenetic data and a closer evaluation with morphology.

Zerdana anchonioides Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 84. 1842.

≡ ***Sterigmostemum anchonioides*** (Boiss.) D.A. German & Al-Shehbaz in Novosti Sist. Vyssh. Rast. 48: 80. 2017 (Fig. 13A, p. 57).

Type: "[Aucher-Eloy] N. 91, in monte Zerde Persiae".

Lectotypus (designated by Jacquemoud, 1984a: 305): **Iran:** *sine loco,* s.d., *Aucher-Eloy 91* (G-BOIS [G00332239]; isolecto-: K [K000693883], P [P01817640]).

Notes. – Rechinger (1968: 307) indicated that the type is *Aucher-Eloy 253*, but that number was not cited in Boissier (1842a) and was listed as *Alyssum alpestre* by Boissier (1867a, 1888).

Jacquemoud (1984a) was correct in lectotypifying the species name because the duplicate P01817640 was annotated by Boissier.

The locality data of the lectotype is "Persia" and that of the isolectotypes is "Mte Zerde".

Zerdana anchonioides var. *stenophylla* Boiss., Fl. Orient. Suppl.: 46. 1888.

≡ ***Sterigmostemum anchonioides*** subsp. ***stenophyllum*** (Boiss.) D.A. German & Al-Shehbaz in Novosti Sist. Vyssh. Rast. 48: 80. 2017.

Type: "Hab. in lapidosis cacuminis montis Kuh Nur Persiae occidentalis 12000' (Haussk.!)".

Lectotypus (first step designated by Jacquemoud, 1985: 368; second step designated here): **Iran:** "In lapidosis cacum. m. Kuh Nur", 12000' [3660 m], 1868, *Haussknecht s.n.* (G-BOIS [G00332240]; isolecto-: BM [BM001172164], JE [JE00001383], P [P01817641, P01817642], W [W0051432]).

Notes. – The labels and taxon name of both duplicates at P were handwritten by Boissier, which justifies the above lectotypification by Jacquemoud (1985). However, it should be noted that the lectotype was designated at JE instead of G-BOIS, and a second step is proposed to correct that.

Authorship of the varietal name is erroneously listed as Boiss. & Hausskn. instead of Boiss. in BrassiBase (2019), IPNI (2019), and Jacquemoud (1985), but there is nothing in the protologue to support those listings.

Anchonium DC. in Mém. Mus. Hist. Nat. 7: 242. 1821.

Tribe: *Anchonieae* DC.

Note. – *Anchonium* was recognized for almost two centuries (see Jacquemoud, 1984b) as a genus of two species centered in SW Asia (Armenia, Azerbaijan, Georgia, Iran, Iraq, Lebanon, Syria, Turkey). However, it has recently been united with *Sterigmostemum* by German & Al-Shehbaz (2017) based on a closer examination of morphology in light for molecular phylogenetic data.

Anchonium tournefortii Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 386. 1842 [nom. illeg.].

≡ *Sterigma elychrisifolium* DC., Syst. Nat. 2: 581. 1821.

≡ *Anchonium elichrysifolium* (DC.) Boiss., Fl. Orient. 1: 240. 1867.

≡ ***Sterigmostemum elichrysifolium*** (DC.) D.A. German & Al-Shehbaz in Novosti Sist. Vyssh. Rast. 48: 81. 2017.

Note. – *Anchonium tournefortii* is illegitimate because its protologue listed the earlier published *Sterigma elychrisifolium* DC as a synonym.

Sterigma DC., Syst. Nat. 2: 579. 1821.

Tribe: *Anchonieae* DC.

Note. – *Sterigma* is a synonym of the earlier published *Sterigmostemum* M. Bieb., a genus of 13 species distributed from SW Asia into central China (German & Al-Shehbaz, 2017).

Sterigma brachypetalum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 386. 1842.

≡ ***Sterigmostemum sulphureum*** var. ***asperulum*** (Boiss.) Bornm. in Beih. Bot. Centralbl., Abt. 2, 27: 300. 1910.

Type: "[Aucher-Eloy] N. 4169 H, Persia australis".

Lectotypus (designated by Jacquemoud, 1988: 105): **Iran:** *sine loco,* s.d., *Aucher-Eloy 4169H* (G-BOIS [G00332243]; isolecto-: G [G00440193], K [K000693702], P [P00741745, P00741746]).

Note. – Lectotypification of the name by Jacquemoud (1988) is justified because Boissier annotated P00741746 as "Sterigma brachypetalum! Boiss.". This indicates that Boissier based the species description on the unicates in G-BOIS and P (see Boissier, 1841a).

Sterigma sulphureum var. *asperulum* Boiss., Fl. Orient. 1: 241. 1867.

≡ *Sterigma brachypetalum* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 386. 1842.

≡ ***Sterigmostemum sulphureum*** var. ***asperulum*** (Boiss.) Bornm. in Beih. Bot. Centralbl., Abt. 2, 27: 300. 1910.

Note. – This is a renaming at the varietal rank of the previous entry.

Sterigma sulphureum var. *angustifolium* Boiss., Fl. Orient. 1: 241. 1867.

≡ *Cheiranthus tomentosus* Willd., Sp. Pl. 3: 523. 1800.

= ***Sterigmostemum incanum*** M. Bieb., Fl. Taur.-Caucas. 3: 444. 1819.

Note. – This is a renaming at the varietal rank of *Cheiranthus tomentosus*.

Sterigma purpurascens Boiss., Fl. Orient. 1: 241. 1867.

≡ ***Petiniotia purpurascens*** (Boiss.) J. Léonard in Bull. Jard. Bot. Natl. Belgique 50: 230. 1980.

Type: "Hab. in Persiâ orientali inter Kerman et Yezd et in Affghaniâ occidentali (Bunge!)".

Lectotypus (first step designated by Leonard, 1980: 230; second step by Jacquemoud, 1988: 122): **Iran:** "inter Kerman et Jesd. inter Bejas & Anar.", IV.1859, *Bunge 30* (G-BOIS [G00332246 fruiting plant]; isolecto-: GH [GH00260232], P [P00741734, P00741737]). **Syntypi: Iran:** "inter Kerman et Jesd. inter Bejas & Anar.", IV.1859, *Bunge 30* (G-BOIS [G00332246 flowering plant], LE [LE00013114], P [P00741734, P00741737]); "in Affghanistano occidentali et Persia orientali", II.1859, *Bunge 30* (G-BOIS [G00791829]).

Notes. – The lectotype has a plant in flower and another in fruit. The lectotypifications by Léonard (1980) just stating "inter Kerman and Yazd" but without specifying whether the flowering or fruiting plant was intended and without giving the details of the locality as given by Jacquemoud (1988) who specifically indicated that the lectotype is the fruiting plant.

The collections number *Bunge 30* appeared on both G-BOIS duplicates above and P00741737, but the other collections cited have *Bunge s.n.* The GH and two P duplicates each have both fruiting (isolectotypes) and flowering plants (syntypes) and listed as such above.

The generic placement of *S. purpureum* has been controversial. Léonard (1980) placed it in the monospecific *Petiniotia* J. Léonard, whereas Jacquemoud (1988) retained it in *Sterigmostemum* M. Bieb. but as a subgenus. The main differences between the two genera is having in *Sterigmostemum* of yellow to orange (vs white to purple) petals and connate (vs free) median filaments. The variation in flower color is not reliable in the genus and found in some of the Chinese species, whereas the presence of connate vs free median filaments remains as the major difference between the two genera.

Sonboli et al. (2006) and Khosravi et al. (2009a) conducted morphometric and molecular phylogenetic studies, respectively, on *S. purpurascens* and other *Sterigmostemum* species, and their data clearly supported Léonard's placement of the species in *Petiniotia.*

Sterigma longistylum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 387. 1842.

≡ ***Sterigmostemum longistylum*** (Boiss.) Kuntze, Revis. Gen. Pl. 1: 36. 1891.

Type: "[Aucher-Eloy] N. 4169 N, Schiraz".

Lectotypus (designated here): **Iran:** "Chiraz", s.d., *Aucher-Eloy 4169N* (G-BOIS [G00332247]; isolecto-: BM [BM000522212], G [G00383980], P [P00741729, P00741730, P00741744]).

Note. – Boissier annotated P00741730 and, therefore, the above lectotypification is justified.

Sterigma contortuplicatum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 387. 1842.

Type: "[Aucher-Eloy] Absque numero, in provinciâ Aderbidjan".

Holotypus: Iran: "Aderbidjan", s.d., *Aucher-Eloy s.n.* (P [P00741726]; iso-: G-BOIS [G00332242]) (Fig. 14, p. 58).

= ***Sterigmostemum incanum*** M. Bieb., Fl. Taur.-Caucas. 3: 444. 1819.

Note. – Although Jacquemoud (1988: 76) cited the P material as the lectotype, it should be recognized as the holotype because Boissier annotated it (Fig. 14, p. 58) and took the fragmentary G-BOIS piece from it. Therefore, Boissier (1842a) used that Paris unicate in the species description.

Goldbachia DC. in Mém. Mus. Hist. Nat. 7: 242. 1821 [nom. cons.].

Tribe: *Calepineae* Horan.

Note. – A genus of seven species distributed from SW Asia into India, China, and Mongolia.

Goldbachia laevigata var. *ascendens* Boiss., Fl. Orient. 1: 243. 1867.

Type: "Hab. circa Byzantium (Noë!), Asiâ minori in Pisidiâ (Heldr!), Cappadociâ (Bal!), Armeniâ Turcicâ ad Ispir (Bourg!) et Rossicâ (Buhse!), prov. Talysch (Hoh!), Persiâ bor. (Szow!) et australi (Ky exs. 227! Auch. exs. 4132!), Turkestaniâ ad Buchara (Lehm!), Affghaniâ (Griff!)".

Lectotypus (designated here): **Iran:** "In ruinis u. Persepolis", 12.IV.1842, *Kotschy 227* (G-BOIS [G00332248]; isolecto-: BM [BM001254069], G [G00446115, G00446116, G00446117], K [K000693723, K000693725], P [P05414900, P05414913, P05414918, P05414919, P05414948]). **Syntypi: Afghanistan:** "Achukyge", s.d., *Griffith 1543* (G-BOIS [G00791878]); "Lower Kaloo", s.d., *Griffith s.n.* (G-BOIS [G00791887]).

Azerbaijan: "In agris incultis prope Tablaechyje et Dipa ditionis Swant Georg. cauc.", 5000' [1520 m], VI.1836, *Hohenacker s.n.* (BM [BM001254070], G [G00446123, G00446124, G00446125], G-BOIS [G00332252], P [P04022618, P05414886, P05414911], W [W0075687]). **Iran:** *sine loco,* s.d., *Buhse s.n.* (G-BOIS [G00791886]); "Inter segetes circa Khoi", 18.III.1828, *Szovit 17* (G-BOIS [G00332251]). **Turkey:** "Laristan (Djaroun)", s.d., *Aucher-Eloy 4132* (BM [BM001254071, BM001254072], G [G00446118, G00446119], G-BOIS [G00332250], K [K000693724], P [P05414888, P05414912], W [W18890077539]); "Village d'Enèhil (Cappadoce)", 1460 m, 18.VI.1856, *Balansa 434* (G-BOIS [G00332253]); "Mt. près Ispir", 6.VII.1862, *Bourgeau s.n.* (G-BOIS [G00791876]); "Bouldour Pisidiae ad lucum", IV.1845, *Heldreich s.n.* (BM [BM001254068], G [G00446120, G00446121, G00446122], G-BOIS [G00332254]); "in subalpinis Anatoliae", VI.1862, *Noë 900* (G-BOIS [G00332249]). **Uzbekistan:** "prope Bucharam", s.d., *Lehmann s.n.* (G-BOIS [G00791888]).

= ***Goldbachia laevigata*** (M. Bieb.) DC., Syst. Nat. 2: 577. 1821.

Note. – The lectotype collections was selected over the other syntypes because it is more complete and several duplicates are extant.

Parlatoria Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 72. 1842.

Tribe: *Thlaspideae* DC.

Note. – A monospecific genus distributed in Iran, Iraq, and Turkey.

Parlatoria cakiloidea Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 72. 1842 (Fig. 13D, p. 57).

Type: "[Aucher-Eloy] N. 199, Mons Namkou Assyriae".

Lectotypus (designated here): **Iraq:** "in Mte. Namkou", s.d., *Aucher-Eloy 199* (G-BOIS [G00332255]; isolecto-: BM [BM000522258], G [G00446111], K [K000693916, K000693918], MO [MO1619107], P [P00741763, P00741764]).

Note. – Boissier (1842a) based the species description on G00446111 and the lectotype above.

Parlatoria griffithiana Boiss., Diagn. Pl. Orient. ser. 2, 1: 23. 1854.

Type: "Hab. in regno *Cabulico* (cl. Griffith No 1472)".

Holotypus: Afghanistan: *sine loco,* s.d., *Griffith 1472* (G-BOIS [G00330375]; iso-: K [K000693285, K00693286, K00693287]).

= ***Arabis bijuga*** G. Watt in J. Linn. Soc., Bot. 18: 378. 1881.

Notes. – Boissier (1854) based the species description solely on the unicate in his herbarium and therefore that unicate is the holotype.

He indicated in *Flora Orientalis* that *Parlatoria griffithiana* ought to be removed from the genus and placed in *Sisymbrium* sect. *Arabidopsis,* a position that influenced Schulz (1924) in recognizing the plant as *Arabidopsis mollissima* var. *griffithiana* (Boiss.) O.E. Schulz, and later tentatively accepted by Hedge (1968). The holotype was correctly annotated by Hedge in March 1965 as "*Arabis* sp.?", whereas Schulz annotated it on 19 Sept 1920 as "An genus novum?".

In every aspect of the plant, *Parlatoria griffithiana* is indistinguishable from *Arabis bijuga,* and although Boissier's epithet predates Watt's, it cannot be used because Jafri (1956) described *A. griffithiana* Jafri based on a different type. For further details and typification, see Al-Shehbaz (2015a, 2015b).

Parlatoria rostrata Boiss. & Hohen. in Boiss., Diagn. Pl. Orient. 8: 22. 1849.

≡ ***Lysakia rostrata*** (Boiss. & Hohen.) Esmailbegi & Al-Shehbaz in Taxon 67: 334. 2018.

Type: "Hab. in valle *Vesbach* montis *Elbrus* propè *Derbend* Kotschy No 236".

Lectotypus (designated by Esmailbegi & Al-Shehbaz in Esmailbegi et al., 2018: 334): **Iran:** "In valle Wesbach m. Elbrus pr. Derbend", 3.VI.1843, *Kotschy 236* (G-BOIS [G00332257]; isolecto-: BM [BM001254051, BM001254073], FI [FI005715], G [G00446112, G00446113, G00446114], P [P00741766, P00741767], W [W0075971, W0075972]).

Notes. – The lectotype is a collection folder of two sheets, one of which has a printed label as in the isolectotypes, and the other has the species name, collection number, and date written by Boissier.

The sheet P00741766, was annotated by Boissier on a strip glued to the printed label.

Parlatoria brachycarpa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 73. 1842.

Type: "Clarus Kotschy è monte Tauro, collectionis n. 35".

Holotypus: Turkey: "In monte Tauro", summer 1836, *Kotschy 35* (G-BOIS [G00332259]; iso-: BM [BM001254074], G [G00446129], K [K000693920, K000693921, K000693925]).

= ***Sobolewskia clavata*** (Boiss.) Fenzl in Tchich., Asie Min., Bot. 1: 348. 1860.

Note. – This and next entry belong to *Sobolewskia* rather than *Parlatoria,* a genus distinguished from the latter by being perennials (vs annuals) with apiculate (vs non-apiculate) anthers, 2–4-seeded (vs 1-seeded) fruits, and non-articulate (vs articulate) fruiting pedicels (Esmailbegi et al., 2018).

Sobolewskia M. Bieb., Fl. Taur.-Caucas. 3: 421. 1819.

Tribe: *Thlaspideae* DC.

Note. – A genus of four species distributed in the Caucasus, Russia, Syria, Turkey, and Ukraine.

Parlatoria clavata Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 73. 1842.

≡ ***Sobolewskia clavata*** (Boiss.) Fenzl in Tchich., Asie Min., Bot. 1: 348. 1860.

Type: "[Aucher-Eloy] N. 134, Alpes Laristani; 183, circa Aleppum".

Lectotypus (designated here): **Turkey:** "in Kurdistano. Alpes Laristani", s.d., *Aucher-Eloy 134* (G-BOIS [G00332258]; isolecto-: G [G00403648, G00446126, G00446128], K [K000693925], P [P05415006, P05415023]). **Syntypus: Syria:** "Alep", s.d., *Aucher-Eloy 183* (P [P05415024]).

Note. – The *Aucher-Eloy 183* syntype was not found in all of the Geneva herbaria, though the P05415024 specimen was annotated by Boissier and taken here as a syntype.

Cochlearia L., Sp. Pl.: 647. 1753.

Tribe: *Cochlearieae* Buchenau.

Notes. – *Cochlearia* is a well-defined genus of about 16 species distributed primarily on costal northern North America, central, western, and northern Europe, and eastern Asia (Koch, 2012).

The genus was so broadly delimited by Boissier in *Flora Orientalis* to include species currently assigned to *Armoracia* G. Gaertn.et al.*(Cardamineae), Kernera* Medik. *(Kernereae), Peltariopsis* (Boiss.) N. Busch and *Pseudocamelina* (Boiss.) N. Bush *(Thlaspideae),* and *Noccaea* Moench *(Coluteocarpeae),* but none in *Cochlearia*.

The first three taxa below were assigned to *Pseudosempervivum* for almost 50 years, and they have recently been transferred to *Noccaea* (Özüdoğru et al., 2019).

Cochlearia sempervivum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 28. 1856.

≡ ***Noccaea sempervivum*** (Boiss. & Balansa) Özüdoğru & Al-Shehbaz in Ann. Missouri Bot. Gard. 104: 349. 2019.

Type: "Hab. in regione montanâ superiori montis *Masmeneudagh* cl. Balansa. Augusto jam fructiferum".

Holotypus: Turkey: "Région montagneuse supérieure du Masmeneu Dagh, à 25 lieues au SSO de Césarée", 8.VIII.1855, *Balansa 439* (G-BOIS [G00332260]; iso-: BM [BM000582868], G [G00389743], GOET [GOET001739], JE [JE00001803, JE00001804], K [K000484388, K000484389], KW [KW000128007], P [P02272525, P02272526, P02272527, P02272528], W [W18890011478, W18890076132], WAG [WAG0004283]).

Notes. – The holotype is a collection folder of three sheets, of which one has a handwritten label with the field number *179,* another has a printed label with identical information except the exsiccatae number *439* (as in all isotypes), and the third sheet has four rosettes and part of the inflorescence. The G isotype is also a collection folder of three sheets only one of which is labeled.

This species was recently lectotypified by Al-Shehbaz (Özüdoğru & German, 2018) based on the same G-BOIS duplicate above, but further checking revealed that Boissier based the species description solely on the specimen in his herbarium and, therefore, the above lectotypification was unnecessary.

Cochlearia aucheri Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 168. 1842.

≡ ***Noccaea aucheri*** (Boiss.) Özüdoğru & Al-Shehbaz in Ann. Missouri Bot. Gard. 104: 349. 2019.

Type: "[Aucher-Eloy] N. 305, Olympus Armeniae".

Holotypus: Turkey: "in Olympo Armeniae", s.d., *Aucher-Eloy 305* (G-BOIS [G00332262]; iso-: BM [BM000582864], G [G00446131, G00446132, G00446133], K [K000484392, K000484394], MO [MO1618792], P [P02272499]).

Note. – No additional duplicates of the type collection were found, and none of the above ones was examined or annotated by Boissier. Therefore, the unicate in G-BOIS is the holotype.

Cochlearia aucheri var. *minor* Boiss., Fl. Orient. Suppl.: 47. 1888.

Type: "Hab. in lapidosis mobilibus regionis alpinae Ponti Lazici supra Khabackar 9000' (Bal.!)".

Holotypus: Turkey: "Pierres mouvantes de la région alpine supérieure du Lazistan, au-dessus de Khabakhor", c. 2900 m, VIII.1866, *Balansa 58* (G-BOIS [G00332263]; iso-: JE [JE00002758], K [K000484384, K000484385], P [P04712343, P05413241, P05413242, P06648879], W [W0075686, W18890148461]).

= ***Noccaea aucheri*** (Boiss.) Özüdoğru & Al-Shehbaz in Ann. Missouri Bot. Gard. 104: 349. 2019.

Note. – The isotypes have the exsiccatae number *1364* instead of the field collection number *58* on the holotype.

Cochlearia drabicarpa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 169. 1842.

≡ ***Peltariopsis drabicarpa*** (Boiss.) N. Busch in Věstn. Tiflissk. Bot. Sada ser. 2, 3–4: 8. 1927.

Type: "[Aucher-Eloy] N. 4152, Seid-Khodji".

Lectotypus (designated here): Azerbaijan: "Seid Kadji", s.d., *Aucher-Eloy 4152* (G-BOIS [G00332264]; isolecto-: BM [BM000582889, BM000582894], G [G00371880, G00371886], KW [KW000128006], LE [LE00012867], P [P02272513, P02272514, P02272515], W [W0075840]).

Notes. – Annotation by Boissier of P02272514 indicates that he used that sheet and the unicate in his herbarium to draft the species description.

The same type collection number *(Aucher-Eloy 4152)* was listed under *Thlaspi natolicum* though from a different locality.

Cochlearia planisiliqua Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 169. 1842.

≡ ***Peltariopsis planisiliqua*** (Boiss.) N. Busch in Věstn. Tiflissk. Bot. Sada ser. 2, 3–4: 8. 1927 (Fig. 15A, p. 59).

