The correct authorship and nomenclature of *Artemisia umbrosa* (Asteraceae), with comments on some misapplied names and distribution of the species in Eastern Europe

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**Abstract.** *Artemisia umbrosa*, initially described as *A. vulgaris* var. *umbrosa*, is an East Asian species that has been introduced and is now locally naturalized in some European countries. It has a complicated nomenclatural and taxonomic history. The name *Artemisia umbrosa* has been misapplied to related taxa of *Artemisia* sect. *Artemisia*, including *A. verlotiorum*, and several other names were erroneously applied to that taxon. The authorship of the species was variously cited in earlier literature (as "Turcz. ex DC.", "Turcz. ex Besser", "(Besser) Turcz. ex DC.", "(Turcz. ex DC.) Pamp.", "(Turcz. ex Besser) Pamp.", etc.). We demonstrate here that the basionym *A. vulgaris* var. *umbrosa* was first validated in 1832 (not 1834) by Besser. The species-rank combination *A. umbrosa* was validated not by Pampanini in 1930 but by Verlot in 1875, and thus the proper authorship citation of the name is *A. umbrosa* (Turcz. ex Besser) Turcz. ex Verlot. Despite the fact that Verlot misapplied the name *A. umbrosa* to the species later described as *A. verlotiorum*, his combination is valid and legitimate. Some other names misapplied to *A. umbrosa* are briefly considered (such as *A. codonocephala* auct. non Diels, *A. dubia* auct. non Wall. ex Besser, *A. lavandulifolia* auct. non DC., nom. illeg., etc.). The lectotype and other available original specimens of *A. umbrosa* (especially those from the Turczaninow and Besser historical herbaria at KW) are discussed. A brief overview of records of *A. umbrosa* (reported under several names) in Eastern Europe is provided.

**Keywords:** alien species, *Artemisia*, Asteraceae, typification, nomenclature, taxonomy

**Introduction**

*Artemisia umbrosa* [initially described as *A. vulgaris* var. *umbrosa*, see comments on its authorship below] is an East Asian species that was reported within its native range from the Russian Far East (south) and Siberia (southeast), China (mostly northern regions), and Mongolia (Pampanini, 1930, 1933; Polyakov, 1961; Leonova, 1982; Korobkov, 1992; Krasnoborov, 1997; Filatova, 2003; Zuev, 2005, 2012; Ling et al., 2011; Urgamal et al., 2014, etc.). It is also known as an alien species forming colonies in several regions of Europe (Moslakin, 1990, 1991, 2006; Leonova, 1994; Gudžinskas, 1990, 1997; Tretyakov, 1999; Yena, 2005; Boiko, 2009, 2012, 2013; Sirbú, Oprea, 2011; Majorov, 2014; Morozova, 2014, etc., see below), but data on its synanthropic distribution are in need of critical reassessment and verification because of its confusion with other similar species, and also because of nomenclatural problems (see further details below).

In Europe *A. umbrosa* was for the first time reported from Ukraine, where several colonies of that species were found by Moslakin (1990) in Kyiv along railroads (Fig. 1). Moslakin (1990, 1991, etc.) also reported several other morphologically similar alien species (such as *A. argyi* H. Lév. & Vaniot, etc.) known and/or newly discovered by that time in Ukraine and adjacent countries, and provided a key for identification of these species related to *A. vulgaris* L. and belonging to *Artemisia* sect. *Artemisia*. Before 1990, almost all long-rhizomatous and stoloniferous alien species of that species aggregate found in Eastern Europe (except the correctly identified earlier records of
Tzvelev as "A. verlotiorum" and the record was published under that misapplied name (Gusev, 1980: 250; later recognized as A. umbrosa by Tzvelev, 2000: 614). New finds of A. umbrosa in Russia were reported later, also as "A. verlotiorum", from Moscow Region (Ignatov et al., 1983, 1990), Kaluga Region (Volosnova, 1986), and Udmurtia (Puzyrev, 1985, 1989; later recognized as A. umbrosa: see Baranova et al., 1992; Baranova, Puzyrev, 2012).