Type: "[Aucher-Eloy] N. 4069 L., Seid-Khodji".

Lectotypus (designated here): Azerbaijan: "Seid Khadji", s.d., *Aucher-Eloy 4169L* (G-BOIS [G00332265]; isolecto-: BM [BM000582893, BM000582895], G [G00389744, G00389745], LE [LE00012868, LE00012869], P [P05348508, P05358509]).

Notes. – Boissier's annotation of P05348508 indicates that he based his species description on that sheet and the unicate in his herbarium.

All duplicates of the type collection have the collection number as *Aucher-Eloy 4169L* instead of the erroneous listing of *4069L* in the protologue.

The type locality of this and previous species spelled differently in print and on the labels, and it is used here exactly the way it is presented.

Cochlearia szowitsii Boiss., Fl. Orient. 1: 248. 1867.

Type: "Hab. in rupestribus Koschadara prov. Aderbidjan (Szow!)".

Lectotypus (designated here): Azerbaijan: "In rupestribus Koschadara", 7.VII.1829, *Szovits 490* (G-BOIS [G00791209]; isolecto-: G-BOIS [G00791210], K [K000618640], LE, P [P02272524]).

= ***Peltariopsis planisiliqua*** (Boiss.) N. Busch in Věstn. Tiflissk. Bot. Sada ser. 2, 3–4: 8. 1927.

Note. – The isolectotype G00791210 is a collection folder of two sheets, and together with the isolectotypes at K and P, their labels list Armenia but without the precise locality or date: "Ex herbario horti Petropolitani. Cochlearia szovitsii Boiss. n. sp. (teste Boissier). Armenia. Szovits".

Cochlearia camelinae Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 172. 1842 [nom. illeg.] [non Ledeb.].

Type: "[Aucher-Eloy] N. 331 et 4164, Persia".

Lectotypus (designated by Miller, 1978: 28): Iran: *sine loco,* s.d., *Aucher-Eloy 4164* (G-BOIS [G00332266]; isolecto-: BM [BM000582866], E [E00381433], G [G00389747, G00389748], K [K000484395], MO [MO1618791], P [P02272509, P02272510, P02272511]). **Syntypus:** Iran: "Persia", 1835, *Aucher-Eloy 931* (P [P05413238]).

= ***Pseudocamelina glaucophylla*** (DC.) N. Busch in Beih. Bot. Centralbl., Abt. 2, 44: 214. 1927.

Notes. – Although Boissier (1842b) cited *Aucher-Eloy 331,* there is no trace of that number in the Geneva herbaria. However, the unicate P05413238, which was annotated by him as *Cochlearia camelinae,* is *Aucher-Eloy 931* (not *331*), and subsequently he (Boissier, 1867a, 1888) did not list that collection again.

The earlier homonym of *C. camelinae* was published in late 1841.

Cochlearia violacea Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 171. 1842.

Type: "[Aucher-Eloy] N. 91, Persia".

Lectotypus (designated by Miller, 1978: 28): **Iran:** *sine loco,* s.d., *Aucher-Eloy 91* (G-BOIS [G00332267]; isolecto-: G [G00371872, G00371889], P [P02272519, P02272520]).

= ***Pseudocamelina glaucophylla*** (DC.) N. Busch in Beih. Bot. Centralbl. Abt. 2, 44: 214. 1927.

Note. – Boissier annotated P02272519 and studied it, along with the duplicates in his and Candolle's herbaria, for the species description.

Cochlearia campylocarpa Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 171. 1842.

≡ ***Pseudocamelina campylocarpa*** (Boiss.) N. Busch in Zhurn. Russk. Bot. Obshch. Akad. Nauk. 13: 115. 1928.

Type: "[Aucher-Eloy] N. 95, Ispahan".

Holotypus: Iran: "Ispahan", s.d., *Aucher-Eloy 95* (G-BOIS [G00332268]; iso-: BM [BM001254038], G [G00389746], K [K000484396], P [P02272512]).

Note. – Boissier (1842b) based the species description solely on the unicate in his herbarium and did not examine the other duplicates at G or P.

Cochlearia aphragmodes Boiss., Diagn. Pl. Orient. 6: 15. 1846.

≡ ***Pseudocamelina aphragmodes*** (Boiss.) N. Busch in Zhurn. Russk. Bot. Obshch. Akad. Nauk. 13: 115. 1928.

Type: "Hab. in glareosis regionis summae alpis *Kuh-Daëna* Persiae australis Kotschy No. 656".

Lectotypus (designated by Esmailbegi et al., 2017b: 119): **Iran:** "In glareosis reg. superiorum m. Kuh-Daëna", 15.VII.1842, *Kotschy 656a* (G-BOIS [G00332269]; isolecto-: BM [BM000582869], G [G00389749], K [K000484397], KW [KW000128004], P [P02272501, P02272502, P02272503]).

Note. – As shown by Esmailbegi et al. (2017b), both of Kotschy's collection numbers *656a* and *656* were collected from the same locality, but those of *656* are coarser and perhaps were collected from lower elevations. They are recognized here as likely isolectotypes: BM [BM001254039], G [G000371890], P [P05348478, P05348481, P04627220, P05413210], W [W0051434].

Aubrieta Adans., Fam. Pl. 2: 420. 1763.

Tribe: *Arabideae* DC.

Note. – A genus of 21 species distributed is E Europe and SW Asia, with the highest concentration of species in Greece and Turkey.

Aubrieta gracilis Spruner ex Boiss., Diagn. Pl. Orient. 1: 74. 1843.

Type: "Hab. in regione alpinâ, in monte *Velugo* Aetoliae, *Tymphresto* veterum alt. 6000' detexit amic. Sprunner".

Holotypus: Greece: "Velugo in Aetolien", 6000' [1830 m], 1842, *Spruner s.n.* (G-BOIS [G00332270]; iso-: B [B100241177], BM [BM000750105], LD [LD1575687], W [no barcode]).

Notes. –Boissier (1843) based the species description on an unicate. The species was later lectotypified by Phitos (2002: 194) based on the same G-BOIS unicate. Therefore this lectotypification is superfluous.

The holotype is a collection folder of two sheets one of which is unlabeled, but the labeled one was undated, while the duplicate at B is.

Aubrieta intermedia Heldr. & Orph. ex Boiss., Diagn. Pl. Orient. ser. 2, 1: 36. 1854.

Type: "Hab. in monte *Kyllene* suprâ *Trikala* (Cl. Orphanides), in *Parnassi* regione alpinâ (Heldreich!), in rupestribus montis *Onii Baeotiae* (Heldr!) et probabiliter in multis aliis locis Graeciae cum *A. deltoideâ* commixta".

Lectotypus (designated by Phitos, 1970: 77): **Greece:** "In monte Parnasso reg. alpine", 6.VIII.1852, *Heldreich 2654* (G-BOIS [G00332271]; isolecto-: K [K000693425], W [W0075682], WAG [WAG0000789]). **Syntypi: Greece:** "In rupestribus reg. superioris m. Onii Baeotiae", 9.V.1851, *Heldreich 53* (G-BOIS [G00332272]); "Cyllene, Tricala", 22.IV.1854, *Orphanides 372* (C [C10008795], HAL [HAL0084116], K [K000693426], WAG [WAG0000790]); "Cyllene, Tricala", 4.V.1854, *Orphanides 372* (BM [BM000750097], JE [JE00003594, JE00003595]); "Kyllene (Trikala)", VI.1851, *Orphanides 2030* (G-BOIS [G00332273]).

= ***Aubrieta deltoidea*** (L.) DC., Syst. Nat. 2: 294. 1821.

Notes. – The G-BOIS material includes another *Heldreich 2654,* but that was collected from "submontines Achajae prope

Megaspilaeon" on 30 April 1861, six years after the publication of the species.

Several collections by Heldreich (e.g., [C10008796], [MPU017004]) and Orphanides (above) were collected in April, May, June, and August 1854, and their collection dates overlap with the publication date of Boissier (1854) which was in May-August of that year. These are recognized here, as on several websites, as syntypes because the exact publication day and month is not yet known.

Aubrieta olympica Boiss., Fl. Orient. 1: 251. 1867.

Type: "Hab. in regione alpinâ summâ Olympi Bithyni (Boiss! Clem!)".

Lectotypus (designated here): **Turkey:** "In rupestrib. alpin. Olymp. bith.", 14.VIII.1850, *Clement s.n.* (G-BOIS [G00332274]; isolecto-: E [E00438353], P [P00747673], W [W18890312947]). **Syntypus: Turkey:** "Olympus", s.d., *Boissier s.n.* (G-BOIS [G00332275]).

Note. – Clement's collection was chosen instead of Boissier's unicate as the lectotype because it is more complete and represented by duplicates.

Aubrieta pinardii Boiss., Diagn. Pl. Orient. ser. 2, 1: 37. 1854.

Type: "Hab. in Cariâ (Pinard exs. 1843 sub *A. gracili*)".

Holotypus: Turkey: "Caria", 1843, *Pinard s.n.* (G-BOIS [G00332276]; iso-: B [B100241173], BM [BM000583706], G [G00383421, G00383422, G00383423], K [K000618641, K000693428, K000693429], MPU [MPU017003], P [P00747650, P00747651, P00747652, P00747653], W [W00075791, W18890312946], WAG [WAG0000792]).

Note. – The G-BOIS holotype is a collection folder of three sheets all of which are labeled. Boissier did not examine additional material elsewhere.

Aubrieta pinardii var. *integrifolia* Boiss., Fl. Orient. 1: 252. 1867.

Type: "Hab. in monte Boulgasdagh Phrygiae (Bal!)".

Holotypus: Turkey: "Boulgas-Dagh (Phrygie)", 13.VI.1857, *Balansa 380* (G-BOIS [G00332279]).

= ***Aubrieta pinardii*** Boiss., Diagn. Pl. Orient. ser. 2, 1: 37. 1854.

Note. – Except for having an entire instead of minutely 1- or 2-toothed leaf margin, which is not a taxonomically reliable feature, this variety does not differ from *A. pinardii*.

Aubrieta deltoidea var. *microphylla* Boiss., Fl. Orient. 1: 252. 1867.

Type: "Hab. in alpinis Cephaloniae (Heldr!), Cariae in monte Cadmo (Boiss!), Sipyli supra Magnesiam (Bal. exs. 72!), Lyciae in monte Akdagh (Bourg!), Galatiae in monte Elmadagh (Tchih!)".

Lectotypus (designated here): **Turkey:** "In rupestribus ad basim montis Ak-Dagh", 4.VII.1860, *Bourgeau s.n.* (G-BOIS [G00332280]; isolecto-: G [G00446135], P [P00747671], W [W00075684, W18890067039]). **Syntypi: Turkey:** "Partie supérieure du Mont Sipyle, au-dessus de Magnésie", 10.VI.1854, *Balansa 72* (BM [BM001254079], G [G00446136, G00446605], G-BOIS [G00332281], K [K000693430], P [P04631692, P06618255], W [W00075683, W18890080873, W18890158132]); "Pic de Geyra. Jun. Cadmus occidentalis", s.d., *Boissier s.n.* (G-BOIS [G00332283]); "insula Cephalonia. M. Aenos", 9.V.1860, *Heldreich s.n.* (G-BOIS [G00332282]).

= ***Aubrieta deltoidea*** (L.) DC., Syst. Nat. 2: 294. 1821.

Notes. – The Bourgeau syntype is more complete than the other three syntypes in G-BOIS and, therefore, designated as the lectotype.

No material of the Tchihatcheff syntype was located.

Aubrieta deltoidea var. *canescens* Boiss., Fl. Orient. 1: 252. 1867.

≡ ***Aubrieta canescens*** (Boiss.) Bornm. in Repert. Spec. Nov. Regni Veg. Beih. 89: 44. 1936 (Fig. 15B, p. 59).

Type: "Hab. in Cadmo supra Geyra (Boiss.!), in alpinis montis Akdagh Lyciae (Bourg.!), in fissuris rupium montis Berytdagh Cataoniae (Haussk!)".

Lectotypus (designated here): **Turkey:** "In rupestribus regionis alpinae superioris montis Ak-Dagh", 3.VII.1860, *Bourgeau s.n.* (G-BOIS [G00332284]; isolecto-: K [K000693432], P [P00747672]). **Syntypi: Turkey:** "Pic de Geyra pars media. Jun ad rupes", s.d., *Boissier s.n.* (G-BOIS [G00332286]); "Taurus Cataonicus. In fissur. rup. Berytdagh", 10000' [3050 m], 10.VIII.1865, *Haussknecht s.n.* (G-BOIS [G00332285], JE [JE00003200]).

Note. – As in the previous similar cases, the designation of a lectotype among the syntypes in G-BOIS is based on the completness of specimens and availability of duplicates.

Aubrieta deltoidea var. *cilicica* Boiss., Fl. Orient. 1: 252. 1867.

≡ ***Aubrieta canescens*** subsp. ***cilicica*** (Boiss.) Cullen in Notes Roy. Bot. Gard. Edinburgh 26: 199. 1965.

Type: "Hab. in Tauro Cilicico (Ky! Bal!), Ciliciâ Kurdicâ (Ky exs. 104!)".

Lectotypus (designated here): **Turkey:** "Plantae in montibus Kassan Oghlu ad pagum Gorumse lectae. In Cedreto locis rupestribus fissura incolit", 5000' [1520 m], 18.V.1859, *Kotschy 104* (G-BOIS [G00332287]; isolecto-: B [B100241181], BM [BM000583707], G [G00389286], JE [JE00003199], K [K000693435], P [P00747669, P00747670], W [W18890058147]). **Syntypi: Turkey:** "Région montagneuse du Taurus oriental au-dessus de Gulex-Boghas", VII–VIII.1855, *Balansa 213* (G-BOIS [G00332288]); "Plantae Tauri Cilicici", 1853, *Kotschy s.n.* (G-BOIS [G00332289]).

Notes. – The same collection number *(Kotschy 104)* is also listed under *Sisymbrium nudum* var. *brachycarpum,* but from a different locality.

Several other collection numbers by Kotschy (e.g., *20, 27, 29*) have been considered as syntypes (see JSTOR Global Plants website), but these are excluded from the list above because no such collections were examined by Boissier.

Aubrieta parviflora Boiss., Diagn. Pl. Orient. 6: 14. 1846 (Fig. 13B–C, p. 57).

Type: "Hab. circa *Schiraz* Aucher 4169, ad rupes abscissas montis *Kuh-Barfi* prope eandem urbem Kotschy No. 342".

Lectotypus (designated here): **Iran:** "Chiraz", s.d., *Aucher-Eloy 4169O* (G-BOIS [G00332290]; isolecto-: BM [BM000583708, BM000583709], G [G00389138, G00389139], K [K000693444], P [P00747661, P00747662]). **Syntypus: Iran:** "Ad rupes abscissas m. Kuh-Barfi pr. u. Schiras", 4.V.1842, *Kotschy 342* (B [B100241174], BM [BM000522078], E [E00386183], G [G00389135, G00389136, G00389137], G-BOIS [G00332291], H [H1353873], K [K000693439], L [L1818812], MO [MO3728920], P [P00747654, P00747655, P00747656, P00747657, P00747658, P00747659, P00747660, P00747661], W [W00075789, W18890029645, W18890154968], WU [WU0101797]).

Note. – In the original protologue of the species, Boissier listed *Aucher-Eloy 4169,* rather than *4169O* as in all the duplicates of this collection, including the lectotype.

Aubrieta parviflora var. *kurdica* Boiss., Fl. Orient. 1: 253. 1867.

Type: "Hab. ad Mar Jako Kurdistaniae prope Mossoul (Barré de Lancy!)".

Holotypus: Iraq: "Environs de Mossoul (Mar Jako, 1rs pentes du Kurdistan)", Printemps de 1819, *Barré de Lancy 2671* (G-BOIS [G00332292]).

= ***Aubrieta parviflora*** Boiss., Diagn. Pl. Orient. 6: 14. 1846.

Note. – The holotype of this variety is basically indistinguishable from plants of this highly variable and most widespread species in the genus.

Aubrieta libanotica Boiss., Diagn. Pl. Orient. 8: 32. 1849.

Type: "Hab. in *Libano* suprà *Cedros*. Legi [Boissier] Jul. 1846".

Holotypus: Lebanon: "Liban au dessus des Cèdres", V–VII.1846, *Boissier s.n.* (G-BOIS [G00332293]; iso-: G [G00446137, G00446138], K [K000693446], KW [KW000127913], P [P06618291], PH [PH00005801], W [W19660021979]).

Note. – The holotype is a collection folder of two sheets, of which one lacks the collection date. Labels of the isotypes differ from that of the holotype in having the collection month as July and the locality as "supra Cedros".

Aubrieta kotschyi Boiss., Diagn. Pl. Orient. 8: 32. 1849.

Type: "Hab. in saxosis praeruptis regionis *Murch Mahal* montis *Elbrus* propè *Derbend*. Kotschy No 80".

Holotypus: Iran: "In saxosis praeruptis reg. Murch Mahal in m. Elbrus pr. Derbend", 5.V.1843, *Kotschy 84* (G-BOIS [G00332295]; iso-: G [G00389140, G00389141, G00389142], H [H1353874], K [K000693436, K000693438], KW [KW000127912], L [L1818915], MO [MO3728918], P [P00747663, P00747664, P00747665, P00747666, P00747667], W [W0075790], WAG [WAG0004274], WU [WU0101796]).

= ***Aubrieta parviflora*** Boiss., Diagn. Pl. Orient. 6: 14. 1846.

Note. – The obvious mistake in the collection number, *Kotschy 80* instead of *84,* in the original publication was later corrected by Boissier (1867a, 1888).

Aubrieta edentula Boiss., Fl. Orient. 1: 254. 1867.

Type: "Hab. in alpinis Armeniae Kurdicae ad Khana Putkie unde ex seminibus a cl. Kotschy allatis plantam in Hort. Valeyres colui".

Holotypus: Armenia: "Jardin de Valeyres Jun. 1869 en Armeniâ Channa Pucky", VI.1869, *Kotschy s.n.* (G-BOIS [G00332296]).

= ***Aubrieta parviflora*** Boiss., Diagn. Pl. Orient. 6: 14. 1846.

Note. – Only the holotype sheet exists, and it was taken from cultivated plant grown in Boissier's private garden at Valeyres from seeds collected by Kotschy.

Ricotia L., Sp. Pl.: 912. 1753.

Tribe: *Biscutelleae* Dumort.

Note. – An eastern Mediterranean genus of nine species centered in Turkey where five species are endemic (Özüdoğru et al., 2015).

Ricotia cretica Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 29. 1849.

Type: "Hab. inter saxa montium *Sphacioticorum* in fauce *Askyphous* dictâ alt. 3000'. (Heldreich) Fl. Aprili".

Lectotypus (designated here): **Greece:** "inter saxa. Sphakia: gorge d'Askyphous", c. 3000' [910 m], 2.IV.1846, *Heldreich 1368* (G-BOIS [G00332300]; isolecto-: BM [BM000750103], K [K000484453], W [W18890010564], WU [WU075948]). **Syntypus: Greece:** "Creta inter sysa mtium Sphaciot.", 3000' [910 m], V.1846, *Heldreich s.n.* (B [B100241717], GOET [GOET002649], K [K000484454], P [P00747550]).

Notes. – There is a single sheet in all of the G combined herbaria that matches perfectly well the original protologue, and it is designated above as the lectotype.

Burtt (1951: 130) cited the Kew sheet, "In montibus sphacioticis in regione pinetorum, 1050–1200 m [3500–4000 feet on the label], April 1846, *Heldreich* (isotypus, K!)" but that is not a lectotypification of the species.

Tan (2002) cited the G-BOIS sheet above as type and the K sheet as an isotype, but that does not qualify for lectotypification of the name because it is post 2001, and she did not use the phrase "designated here" or its equivalent (see Turland et al., 2018: Art. 9, note 6; McNeill, 2014).

Some duplicates were distributed with labels carrying Boissier's handwriting indicating a collection date of May instead of April 1846, and are treated here as syntypes. These and the isolectotypes do not have Heldreich's field collection number. Indeed, only the lectotype and WU duplicates have the collection number, though the latter has the locality as "in montibus Sphacioticis. Cretae prope Askyphous. inter saxa".

Ricotia carnosula Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 30. 1849.

Type: "Hab. inter saxa maritima ad occidentem urbis *Adalia* in *Pamphyliâ* (Heldr.) Fl. Mart. fruct. Aprili".

Lectotypus (first step designated by Burtt, 1951: 129; second step designated here): **Turkey:** "Inter lapides ad oras maris Adalia", IV.1845, *Heldreich s.n.* (G-BOIS [G00332297]; isolecto-: B [B100241718 three fruiting plants], BM [BM001254077], E [E00373142], G [G00446139, G00446140], GOET [GOET0024648], K [K000484459, K000484461], KW [KW000127926], P [P00747551, P00747552, P00747554, P00747555], W [W00075701A, W18890010563 bottom fruiting plant], WIS [WIS0255297]). **Syntypus: Turkey:** "Adalia", 14.III.1845, *Heldreich 475* (B [B100241718 seven plants in flower], G-BOIS [G00332299], W [W00075701B, W18890010563 five top plants in flower]).

Notes. – The protologue cited flowering material collected in March and fruiting in April, and by citing a specimen in Kew collected in April as an isotype, Burtt (1951) basically made a first step lectotypification. However, he did not indicate where the type (or lectotype) is housed, and that step is completed herein.

To our knowledge, there are only three numbered sheets *(Heldreich 475)* that indicate a flowering date of 14 March 1845 and fruiting date of 5 April 1845. The sheet in G-BOIS is cited above as a syntype. The other sheet is at B, and it has seven plants in flowers and three in fruit, and the mixed collections B100241718 and W18890010563 each is listed as an isotype and syntype.

Label of G-BOIS [G00332299] gives a slightly different locality "Dans les cailloux (*non* in arenosis!!) au bord de la mer à 1 lieue à l'ouest d'Adalia. le 14 mars en fleurs. Le 5 avril les siliques. 1845" and the duplicate includes only two plants in flower.

Ricotia sinuata Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 30. 1849 (Fig. 15C, p. 59).

Type: "Hab. in faucibus montis *Climax* propè *Kourmalu* Lyciae et in promontorio *Alaya* Pamphyliae in saxis inter frutices. (Heldreich.)".

Lectotypus (first step designated by Burtt, 1951: 129; second step designated here): **Turkey:** "rare au promontoir d'Alaya, dans les rocailles", 18.IV.1845, *Heldreich 564* (G-BOIS [G00332301]; isolecto-: BM [BM00125406], E [E00373140], G [G00446141, G00446142], GOET [GOET002650], K [K000484456, K000484457, K000484458], KW [KW000127928], P [P00747544, P00747545], WAG [WAG0004251]). **Syntypus: Turkey:** "in rupestribus apricis. Gorge du Mt. Climax près de Kourmalu. 3 heures à l'Ouest d'Adalia", 4.V.1845, *Heldreich 564* (G-BOIS [G00332303], KW [KW000127927], P [P00747543]).

Notes. – Burtt (1951) narrowed the two collections cited in the protologue to one at K as an isotype, but he did not indicate where the type (or lectotype) is housed. The presence in the Geneva herbaria of three duplicates of the type collection, including two in G-BOIS, necessitated a second step lectotypification.

One might consider that discrepancy in the collection data between the lectotype and isolectotypes sheets (*Heldreich s.n.* "Ad rupes promont. Alaya. Pamphyliae. Apr. 1845") to be significant, but the following arguments stand against that. First, the collection number on the lectotype was given by Heldreich on two other G-BOIS duplicates from different localities, just as he did for many other species in that herbarium. Second, the lectotype is a collection folder of two sheets, of which one has the original handwritten label by Heldreich and the other has the abbreviated handwritten label by Boissier. Finally, the printed, Boissier's handwritten label on all isolectotypes, as is the case for many other species, does not perfectly match the original Heldreich handwritten label. The same discrepancy exits for the syntype in G-BOIS that has an original label with indications as above but with number *564* and a printed handwritten label by Boissier with: "In faucibus montis Climax. propè Kourmalu. Pamphylia. Mai 1845" without collection number indicated.

Two duplicates in Paris, P00747548 and P00747549, have the locality as Pamphylia and the year 1845 but no month. These may be part of the same lectotype collection or perhaps only syntypes.

Fibigia Medik., Pfl.-Gatt.: 90. 1792.

Tribe: *Alysseae* DC.

Notes. – As most recently delimited (Španiel et al., 2015), *Fibigia* includes only three European and SW Asian species.

For taxa previously placed in the genus (especially *Acuston* Raf., *Brachypus* Ledeb., and *Irania* Hadač & Chrtek) the above reference should be consulted.

Fibigia macroptera (Kotschy & Boiss. ex E. Fourn.) Boiss., Fl. Orient. 1: 257. 1867.

≡ *Farsetia macroptera* Kotschy & Boiss. ex E. Fourn. in Bull. Soc. Bot. France 11: 60. 1864.

Type: "Kotschy *iter cilicico-curdicum,* n. 380".

Lectotypus (designated here): **Turkey:** 'Plantae in prov. Musch ad radices australes Bimgoell montis ad Gumgum in districtu Warto lectae. In valle Goschkar", 5600' [1705 m], 22.VIII.1859, *Kotschy 380* (P [P00747709]; isolecto-: B [B100241470, B100241471], E [E00373132], G [G00446144], G-BOIS [G00332305], JE [JE00001348], K [K000484529], P [P00747710, P06618013], S [S1216049, S1216050], W [W0075788]).

= ***Fibigia macrocarpa*** (Boiss.) Boiss., Fl. Orient. 1: 258. 1867.

Notes. – All three duplicates of the type collection at P have printed labels, and none was annotated by any of the three species authors. The one with dehiscent fruit showing the broadly winged seeds is taken here as the lectotype.

Boissier (1867a) did not cite Fournier (1864) for the original publication of the species as *Farsetia,* though it is evident that he had the same taxon in mind.

Fibigia macroptera var. *microcarpa* Boiss., Fl. Orient. Suppl.: 48. 1888.

Type: "Hab. in dumetis montis Sawers 8000' et in quercetis montis Kuh Eschker Persiae occid. 8–10000' (Haussk.!)".

Lectotypus (designated here): **Iran:** "In quercetis m. Kuh Eschker, dit Kuh Kilugek", 8000'–10000' [2440–3050 m], VII.1868, *Haussknecht s.n.* (G-BOIS [G00332306]; isolecto-: JE [JE00001347]). **Syntypus: Iran:** "In dumetis m. Sawers", 8000 [2440 m], VII.1868, *Haussknecht s.n.* (G-BOIS [G00332307], K [K000484528]).

= ***Fibigia macrocarpa*** (Boiss.) Boiss., Fl. Orient. 1: 258. 1867.

Note. – The variation in fruit size in *F. macrocarpa* is continuous and does not fall into any discrete geographical or morphological pattern that justifies its subdivision into infraspecific taxa.

Fibigia macrocarpa (Boiss.) Boiss., Fl. Orient. 1: 258. 1867.

≡ *Farsetia macrocarpa* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 89. 1842.

Type: "[Aucher-Eloy] N. 236, Akdag".

Holotypus: Turkey: "Akdagh", s.d., *Aucher-Eloy 236* (G-BOIS [G00386394]; iso-: G [G00334005, G00386395], K [K00048453], MPU [MPU017868], P [P00747711, P00747712]).

Note. – Boissier based the description of the species solely on the unicate in his herbarium, and he did not annotate or examine the duplicates of G or P.

Fibigia obovata (Boiss. & Kotschy) Boiss., Fl. Orient. 1: 258. 1867.

≡ *Farsetia obovata* Boiss. & Kotschy in Boiss., Diagn. Pl. Orient. ser. 2, 5: 27. 1856.

≡ *Acuston perenne* subsp. *obovatum* (Boiss. & Kotschy) Mabb. & Al-Shehbaz in Novon 25: 415. 2017.

Type: "Hab. in jugis frigidis Antilibani supra Bludan alt. 6300' (Ky exs. 152!)".

Holotypus: Syria: "Circa Zebdaine prope Damascum. In jugis frigidis inter Bludan et Halbun pagum", 6500' [1980 m], 17.VI.1855, *Kotschy 142* (G-BOIS [G00332308]; iso-: B [B100241465], BM [BM001254080], E [E00373134], GZU [GZU000273463], K [K000618642], KW [KW000127920], LE, MPU [MPU017097], P [P00747701, P06618104, P06618105], W [W0075786, W0075787]) (Fig. 16, p. 60).

= ***Acuston petalodes*** (DC.) Al-Shehbaz (see following entry).

Notes. – Boissier in *Flora Orientalis* erred by listing under *Fibigia obovata* the earlier published *Alyssum petalodes* DC. as a synonym. *Fibigia obovata* is not illegitimate being based on a legitimate name. It is incorrect when published. The following entry with a new combination is proposed to recognize the taxon in *Acuston*.

The holotype is a collection folder of two sheets. The above barcoded sheet has four groups of plants (Fig. 16, p. 60), of which one is pinned by Kotschy's printed label with the full locality and date as above, another by a smaller label on which Boissier wrote the collection number *142,* and the remaining two by labels on which Boissier wrote "Syrie Liban Kotschy 1855" with "Farsetia obovata sp. nov." on one of them. The second sheet of the holotype consists of flowering and fruiting plant mounted by a label with "Syrie Liban Kotschy 1855" but without species name. The entire folder represents a single collection.

Boissier (1856) did not give Kotschy's collection number, but in *Flora Orientalis* erroneously gave *Kotschy 152* instead of *Kotschy 142* and the elevation at 6300 instead of 6500 feet. Furthermore, no specimen in the Geneva herbaria or in any of the herbaria cited above for the isotypes has the locality Manschura [currently Mansoura]. Clearly, there is a single collection made by Kotschy for the species. It is rather surprising, however, that Boissier in *Flora Orientalis* did not list *Farsetia obovata* in the text or index.

Although Post (1896, 1932), followed by Mouterde (1970), reduced *F. obovata* to a variety of *F. clypeata*, they are clearly very distinct species. *Fibigia clypeata* is a much taller plant usually more than 30 cm tall (vs 2–10 cm) and has fully or only basally bracteate (vs ebracteate), 10–40-fruited (vs 1–3-fruited) infructescence with typically oblong (vs narrowly obovate) fruit widest at the middle (vs distally).

The Syrian *F. obovata* was most recently recognized by Al-Shehbaz & Mabberley (2017) as a subspecies of the Aegean *Acuston perenne* (Mill.) Mabb. & Al-Shehbaz (= *A. lunarioides* (Willd.) Raf.) based on some similarities in floral and fruit characters. However, the disjunction of 1000 km between the Aegean and Syrian plants, as well as morphological differences presented by these authors, are considered here as important factors leading to the recognition of two species in *Acuston* Raf., instead of one with two subspecies.

Acuston petalodes (DC.) Al-Shehbaz, **comb. nov.**

≡ *Alyssum petalodes* DC., Syst. Nat. 2: 312. 1821.

Type: "Hab. in Syriâ. *Labillardiere.* (v.s. sp. in h. Labill.)".

Holotypus: Syria: *sine loco,* 1819, *Labillardière s.n.* (G [G00371675]; iso-: G-DC [G00205585]).

Notes. – Candolle (1821b: 312) indicated that he examined the material in Labillardière's herbarium, but as shown by Stafleu & Cowan (1979), collections of that herbarium from Syria, which were in Lemonnier's herbarium, are currently housed in the Geneva herbaria.

A search for possible duplicates in the Virtual Herbaria (2019) and P (including P-JU and P-LA), where many of Labillardière duplicates are currently housed, did not yield anything. Therefore, the listing of the holotype in P by Al-Shehbaz & Mabberley (2017) is erroneous.

By contrast, the G00371675 specimen is from Labilladière's herbarium with two different labels indicating Syria and Liban but no date, and it is concluded here that this is the holotype. The G-DC specimen above is a fragmentary material with a label in Candolle's handwriting "Alyssum petaloideam. M.Labillard. 1819" but no country or locality. The conclusion is that it was taken by Candolle from the holotype and, therefore, it is an isotype.

Fibigia multicaulis (Boiss. & Hohen.) Boiss., Fl. Orient. 1: 259. 1867.

≡ *Farsetia multicaulis* Boiss. & Hohen. in Boiss., Diagn. Pl. Orient. 8: 31. 1849.

≡ ***Irania multicaulis*** (Boiss. & Hohen.) Hadač & Chrtek in Acta Univ. Carol., Biol. 1971: 248. 1973.

Type: "Hab. in monte *Elbrus* propè pagum *Passgala*. Kotschy. No 203".

Holotypus: Iran: "In m. Elbrus pr. pagum Passgala", 27.V.1843, *Kotschy 203* (G-BOIS [G00332310]; iso-: [P00747702]).

Notes. – Thirteen collections (G [G00371697, G00371764, G00371773], G-BOIS [G00332311 plant on lower left], K [K000484535, K000484536], P [P00747539, P00747703, P00747704, P00747705, P00747706], W [W0051430], WAG), have the collection number as "*203, 528*", collection date "15 Jul 1843", and locality data "Prope cataractas Ser Abi Schirr et prope pagum Asadbar in partibus occidentalibus m. Elbrus" and, therefore, are not considered as part of the type collection.

Furthermore, four other collections (B [B100241466], G-BOIS [G00332311 plant on upper right], JE [JE0005735], KW) have the number *203* or *528,* but with date of collection as 15 Jul 1843, and locality data as "Prope pagum Asadbar in partis occidentalibus m. Elburs". They too cannot be considered as part of the type collection.

The holotype sheet was annotated in Boissier's handwriting. If the above 17 collections are to be considered syntypes, it is only because they carry one of two collection numbers that matches that of the holotype, but all other information are quite different.

Fibigia umbellata (Boiss.) Boiss., Fl. Orient. 1: 259. 1867.

≡ *Farsetia umbellata* Boiss., Diagn. Pl. Orient. 6: 13. 1846.

≡ ***Irania umbellata*** (Boiss.) Hadač & Chrtek in Acta Univ. Carol., Biol. 1971: 248. 1973 (Fig. 17, p. 61).

Type: "Hab. ad rupes calcareas montis *Kuh-Daëna* Persiae australis Kotschy No. 576".

Holotypus: Iran: "Ad rupes calcareas alpis Kuh-Daëna", 8.VII.1842, *Kotschy 576* (G-BOIS [G00332312]; iso-: B [B100241469], BM [BM001254081], E [E00373129, E00373130], G [G00371683, G00371685, G00371690], K [K000484539], KW [KW000127922], MO [MO3831884], P [P00747541, P00747683, P00747684, P00747685, P00747686, P00747687, P00747688, P00868468], W [W0051431, W18890072855, W18890152828], WAG [WAG0003963]).

Note. – Rechinger (1968: 145) listed a specimen at W as the "type", but Boissier never examined any of the three duplicates at W, nor did he examine any other duplicate elsewhere. He based his species description solely on the specimen in his herbarium that ought to be the holotype.

Fibigia pendula (Boiss.) Boiss., Fl. Orient. 1: 260. 1867.

≡ *Farsetia pendula* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 90. 1842.

≡ ***Irania pendula*** (Boiss.) Hadač & Chrtek in Acta Univ. Carol., Biol. 1971: 248. 1973.

Type: "[Aucher-Eloy] N. 4086, absque loco".

Lectotypus (designated here): **Iran:** *sine loco,* s.d., *Aucher-Eloy 4086* (G-BOIS [G00330261]; isolecto-: BM [BM000582911], G [G00371672], K [K000484541], P [P00747698, P00747699, P00747700], W [W0033646]).

Notes. – Boissier annotated P00747699, and that justifies the lectotypification of the name. The duplicate at G belongs to the Moricand's herbarium.

The species is endemic to Iran, and that information was not available to Boissier because Aucher-Eloy did not mention the locality.

Clastopus Bunge ex Boiss., Fl. Orient. 1: 261. 1867.

Tribe: *Alysseae* DC.

Note. – A genus of two species distributed in Iran, Iraq, and Turkey.

Clastopus purpureus Bunge ex Boiss., Fl. Orient. 1: 261. 1867.

Type: "Hab. in Persiâ mediâ occidentali inter Ssof et Kohrud (Bunge!)".

Holotypus: Iran: "Inter Ssof & Kohrud", 14.V.1859, *Bunge s.n.* (G-BOIS [G00791307]; iso-: K [K000484514, K000484515], LE [LE00013037, LE00013038], P [P02272117, P02272118, P02272119]).

Notes. – Except for P02272119, which has a handwritten label by Bunge with the exact locality and date, all isotypes have printed labels that read "Iter persicum. inter Isfahan et Teheran. Maj. 1859". The G-BOIS holotype has the printed label, as well as Bunge's handwritten label in pencil of the exact locality but without the day of collection.

The species was transferred by Bornmüller (1906) to the monospecific *Straussiella* and remained there for more than

a century. However, it is recently retained by Španiel et al. (2015) in *Clastopus* based on molecular data and a closer re-examination of morphology.

Alyssum L., Sp. Pl.: 650. 1753.

Tribe: *Alysseae* DC.

Note. – Earlier works (e.g., Al-Shehbaz, 1987, 2012) recognized as many as 195 species in *Alyssum,* but based on detailed surveys of molecular and morphological data, Španiel et al. (2015) recognize 115 species. These are distributed throughout the temperate Eurasia and North Africa, with only a single native species in North America. The remaining species placed in *Alyssum* by previous authors were recognized in the latter work in *Odontarrhena* C.A. Mey., and that delimitation of both genera is followed here.

Alyssum bracteatum Boiss. & Buhse in Nouv. Mém. Soc. Imp. Naturalistes Moscou 12: 18. 1860.

≡ ***Odontarrhena bracteata*** (Boiss. & Buhse) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "Am Fuss des Illanglidagh bei Nachitschewan, [Buhse] 21 Mai 1847 (florens). Persien: Pl. exs. Aucherianae No 4101, B".

Lectotypus (designated here): **Azerbaijan:** *sine loco,* 1847, *Buhse s.n.* (G-BOIS [G00332313]; isolecto-: LE [n.v.]). **Syntypus: Iran:** "Ispahan", s.d., *Aucher-Eloy 4101B* (BM [BM000583323], G [G00446145, G00446607], G-BOIS [G00332314], K [K000484842], P [P02272224, P02272225, P02272226], W [W0068989, W18890075533]).

Note. – The combined Geneva herbaria have only a single specimen of the species collected by Buhse in 1847 and annotated in Boissier's handwriting as *Alyssum bracteatum*. However, it gives the locality as Persia, presumably a broader region that included Nakhchivan (Azerbaijan), the autonomous republic from which the lectotype was collected.

Alyssum singarense Boiss. & Hausskn. in Boiss., Fl. Orient. Suppl.: 49. 1888.

≡ ***Odontarrhena singarensis*** (Boiss. & Hausskn.) Španiel et al. in Pl. Syst. Evol. 301: 2486. 2015.

Type: "Hab. in cretaceis montis Sindjar inter Zamuche et Zakinia (Haussk.!)".

Holotypus: Iraq: "In cretac. inter Zamucha & Zakinia, mt. Singarae", V.1867, *Haussknecht 91* (G-BOIS [G00332315]; iso-: BM [BM000595356], JE [JE00001888, JE00001889], K [K000697027]).

Note. – The BM and K duplicates were annotated by Dudley as isotypes, but they lack the collection number and precise locality in Sinjar Mt.

Alyssum alpestre var. *suffrutescens* Boiss., Fl. Orient. 1: 268. 1867 [nom. illeg.].

≡ *Alyssum tortuosum* var. *orientale* DC., Syst. Nat. 2: 306. 1821.

= ***Alyssum sibiricum*** Willd., Sp. Pl. 3: 465. 1800.

Note. – Varietas *suffrutescens* is illegitimate because Boissier listed the earlier published *Alyssum tortuosum* var. *orientale* DC. in synonymy. Both varietal names are rather obscure, and the latter needs lectotypification.

Alyssum alpestre var. *minutiflorum* (Boiss.) Boiss., Fl. Orient. 1: 268. 1867.

≡ *Alyssum minutiflorum* Boiss., Diagn. Pl. Orient. 1: 73. 1843.

Type: "[Boissier] Hab. in collibus aridis vallis *Meandri* ad occidentem urbis *Guzel-hissar*. Floret Maio".

Holotypus: Turkey: "Colles arenosi ad Tralles. Caria", V.1842, *Boissier s.n.* (G-BOIS [G00332316]).

= ***Alyssum sibiricum*** Willd., Sp. Pl. 3: 465. 1800.

Note. – No duplicates of the type collection were found in any of the major herbaria consulted.

Alyssum condensatum Boiss. & Hausskn. in Boiss., Fl. Orient. 1: 268. 1867.

≡ ***Odontarrhena condensata*** (Boiss. & Hausskn.) Jord. & Fourr., Brev. Pl. Nov. 2: 4. 1868.

Type: "Hab. in Syriae borealis monte Akdagh (Auch. exs. 266!), monte Karabiyuckle inter Aintab et Marasch (Haussk!), Tauro Cilicico (Ky! Bal!), in monte Berytdagh Cataoniae alt. 8–9000' (Haussk!)".

Lectotypus (first step designated by Dudley, 1965b: 401; second step designated here): **Turkey:** "Taurus Cataonicus. Karabiyukle, inter Aintab et Marach", 11.VII.1865, *Haussknecht s.n.* (G-BOIS [G00332329]; isolecto-: A [A00018480], JE [JE00001754, JE00001755], W [W0055921, W18890055595]). **Syntypi: Turkey:** "Ak-Dagh",

s.d., *Aucher-Eloy 266* (G [G00446160, G00446161], MPU [MPU017001], P [P02272252, P06617191]); "village de Gulek-Boglas, N Taurus", 30.VI.1855, *Balansa 168* (G-BOIS [G00332328]); "Berytdagh, Taurus Cataonicus", 8000'–9000' [2440–2740 m], 10.VIII.1865, *Haussknecht s.n.* (G-BOIS [G00332326], JE [JE00001753], W [W0055922, W18890055607]); "Plantae Tauri Cilicici", 1853, *Kotschy s.n.* (G-BOIS [G00332327]).

Notes. – The lectotype is a collection folder of two sheets, of which one has a handwritten label by Boissier that reads "montes, inter Aintab et Marach" but without collector name or collection date.

In his designation of the lectotype collection, Dudley (1965b) listed Haussknecht's collections at G, JE, and W herbaria. That designation is narrowed here to G-BOIS, from which material Boissier based his description in *Flora Orientalis*. There is no duplicate of this collection in the other Geneva herbaria.

One of Haussknecht's collections from Mt. Marash in Turkey, P06617297, was annotated by Boissier as "*Alyssum confertum* Boiss. et Haussk.", but that species epithet was published by Boissier in 1842, or 25 years prior to the publication of *A. condensatum*. The collection is missing the exact locality and day and month, and it may be part of the type collection of the latter species.

Alyssum troodi Boiss., Fl. Orient. Suppl.: 49. 1888.

≡ ***Odontarrhena troodi*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2487. 2015.

Type: "Hab. in monte Troodos Cypri (Sint. et Rigo!)".