Taxonomic conclusions of Mosyakin (1990) on alien plants of the A. vulgaris aggregate found in Ukraine (and his revision of selected specimens from Belarus, Leningrad, and Udmurtia, which proved to be A. umbrosa: see Mosyakin 1990: 12) resulted in subsequent new East European records and new identifications of earlier collections. In particular, it has been demonstrated that true A. verlotiorum was reliably known at that time in the eastern part of Europe only in Crimea (Mosyakin, 1990), but later it was also reported from the Caucasus (Dubovik, Mosyakin, 1991; Gabriilian, Valla, Xirau, 1996; Klodzki et al., 2010), the adjacent parts of Turkey (Jäger, 1988; Byfield, Baytop, 1998; Uludag et al., 2017, etc.), and Turkmenistan (Nikitin, Geldikhanov, 1988; now reported as a "common weed": Kurbanov, Vlasenko, 2006).

Mayorov et al. (1993) provided data on a new locality of A. argyi near Kozelsk, revised the collections of Volosnova from Maloyaroslavets (both in Kaluga Region), and identified the plants as belonging to A. umbrosa. They also commented that the latter species was earlier erroneously reported from the region by Volosnova (1986) as A. verlotiorum and that new records and revisions of older identifications of taxa from the affinity of A. vulgaris should be expected after the publication by Mosyakin (1990) [in Russian: "Ранее ошибочно указана для области под названием A. verlotiorum Lamotte (Волоснова, 1986). После публикации С.Л. Моськина (1990) следует ожидать новые находки и уточнение старых определений для полыней из рода A. vulgaris L."]:

A. selengensis Turcz. ex Besser: see Vynaev, Tretyakov, 1978; Puzyrev, 1985, and Gudžinskas, 1990) and in Europe in general were identified as A. verlotiorum Lamotte (see Brenan, 1950; Verloove, 2013—onward, etc.). Artemisia umbrosa is now also known in some other European countries, where it was sometimes reported under several other names.

**Artemisia umbrosa in Eastern Europe: early records and current distribution**

In Eastern Europe A. umbrosa was probably found for the first time in Latvia (first collected in 1955 by A. Rasiņš, see Fatare, Gavrilova, 1985; Tabaka et al., 1988) and then in Belarus (Vynaev, Tretyakov, 1978); in both cases it was identified as "A. verlotiorum" (see Leonova, 1987). Probably the first collection of A. umbrosa in the European part of Russia has been made by Gusev in October 1978 in St. Petersburg (formerly Leningrad) at the Sortirovchnaya-Moskovskaya railway station. The plants were initially identified by
et al., 2013; Seregin, 2014; Vinogradova et al., 2017, etc.). In the Eastern part of Russia the species is known from Ivanovo, Kaluga, Kostroma, Moscow, Penza, Ryazan, Samara, Saratov, St. Petersburg (Leningrad), Tambov, Tula, Tver, Ul’yanovsk, Vladimir, Volgograd, Voronezh, Yaroslavl, Yekaterinburg (Sverdlovsk) regions, republics of Mordovia, Tatarstan and Udmurtia, and from some other administrative units (Mayorov, 2014; Khorun et al., 2012, and references listed above), northward up to Kandalaksha in Murmansk Region (Kozhin et al., 2014) and Petrozavodsk in Karelia (Kravchenko et al., 2014). However, Mayorov (2006: 507; 2014: 366) commented that the species is definitely more widespread there, but is often overlooked by collectors [in Russian: "Без сомнения, распространена шире, но просматривается"].