Holotypus: Cyprus: "Ins. Cypro. In monte Troodos", 17.VI.1880, *Sintenis & Rigo 844* (G-BOIS [G00332331]; iso-: B [B100244946, B100244947], BM [BM000583332], CAS [CAS0026920], FI [F010120], GH [GH00018607], K [K000679034, K000679035, K000679036, K000679037, K000679038, K000679039], LD [LD1685802, LD1688922, LD1693789], NY [NY00172547], P [P02272344, P02272345, P04630381, P06649608, P06649609, P06649610], US [US00100424], W [W18890033480, W18890103863], WU [WU0101799], Z [Z000004366]).

Notes. – Meikle (1977: 135) stated that the type is at G and K but without any indication of the status of the type.

Except for the G-BOIS specimen, none of the other duplicates listed above was annotated by Boissier who based the species description solely on the folder in his herbarium.

The holotype is a collection folder of three sheets, of which one has a label identical to barcoded sheet, and the third has the collection number, the date, and Mt. Troodos.

Alyssum oxycarpum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 35. 1856.

≡ ***Odontarrhena oxycarpa*** (Boiss. & Balansa) Španiel et al. in Pl. Syst. Evol. 301: 2486. 2015.

Type: "Hab. in regione alpinâ inferiori montis *Masmeneudagh* inter *Taurum* et urbem *Caesaream,* legit fructiferum Aug. cl. Balansa".

Holotypus: Turkey: "Region alpine inférieure du Masmeneu-Dagh, à 25 lieues au SSO. de Césarée", 8.VIII.1855, *Balansa 427* (G-BOIS [G00332333]; iso-: BM [BM000595315], G [G00446152, G00446153], GH [GH00018569, GH00018569], JE [JE00001879], K [K000484850, K000484851], OXF, P [P02272323, P02272324], W [W18890076143], WAG [WAG0004264]) (Fig. 18, p. 62).

Note. – The holotype is a collection folder of two sheets, of which the first has a printed label with the exsiccatae number *427* (Fig. 18, p. 62) and the second sheet has handwritten label by Balansa that carries the field number *167*. All isotypes carry printed labels with the exsiccatae number *427*.

Alyssum oxycarpum var. *kurdicum* Boiss., Fl. Orient. 1: 269. 1867.

≡ ***Odontarrhena kurdica*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2485. 2015.

Type: "Hab. in monte Gara Kurdistaniae (Ky exs. 337! Sub. *Od. tortuosâ*)".

Holotypus: Iraq: "Odontarrhena tortuosa C. A. Mey. In cacumine m. Gara Kurdist.", 27.VII.1841, *Kotschy 337* (G-BOIS [G00332335]; iso-: A [A00018570], BM [BM000583330, BM000583331], E [E00386009], G [G00388931, G00388932, G00388933], K [K000484846, K000484847], P [P05444892], W [W0003825, W0003826], WAG [WAG0004273]).

Note. – Except for the holotype, none of the duplicates above was annotated by Boissier.

Alyssum haussknechtii Boiss., Fl. Orient. 1: 269. 1867.

≡ ***Odontarrhena haussknechtii*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2485. 2015.

Type: "Hab. in rupestribus alpinis montis Berytdagh Cataoniae alt. 8000'–10000' (Haussk!)".

Holotypus: Turkey: "Taurus Cataonicus. in rup. Berytdagh", 9000'–10000' [2740–3050 m], 10.VIII.1865,

Haussknecht s.n. (G-BOIS [G00332336]; iso-: B [B100244992], BM [BM000583298], JE [JE00003084, JE00003085, JE00003086], P [P02272268, P02272292, P02272293], W [W18890055599, W19270014882]).

Note. – The three duplicates at JE have photocopied handwritten annotations by Boissier and a collection number of *1116* not found on other sheets. However, the date of collection and locality are identical to those of the holotype.

Alyssum constellatum Boiss. in Ann. Sci. Nat., Bot. ser. 4, 2: 244. 1854.

≡ ***Odontarrhena constellata*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "Hab. prope *Rizildagh* ubi legit cl. P. a Tchihatcheff".

Holotypus: Turkey: "propè Kizildagh", s.d., *Tchihatcheff s.n.* (G-BOIS [G00332337]).

Note. – The species is restricted to the Kurdistan area of Iran, Iraq, and Turkey and its range extends westward into south central Turkey.

Alyssum constellatum var. *confertum* Boiss., Fl. Orient. 1: 270. 1867.

≡ *Alyssum callichroum* Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 34. 1856.

= ***Odontarrhena callichroa*** (Boiss. & Balansa) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Note. – This is a renaming at the varietal rank of the following entry.

Alyssum callichroum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 34. 1856.

≡ ***Odontarrhena callichroa*** (Boiss. & Balansa) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "Hab. in regione montanâ superiori montis *Masmeneudagh* inter Taurum et urbem *Caesaream* siti. Floret Augusto. Fr. Septembri".

Lectotypus (designated here): **Turkey:** "Région montagneuse supérieure du Masmeneu-Dagh, à 25 lieues au SSO. de Césarée", 7.IX.1855, *Balansa 432* (G-BOIS [G00332338]; isolecto-: BM [BM000583287], CAS [CAS0026903], E [E00105991], G [G00388596, G00388597], GH [GH00018468], GOET [GOET002677], JE [JE00003011], K [K000484860, K000484861, K000484862], MPU [MPU011455, MPU013355], P [P02272253, P02272254], US [00100409], W [W0069851, W18890076139]). **Syntypus: Turkey:** "Région montagneuse supérieure du Masmeneu-Dagh, à 5 lieues au SSO de Césarée", 8.VIII.1855, *Balansa 172* (G-BOIS [G00332340]).

Notes. – Lectotypification is needed to narrow the selection of the lectotype to one of the two duplicates in G-BOIS that consists of only fruiting material.

The other G-BOIS specimen is a flowering material collected in August, with the field number *172* and recognized here as a syntype.

As for the other isolectotypes, some consist of only fruiting material and these pose no concerns, but those with mixed flowers and fruit (such as the two duplicates at G), only the fruiting specimens are isolectotypes.

Alyssum masmenaeum Boiss., Diagn. Pl. Orient. ser. 2, 5: 36. 1856.

≡ ***Odontarrhena masmenaea*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2485. 2015.

Type: "Hab. in regione montanâ superiori montis *Masmeneudagh,* cl. Balansa. Floret Aug. Fruct. Sept.".

Lectotypus (designated here): **Turkey:** "Région sous-alpine du Masmeneu-Dagh, à 25 lieues au SSO. de Césarée", 7.IX.1855, *Balansa 430* (G-BOIS [G00332341]; isolecto-: A [A00018520], BM [BM000583944 plant on left], CAS [CAS0026913 plant on left], G [G00388923 two plants on left, G00388924 two plants on left], GOET [GOET002690], JE [JE00001891 plant on right], K [K000484873 plant on lower left, K000484874 two plants on right, K000484875 two plants on right, K000484876 two plants on right], MPU [MPU014241], OXF, P [P02272312 plant on right, P02272314 lower plant, P02272315, P02272316], W [W0075785 plant on right, W18890076151 two plants on left], WAG [WAG0004265 plant on right]). **Syntypus: Turkey:** "Région sous-alpine du Masmeneu-Dagh, à 25 lieues SSO. de Césarée", 8.VIII.1855, *Balansa 430* (BM [BM000583944 plant on right], CAS [CAS0026913 plant on right], G [G00388923 plants on right, G00388924 plants on right], G-BOIS [G00332342], JE [JE00001891 plant on left], K [K000484873 plant on upper left, K000484874 plant on left, K000484875 plant on lower left, K000484876 plant on left], MPU [MPU013491], P [P02272312 plant on left, P02272313, P02272314 plant on top], W [W0075785 plant on left, W18890076151 plant on right], WAG [WAG0004265 plant on left]).

Notes. – With the exception of G00332342 with the handwritten field number *174,* all other duplicates have printed

labels with the exsiccatae number *430*. All labels carry the initial species epithet "kotschyanum" that was replaced in publication with "masmenaeum".

Because the fruits are very important taxonomically in *Alyssum* and *Odontarrhena,* the fruiting material collected on September 7 is selected as the lectotype collection and those in flower (collected on August 8) represent the syntypes.

As in the preceding species, Dudley (1965b) did not designate or annotate the lectotype from any of the two specimens each in G-BOIS or two at G. Furthermore, he considered both flowering and fruiting material as one collection and annotated both as isotypes. His mix-up was most likely resulted from the mixed collections (flowering and fruiting) on the majority of duplicates, including those at G and K. However, the flowering and fruiting plants are mounted on separate sheets in G-BOIS.

Alyssum argenteum var. *chrysanthum* Boiss., Fl. Orient. 1: 271. 1867.

Type: "Hab. ad basin montis Mouraddagh Phrygiae (Bal!), in Lyciâ ad Elmalu (Bourg!), in Armeniâ ad Maimansour (Huet!)".

Lectotypus (designated here): **Turkey:** "Elmalu, in lacunosis", 17.V.1860, *Bourgeau 25* (G-BOIS [G00332344]; isolecto-: BM [BM000583301, BM000595343], G [G00446154], K [K000484884], P [P02272239, P02272240, P04628049, P06681622]). **Syntypi: Turkey:** "Versant méridional du Mourad-Dagh (Phrygie)", 28.VI.1857, *Balansa 1249* (G [G00389030], GH [GH00018406], K [K000697041], MPU [MPU017002], P [P02272241], W [W18890013479]); "Meimansour", V.s.a., *Huet du Pavillon s.n.* (G-BOIS [G00332343]).

= ***Odontarrhena muralis*** (Waldst. & Kit.) Endl., Cat. Horti Vindob. 2: 245. 1841.

Note. – Although all of its type material cited by Boissier in *Flora Orientalis* were collected from Turkey, var. *chrysanthum* was not accounted by Dudley (1965b).

Alyssum elatum Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 33. 1849 [nom. illeg.] [non Kreutzer].

≡ *Alyssum pterocarpum* T.R. Dudley in J. Arnold Arbor. 45: 370. 1964.

Type: "Hab. in totâ *Anatoliâ meridionali, Cariâ* in regione sylvaticâ ad meridiem *Cadmi* sitâ (Boiss.! Pinard.!) ad rupes portûs *Tcherali* Lyciae (Heldreich), in *Tauro* Kotchy No 41".

Lectotypus (designated by Dudley, 1964b: 370): **Turkey:** "in campis sterilibus au pied des montagnes près du port de *Tcherali*, en Lycie", 13.V.1845, *Heldreich 620* (G-BOIS [G00332347]; isolecto-: B [B100244994], BM [BM000583308, BM001254083], CAS [CAS0027439], E [E00373072, E00373073], G [G00446618], GH [GH00018498], GOET [GOET002695], H [H1355575], K [K000484885], OXF, P [P02272261, P02272262], US [US000100413], W [W0075781, W18890026326], WAG [WAG0004234, WAG0004235]). **Syntypi: Turkey:** "Cadmus", VI.1842, *Boissier s.n.* (G-BOIS [G00332346]); "Mt. Tauro", s.d., *Kotschy 41* (GH [GH00018501], P [P02272258, P02272259]).

= ***Odontarrhena pterocarpa*** (T.R. Dudley) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Notes. – The Pinard's syntypes belong to *Odontarrhena corsica* (Duby) Španiel et al.

The lectotype is a collection folder of two sheets, of which one has the handwritten label by Heldreich with the collection number *620,* as W0075781, and the other, as well as all of the isolectotypes, with a printed, handwritten label by Boissier but without the collection number. The isolectotypes labels have "ad rupes portus Tcherali Lycia. de Heldreich ver. 1845" indicated.

Alyssum crenulatum Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 33. 1849.

≡ ***Odontarrhena crenulata*** (Boiss. & Heldr.) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "Hab. in collibus ad radices meridionales jugi *Cassii* in viâ inter *Latakieh* et *Suadieh.* Legi [Boissier] Jun. 1846".

Holotypus: Turkey: "Chaîne du Cassius de la base", V–VII.1846, *Boissier s.n.* (G-BOIS [G00332349]; iso-: G [G00446173], GH [GH00018486], P [P02272255], WAG [WAG0004261]).

Notes. – Boissier (1849) based the species description on his own single collection above.

The holotype is a collection folder of five sheets, of which three have printed labels indicating "Syria, Mai-Jul. 1846. E. Boissier", though the locality is currently part of Turkey. The barcoded one has Boissier's handwriting of the species name in red ink and "Chaîne du Cassius de la base" in black ink.

Alyssum floribundum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 33. 1856.

≡ ***Odontarrhena floribunda*** (Boiss. & Balansa) Španiel et al. in Pl. Syst. Evol. 301: 2485. 2015.

Type: "Hab. in schistosis vallis *Guzel Déré* suprâ *Sedichig* in Ciliciâ littorali cl. Balansa. Floret fine Maii".

Lectotypus (designated here): **Turkey:** "Terrains schisteux du Guzel Déré, en amont de Sedi-chig (environs de Mersina)", 9.VI.1855, *Balansa 171* (G-BOIS [G00332351 plant on left]; isolecto-: BM [BM000583309 plant on left], CAS [CAS0026909 plant on left], G [G00388576 fragment on left, G00446603 first sheet], GOET [GOET002682 plant on left], JE [JE00003057 plant on right, JE00003058 two branches in middle], K [K000484887 plant on lower right, K000484888 plant on lower right], MPU [MPU013362 plant on right, MPU013363, MPU013364 plant on right, MPU014809 plant on right, MPU014810 plant on right, MPU014811 plant on right], OXF, P [P02272266 plant on left, P04708403, P06616637, P06616638, P06616639], US [US00100414 plant on right], W [W0075605], WAG [WAG0004259 plant on left]). **Syntypus: Turkey:** "Terrains schisteux du Guzel Déré, en amont de Sedi-chig (environs de Mersina)", 20.V.1855, *Balansa 171* (G-BOIS [G00332351 plant on right], only flowering material of all of the above mixed collections and the following duplicates: G [G00388577, G00446603 second and third sheet], MPU [MPU013361], WAG [WAG0004260]) (Fig. 20, p. 64).

Notes. – The type collection as a whole consists of flowering material collected on May 20 and fruiting material collected on June 9. The fruiting material is designated as the lectotype and the flowering material is treated as syntypes (Fig. 20, p. 64).

With the exception of the type specimens G [G00332351, G00388576], which is fragmentary material ex G-BOIS given to Huber-Morath's herbarium that was later donated to G in 1991, all other duplicates have printed labels with the exsiccatae number *434* instead of the field number *171*.

Dudley did not annotate the material in G or G-BOIS, though he annotated *Balansa 434,* and erroneously *Balansa 433* from Masmeneudagh (BM [BM000583310], K [K000484889, K000484890]), as isotypes. Flowering and fruiting material of *Balansa 433* were collected on 8 Aug and 6 Sep 1855, respectively.

Alyssum peltarioides Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 158. 1842.

≡ ***Odontarrhena peltarioidea*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2486. 2015 (Fig. 19, p. 63).

Type: "[Aucher-Eloy] N. 286, Olympus Armeniae".

Lectotypus (designated here): **Turkey:** "in Olymp. Armenia", s.d., *Aucher-Eloy 286* (G-BOIS [G00332352]; isolecto-: BM [BM000583311], G [G00388906], K [K000484892], MO [MO1618794], OXF, P [P02272325, P05444886]).

Note. – Boissier (1842b) based the species description only on the unicate in his herbarium and P05444886, which he annotated and, therefore, the species name needed lectotypification. The duplicate at G was acquired from the Moricand herbarium.

Alyssum samariferum Boiss. & Hausskn. in Boiss., Fl. Orient. 1: 272. 1867.

≡ ***Odontarrhena samarifera*** (Boiss. & Hausskn.) Španiel et al. in Pl. Syst. Evol. 301: 2486. 2015.

Type: "Hab. in monte Berytdagh Cataoniae alt. 6000'–8000' (Haussk!)".

Lectotypus (designated here): **Turkey:** "Taurus Cataonicus. Allischerdagh. Berytdagh", 17.VIII.1865, *Haussknecht s.n.* (G-BOIS [G00332353]; isolecto-: JE [JE00001886, JE00001887]). **Syntypi: Turkey:** "In gramin. m. Beryt dagh, Cataoniae & Allischerdagh", 6000'–7000' [1830–2130 m], 8.VIII.1865, *Haussknecht s.n.* (B [B100244956], BM [BM000583322], K [K000484896], P [P02272330, P02272332], W [W18890055600, W0075784]); "Taurus cataonicus. Beyritdagh", 1865, *Haussknecht s.n.* (JE [JE00001884, JE00001885], P [P02272331]).

Notes. – The collection date on the lectotype is 17 August 1865, and Dudley (1965b) erred by giving the date as 8 July 1865, as on the duplicates at BM, K, and W that he cited and annotated. One of the syntypes, P02272331, was annotated by Boissier, though that sheet does not have the collection day and month.

All four duplicates at JE do not carry the date or month of collection. Of these, two have the collection number *1118,* which was not given on any of the above duplicates, and have the mountain Allischerdagh indicated, as in the lectotype. These two duplicates are recognized here as isolectotypes.

Alyssum eriophyllum Boiss. & Hausskn. in Boiss., Fl. Orient. 1: 273. 1867.

≡ ***Odontarrhena eriophylla*** (Boiss. & Hausskn.) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "Hab. in jugo Tolosdagh montis Amani Syriae bor. (Ky exs! sub *A. constellato*), in apricis montis Berytdagh Cataoniae alt. 6000' et ad Bazardjick Owa (Haussk!), in Armeniâ meridionali prope Musch (Ky Suppl. exs. 750!)".

Lectotypus (first step designated by Dudley, 1965b: 398; second step designated here): **Turkey:** "Taurus Cataonicus. in apricis Berytdagh", 6000' [1830 m], 11.VIII.1865, *Haussknecht s.n.* (G-BOIS [G00332358]; isolecto-: A [A00018502, A00018503], BM [BM000583288], GH, JE [JE00003007], K [K000484898], P [P2272263]). **Syntypi: Syria:** "in Tolos Dagh", 4000' [1220 m], 4.VII.1862, *Kotschy 203* (G-BOIS [G00332357]). **Turkey:** "Taurus Cataonicus. in apricis Bazardsihik Owa p. Marardh", 11.VII.1865, *Haussknecht s.n.* (G-BOIS [G00332354], JE [JE00003008], W [W18890055596]); "Crescit ad urbem Musch", 4300' [1310 m], 9.IX.1859, *Kotschy 750* (G-BOIS [G00332356]).

Notes. – Although Dudley (1965b) narrowed the number of syntypes cited in the original protologue from four to one, he listed five herbarium acronyms as the lectotype and did not specify any of them. Therefore, a second step lectotypification is completed here.

The lectotype is a collection folder of three sheets, of which one has no label, and the other has an abbreviated label stating "in apricis Beryt dagh 6000' Haussk.". The two labeled sheets were annotated in October 1961 by Dudley as "syntype = lectotype".

The *Kotschy 750* belongs to *Odontarrhena filiformis* (Nyár.) Španiel et al.

Alyssum cilicicum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 34. 1856.

≡ ***Odontarrhena cilicica*** (Boiss. & Balansa) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "Hab. in herbidis vallis *Guzel Déré* suprâ *Sedichig* in *Ciliciâ littorali* cl. Balansa. Fl. Junio Fruct. Sept.".

Lectotypus (designated here): **Turkey:** "Bords herbeux du Guzel Déré, en amont de Sedi-chig (environs de Mersina)", 9.VI.1855, *Balansa 170* (G-BOIS [G00332360]; isolecto-: BM [BM000583306], E [E00373076], G [G00446157], GH [GH00018478, GH00018479], GOET [GOET002681], JE [JE00003052], K [K000484900, K000484901, K000484902], MPU [MPU01473], OXF, P [P02272250, P02272251, P04661347], US [US00100410], WAG [WAG0004262]). **Syntypus: Turkey:** "Bords du Guzel Déré, en amont de Sedi-chig (environs de Mersina)", 2.X.1855, *Balansa 170* (G-BOIS [G00332360 fruiting branch]).

Notes. – The lectotype is a collection folder of two sheets the label of one of which was handwritten by Balansa with the field number *170* and Boissier's initial handwritten determination as "Alyssum cremocarpum n. sp!". The second sheet has a printed label with the collection number *435* and the same information as in the isolectotypes. The isolectotypes have a printed label with exsiccatae rather than field number: "Bords du Guzel-Déré, à 4 lieues au NO. de Mersina (Cilicie), 9 juin. 1855. B. Balansa 435".

There are three sheets in G-BOIS and two duplicates at G of the type collection. Dudley (1965b) indicated that the collection date is 9 September (instead of June 9) 1855, as in all the material he examined and annotated. Only a single fruiting material (third sheet in the lectotype folder) was examined from all the herbaria above, and it was collected on 2 October 1855 and recognized here as a syntype.

Alyssum cassium Boiss., Diagn. Pl. Orient. 8: 34. 1849.

≡ ***Odontarrhena cassia*** (Boiss.) Španiel et al. in Pl. Syst. Evol. 301: 2484. 2015.

Type: "[Boissier] Hab. in agris derelictis et collibus ad radices jugi *Cassii* in latere meridionali cum praecedenti [*A. crenulatum*] mixtum".

Holotypus: Turkey: "Syria. Bas de la chaîne du Cassius venant de Latakieh", V–VII.1846, *Boissier s.n.* (G-BOIS [G00332362]; iso-: BR [BR0000006993368], CAS [CAS0026904], E [E00373077], G [G00446158, G00446159, G00446160], GH [GH00018473], GOET [GOET002678, GOET002679], HBG [HBG505891], K [K000484903, K000484904], P [P02272242, P02272244, P02272246, P02272248, P02272249, P04708402], PH [PH00002542], W [W0072045, W18890016458, W19380001461]).

Notes. – The holotype is a collection folder of seven sheets. The label of one has Boissier's handwriting of the species name in red ink and locality in black ink and the print "Syria, Mai-Jul. 1846. E. Boissier". The locality data on the other six sheets is rather brief. Although the locality was originally belived in Syria, it is currently in Turkey near Latakia City.

The isotypes have a printed label in Boissier's handwriting "Syria ad radices Mtis Cassii Jun 1846. E. Boissier".

Alyssum bungei Boiss., Fl. Orient. 1: 274. 1867.

Type: "Hab. in Persiâ inter Ispahan et Teheran (Bunge!)".

Holotypus: Iran: "inter Isfahan et Teheran", V.1859, *Bunge s.n.* (G-BOIS [G00332364]; iso-: K [K000484971], P [P2272229, P2272230, P2272231]).

= ***Meniocus heterotrichus*** (Boiss.) Hadač & Chrtek in Acta Univ. Carol., Biol. 1971: 260. 1973.

Note. – Boissier somehow did not realize that the material he received from and named after Bunge was at a much younger stage of development than the mature material of conspecific *Alyssum heterotrichum* that he described 21 years earlier.

Alyssum montanum var. *hymettium* Boiss., Fl. Orient. 1: 274. 1867.

Type: "Hab. in Graeciae monte Hymetto (Auch. exs. 276! Spr.!), Parnasso (Heldr!)".

Lectotypus (designated by Španiel et al., 2017: 1438): **Greece:** "in Mte Hymetto", s.d., *Aucher-Eloy 276* (G-BOIS [G00332365]; isolecto-: BM [BM000750107], G [G00388918, G00446161, G00446162], K [K000484576], P [P05426246, P05426263, P05426422]). **Syntypi: Greece:** "In monte Parnasso. reg. alpina", 11.VIII.1852, *Heldreich s.n.* (G-BOIS [G00332366], WU [WU0076265]); "Gipsel d'Hymetteri", s.d., *Spruner s.n.* (G-BOIS [G00332367]).

= ***Alyssum montanum*** L., Sp. Pl.: 650. 1753.

Notes. – *Alyssum montanum* is the most variable species in the genus, and numerous infraspecific taxa at various ranks have been recognized.

Hartvig (2002: 210) accepted var. *hymettium* solely on morphological grounds within Greece, but without extensive population-based and detailed morphological and molecular studies. It is then advisable to reduce the variety to synonymy within subsp. *montanum,* as done in BrassiBase (2019).

Alyssum montanum var. *ochroleucum* (Boiss. & A. Huet) Boiss., Fl. Orient. 1: 274. 1867.

≡ ***Alyssum ochroleucum*** Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 36. 1856.

Type: "Hab. in Armeniâ propè *Tortoum* cl. Huet du Pavillon".

Holotypus: Turkey: "inter Hako et Tortoum", VI.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332368]; iso-: G [G00388911, G00388912], K [K000484908], KW [KW000127917], W [W18890093875]).

Notes. – There is only one sheet in G-BOIS and two duplicates in G. "In montibus inter Erzeroum et Ispir. In arenosis torrentium propè Tortum. 4–5000 p.s.m. Jun. 1853" is indicated for G [G00388911] and KW [KW000127917] and "circà Tortum. Jun. 1853" for G [G00388912], K [K000484908] and W [W18890093875].

Boissier in *Flora Orientalis* reduced the species to a variety of *Alyssum montanum* but changed his mind again in the *Supplementum* and re-recognized it as a distinct species.

Alyssum praecox Boiss., Fl. Orient. 1: 275. 1867.

Type: "Hab. in monte Tchoschdagh Ciliciae Kurdicae (Ky exs. 95! spec. florifera), Tauro Cilicico circa Gülekboghas (Bal!), et montibus inter Aintab et Marasch (Haussk! spec. fructifera). Fl. Maio".

Lectotypus (designated by Dudley, 1965b: 388): **Turkey:** "Coteaux calcaires entourant de village de Gulek-Boghas, à 10 lieues au nord de Tarsous", 26.VI.1855, *Balansa 166* (G-BOIS [G00332371]; isolecto-: E [E00386023], G [G00388900]). **Syntypi: Turkey:** "Taurus Cataonicus. Artrihakôi inter Aintab & Marasch", 12.VII.1865, *Haussknecht s.n.* (G-BOIS [G00332370], W [W0075794, W18890055594]); "In jugis montis Tschosch Dagh versus Bakhyr Dagh.", 5600' [1705 m], 15.V.1859, *Kotschy 95* (A [A00018576], BM [BM000582933, BM000582934], G-BOIS [G00332369], JE [JE00024513], K [K000484912], P [P05444874], W [W0075779, W18890058110]).

Notes. – Dudley (1965b) narrowed the selection of three syntypes in the original publication to one and he listed a G sheet as the lectotype. He annotated in 1961 the G-BOIS sheet as syntype. This sheet, which is taken here as the lectotype, is with a label that carries the species name in Boissier's handwriting and the rest of the data in Balansa's handwritten label, including the field number *166.*

Labels of the isolectotypes are printed, and they carry the exact collection data as the lectotype but without a collection or field number.

Alyssum suffrutescens Boiss., Fl. Orient. 1: 275. 1867 [nom. illeg.].

≡ ***Alyssum erosulum*** Gennari & Pestal. ex Clementi in Mem. Reale Accad. Sci. Torino ser. 2, 16: 248. 1855.

Note. – *Alyssum suffrutescens* is illegitimate because Boissier in *Flora Orientalis* listed the earlier published *Alyssum erosulum* Gennari & Pestal. ex Clementi as a synonym and indicated that it is a "nomen improprium".

Alyssum suffrutescens var. *olympicum* Boiss., Fl. Orient. 1: 276. 1867 [nom. illeg.].

≡ *Alyssum wulfenianum* var. *suffruticosum* Boiss. ex Clementi in Mem. Reale Accad. Sci. Torino ser. 2, 16: 248. 1855.

Type: "[Aucher-Eloy] n. 275, Olympus Bithynus".

Lectotypus (designated here): **Turkey:** "Olymp. Bith.", s.d., *Aucher-Eloy 275* (G-BOIS [G00332374]; isolecto-: A [A00018615], BM [BM000582930], G [G00388578, G00388579, G00388580], K [K000484913, K000484914], P [P2272342, P05444992]).

= ***Alyssum erosulum*** Gennari & Pestal. ex Clementi in Mem. Reale Accad. Sci. Torino ser. 2, 16: 248. 1855.

Notes. – *Alyssum suffrutescens* var. *olympicum* is illegitimate because it is superfluous for *A. wulfenianum* var. *suffruticosum*.

Although Boissier in *Flora Orientalis* recognized this and the above entry as different taxa, they belong to the same taxon.

Alyssum sphacioticum Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 35. 1849.

Type: "Hab. in monte *Stravopodia* cacumine excelso jugi *Sphaciotici* rarum (Heldreich)".

Holotypus: Greece: "Mt *Stravopodia* (les plus hautes sommités d'Sphakia)", 6500' [1980 m], 10.VII.1846, *Heldreich 1509* (G-BOIS [G00332375]; iso-: B [B100244953]).

Note. – This Greek endemic is highly restricted to W Crete.

Alyssum aurantiacum Boiss., Fl. Orient. 1: 276. 1867.

Type: "Hab. in regione alpinâ montis Akgadh Lyciae (Bourg. exs. 20! sub *A. lepidoto*)".

Holotypus: Turkey: "In glareosis regionis alpinae montis Ak-Dagh", 5.VII.1860, *Bourgeau 20* (G-BOIS [G00332376]; iso-: B [B100241659, B100241660], E [E00386024], G [G00446163, G00446164], GOET [GOET002675], JE [JE00003021, JE00003022], K [K000484917, K000484919, K000484920], P [P06681528], W [W0050688, W18890016459]).

Notes. – Boissier based the species description solely on the unicate in his herbarium and, therefore, the name does not need lectotypification.

Alyssum lepidotum Boiss., Diagn. Pl. Orient. 1: 73. 1843.

Type: "Hab. in regione alpinâ summâ *Cariae,* montes propè *Moglah* Aucher No 299, *Cadmus* suprà *Gheyra* ego Junio 1842 [Boissier]".

Lectotypus (first step designated by Dudley, 1965b: 390; second step designated here): **Turkey:** "Pic de Geyra", VI.1842, *Boissier s.n.* (G-BOIS [G00332378]; isolecto-: A [A00018554], B [B100244986], JE [JE00002999], W). **Syntypus: Turkey:** "Mouglah", s.d., *Aucher-Eloy 252* (G-BOIS [G00332377], K [K000484921, K000484922], P [P00868514, P05330196]).

Notes. – Dudley (1965b) selected one of the two syntypes cited in the original publication but did not indicate which of the four herbaria he cited house the lectotype, and therefore a second step is done here. Dudley listed K among the isolectotypes, but the two duplicates by Boissier K000484923 and K000484924 were collected from "Mesogis cacumen suprà Tralles" and are not recognized here as part of the type collection.

The lectotype is a collection folder of three sheets, of which one is unlabeled, and the barcoded sheet has the species name, locality, and month and collection year. The third sheet has four rows of plants with the locality "Pic de Geyra" on the second row and collection year on the other three rows.

Boissier (1843) erroneously cited the syntype as *Aucher-Eloy 299,* but he later corrected it to *252* (Boissier, 1867a).

Alyssum aizoides Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 153. 1842.

Type: "[Aucher-Eloy] N. 271 Armenia".

Lectotypus (designated here): **Turkey:** *sine loco,* s.d., *Aucher-Eloy 271* (G-BOIS [G00332380]; isolecto-: BM [BM000583935], G [G00429197, G00446165], K [K000484926], MPU [MPU017013], P [P00868521, P05372727]).

Note. – Lectotypification of the name is justified because Boissier based the original species description on G00446165 and the specimen in his herbarium.

Alyssum mouradicum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 16. 1859.

Type: "Hab. in regione alpinâ montis *Mouraddagh Phrygiae* alt. 2400 metr. ubi fine Junii floriferum et cum fruct. immaturis legit cl. Balansa".

Holotypus: Turkey: "Région alpine du Mourad-Dagh (Phrygià)", c. 2400 m, 27.VI.1857, *Balansa 373* (G-BOIS [G00332381]; iso-: A [A00018523], G [G00388917]).

Notes. – The A isotype was taken by Dudley from the G specimen(s).

The G00388917 duplicate was not examined by Boissier and does not have the collector's number.

Alyssum idaeum Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 35. 1849.

Type: "Hab. ad saxa cacuminum montis *Idae* act 6000' rarum (Heldreich)".

Holotypus: Greece: "Creta in saxosis montis Ida", 6000' [1830 m], 28.V.1846, *Heldreich 1509* (G-BOIS [G00332382]; iso-: B [B100244988], BM [BM000750129], G [G00389046, G00446190], GH [GH00018547], GOET [GOET002688], K [K000484586, K000484587, K000484588, K000484589], W [W00075613], WU [WU0076290]).

Notes. – The holotype sheet has two labels, of which the one written by Heldreich ("in saxis. Mt Ida – sommités") has the collection number and day, and the other is mimeographed written by Boissier as above but lacks both. However, the locality, elevation, month, and year in both are identical.

All isotypes, except for the BM and K000484588 that carry Heldreich's writing, have the mimeographed Boissier label.

Alyssum ruprechtii Boiss., Fl. Orient. Suppl.: 51. 1888 [nom. illeg.].

≡ ***Alyssum andinum*** Rupr., Fl. Caucasi: 103. 1869.

Lectotypus: designated by Dorofeyev (2012: 414).

Notes. – *Alyssum ruprechtii* is illegitimate because the earlier published *A. andinum* was listed as its synonym. Boissier (1888) apparently did not like the name *A. andinum* and indicated that it is "nomen absurdum, etenim Andes sunt Alpes Americae nec Orbis veteris".

Dorofeyev (2012: 414) did not list *Alyssum ruprechtii,* though he accepted *A. andinum* and lectotypified it.

Alyssum tetrastemon Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 153. 1842.

Type: "[Aucher-Eloy] N. 279, Cilicia".

Holotypus: Turkey: "Cilicia", s.d., *Aucher-Eloy 279* (G-BOIS [G00332384]; iso-: G [G00446166], P [P02272277]).

Note. – Boissier did not examine or annotate the duplicates at G and P.

Alyssum tetrastemon var. *cappadocicum* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 153. 1842.

Type: "[Aucher-Eloy] n. 270 Akdag".

Holotypus: Turkey: "Ak Dagh", s.d., *Aucher-Eloy 270* (G-BOIS [G00332385]; iso-: G [G00446168, G00446167], K [K000364807], MPU [MPU013463]).

= ***Alyssum tetrastemon*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 153. 1842.

Notes. – Boissier in *Flora Orientalis* erroneously maintained var. *cappadocicum* despite citing its type under the collections of *Alyssum tetrastemon* and listed a different collection under that variety.

He did not annotate the duplicate G00446167, and his *Flora Orientalis* varietal concept was the basis for Dudley's (1964a: 72) *A. corningii* T.R. Dudley.

Alyssum tetrastemon var. *latifolium* Boiss., Fl. Orient. 1: 278. 1867.

Type: "Hab. in Libani monte Sannin (Bourquenoud!), montibus Palaestinae prope Nazareth (Roth!)".

Lectotypus (designated here): **Lebanon:** "Sommet du Sannine", 14.VI.1859, *Bourquenoud 2465* (G-BOIS [G00332386]; isolecto-: JE [JE00003020]). **Syntypus: Israel:** "Nazareth", 1858, *Roth 149* (G-BOIS [G00332387], K [K000484932]).

= ***Alyssum baumgartnerianum*** Bornm. in Jahresber. K. Franz-Jos. Landesgymnas. Oberrealschule Baden 48: 16. 1911.

Note. – This small perennial is distributed from south central Turkey southward into Lebanon, Israel, and W Syria.

Alyssum armenum Boiss., Fl. Orient. 1: 278. 1867.

Type: "Hab. in Armeniâ Turcicâ prope Bayazid (Auch. exs. 4095!), in pascuis alpinis prope Gumuchkhané (Bourg. exs. sub. *A. montano*)".

Lectotypus (first step designated by Dudley, 1965b: 387; second step designated here): **Turkey:** "prope Bayazid", s.d., *Aucher-Eloy 4093* (G-BOIS [G00332389]; isolecto-: BM [BM000582931, BM000582932], G [G00446169], K [K000484935], LE [LE00013015], P [P2272232, P06681534], W [W0067796, W18890077481]). **Syntypus: Turkey:** "Paturages dans la Mt. de Brothacolin", 9.VI.1862, *Bourgeau 165* (G-BOIS [G00332388]).

Notes. – Although Dudley (1965b) narrowed the lectotypification of the species name from two syntypes to one, he did not complete the process to indicate where the lectotype is housed because he listed BM, G, K and W as lectotypes, and therefore the second step is designated here.

Boissier (1867a) listed Aucher-Eloy's collection number as *4095* instead of *4093,* and that mistake was not corrected in Boissier (1888).

Alyssum muellerii Boiss. & Buhse in Nouv. Mém. Soc. Imp. Naturalistes Moscou 12: 16. 1860.

Type: "In den Vorbergen des Kisildagh bei Gamarlu in der Nähe von Eriwan, 21 April 1847. [Buhse] No 93/1. Gebirge bei Jesd (Deh ballo), 24 April 1849 (florens). [Buhse] No 1358".

Lectotypus (designated here): **Iran:** "Yesd", 1847, *Buhse 1357* (G-BOIS [G00332390]; isolecto-: LE [LE00013023], P [P00868519]). **Syntypus: Armenia:** *sine loco,* 1847, *Buhse 93/1* (G-BOIS [G00332391]).

Notes. – The collection number for the lectotype was erroneously given in the original publication.

Although Buhse 1358 was collected in 1849, the lectotype has a printed label showing Persia, Dr. Buhse, and the year 1847, as well as in Boissier's handwriting of "1357 [for 1538] Alyssum Buhseanum n.sp. Yesd". Discrepancy in the year of collections is considered here as an error that resulted from using a label pre-printed prior to the collection year.

The lectotype sheet also carries Dudley's 1961 annotation of "A. mülleri Boiss. et Buhse. Cotype!". However, neither *1357* nor *1358* were listed in Boissier's (1888) index.

The duplicate at P is treated here as a likely isolectotype because it was collected from "Dehballoh", though no year or collection number accompany it.

Alyssum persicum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 152. 1842.

Type: "[Aucher-Eloy] N. 4089, Ispahan".

Lectotypus (designated here): **Iran:** "Ispahan", s.d., *Aucher-Eloy 4089* (G-BOIS [G00332392]; isolecto-: BM [BM000583328], CAS [CAS0026916], G [G00388903, G00388904], K [K000484938], KW [KW000127918], LE [LE00013040], P [P02272326, P02272327, P02272328], W [W0007730, W18890077482]).

Note. – Although none of the duplicates at G is from the Candolle's herbarium, the annotation by Boissier of P02272327 justifies the lectotypification.

Alyssum xanthocarpum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 154. 1842.

Type: "[Aucher-Eloy] N. 263 Akdag; 4098 A. Erzeroum".

Lectotypus (first step designated by Dudley, 1965b: 383; second step designated here): **Turkey:** "Ak Dag", s.d., *Aucher-Eloy 263* (G-BOIS [G00332393]; isolecto-: BM, K [K000484939]). **Syntypus: Turkey:** "Tokas Erzeroum", s.d., *Aucher-Eloy 4098A* (BM [BM000582925], G-BOIS [G00332394], K [K000484940], KW [KW000127919], P [P02272301]).

Note. – In his lectotypification of the species name, Dudley (1965b) selected *Aucher-Eloy 263* and listed BM, G, and K where the collection is housed but did not designate any of these three as the lectotype. Therefore, a second step designation is completed here.

Alyssum macrostylum Boiss. & A. Huet in Boiss., Fl. Orient. 1: 279. 1867 [nom. illeg.].

≡ ***Alyssum xanthocarpum*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 154. 1842.

Type: "Hab. in incultis Armeniae ad Erzeroum (Auch. exs. 4098 A!, Huet!), ad Baibout (Bourg. sub. *A. montano*), in monte Akdagh Syriae bor. (Auch. exs. 263!), in montibus Ciliciae Kurdicae (Ky exs. 130!) [Aucher Eloy] N. 263 Akdag; [Aucher Eloy] 4098 A. Erzeroum".

Lectotypus: see *Alyssum xanthocarpum* Boiss. entry above.

Note. – Under *Alyssum macrostylum,* Boissier in *Flora Orientalis* cited both syntypes (*Aucher-Eloy 263* from Akdag and *Aucher-Eloy 4098A* from Erzeroum) of the earlier published *A. xanthocarpum* and erroneously placed the latter in the synonymy of the former (see above).

Alyssum cephalotes Boiss., Diagn. Pl. Orient. ser. 2, 1: 34. 1854.

Type: "Hab. in pinguibus arenosis montis *Cadmi* Asiae minoris, in jugo ad orientem urbis *Geyra* sito, et in cacumine ad orientem urbis *Denisleh* suprâ *Khonas*. Legi [Boissier] fine Junii 1842".

Lectotypus (designated here): **Turkey:** "Pic de Gheyra suprà Cadmus", VI.1842, *Boissier s.n.* (G-BOIS [G00332400]; isolecto-: B [B100241652], G [G00446191, G00446172], GH [GH00018475], GOET [GOET002680], JE [JE00003012], K [K000484945, K000484946, K000484947], P [P02272304, P06617305], W [W0075835, W18890016448]). **Syntypus: Turkey:** "Cadmi ad or. Denisleh arenosi pinguibus", VI.1842, *Boissier s.n.* (G-BOIS [G00332398]).

Note. – Dudley (1965b: 385) did not lectotypify the species name and listed the acronyms G, GH, K, and W for the Gheyra and Denisleh collections above. No material of the latter locality was seen anywhere other than in G-BOIS, and the W syntypes cited by Dudley were not located.

Alyssum macropodum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 18. 1859.

Type: "Hab. in planitie *Caesareae* in *Cappadociâ* alt. 1100 metr. cl. Balansa. Fl. Jun. Jul.".

Holotypus: Turkey: "Plaine de Césarée (Cappadoce)", 1107 m, VII.1856, *Balansa 490* (G-BOIS [G00332401]; iso-: E [E00386065], G [G00388925], GOET [GOET002689], K [K000484948, K000484949], P [P02272296, P02272297, P02272298], W [W18890069393]).

Note. – As in his numerous other collections, Balansa gave field numbers on his handwritten labels deposited in G-BOIS. By contrast, he gave exsiccatae numbers on his mimeographed labels (i.e. *Balansa 987*), but all other data in the original vs exsiccatae are identical.

Alyssum modestum Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 17. 1859.

Type: "Hab. in *Bithyniâ* Thirke, in regione alpinâ montis *Argaei* Bal. No 484, in monte *Almadagh Phrygiae* propè *Ouchak* Bal. pl. exs. 1857".

Lectotypus (designated here): **Turkey:** "Moissons du plateau de Tékir-Yaïla (mont Argée)", c. 2117 m, 9.VII.1856, *Balansa 484* (G-BOIS [G00332404]). **Syntypi: Turkey:** "Alma-Dagh, au nord d'Ouchak (Phrygie)", 3.VI.1857, *Balansa 370* (G [G00388922], G-BOIS [G00332403], GH [GH00018524], JE [JE00002963], P [P05445002]); "Turquie d'Europe", 1845, *Thirke s.n.* (G-BOIS [G00332402]).

= ***Alyssum minutum*** DC., Syst. Nat. 2: 316. 1821.