*Artemisia umbrosa* was also reported (under several names) from Belarus (Vynaev, Tretyakov, 1978, as "A. verlotiorum"; Tretyakov, 1999, as *A. umbrosa*), Lithuania (Gudžinskis, 1990, as "A. verlotiorum"; Gudžinskis, 1997, as "A. codonocephala"), Latvia (Fatare, Gavrilova, 1985; Tabaka et al., 1988, as "A. verlotiorum"; Evarts-Bunders et al., 2012, and references therein), and several regions of Ukraine, in particular, Kyiv (Mosyakin, 1990, 1991; Mosyakin, Fedoronchuk, 1999, as *A. umbrosa*; Mosyakin, 1992, 2006, as "A. codonocephala"), Kherson (Moysienko, 2000, as *A. umbrosa*), Crimea (Yena, 2005, 2012, as "A. codonocephala"; Seregin et al., 2015, as "A. dubia"), Donetsk (Boiko, 2009; Ostapko et al., 2010, as "A. lavandulifolia"; Boiko, 2012, as *A. umbrosa*), Lviv (Kuzyarin, 2012; Mamchur et al., 2017, as *A. umbrosa*), etc. In Romania *A. umbrosa* was reported as "A. lavandulifolia" (Sirbu, Oprea, 2011). The recently published first record of "A. dubia" from Kazakhstan (found in Kostanay: see Perezhizn, Kulikov, 2017) most probably (or almost certainly) also belongs to *A. umbrosa*, judging from the image of a herbarium specimen available online (http://rcb.ksp.kz/pages/Families/Asteraceae/Artemisia_umbrosa.html, now identified as *A. umbrosa*).

It is also worth noting that *A. umbrosa* (reported as "A. dubia") and *A. vulgaris* were studied at the Lithuanian Institute of Agriculture as potential biomass producers for biofuel (Kryżewiściene et al., 2010; Kadziulienė et al., 2017, etc.). It was concluded that both species are well suited for biofuel production (however, *A. umbrosa* proved to be a much better biomass producer than *A. vulgaris*) and they have been recommended for cultivation (Kryžewiściene et al., 2010). That, in our opinion, may result in further uncontrolled spread of *A. umbrosa*.

It seems that in the eastern part of Europe *A. umbrosa* is currently the most successful invader among alien species of *Artemisia* sect. *Artemisia* known from that territory, followed by *A. argyi*; other taxa are less widespread and are known from a few localities each. These taxa are reported in dozens of East European publications, and at least some of those records are in need of re-assessment (as well as at least some records of *A. verlotiorum* from Central Europe; see Verloove, 2012—onward). A critical overview and detailed analysis of the available records and specimens of *Artemisia sect. Artemisia* from Eastern Europe is in progress and will be published separately.

The correct authorship and dates of publication of *Artemisia umbrosa*

*Artemisia umbrosa* has a complicated nomenclatural and taxonomic history, which is worth discussing in more detail. In particular, several other names, including *A. verlotiorum* (see above), were misapplied to that taxon. The authorship of the species–rank combination *A. umbrosa* was also debatable, being cited variously in earlier literature as "Turcz.", "Turcz. ex DC.", "Turcz. ex Besser", "(Besser) Turcz. ex DC.", "(Turcz. ex DC.) Pamp.", "(Turcz. ex Besser) Pamp.", etc. In our recent article (Mosyakin et al., 2017: 257) we also cited that species as "A. umbrosa" (Turcz. ex Besser) Pampanini (1930: 448) (= *A. vulgaris* var. *umbrosa* Turczaninow ex Besser 1832: 52; 1834: 52)"). Clarification of the authorship, nomenclature, and taxonomic identity of *A. umbrosa* is especially important in view of the ongoing studies of alien species of *Artemisia* sect. *Artemisia* naturalized in Europe and in some other parts of the world (Verloove et al., research in progress).

In our earlier article (Mosyakin et al., 2017) we have already demonstrated that the date of valid publication of the name *Artemisia vulgaris* L. var. *mongolica* Besser, as well as of many other names in *Artemisia* published in Besser’s *Tentamen de Abrotanis…*, is 1832, not 1834 or 1833, as it was often accepted earlier. The treatment by Besser was indeed published in volume 3 of *Nouveaux Mémoires de la Société Impériale des Naturalistes de Moscou* issued in 1834 (Besser, 1834), but it was preceded by a preprint (separate article) published already in 1832 and distributed to some botanical institutions and individual botanists (Besser, 1832).
The pagination and content of the preprint are in fact identical to those of the final version of the article (only some minor typographic errors were corrected in the journal version). The preprint was undated (except the date of the Preface, signed by Besser as "Scripsi Cremeneci d. 30 Aprilis 1832" – "Written in Kremenets on 30 April 1832": Besser, 1832: 8; and the date at the end of the treatment "Cremeneci d. 16 Julii 1832" – "Kremenets, 16 July 1832": Besser 1832: 89) but it was already delivered from Moscow to Paris in January 1833 (de Candolle, 1833; see details in Mosyakin et al., 2017), so its actual publication in 1832 can be accepted with certainty. Pritzel (1851: 22) in his bibliography also reported the date of publication of that preprint as 1832. Thus, the epithet "umbrosa" was first validated in Artemisia by Besser in 1832 for a variety of A. vulgaris.