Notes. – The JE syntype lacks the collection date. All Balansa's duplicates except G-BOIS lack collection number.

Boissier in *Flora Orientalis* reduced *A. modestum* to synonymy of *A. minutum.*

Alyssum aucheri Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 156. 1842.

Type: "[Aucher-Eloy] N. 256, Asia minor".

Holotypus: Turkey: "As. m.", s.d., *Aucher-Eloy 256* (P [P02272267]; iso-: K [K000484952]).

= ***Alyssum foliosum*** Bory & Chaub., Expéd. Sci. Morée Bot.: 185. 1832.

Notes. – The only specimen on which Boissier based his description of the species is the holotype at P, and that sheet was annotated by him. He did not examine the specimen at K, and there are no duplicates in the Geneva herbaria.

Boissier in *Flora Orientalis* reduced this species to synonymy of *A. foliosum.*

Alyssum umbellatum var. *corymbulosum* Boiss., Diagn. Pl. Orient. ser. 2, 5: 38. 1856.

Type: "Hab. in collibus ad meridiem *Smyrnae* sitis, cl. Balansa".

Lectotypus (designated here): **Turkey:** "Collines bordant la partie sud du golfe de Smyrne", 8.V.1854, *Balansa 63* (G-BOIS [G00332405 plant on top]; isolecto-: BM [BM000582921 two plants on top], CAS [CAS0027440 two plants on top], E [E00386112 plants on lower left and top middle], G [G00446174 plants on top and lower right, G00446175 two plants on top], K [K000484953 plant on top left], JE [JE00003030 two plants on top], MPU [MPU014637], P [P02272347, P02272350, P04022518], W [W0075612 plant on top right, W18890158099, W18890080905 three plants on top]). **Syntypus: Turkey:** "Collines bordant la partie sud du golfe de Smyrne", 4.IV.1854, *Balansa 63* (BM [BM000582921], CAS [CAS0027440], E [E00386112], G [G00446174, G00446175], G-BOIS [G00332405], K [K000484953], JE [JE00003030], MPU [MPU013366], P [P02272348, P02272349, P05383124], W [W0075612, W18890080905]).

= ***Alyssum umbellatum*** Desv. in J. Bot. Agric. 3: 173. 1814.

Note. – The lectotype collection is based on fruiting material, whereas the syntype is flowering material.

Alyssum marginatum Steud. ex Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 157. 1842.

Type: "[Aucher-Eloy] N. 258, mons Horeb; [Aucher-Eloy] 4101, Ispahan (mixtum cum aliâ specie)".

Lectotypus (designated here): **Egypt:** "in Mte Horeb", s.d., *Aucher-Eloy 258* (G-BOIS [G00332406]; isolecto-: E [E00327984], G [G00389022, G00389023], K [K000484954], P [P02272307, P02272311]). **Syntypus: Iran:** "Ispahan", s.d., *Aucher-Eloy 4101* (G-BOIS [G00332407]).

Note. – The collection *Aucher-Eloy 4101* at K [K000484842] is *A. bracteatum* rather than *A. marginatum.*

Alyssum confertum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 155. 1842.

Type: "[Aucher-Eloy] N. 262, Akdag".

Holotypus: Turkey: "Ak Dagh", s.d., *Aucher-Eloy 262* (G-BOIS [G00332408]; iso-: BM [BM000582919], G [G00446176, G00446177], K [K000484959], P [P02272334, P02272335]).

= ***Alyssum strictum*** Willd., Sp. Pl. 3: 464. 1800.

Notes. – Boissier based the species description on the unicate in his herbarium.

Alyssum confertum was reduced by Boissier in *Flora Orientalis* to synonymy of *A. strictum*.

Alyssum polyodon Boiss. & Buhse in Nouv. Mém. Soc. Imp. Naturalistes Moscou 12: 17. 1860.

Type: "In Weingärten der Stadt Eriwan, [Buhse] 15 April 1847 (florens). Bei Tassakend und Sisian, 23 Mai 1847 (florens et defloratum) [Buhse] No 69".

Lectotypus (designated here): **Uzbekistan:** "Tassakend", s.d., *Buhse s.n.* (G-BOIS [G00332409]; isolecto-: LE [n.v.]).

Notes. – The lectotype has Boissier's annotation of the species name, and the other Buhse syntypes were not located in G-BOIS or in the other Geneva herbaria.

This species name was reduced by Boissier in *Flora Orientalis* to a synonym of *A. campestre* var. *micropetalum* (Fisch.) Boiss. However, this varietal name was synonymized by Dudley (1965b: 381) under *A. minus* (L.) Rothm. Although both names are synonyms of *A. simplex* Rudolphi (in J. Bot. (Schrader) 1799(2): 290. 1799), the lectotype is a flowering branch quite different morphologically from plants of *A. simplex*. The name *A. polyodon* was not listed in Busch (1939), Botschantzev & Vvedensky (1955), Schermatov (1974), and Czerepanov (1995).

Because only the lectotype, which is in flower, was examined, it is not possible to determine at present the status of *A. polyodon.*

Alyssum damascenum Boiss. & Gaill. in Boiss., Diagn. Pl. Orient. ser. 2, 6: 18. 1859.

Type: "Hab. in cultis inter *Merrè* et *Damascum* cl. Dr Gaillardot. Fl. Martio".

Holotypus: Syria: "Dernier jardin à Ganche de la route de Merrè à Damas", 18.III.1846, *Gaillardot 857ter* (G-BOIS [G00332410]; iso-: A [A00019489]).

Notes. – Dudley (1965a: 203) listed as an isotype a fragmentary material at A that he took from G-BOIS. He mistyped and cited the collection number and year as *817* and 1847, respectively. There are no duplicates of the type collection elsewhere, and Boissier based his species description solely on the unicate in his herbarium.

Furthermore, Dudley's 1967 annotation of CAS0026905 as an isotype is erroneous because it was collected on a different day, month, year, and locality despite having the collection number *Gaillardot 857bis.*

Alyssum horebicum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 156. 1842.

Type: "[Aucher-Eloy] N. 257, in monte Horeb".

Holotypus: Egypt: "in monte Horeb", 1830, *Aucher-Eloy 257* (P [P02272286]).

= ***Alyssum homalocarpum*** (Fisch. & C.A. Mey.) Boiss., Fl. Orient. 1: 285. 1867.

Notes. – Despite Dudley's (1965a: 211) listing of an isotype at G, there is no such material of *A. horebicum* in the Geneva herbaria, and the species description was based on the unicate at P that Boissier annotated and Dudley did not examine.

Alyssum horebicum was reduced by Boissier in *Flora Orientalis* to synonymy of *A. homalocarpum* Fisch. & C.A. Mey.

Alyssum meniocoides Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 158. 1842.

≡ ***Meniocus meniocoides*** (Boiss.) Hadač & Chrtek in Acta Univ. Carol., Biol. 1971: 260. 1973.

Type: "[Aucher-Eloy] N. 281, Mesopotamia".

Holotypus: Sine Patria: "Mesopotamia", s.d., *Aucher-Eloy 281* (G-BOIS [G00332411]; iso-: BM [BM000582915], G [G00446178, G00446179], K [K000484965], OXF, P [P02272264, P02272317]).

Note. – Boissier did not annotate G00446178 and, therefore, based the species description only on the material in his herbarium.

Alyssum heterotrichum Boiss., Diagn. Pl. Orient. 6: 15. 1846.

≡ ***Meniocus heterotrichus*** (Boiss.) Hadač & Chrtek in Acta Univ. Carol., Biol. 1971: 260. 1973.

Type: "Hab. ad muros hortorum prope ruinas *Persepolis* Kotschy No. 224".

Holotypus: Iran: "Ad muros hortorum pr. ruinas u. Persepolis", 11.IV.1842, *Kotschy 224* (G-BOIS [G00332412]; iso-: B [B100244989, B100244990], BM [BM000583321], CAS [CAS0026911], E [E00386124], FR [FR0038380], G [G00446180, G00446181, G00446182], GOET [GOET002684], H [H1262689], HAL [HAL0086102], JE [JE00003004, JE00003005], K [K000484970], KW [KW000127916], L [L1831206], MO [MO5457861, MO5492010], MPU [MPU013511], OXF, P [P02272269, P02272271, P02272272, P02272273, P02272274, P02272275, P02272276, P04628050, P04708538], US [US00100415], W [W0003838, W18890029631, W18890154960], WU [WU0101798]).

Note. – The previous and following pairs of entries have long been fluctuating between the genera *Alyssum* and *Meniocus,* but from Španiel et al. (2015) onward, the latter genus is firmly established on solid morphological and molecular grounds. It is readily distinguished from *Alyssum* by having 2–4(–8) vs 2 ovules per locule on parietal vs apical or subapical placentae.

Alyssum huetii Boiss., Fl. Orient. 1: 287. 1867.

≡ ***Meniocus hirsutus*** Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 32. 1856.

Type: "Hab. in neglectis circâ *Erzeroum* cl. Huet du Pavillon in consortio *M. linifolii*".

Lectotypus (designated by Dudley, 1965a: 192): **Turkey:** "In neglectis prope Erzuroum", 6000' [1830 m], VI.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332416]; isolecto-: FI [FI010112], JE [JE00003003], OXF, WAG [WAG0004268]). **Syntypus: Turkey:** "Circà Erzeroum", VII.1853, *Huet du Pavillon s.n.* (BM [BM000946181], G [G00388935, G00388936, G00388937], K [K000484972], P [02272288]).

Notes. – Boissier in *Flora Orientalis* renamed the species in *Alyssum,* listed his *Meniocus hirsutus* in its synonymy, and cited the type of the latter and additional collections under *Alyssum huetii*. Obviously, he was aware of the earlier published *A. hirsutum* M. Bieb. (Fl. Taur.-Caucas. 2: 106. 1808) that prevented him from the transfer of *Meniocus hirsutus* to *Alyssum*.

All of the isolectotypes and syntypes cited above have printed labels indicating "Huet du Pavillon. Plantae Orientales exsiccatae. Circà Erzeroum. 1853 Armenia" and the collection month (June or July) and the word "In neglectis" or "Inter segetes" were often added to collections of both months. The lectotype was collected in June, and the July collections (e.g., [BM000946181] and [K000484972]), are recognized as syntypes. The G00388935 duplicate has number *1240* indicated and no collection month.

Dudley (1965a) indicated that the holotype of *M. hirsutus* is *Balansa 1252* at G, but this collection was never cited in the original protologue of this species.

The transfer of *Alyssum huetii* to *Meniocus* by Hadač & Chrtek (1973) is illegitimate and superfluous because of the existence of earlier published *Meniocus hirsutus*. Their combination has erroneously been accepted by Španiel et al. (2015).

Alyssum stylare (Boiss. & Balansa) Boiss., Fl. Orient. 1: 287. 1867.

≡ ***Meniocus stylaris*** Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 16. 1859.

Type: "Hab. inter segetes ad basin montis *Karamasdagh* quinque leucis ad orientem urbis *Caesareae* siti. Alt. circ. 1500 metr. Floret Junio. Cl. Balansa".

Holotypus: Turkey: "Moissons situées à la base du Karamas-Dagh, à 5 lieues à l'Est de Césarée", c. 1500 m, 2.VII.1856, *Balansa 486* (G-BOIS [G00332417]; iso-: A, G [G00389038], GOET [GOET002697], K [K000484976, K000484977], OXF, P [P02272336, P02272337, P02272339], W [W18890069352]).

Note. – Duplicates of the type collection have labels with identical locality and collection date, but the holotype has a handwritten label by Balansa with a field number *486,* and all the isotypes have mimeographed labels originally written by Balansa and distributed with the exsiccatae number *991*.

Ptilotrichum C.A. Mey. in Ledeb., Fl. Altaica 3: 64. 1831.

Notes. – Prior to the use of molecular phylogenetic studies in assessing generic relationships and boundaries in the *Brassicaceae, Ptilotrichum* was so broadly delimited to encompass as many as 30 species (see IPNI, 2019) currently placed in several genera of different tribes, especially *Aurinia* Desv. (Dudley, 1964c), *Bornmuellera* Hausskn., and *Hormathophylla* Cullen & T.R. Dudley of the *Alysseae* (Dudley & Cullen, 1965; Španiel et al., 2015) and *Stevenia* Fisch. of the *Stevenieae* (German & Al-Shehbaz, 2011).

The generic type of *Ptilotrichum* was transferred to *Stevenia* by Kransoborov & German (2007).

Schivereckia iberidea Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 29. 1856.

Type: "Hab. in Armeniâ propè *Zazalarhané* cl. Huet du Pavillon".

Holotypus: Turkey: "Prope Zazalarchané", V.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332418]; iso-: JE [JE00001942], K [K000484117, K000484118, K000484119], S [S0712590], WAG [WAG0104054]).

= ***Bornmuellera cappadocica*** (Willd.) Cullen & T.R. Dudley in Feddes Repert. 71: 228. 1965.

Note. – The species was listed by Boissier in *Flora Orientalis* in the synonymy of *Ptilotrichum cappadocicum* (Willd.) Boiss.

Ptilotrichum cyclocarpum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 159. 1842.

≡ ***Phyllolepidum cyclocarpum*** (Boiss.) L. Cecchi in Pl. Biosystems 145: 828. 2011.

Type: "[Aucher-Eloy] N. 279 *bis,* Kurdistan".

Holotypus: Turkey: "Monzourdag, Kurdistan", s.d., *Aucher-Eloy 279bis* (G-BOIS [G00332419]; iso-: BM [BM001254082], G [G00446192], K [K000484525], P [P02272351, P06617344]).

Notes. – Because Boissier based the species description on the unicate of *Aucher-Eloy 279bis* in his herbarium, that sheet has to be recognized as holotype. The isotype sheet at G belongs to the Moricand's herbarium, and the two sheets at P were not annotated by him either (see Boissier, 1841a).

The generic placement of the species has fluctuated a great deal, but based on molecular phylogenetic studies by Cecchi (2011), the species is firmly placed in *Phyllolepidum* of the *Alysseae*.

Ptilotrichum emarginatum Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 160. 1842.

≡ ***Bornmuellera emarginata*** (Boiss.) Rešetnik in Phytotaxa 159: 299. 2014.

Type: "[Aucher-Eloy] N. 288, mons Delphi Eubeae".

Holotypus: Greece: "in Mte Delph. Euboea", s.d., *Aucher-Eloy 288* (G-BOIS [G00332420]; iso-: BM [BM000750102], G [G00371850], K [K000720736], P [P00835134, P00835135, P00835136]) (Fig. 21, p. 113).

Notes. – None of the three sheets at P was annotated by Boissier, and the duplicate at G is part of the Moricand's herbarium. Therefore, the treatment of the G-BOIS sheet as the holotype is fully supported (Fig. 21, p. 113).

The species has been known in *Leptoplax* O.E. Schulz for over 80 years since it was established by Schulz (1933), but molecular phylogenetic studies lead to its transfer to *Bornmuellera* (see Rešetnik et al., 2013, 2014).

Ptilotrichum glabrescens (Boiss. & Balansa) Boiss., Fl. Orient. 1: 289. 1867.

≡ *Vesicaria glabrescens* Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 5: 32. 1856.

≡ ***Bornmuellera glabrescens*** (Boiss. & Balansa) Cullen & T.R. Dudley in Feddes Repert. 71: 228. 1965.

Type: "Hab. in regione montanâ montis *Masmeneudagh* in viâ inter *Ciliciam* et *Caesaream* siti cl. Balansa qui legit fructiferam Augusto".

Holotypus: Turkey: "Région montagneuse supérieure du Masmeneu-Dagh, à 25 lieues SSO de Césarée", 8.VIII.1855, *Balansa 177* (G-BOIS [G00332422]; iso-: BM [BM000583334], CAS [CAS0005115], E [E00373128], G [G00389492, G00389493, G00446263], GH [GH00018820], GOET [GOET002719], JE [JE00002861], K [K000697062], KW [KW000127914], P [P02272072, P02272073, P02272074], US [US00100436, US00100670], WAG [WAG0104053]).

Note. – Plants of this species are quite large, and the holotype consists of four sheets in one collection folder of which only one sheet has a handwritten label by Balansa and has the field number *177* and the species name in Boissier's handwriting. Two sheets are unlabeled and the remaining sheet as well as the isotypes elsewhere, have printed labels with the exsiccatae number *437,* but all information of both types of labels are identical.

Koniga R. Br., Narr. Travels Africa 214: 1826.

Tribe: *Anastaticeae* DC.

Note. – *Koniga* is a synonym of the earlier published *Lobularia* Desv. (in J. Bot. Agric. 3: 162. 1815), a genus of four Macaronesian and circum-Mediterranean species one of which is naturalized worldwide (Borgen, 1987).

Koniga arabica Boiss., Diagn. Pl. Orient. 8: 26. 1849.

≡ ***Lobularia arabica*** (Boiss.) Muschl., Man. Fl. Egypt 1: 421. 1912.

Type: "Hab. in desertis Aegypti (Aucher), Arabiae petreae ad meridiem urbis *Gaza* in arenosis (Boiss.)".

Lectotypus (first step designated by Borgen, 1987: 66; second step designated here): **Egypt:** *sine loco,* 1837, *Aucher-Eloy 264* (G-BOIS [G00332424]; isolecto-: G [G00371856], K [K000230466], P [P00868524]). **Syntypus: Palestine:** "Désert frontières de Palestine", IV–V.1846, *Boissier s.n.* (G-BOIS [G00332423]).

Notes. – Borgen (1987) selected one of the two syntypes cited by Boissier (1849), *Aucher-Eloy 264,* as the lectotype collection and indicated that the G-DC specimen is the lectotype. The G-DC abbreviation stands for the *Prodromus* herbarium, which does not have any of Aucher-Eloy collections. Instead, what she likely meant was G00371856, which has a label of Candolle's herbarium, and such collections are part of the general herbarium (G).

However, this duplicate was not annotated by Boissier who described the species solely on the specimen in G-BOIS. Therefore, a second-step lectotypification is proposed here to solve this problem.

Berteroa DC. in Mém. Mus. Hist. Nat. 7: 232. 1821.

Tribe: *Alysseae* DC.

Note. – The genus includes six species native to the Mediterranean region, C Europe, and SW Asia (Yüzbaşıoğlu et al., 2017).

Berteroa graeca Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. ser. 2, 1: 35. 1854.

Type: "Hab. in Arcadiâ occidentali circâ *Andritzena,* propè *Pheneon* et *Kalavryta Arcadiae* borealis (Heldr.) propè *Klakines* Peloponnesi (Orphanid. Fl. Graeca exs. Nº 167)".

Lectotypus (designated here): **Greece:** "in Peloponneso prope Klakines (Vulg)", 3000' [910 m], 13–25.VI.1852, *Orphanides 167* (G-BOIS [G00332425]; isolecto-: ATHU [n.v.], BM [BM000750191, BM001254085], K [K000697064], KW [KW000127911], LD [LD1047942], P [P04626677, P04717656], W [W0075609A]). **Syntypus: Greece:** "in arvis Aradia pr. Kalavryta", VII.1848, *Heldreich s.n.* (BM [BM001254084]).

= ***Berteroa obliqua*** (Sm.) DC., Syst. Nat. 2: 292. 1821.

Notes. – Tan (2002: 226) listed one of the syntypes in the original protologue and indicated that ATHU, G-BOIS, and LD are the lectotype. Instead of 1852, she erroneously indicated that the year of collection was 1870, or 18 years after the publication of the species. However, despite that her action was inadequate to qualify for lectotypification because she did not use the phrase "designated here" or its equivalent (see Turland et al., 2018: Art. 9, note 6; McNeill, 2014).

Boissier in *Flora Orientalis* reduced *B. graeca* to synonymy of *B. mutabilis* (Vent.) DC. No material of the Heldreich syntype above was located in the G or P herbaria.

Berteroa orbiculata var. *stricta* (Boiss. & Heldr.) Boiss., Fl. Orient. 1: 291. 1867.

≡ *Berteroa stricta* Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. ser. 2, 1: 35. 1854.

Type: "Hab. frequens ad radices montis *Olympi Thessali* propè *Katarine* (Heldr. Aug. 1851)".

Holotypus: Greece: "Freq. ad radices m. Olympi. Thessaliae pr. Katarine", 3.VIII.1851, *Heldreich 2404* (G-BOIS [G00332428]; iso-: W [W18890008656]).

= ***Berteroa incana*** (L.) DC., Syst. Nat. 2: 291. 1821.

Note. – The species was described based on G-BOIS duplicate alone and, therefore, it is the holotype.

Berteroa ascendens var. *microcarpa* Boiss., Fl. Orient. Suppl.: 52. 1888.

Type: "Hab. in collibus aridis Ponti Lazici circa Djimil 6100 (Bal.!)".

= ***Berteroa incana*** (L.) DC., Syst. Nat. 2: 291. 1821.

Note. – No material in the Geneva or other herbaria was examined.

Draba L., Sp. Pl.: 642. 1753.

Tribe: *Arabideae* DC.

Note. – The largest genus in the family with previously estimated 390 species (Al-Shehbaz, 2012) but now 402 (BrassiBase, 2019) that are distributed primarily in the alpine and subarctic areas of Eurasia, North America (Rocky Mts.), and South America (Andes), with a few species in the alpine areas of NW Africa.

Draba aizoides var. *brevistyla* Boiss., Fl. Orient. 1: 293. 1867 [nom. illeg.] [non Neilr.].

Type: "Hab. in regione sylvaticâ Parnassi ad Gourna (Heldr!), in monte Kyllene (Orph!). Flores non vidi".

Lectotypus (designated here): **Greece:** "Legi in monte Cyllone supra Tricata", 3500' [1070 m], 22.IV–4.V.1854, *Orphanides 2649* (G-BOIS [G00332426]).