The species name "A. umbrosa" attributed to Turczaninow (as "Turcz.! in litt.") was mentioned by de Candolle (1838: 113), but only in synonymy of A. vulgaris var. umbrosa. The name is still listed in the International Plant Names Index (IPNI, 2018–onward, accessed 23 March 2018) as "A. umbrosa Turcz. ex DC.":; however, in that publication it was an invalid name (Art. 36.1(c) of the ICN; McNeill et al., 2012). Turczaninow (1846: 197) also listed his "A. umbrosa Turcz. pl. exsicc." only in synonymy of the accepted name A. vulgaris var. umbrosa.

It was usually assumed in recent publications (Mosyakin, 1990; Leonova, 1994; Boiko, 2012, etc.) that the species-rank combination Artemisia umbrosa was validated by Pampanini (1930). However, Pampanini cited in his articles an earlier publication by Verlot, a seed catalogue of 1875 from the Grenoble Botanical Garden ("Verlot J.B., Jardin botanique de la Ville de Grenoble: Catalogue des graines récoltées en 1875, p. 12. Grenoble, 1875": see Pampanini, 1923: 78), in which, judging from Pampanini's citation, Verlot accepted the name A. umbrosa at species rank and ascribed (attributed) its authorship to Turczaninow. Moreover, as it has been demonstrated later, Verlot misapplied that name to another species that was subsequently described as A. verlotorum, originally published as "A. verlotorum" (Lamotte, 1877: 513) but correctable to "verlotorum" following Art. 60.12, Ex. 37–38, and Recommendation 60C.1(b) of the ICN (McNeill et al., 2012). Lamotte (1877) and Bonnet (1883: 208) noticed that Verlot misapplied the name A. umbrosa to plants of A. verlotorum. Unfortunately, Bonnet erroneously accepted for that species the name A. selengensis Turcz. ex Besser (1832: 50; 1834: 50) [cited by Bonnet as: "A. selengensis" Turcz., Cat. Baical, no 630; A. Verlotorum Lamotte; A. umbrosa J.-B. Verl. (non Turcz.)], which in fact refers to the currently recognized and morphologically well outlined East Asian species that is also locally known as alien in Belarus (Vynaev, Tretyakov, 1978; Tretyakov, 1999), Lithuania (Gudzinskas, 1990, 1997), Ukraine (Mosyakin, 1990; Bortnyak, Voytyuk, 1991), and some regions of the European part of Russia (Puzyrev, 1985; Mayorov, 2006, 2014; Mayorov et al., 2012, Seregin, 2012, 2014, etc.). It was also discovered in 2012 in the Netherlands (Verloove, 2013–onward) and may be expected in some other European countries.

The Grenoble Catalog... of 1875 seems to be a very rare publication. Brenan in his article listed that reference but reported that he has not seen it (Brenan, 1950: 223). Our efforts to locate at least one still existing copy of the Catalogue... proved to be unsuccessful, despite our thorough search in several major libraries of Ukraine and Belgium and numerous requests sent to libraries of several botanical institutions and libraries of Paris, Geneva, Grenoble, London, etc. However, we found that the Catalogue... was cited and/or directly referenced in several botanical periodicals of the 1870s. In particular, an anonymous author in a review of recent botanical publications reported in Bulletin de la Société Botanique de France: "Dans le Catalogue des graines récoltées en 1875, M.J.-B. Verlot signale l'Artemisia umbrosa Turcz., espèce douteuse observée par lui sur quelques points des environs de Grenoble, qui diffère de l'A. vulgaris par ses feuilles incisées profondément à lobes aigus, entiers, presque réguliers, les supérieures lancéolées ou linéaires entières, son inflorescence pauciflore, à rameaux penchés, ses fleurs solitaires un peu plus petites, presque unilatérales, et par l'époque de floraison de deux à trois mois plus tardive" (Anonymous in Fournier, 1876: 3). The Grenoble Catalogue... of 1875 (including Verlot’s acceptance of A. umbrosa) was also mentioned and briefly reviewed in some other bibliographic reviews of the 1870s (Anonymous in Just, 1877; Bohnensieg, Burck, 1879, etc.).

An excerpt from the 1875 publication (the paragraph directly related to Verlot’s information about A. umbrosa) was reproduced, most probably verbatim and in toto, in Bulletin de la Société Dauphinoise pour l'Échange des Plantes in 1876. In particular, Verlot wrote: "Artemisia umbrosa Turcz. – A. vulgaris L. Var. umbrosa DC. Prodr. 6, p. 113. – Nous nommons ainsi (sans être certain que ce nom soit exact) une plante que nous observons depuis deux ans dans plusieurs localités autour Grenoble, et qui est voisine de l'Artemisia vulgaris L." (Verlot, 1875, cited
according to Verlot, 1876: 73) [translation: "We name here (not being sure that this is the proper name) a plant that we have been observing for two years in several localities near Grenoble, and which is close [closely related] to Artemisia vulgaris L."]. He then discussed some morphological differences of that species from A. vulgaris sensu stricto and reported that he observed and collected the plants in numerous localities in and around Grenoble.

Verlot's reference to the authorship of Turczaninow is an indirect reference (Art. 38.14 and 41.3 of the ICN) to the existing basionym A. vulgaris var. umbrosa [Turcz. ex] Besser (1832: 50; 1834: 50; see also de Candolle, 1838: 113). According to Art. 7.3 of the ICN (McNeill et al., 2012), a nomenclatural combination is typified by the type of its basionym even though it may have been applied erroneously to a taxon now considered not to include that type. Consequently, Verlot validated the new combination A. umbrosa (Besser) Turcz. ex Verlot (homotypic with A. vulgaris var. umbrosa), despite the fact that he misapplied that name to another species (A. verlotiorum).

Judging from the available bibliographic references mentioned above, there is no reason to doubt that the Catalogue... of 1875 by Verlot actually existed, despite our failure to find its extant copies. Even if we assume that that publication never existed (which is not the case) or has not been published effectively (in the sense of Art. 29–30 of the ICN), the text reproduced in Bulletin de la Société Dauphinoise pour l'Échange des Plantes in 1876 and directly attributed to Verlot constitutes effective and valid publication of the nomenclatural combination A. umbrosa. Thus, the species-rank name was published in 1875 (or 1876?) and thus it is of priority over A. codonocephala Diels and some other names, if these taxa are considered conspecific.

Notes on typification and original specimens of Artemisia umbrosa

Korobkov (2014: 15) designated the following specimen as the lectotype of A. umbrosa (A. vulgaris var. umbrosa): "Lectotypus (Korobkov, hic designatus) et isolecototypi (3): Восточная Сибирь, Бурятия, "In umbrosis Charatzai, in insulis Selenga, 1829 [fl.], Turczaninov (Herb. Ledebou)" (LE)"). The following specimens were listed as syntypes: "Syntypi (3): Восточная Сибирь, Забайкальский край, "In humidis Dahuria Nerzciensis [sic! – S.M.], 1831 [fl.], Turczaninov"

* Herbarium acronyms here and below follow Index Herbariorum (Thiers, 2018–onward).
Russian: Хабаанша аймаг in Buryat, of Buryatia, and on the Selenga within the present-day Zabaykalskiy Kray (Trans-Baikal Province, Забайкальский край) of Russia.