= ***Draba lacaitae*** Boiss., Fl. Orient. Suppl.: 53. 1888.

Note. – The Heldreich syntype was not located in the herbaria consulted.

Draba lacaitae Boiss., Fl. Orient. Suppl.: 53. 1888.

Type: "Hab. ad rupes schistosas montis Chelmos Peloponnesi prope Kalogeros 4–5000' (cl. C. Lacaita!)".

Holotypus: Greece: "in monte Chelmos Peloponnisus ad rupes schistosas prope mandram Kalógeros", 4000'–5000' [1220–1520 m], 4.V.1883, *Lacaita s.n.* (G-BOIS [G00332427]; iso-: B [B100241477]).

Note. – Buttler (1986) listed the holotype as "orig. coll." and cited G-BOIS for it.

Draba parnassica Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. ser. 2, 1: 34. 1854.

Type: "Hab. in summo cacumine montis *Parnassi* (Heldreich!)".

Holotypus: Greece: "In monte Parnasso. In summon cacumine!", 8.VIII.1852, *Heldreich 2655* (G-BOIS [G00332429]; iso-: BP, FI, W [W0051068, W18890305318]).

Note. – Boissier based the species description solely on the G-BOIS duplicate and, therefore, the lectotypification of the species by Buttler (1986: 312) based on that same sheets was unnecessary.

Draba cretica Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 27. 1849.

Type: "Hab. in cacumine *Lazzaro* montium *Lassiti* alt. 6000'. (Heldreich.)".

Holotypus: Greece: "sommet du Mt Lazzaro des montagnes des Lassiti", 6000' [1830 m], 9.V.1846, *Heldreich 1657* (G-BOIS [G00332430]; iso-: BM [BM000750202], G [G00446193, G00446194], GOET [GOET002751], JE [JE00003666], K [K000697132], P [P05450709], WU [WU0076310]).

Notes. – Labels of the isotypes lack the collection day and number.

As in the previous entry, the lectotypification by Buttler (1986: 312) based on the holotype was superfluous.

Draba bruniifolia var. *diversifolia* (Boiss. & A. Huet) Boiss., Fl. Orient. Suppl.: 54. 1888.

≡ *Draba diversifolia* Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 30. 1856.

Type: "Hab. in monte *Techdagh* Armeniae alt. 7000'–8000', cl. Huet du Pavillon, cl. Calvert".

Lectotypus (first step designated by Dorofeyev, 2003: 70; second step designated here): **Turkey:** "Tech-Dagh", 7000'–8000' [2130–2440 m], VI.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332431]; isolecto-: B [B100294033], BM [BM000583402], G [G00446195, G00446196, G00446264], GOET [GOET002750], JE [JE0002442 plant in middle, JE00002444], K [K000697184, K000697185], LE, P [P04625375], W [W18890011476, W18890093874], WAG [WAG0004245]). **Syntypus: Turkey:** "Erzeroum", *Calvert 19* (G-BOIS [G00332432], JE [JE00002443]).

= ***Draba bruniifolia*** Steven in Mém. Soc. Naturalistes Moscou 3: 269. 1812.

Notes. – One sheet, JE00002442, may be an isolectotype, but it lacks the collection date and elevation, and JE00002443 lacks the collection number.

Dorofeyev (2012: 427) re-lectotypified the species name based on the same specimen he designated earlier, but he erroneously took the LE duplicate as the lectotype, a specimen that was never examined nor annotated by Boissier. Therefore, a second step is needed to designate the G-BOIS duplicate as the lectotype.

Draba olympica var. *major* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 163. 1842.

Type: "[Aucher-Eloy] n. 302, Akdag; [Aucher-Eloy] 4065, absque loco".

Lectotypus (designated here): **Turkey:** "in rupib. Circa Tocat", s.d., *Aucher-Eloy 4065* (G-BOIS [G00796450]; isolecto-: BM [BM000583408, BM001254090]). **Syntypus: Turkey:** "Ak-Dag", s.d., *Aucher-Eloy 302* (BM [BM000583406, BM001254089], G-BOIS [G00796449]).

= ***Draba bruniifolia*** Steven in Mém. Soc. Naturalistes Moscou 3: 269. 1812.

Notes. – The var. *major* was not listed in *Flora Orientalis,* but the two syntypes listed in its original publication were cited in the *Flora* under *D. olympica* var. *diversifolia*.

The missing locality for *Aucher-Eloy 4065* in the original publication was listed as Tokat in *Flora Orientalis.*

Draba natolica Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 163. 1842.

Type: "[Aucher-Eloy] N. 4066, Tokat".

Holotypus: Turkey: "Tokas", s.d., *Aucher-Eloy 4066* (G-BOIS [G00332434]; iso-: BM [BM000583400, BM000583401], FI [FI010123], G [G00032274, G00446197, G00446198], K [K000697181], KW [KW000128002], P [P02272420, P02272421, P02272422, P02272423, P02272424, P04712517, P06616788], W [W0075602, W0075603, W18890077464, W18890077472]).

= ***Draba bruniifolia*** Steven in Mém. Soc. Naturalistes Moscou 3: 269. 1812.

Note. – Boissier in *Flora Orientalis* recognized this taxon as a distinct species, but later he reduced it in the *Supplementum* to synonymy of the illegitimate *D. bruniifolia* var. *incana* Boiss. (see below).

Draba natolica var. *argaea* Boiss., Fl. Orient. 1: 296. 1867.

Type: "Hab. in regione alpinâ montis Argaei Cappadociae (Bal! Ky exs. 202!). Specimen floriferum e monte Ssahend prov. Aderbidjan (Buhse exs 591!), huic quoque referendum videtur".

Lectotypus (designated here): **Turkey:** "Plantae Argaei montis Cappadociae", 30.V.1859, 8500' [2590 m], 30.V.1859, *Kotschy 202* (G-BOIS [G00332437]; isolecto-: BM [BM000583403], C [C10008825], G [G00446199], H [H1511655], JE [JE00002445, JE00002446], K [K000697179], P [P06616790, P06616791, P06616792], W [W0075606, W0075607, W18890058117]). **Syntypi: Turkey:** "Région alpine du Mont-Argée (Cappadoce)", VII.1856, *Balansa 442* (G-BOIS [G00332436]); "Schah Yordih", VII.1850, *Buhse 591* (G-BOIS [G00332435], LE).

= ***Draba bruniifolia*** Steven in Mém. Soc. Naturalistes Moscou 3: 269. 1812.

Note. – Although Coode & Cullen (1965: 414) correctly listed the previous entry in synonymy of *D. bruniifolia,* they did not list this varietal name.

Draba bruniifolia var. *incana* Boiss., Fl. Orient. Suppl.: 54. 1888.

≡ *Draba natolica* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 163. 1842.

Type: "Hab. in montibus Anatoliae orientalis, Cataoniae, Cappadociae".

= ***Draba bruniifolia*** Steven in Mém. Soc. Naturalistes Moscou 3: 269. 1812.

Notes. – Boissier in the *Supplementum* listed *D. natolica* and *D. argaea* in the synonymy of the variety. The latter species epithet was never published but was given as an exsiccatae name under var. *argaea*.

This is then a renaming at the varietal level of *D. natolica* Boiss. (see above).

Draba antilibanotica Al-Shehbaz, **nom. nov.**

≡ *Draba oxycarpa* Boiss., Diagn. Pl. Orient. 8: 28. 1849 [nom. illeg.] [non Sommerf.].

Type: "Hab. in cacuminibus *Hermonis* suprà *Rascheya* in *Antilibano*. (Boiss.)".

Holotypus: Syria: "Hermon", V–VII.1846, *Boissier s.n.* (G-BOIS [G00332433]).

Notes. – Several authors (e.g., Post, 1896, 1932; Zohary et al., 1980; Greuter et al., 1986) maintained Boissier's name and overlooked its earlier homonym. In that, they mostly likely followed Schulz (1927) who recognized the illegitimacy of that name but erroneously kept it while reducing the earlier homonym to a variety (var. *oxycarpa* Th. Fr.) of his highly polymorphic *D. alpina* L. that encompassed many species of northern Eurasia and North America.

The species is highly restricted to the Antilibanon Mountains west of Damascus in the Golan Heights, an area currently administered by Israel.

Draba dicranoides Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 30. 1856.

Type: "Hab. in rupibus suprâ *Baibout* Armeniae cl. Huet du Pavillon, circâ *Ispir* cl. Calvert".

Lectotypus (designated here): **Turkey:** "ad rupes supra Baibout", V.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332456]; isolecto-: BM [BM001254000], FI [FI005658], G [G00446209, G00446210], GOET [GOET002773], JE [JE00003680], K [K000697203, K000697204], P [P06616478, P06616479], W [W18890011473]). **Syntypus: Turkey:** "Ispir", 1853, *Calvert 1245* (G-BOIS [G00332457]).

= ***Draba rigida*** Willd., Sp. Pl. 3: 425. 1800.

Note. – The isolectotypes labels have "inter Baibout et Erzeroum" indicated.

Draba affghanica Boiss., Fl. Orient. Suppl.: 55. 1888.

Type: "Hab. in alpinis ad Schendtoi, Sikaram, etc. vallis Kuram Affghaniae (Aitch. 99! 112! 126!)".

Lectotypus (first step designated by Jafri, 1973: 134; second step designated here): **Pakistan:** "Affghania", 12.VI.1880, *Aitchison 99* (G-BOIS [G00330491]; isolecto-: GH [GH00046951], K [K000568096]). **Syntypi: Pakistan:** "Affghania", 10000'–14000' [3050–4270 m], 12.VII.1880, *Aitchison 112* (G-BOIS [G00332438]); *sine loco,* 13.VI.1880, *Aitchison 126B* (G-BOIS [G00332439], K [K000568066], LE [LE00012963]).

Notes. – A second-step lectotypification is necessary to correct the lectotype from K to G-BOIS because Boissier never examined or annotated any of the duplicates at K.

The specimens at K sometimes include different collections of Aitchison or different numbers on the same sheet (e.g., [K000568066]). However, all are from Afghanistan, and they lack data on collection dates or specific localities. Untangling the finer details of each these requires consulting the fieldbooks and travel itineraries of Aitchison, a task beyond the scope of this work, and that is why they are treated herein as syntypes.

What is most important for the lectotypification of the species name is *Aitchison 99* because it was initially designated by Jafri (1973: 134), and its single problem is resolved by taking the G-BOIS as the lectotype.

Draba reuteri Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 6: 13. 1859.

Type: "Hab. in summo monte *Karakaban Armeniae* ad nives cl. Huet du Pavillon. Fl. Maio".

Holotypus: Turkey: "In summo Karakaban ad nives", 9000'–10000' [2740–3050 m], V.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332460]; iso-: BM [BM001254095, BM001254096], G [G00446212, G00446213], GOET [GOET002770], JE [JE00002048, JE00002049], K [K000697224, K000697225], W [W19310012473]).

= ***Draba polytricha*** Ledeb., Fl. Ross. 1: 146. 1842.

Note. – The isotypes labels have handwritten: "ad rupes Mtis Karakaban", and printed: "Inter Trapezuntem et Baibout. Maio 1853".

Draba polytricha var. *laxior* Boiss., Fl. Orient. 1: 298. 1867.

Type: "Hab. in Armeniâ Rossicâ (Szow!)".

Holotypus: Armenia: *sine loco,* s.d., *Szovits 145* (G-BOIS [G00332440]; iso-: K [K000697222], LE).

= ***Draba polytricha*** Ledeb., Fl. Ross. 1: 146. 1842.

Notes. – Boissier based his varietal name solely on the duplicate in his herbarium, which ought to be recognized as the holotype.

The holotype is a collection folder of two sheets, of which the barcoded one has *Szovits 145* and the other *Szovits s.n.* indicated.

Draba rosularis Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 165. 1842.

Type: "[Aucher-Eloy] N. 4062, Bayazid".

Lectotypus (designated here): **Turkey:** "Bayazid", s.d., *Aucher-Eloy 4062* (G-BOIS [G00332442]; isolecto-: G [G00446200], K [K000697229], P [P02272380, P02272381]).

Notes. – Lectotypification of the species name is justified because Boissier (1842b) based his description on the single sheet in his herbarium and P022724381 that he annotated. He did not annotate or examine the K or other P duplicates above.

Boissier in *Flora Orientalis* reduced the species to synonym of *D. calycosa* var. *aucheri* that he based on the same type.

Draba calycosa var. *aucheri* Boiss., Fl. Orient. 1: 299. 1867.

≡ ***Draba rosularis*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 165. 1842.

Note. – This is a renaming of the previous entry at the varietal rank.

Draba velutina Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 6: 15. 1859.

Type: "Hab. in monte *Techdagh Armeniae* propè *Erzeroum* cl. Huet du Pavillon, cl. Calvert. Hùc etiam spectare videtur Auch. No 203".

Lectotypus (designated here): **Turkey:** "Tech-Dagh", 7000'–8000' [2130–2440 m], VI.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332443]; isolecto-: BM [BM001254097], G [G00446201, G00446202], GOET [GOET002779], JE [JE00002323], K [K000697227, K000697228], P [P02272445, P02272447], W [W18890011477]). **Syntypi: Turkey:** "Erzeroum", s.d., *Aucher-Eloy 203* (G [G00446201], G-BOIS [G00332445], P [P02272444]); "Tech Dagh", 1853, *Calvert 55* (G-BOIS [G00332444]).

= ***Draba rosularis*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 165. 1842.

Notes. – The isolectotypes labels have "In montibus Tech-Dagh suprà Erzeroum, 7–8000', Jun 1853, *Huet du Pavillon*" indicated.

On the specimen G00446201 two different collections are mounted: *Huet du Pavillon s.n.* and *Aucher-Eloy 203.*

Draba rosularis var. *leiocarpa* Boiss., Diagn. Pl. Orient. ser. 2, 5: 31. 1856.

Type: "Specimina in eodem monte *Techdagh* Armeniae a cl. Calvert lecta".

Holotypus: Turkey: "Tech Dagh", 1853, *Calvert 55* (G-BOIS [G00332444]).

= ***Draba rosularis*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 165. 1842.

Note. – Based on one of the syntypes of *D. velutina*.

Draba incompta var. *persica* (Boiss.) Boiss., Fl. Orient. 1: 299. 1867.

≡ *Draba persica* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 164. 1842.

Type: "[Aucher-Eloy] N. 4061, Elamout".

Holotypus: Iran: "Elamout", s.d., *Aucher-Eloy 4061* (G-BOIS [G00332446]; iso-: BM [BM001254091, BM001254092], G [G00446203, G00446204], K [K000697218], P [P02272368, P02272369, P02272370], W [W0075604]).

= ***Draba pulchella*** DC., Syst. Nat. 2: 354. 1821.

Note. – Boissier (1842b) based the species description solely on the unicate in his herbarium which ought to be recognized as the holotype. No duplicates were found in the Candolle's herbarium, and none of the three sheets at P were annotated by Boissier.

Draba calycina Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 14. 1859 [nom. illeg.] [non Desv.].

Type: "Hab. in fissuris rupium regionis subalpinae montis *Argaei* suprà pagum *Assardjick* ad meridiem urbis *Caesareae* siti. Initio Julii fructiferam legit cl. Balansa".

Holotypus: Turkey: "au-dessus du village d'Assardjik, au S. de Césarée (Cappadoce)", 10.VII.1856, *Balansa 440* (G-BOIS [G00332447]; iso-: B [B0100294047], P [P02272379]).

= ***Draba cappadocica*** Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 14. 1859.

Note. – Boissier did not examine the duplicates at B or P.

Draba calycosa Boiss. & Balansa in Boiss., Fl. Orient. 1: 299. 1867.

≡ *Draba calycina* Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 14. 1859 [non Desv.].

= ***Draba cappadocica*** Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 14. 1859.

Notes. – This is a renaming of Boissier's later homonym *D. calycina*.

The holotype of *D. calycina* in G-BOIS is stored alone in a folder cover named *D. calycosa.*

Draba acaulis Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 164. 1842 (Fig. 22A, p. 114).

Type: "monte Tauro a cl. Kotschy lecta".

Holotypus: Turkey: "In monte Tauro", summer 1836, *Kotschy 38* (G-BOIS [G00332448]; iso-: G [G00446205],

K [K000697231, K000697233, K000697234], KW [KW000128005], P [P02272584]).

Note. – Although some authors, such as Coode & Cullen (1965: 418), indicated that no type collection was cited in the original publication, the phrase "monte Tauro a cl. Kotschy lecta" was given two lines before the species description, and such original material is cited above.

Draba cappadocica Boiss. & Balansa in Boiss., Diagn. Pl. Orient. ser. 2, 6: 14. 1859.

Type: "Hab. in regione alpinâ montis *Argaei Cappadociae* cl. Balansa. Floret Junio".

Holotypus: Turkey: "Région alpine du Mont-Argée (Cappadoce)", 20.VII.1856, *Balansa 441* (G-BOIS [G00332449]).

Note. – No duplicates of the type collection were found in any of the herbaria consulted, and JSTOR does not list any.

Draba elegans Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 166. 1842.

Type: "[Aucher-Eloy] N. 300, Taurus".

Holotypus: Turkey: "in Mte Taurus", s.d., *Aucher-Eloy 300* (G-BOIS [G00332450]; iso-: K [K000697215], P [P02272367]).

Note. – There are no duplicates of Aucher-Eloy in all of the other Geneva herbaria, and the P02272367 duplicate was not annotated by Boissier. Therefore, Boissier (1842b) based the species description solely on the unicate in his herbarium.

Draba armena Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 167. 1842.

Type: "[Aucher-Eloy] N. 4060, Armenia".

Holotypus: Turkey: "Armeni", s.d., *Aucher-Eloy 4060* (G-BOIS [G00332451]; iso-: G [G00446206], K [K000697221], P [P02272377], W [W0075608]).

= ***Draba pulchella*** DC., Syst. Nat. 2: 354. 1821.

Note. – No duplicate of the type collection was found in the Candolle's herbarium, and the sheet at P was not annotated by Boissier. Therefore, the G-BOIS is the holotype (see Boissier, 1841a).

Draba huetii Boiss., Diagn. Pl. Orient. ser. 2, 5: 31. 1856.

Type: "Hab. in Anatoliâ propè *Beybazar* Aucher No 4058 mixta cum *Dr. nemorali,* in Armeniâ propè *Kochaponar* cl. Huet du Pavillon".

Lectotypus (first step designated by Dorofeyev, 2012: 431; second step designated here): **Turkey:** "Beybasar", s.d., *Aucher-Eloy 4058* (G-BOIS [G00332452]; isolecto-: BM [BM000583556], G [G00441249, G00441250], K [K000697239], P [P02272398], W [W0032996]). **Syntypus: Turkey:** "Moulins de Kochaponar", V.1853, *Huet du Pavillon s.n.* (B [B100241487], BM [BM000583570], G [G00441246, G00441248], G-BOIS [G00332453], GOET [GOET002760], JE [JE00002044], K [K000697237, K000697243], LE, P [P02272402, P02272405], S [S1216185, S1216186], W [W18890011475]).

Note. – Dorofeyev (2012: 431) lectotypified the species based on the duplicate at LE that Boissier did not examine. Therefore, that typification is corrected here by a second step designating the G-BOIS duplicate as the lectotype.

Draba nemoralis var. *leiocarpa* Boiss., Fl. Orient. 1: 303. 1867.

≡ *Draba pontica* Desf. in Ann. Mus. Hist. Nat. 11: 381. 1808.

= ***Draba nemorosa*** L., Sp. Pl.: 643. 1753.

Note. – This is a renaming at the varietal rank of *D. pontica* Desf.

Draba aucheri Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 166. 1842.

Type: "[Aucher-Eloy] N. 92, Alpes Zerdkou".

Holotypus: Iran: "in Zerdakou", s.d., *Aucher-Eloy 92* (G-BOIS [G00332072]; iso-: G [G00441255, G00441256], K [K000729819], P [P00747370, P02272365]).

Notes. – Boissier did not examine or annotate any of the sheets at P or G and based the species solely on the duplicate in his herbarium.

Three species names were published by Boissier and compete for recognition: *Arabis sulphurea* (see under that genus) was a renaming of *Draba aucheri* in *Arabis*, *Draba linearis* (next entry) was simultaneously published with *D. aucheri* (Boissier, 1842b), and Schulz (1927: 316) reduced it to a variety of *D. aucheri.* Subsequent authors, including myself, have since placed both *D. linearis* and *Arabis sulphurea* in synonymy of *Draba aucheri*. Oddly enough, Boissier recognized the very

same species as *Arabis sulphurea* (Fl. Orient. 1: 173–174) and as *Draba linearis* (Fl. Orient. 1: 303).

The single species recognized here has yellow flowers, a feature taxonomically important in *Draba,* though it is never found in any species of *Arabis*.

Draba linearis Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 167. 1842.

Type: "[Aucher-Eloy] N. 4118, Elamout".

Holotypus: Iran: "Elamout", s.d., *Aucher-Eloy 4118* (G-BOIS [G00332458]; iso-: B [B100294017], BM [BM001254094], G [G00446211], K [K000729823], P [P02272414, P02272415, P02272416], W [W0032993]).

= ***Draba aucheri*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 166. 1842.

Note. – Boissier based the species description solely on the unicate in his herbarium and did not annotate the material at P nor examined the above sheet at G that belongs to the Moricand's herbarium.

Draba linearis var. *macrocarpa* Boiss., Fl. Orient. 1: 303. 1867.

Type: "Hab. in Persiae jugo Elbrus inter Asterabad et Schahrud (Bunge!)".

Holotypus: Iran: "in jugo Elbrusensi; inter Astrabad et Schahrud", V.1858, *Bunge s.n.* (G-BOIS [G00332459]; iso-: K [K000729822], P).

= ***Draba aucheri*** Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 166. 1842.

Note. – See the previous note under *D. aucheri.*

Erophila DC., Syst. Nat. 2: 356. 1821.

Tribe: *Arabideae* DC.

Notes. – All regional floras and checklists that covered parts of the *Flora Orientalis* area (e.g., Busch, 1939; Coode & Cullen, 1965; Hedge, 1968; Jafri, 1973; Greuter et al., 1986; Tan & Stevanović, 2002) recognized *Erophila* as a genus distinct from *Draba,* whereas only few recent authors (e.g., Appel & Al-Shehbaz, 2003; Al-Shehbaz, 2012) united the former with the latter. It is interesting to note that Linnaeus (1753) described the type species of *Erophila* as *Draba verna* L.

Molecular phylogenetic studies by Jordon-Thaden et al. (2010) firmly established that *Erophila* is nested within *Draba* and supported the recognition of a single genus.

In spite of synonymizing *Erophila* with *Draba,* the number of taxa recognized in *Erophila* have not yet been fully accounted for in *Draba*. One of the main reasons is the lack of agreement among experts of the *Brassicaceae* as to how many species and infraspecific taxa should be recognized in *Erophila*. For example, IPNI (2019) lists over 100 binomials, wheras Schulz (1927) recognized only seven species but divided *E. verna* (L.) DC. into 36 varieties.

By contrast, Al-Shehbaz et al. (2010) favored the recognition of a single polymorphic species. The second main reason is that no taxonomic study on the *Erophila* complex will be satisfactory unless combined with extensive, population-based molecular, cytological, and critical morphological studies. As shown by Winge (1940), chromosome numbers show a complex series form the lowest $2n = 14$ to the highest $2n = 96$, though future studies are needed to confirm that.

Erophila setulosa Boiss. & C.I. Blanche in Boiss., Diagn. Pl. Orient. ser. 2, 5: 31. 1856.

Type: "Hab. in cultis propè Saida ad pontem fluvii *Nahr-Aoulè* cl. Blanche, in viâ inter Saida et *Deir el Kammar* cl. Dr. Gaillardot. Fl Januario, Februario".

Lectotypus (designated here): **Lebanon:** "Dans les champs de Muriers près du pont de Nahr-Aoulé, Saïda", 15.II.1853, *Blanche 29* (G-BOIS [G00332461]). **Syntypus: Lebanon:** "route du Saïda à Deir el Kamar près du village de Crïn Belen", 28.I.1853, *Gaillardot 31* (G-BOIS [G00332462]).

= ***Draba verna*** L., Sp. Pl.: 642. 1753.

Note. – *Gaillardot s.n.* [JE00002073], "Sommet du rocher entre Djemélie et Medjloùna route de Saïda à Deir el Kamar" collected a day after the above syntype, was not examined by Boissier.

Draba edmondii Al-Shehbaz, **nom. nov.**

≡ *Draba macrocarpa* Boiss. & Heldr. in Boiss., Diagn. Pl. Orient. 8: 28. 1849 [nom. illeg.] [non Adams].

≡ *Erophila macrocarpa* Boiss., Fl. Orient. 1: 304. 1867.

Type: "Hab. in collibus maritimis propè *Smyrnam* in consortio *Dr. vernae* Febr. et Mart. (Heldr.)".

Holotypus: Turkey: "in collibus ad littora maris prope Smyrnam", 26.II.1846, *Heldreich 1297* (G-BOIS [G00332463]; iso-: B [B000522043], E [E00373101], G [G00446214, G00446215], GOET [GOET002573], K [K000697635, K000697636, K000697637], P [P06650499], W [W0075600, W0075601]).

Etymology. – The species is named after the renouned Swiss botanist Pierre-Edmond Boissier (see introductory part of this paper).

Notes. – Except for the holotype in G-BOIS and isotype at W [W0075601], all other isotypes were distributed as exsiccatae without a collection number.

Halácsy (1900: 102) recognized this taxon as a variety of *Draba verna,* whereas both Walters (1964: 57) and Coode & Cullen (1965) maintained it as a subspecies of *Erophila verna*. As shown above, *Erophila* is perfectly nested within *Draba* and, therefore, the plant should be renamed when maintained as a distinct species of *Draba*.

Draba edmondii is unique among all the taxa previously assigned to *Erophila* and can be readily distinguished from them by having linear to linear-lanceolate (vs orbicular to ovate or elliptic) siliques (6–)7–10 times (vs equaling or to 4.5 times) longer than broad and with parallel (vs not parallel) margins, as well as fruiting pedicels shorter or rarely subequaling (vs longer) than fruit. It is distributed in Greece, the eastern Aegean Islands, and western Turkey.

Petrocallis W.T. Aiton, Hort. Kew. ed. 2, 4: 93. 1812.

Note. – This monospecific genus has not yet been assigned to tribe, and its type, *P. pyrenaica* (L.) W.T. Aiton, is an European species that does not grow in the *Flora Orientalis* area (see Jalas et al., 1996). However, the following species is currently recognized as *Didymophysa* Boiss. of the tribe *Thlaspideae* (see below).

Petrocallis fenestrata Boiss. & Hohen. in Boiss., Diagn. Pl. Orient. 8: 27. 1849.

≡ *Elburzia fenestrata* (Boiss. & Hohen.) Hedge in Notes Roy. Bot. Gard. Edinburgh 29: 181. 1969.

≡ ***Didymophysa fenestrata*** (Boiss. & Hohen.) Esmailbegi & Al-Shehbaz in Taxon 67: 334. 2018.

Type: "Hab. in saxosis *Meidan Abdallah* in valle *Loura* montis *Elbrus* Kotschy N° 493 et 795".

Lectotypus (designated here): **Iran:** "In saxosis Meidan Abdullah in valle Loura m. Elbrus", 15.VII.1843, *Kotschy 493a 795* (G-BOIS [G00332464]; isolecto-: P [P02272395], W [W0053489]).

Notes. – Boissier (1849) based the species description on the unicate in his herbarium and on P02272395 that he annotated and, therefore, lectotypification of the name is justified.

Both *Kotschy 493a* and *Kotschy 795* are listed in protologue and on the labels of the lectotype and W0053489. By contrast, the label of P duplicate has only *Kotschy 493a*. Since the other information on all duplicates of the type collection is identical, it is not possible to determine why Kotschy used both numbers on the lectotype and W isolectotype duplicates.

Following its transfer to *Elburzia* Hedge by Hedge (1969), the species remained in that genus to the present. However, molecular phylogenetic studies by Esmailbegi et al. (2018) strongly support its assignment to *Didymophysa*.

Buchingera Boiss. & Hohen. in Boiss., Diagn. Pl. Orient. 8: 29. 1849 [nom. illeg.] [non F.W. Schultz].

Note. – Boissier's later homonym was renamed by Rauschert (1982) as *Asperuginoides* Rauschert, a monospecific genus not yet assigned to tribe.

Buchingera axillaris Boiss. & Hohen. in Boiss., Diagn. Pl. Orient. 8: 29. 1849.

≡ ***Asperuginoides axillaris*** (Boiss. & Hohen.) Rauschert in Taxon 31: 558. 1982.

Type: "Hab. ad versuras agrorum propè urbem *Teheran* Aprili Kotschy N° 10".

Holotypus: Iran: "Ad versuras agrorum prope urbem Teheran", 15.IV.1843, *Kotschy 10* (G-BOIS [G00330399]; iso-: BM [BM000583346, BM000583347], G [G00382767, G00382768], GOET [GOET002728], H [H1355713], HAL, JE [JE00001945], K [K000697072, K000697074], KW [KW000128008], LE [LE00013028], P [P00747674, P00747675, P00747677, P00747678], WAG [WAG0004237], WU [WU0101795]).

Notes. – Jafri (1973: 124) indicated that the type of *Asperuginoides axillaris* (as *Buchingera*) is Bunge's collection from Isfahan. However, that specimen was collected ten years after the publication of the species name, though Bunge's collection was cited in *Flora Orientalis.*

The JE isotype lacks the collection number, year, and collector, and it is a fragment annotated by Boissier and given to Haussknecht.

Coluteocarpus Boiss. in Ann. Sci. Nat., Bot. ser. 2, 16: 378. 1841.

Tribe: *Coluteocarpeae* V.I. Dorof.

Notes. – Boissier (1841b) recognized *C. reticulatus* Boiss. in this monospecific genus, but that combination is illegitimate because the basionym, *Vesicaria reticulata* Lam. (1808), was predated by *Alyssum vesicaria* L. (1753) that Boissier listed in the synonymy.

The genus remained accepted for over 170 years until its recent union with the earlier published *Noccaea* Moench by Al-Shehbaz (2014).

Graellsia Boiss. in Ann. Sci. Nat., Bot. ser. 2, 16: 379. 1841.

Tribe: *Thlaspideae* DC.

Note. – A genus of nine species of which one is endemic to Turkey, one to Pakistan, two in Tajikistan, and three in Iran, with the ranges of one other Iranian species extend into Afghanistan and another into Iraq (Esmailbegi et al., 2017a).

Graellsia saxifragifolia var. *yezdana* Boiss., Fl. Orient. 1: 307. 1867.

Type: "Hab. in montibus prope Yezd (Buhse!)".

Holotypus: Iran: "Jesd", V.1849, *Buhse 1404/2* (G-BOIS [G00332467]; iso-: LE [n.v.]).

= ***Graellsia saxifragifolia*** (DC.) Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 173. 1842.

Note. – The variety was based on having somewhat longer and narrower fruit, a feature considered by Esmailbegi et al. (2017a) as trivial.

Peltaria Jacq., Enum. Stirp. Vindob.: 260. 1762.

Tribe: *Thlaspideae* DC.

Notes. – *Peltaria* is a genus of three species distributed from C Europe eastward into Turkmenistan.

Although the genus belongs to the tribe *Thlaspideae,* the following species belongs to *Ricotia* L., a genus of nine species that belongs to the tribe *Biscutelleae* Dumort. (Özüdoğru et al., 2015).

Peltaria aucheri Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 175. 1842.

≡ ***Ricotia aucheri*** (Boiss.) B.L. Burtt in Kew Bull. 6: 131. 1951 (Fig. 22B, p. 114).

Type: "[Aucher-Eloy] N. 285, Armenia".

Holotypus: Turkey: "Armenia", s.d., *Aucher-Eloy 285* (G-BOIS [G00332304]; iso-: BM [BM001254078], G [G00446143], K [K000484467], MO [MO1619005], P [P00835125], US [US00099941]).

Note. – Boissier (1842b) based the species description solely on the specimen in his herbarium and did not annotate the material at P nor examined the above sheet at G that belongs to the Moricand's herbarium (see Boissier, 1841a).

Clypeola L., Sp. Pl.: 652. 1753.

Tribe: *Alysseae* DC.

Notes. – The genus includes nine Eurasian-NW African species distributed from Morocco and Spain eastward into Uzbekistan (Španiel et al., 2015).

Although it was united earlier by Al-Shehbaz (2013) with *Alyssum,* the current evidence at hand strongly supports the maintenance of both genera.

Clypeola microcarpa Boiss., Diagn. Pl. Orient. 1: 74. 1843 [nom. illeg.] [non Moris].

≡ *Clypeola glabra* Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 173. 1842.

Type: "Hab. in parte superiori montium Atticae *Pentelicus, Parnes*. Fl. Maio".

Typus: see *C. glabra* Boiss. entry below.

= ***Clypeola jonthlaspi*** subsp. ***microcarpa*** (Moris) Arcang., Comp. Fl. Ital.: 63. 1882.

Note. – *Clypeola microcarpa* is illegitimate because Boissier (1843) listed the earlier published *C. glabra* Boiss. as a synonym. Furthermore it is a later homonym of. *C. microcarpa* Moris.

Clypeola glabra Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 173. 1842.

= ***Clypeola jonthlaspi*** subsp. ***microcarpa*** (Moris) Arcang., Comp. Fl. Ital.: 63. 1882.

Notes. – No material was cited by Boissier (1842b), but Meikle (1977: 144) gave the type as: "Greece; in parte superiori montium Atticae Pentelicus, Parnes", which is the same as that of the illegitimate and later homonym *C. microcarpa* Boiss.

Boissier in *Flora Orientalis* listed *C. glabra* in the synonymy of *C. microcarpa* Moris (non Boiss.). The failure to cite any collections in the original description of *C. glabra* does not allow accurate and final evaluation of the name status.

Clypeola elegans Boiss. & A. Huet in Boiss., Diagn. Pl. Orient. ser. 2, 5: 38. 1856.

Type: "Hab. in Armeniâ inter *Zarbas* et *Haho* cl. Huet du Pavillon".

Holotypus: Turkey: "Inter Zarbas et Haho", 3000'–4000' [910–1220 m], VI.1853, *Huet du Pavillon s.n.* (G-BOIS [G00332469]; iso-: FI [FI005704], G [G00389755, G00389756, G00389757], K [K000697095, K000697097], P [P00835155, P00835156, P00835157]).

Notes. – Cullen (1965) listed a collection of Huet du Pavillon from between Erzurum and Ispir, but no such collection was cited in the original protologue.

The holotype is a collection folder of three sheets only one of which is labeled.

Clypeola ciliata Boiss., Fl. Orient. 1: 309. 1867.

Type: "Hab. in saxosis regionis subalpinae montium supra Elmalu Lyciae (Bourg!)".

Holotypus: Turkey: "In saxosis regionis subalpinae montis Elmalu", 13.V.1860, *Bourgeau 30* (G-BOIS [G00332470]; iso-: B [B100244895], BM [BM0001254087], E [E00814529, E00814530], G [G00446222, G00446223, G00446224], GOET [GOET002736], JE [JE00001762, JE00001763], K [K000697098], KW [KW000128010], MPU [MPU013460], P [P00835143, P00835144, P00835145, P00835146, P05362709], W [W00075598, W18890152686, W18890152687, W18890322115]).

Note. – A distinct species readily distinguished from its other congeners by the soft-ciliate, long-pilose fruit margin.

Clypeola lappacea Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 174. 1842.

Type: "[Aucher-Eloy] N. 282, Mesopotamia".

Holotypus: Turkey: "Mesopotamia", s.d., *Aucher-Eloy 282* (G-BOIS [G00332472]; iso-: BM [BM000583350, BM000583351], G [G00389750, G00389751, G00389752], K [K000697099], P [P00835161, P00835162, P00835163]).

Note. – Boissier based his species description on the unicate in his herbarium and did not annotate any of the duplicates above. Therefore, the indication by Al-Shehbaz (2013) of the G-BOIS sheet as the holotype was justified.

Clypeola dichotoma Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 175. 1842.

Type: "[Aucher-Eloy] N. 4082, Aderbidjan".

Holotypus: Iran: "in aridis Aderbidjan", s.d., *Aucher-Eloy 4082* (G-BOIS [G00332473]; iso-: BM [BM001254086], G [G00389753, G00389754], K [K000697102], KW [KW000128009], LE [LE00013027], MO [MO1617733], P [P00835147, P00835148, P00835149, P00835150], W [W0075599, W18890077507]).

Notes. – Because Boissier (1842b) based his species description solely on the unicate in his herbarium and did not annotate any of the four duplicates at P, the G-BOIS material should be the holotype. Therefore, the lectotypification by Al-Shehbaz (2013) of the G-BOIS unicate as the lectotype, was not needed.

Tchihatchewia Boiss. in Tchich., Asie Min., Bot. 1: 292. 1860.

Tribe: *Hesperideae* Prantl.

Notes. – Rauschert (1982) claimed that Boissier's name was published in 1866 and was predated by *Tchihatchewia* Unger, a fossil genus published in 1863. As indicated by Al-Shehbaz et al. (2007), Stafleu & Cowan (1976) clearly demonstrated that Tchihatcheff's volume 1 of *Asie Mineure* botanical account was published in 1860. Therefore, Rauschert's generic name *Neotchihatchewia* Rauschert as a replacement of Boissier's name is illegitimate.

Molecular phylogenetic studies by Warwick et al. (2010) clearly show that the monospecific *Tchihatchewia* is nested within the earlier published *Hesperis* and, therefore, the two genera have recently been united (German & Al-Shehbaz, 2018).

Tchihatchewia isatidea Boiss. in Tchich., Asie Min., Bot. 1: 292. 1860.

≡ ***Hesperis isatidea*** (Boiss.) D.A. German & Al-Shehbaz in Phytotaxa 334: 97. 2018 (Fig. 22C–D, p. 114).

Type: "*Armenia*: montibus ad septentr. Euphrates vallem circumdantibus, inter pagos Kalaratch et Almalu (ad Orient. urbis Erzindjan), alt. 1700–2000m. T[chihatcheff]".

Lectotypus (designated by Al-Shehbaz in German & Al-Shehbaz, 2018: 97): **Turkey:** "Armenia ad orientum. Urbis Erzindjan. Asia minor, Oest", 1858, *Tchihatcheff s.n.* (G-BOIS [G00332474]; isolecto-: P [P00835139]).

Note. – Label of the isolectotype sheet at P has the generic name written in Boissier's hand, and because of that the species name needed lectotypification.

Camelina Crantz, Stirp. Austr. 1: 17. 1762.

Tribe: *Camelineae* DC.

Note. – *Camelina* includes eight species distributed in Europe and SW Asia.

Camelina sylvestris var. *albiflora* Boiss., Fl. Orient. 1: 312. 1867.

Type: "Hab. in faucibus umbrosis Ciliciae Kurdicae ad Gorumse (Ky!)".

Holotypus: Turkey: "Plantae in montibus Kassan Oghlu ad pagum Gorumse lectae", 4500'–5000' [1370–1520 m], 12.V.1859, *Kotschy 52* (G-BOIS [G00332475]; iso-: B [B100241003, B100241005], BM [BM001254101], K [K000725081], P [P05324694], US [US00100157], W [W0075596, W0075597, W18890005811]).

= ***Camelina rumelica*** Vel. in Sitz. Boehm. Ges. Wiss. 1887: 448, f. 13a. 1887.

Note. – Boissier in *Flora Orientalis* based the species description on the unicate in his herbarium, and he did not examine or annotate any of the duplicates in the other herbaria. Therefore, the G-BOIS sheet ought to be recognized as the holotype.

Camelina hispida Boiss. in Ann. Sci. Nat., Bot. ser. 2, 17: 176. 1842.

Type: "[Aucher-Eloy] N. 359, Armenia; 361, Persiâ".

Lectotypus (designated here): **Turkey:** "Armenia", s.d., *Aucher-Eloy 359* (G-BOIS [G00332476]); isolecto-: K [K000725082]). **Syntypus: Iran:** *sine loco,* s.d., *Aucher-Eloy 361* (G-BOIS [G00332477], P [P05325024]).

Note. – Boissier did not examine the K or P duplicates above.

Camelina lasiocarpa Boiss. & C.I. Blanche in Boiss., Fl. Orient. 1: 312. 1867.

Type: "Hab. in Syriae pascuis ad Agraba et Gebel Belas in viâ inter Hama et Palmyram (Blanche!)".

Lectotypus (designated here): **Syria:** "De Hama à Palmyre. Désert de Syrie. (Puits de Fadel). Dans le Djebel Belas", 19.V.1857, *Blanche 2878* (G-BOIS [G00330347]; isolecto-: JE [JE00002465]). **Syntypus: Syria:** "De Hama à Palmyre. Désert de Syrie. Au paturage d'Agraba", 18.V.1857, *Blanche 2971* (G-BOIS [G00330345]).

Note. – Boissier in *Flora Orientalis* listed two collections between Hama and Palmyra but one was near Agraba and the other at Gebel Belas.

Camelina grandiflora Boiss., Diagn. Pl. Orient. 5: 82. 1844.

Type: "Hab. in *Cariâ* undè aest. 1843 retulit Chr. Pinard".

Holotypus: Turkey: "Caria", 1843, *Pinard s.n.* (G-BOIS [G00332478]; iso-: B [B100241011], BM [BM001254100], G [G00446228, G00446229, G00446265], K [K000725083], MO [MO3729731], P [P05325035, P05325037, P05325039, P05325041], W [W0075595], WAG [WAG0004250]).

Notes. – The holotype is a collection folder of three sheets of which two are unlabeled.

Camelina hispida, together with *C. lasiocarpa* and *C. grandiflora,* form a species complex that can be readily distinguished on the bases of fruit and stem indumentum and orientation of the fruiting pedicels. Hedge (1965: 493) reduced the latter two to varieties of the first, though he admitted that more taxa at the specific and infraspecific ranks may eventually be recognized.

In our opinion, the differences between the three taxa above are quite settled, as *C. hispida* has rigid, divaricate to horizontal, often hispid fruiting pedicels and glabrous fruit. Both *C. lasiocarpa* and *C. grandiflora* have ascending fruiting pedicels subappressed to rachis, but the former has hispid (vs glabrous fruit), hispid rachis of fruiting raceme (vs glabrous or rarely sparsely pilose), and pedicels without (vs with) a tuft of axillary hairs.

Molecular phylogenetic studies are being conducted in more than one lab, and it is hoped that they resolve some of the entangled taxonomy of the genus, which most likely caused by hybridization, polyploidy, and introgression. In our opinion, it would be better to maintain the three species until future studies prove otherwise.

Camelina anomala Boiss. & Hausskn. in Boiss., Fl. Orient. 1: 313. 1867.

Type: "Hab. in agris argillosis prope Kharran Syriae borealis (Haussk!)".

Holotypus: Turkey: "in agris argil. p. Kharran. Syria borealis", 12.V.1865, *Haussknecht s.n.* (G-BOIS [G00332479]; iso-: B [B100241015], BM [BM000522288], JE [JE00002459, JE00002464], K [K000725088], P [P04738767, P05325042, P05325043], W [W0045020, W18890055604]).