Thus, the lectotype designation by Korobkov (2014) was not the best available choice (see comments and the list of other original specimens below). However, the current wording of Art. 9.19 of the ICN (McNeill et al., 2012) gives no solid reason for rejection of his lectotypification because the lectotype specimen belongs to original material in the extended sense of Art. 9.3 of the ICN (McNeill et al., 2012).

**Artemisia umbrosa** (Turcz. ex Besser) Turcz. ex Verlot, *Catalogue des graines du Jardin botanique de Grenoble*, 1875: 12. 1875 (Verlot, 1875: 12, *non vidi*); Verlot in *Bull. Soc. Dauphin. Échange Pl.* [Première série] 3: 73. 1876 (Verlot, 1876: 73).

Basionym: *Artemisia vulgaris* L. var. umbrosa Turcz. ex Besser, *Tentamen de Abrotanis seu de sectione II* *Artemisiarum* Linné [Moscow]: 52. 1832 (Besser, 1832: 52, preprint); Besser, *Nouv. Mém. Soc. Imp. Naturalistes Moscou* 3: 53. 1834 (Besser, 1834: 52, bound volume).

Type:—RUSSIA. Buryatia [Buryaad Ulas], "In umbrosis Charatzai, in insulis Selenga, 1829 [fl.], Turczaninov (Herb. Ledebour)", LE (lectotype, designated by Korobkov, 2014: 15).

The names that were misapplied to *A. umbrosa* in some earlier publications are discussed below, in the next section of the article. We decided not to cite here yet any heterotopic synonyms of *A. umbrosa*. An annotated list of heterotopic synonyms (extended synonymy) will be provided later, following the results of the ongoing research of East Asian species of *Artemisia* found in Europe.

**Selected original specimens of Artemisia umbrosa and/or their digital images studied**

In the course of preparation of the present article, Mosyakin and Boiko studied original specimens of *A. umbrosa* from the historical herbarium collections of Besser and Turczaninow (now in the type collection at KW). Available digital images from G, H, K, and P were consulted as well. The list of these specimens is provided below, with brief comments.

KW001000449: **label 1**, with an original handwritten description by Turczaninow: "Artemisia umbrosa mihi. foliis inferioribus pinnatipartitis, trifurcatis vel superioribus linearis-lanceolatis, integris, subitus cauleque ramoso, albo-pilosus, spicis axillaris foliosis, floribus sessilibus. In umbrosis ad Selengam et [illegible, some abbreviation]: 1829 Turcz."; (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000449; Fig. 2).

KW001001797: Turczaninow's label: "Artemisia umbrosa mihi. In umbrosis transbaicalensi 1829 Turcz." (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001001797).

KW001000453: Besser's label, blue paper (identical to paper used for publication of the *Catalogue...* by Besser, 1810), on the same sheet with KW001000452: "Artemisia (Abrotanon) vulgaris α A. umbrosa α)." (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000453; Fig. 3).

KW001000452: Besser's label, blue paper, on the same sheet with KW001000453: "Artemisia (Abrotanon) vulgaris α A. umbrosa d) Turc. Ad Selengam Adams (Hbr. Ac. I. Sc.) [from the herbarium of the Imperial Academy of Sciences, St. Petersburg – S.M.]. Herb. W. Besser" (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000452; Fig. 3). This specimen was collected on the Selenga by Adams, as indicated in the protologue (Besser, 1832: 52; 1854: 52).

G00451804: Turczaninow's label: "Artemisia umbrosa mihi. In umbrosis ad Selengam et [illegible, some abbreviation]. 1829. Turcz.;" addition on the label by de Candolle: "M. Turczaninoff à Irkoutsk. 1830 [the date of provenance? – S.M.];" identification label by de Candolle: "Artemisia vulgaris α umbrosa Bess." (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00451804).

G00451809: Besser's label: "Artemisia vulgaris L. α umbrosa mihi. In umbrosis ad Selengam Ircutia. 1835 [most probably the date of provenance – S.M.]. Herb. W. Besser" (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00451809).

H1437728: "Artemisia umbrosa mihi. A. selengensis β Led. Fl. r. [A. selengensis var. β umbrosa sensu Ledebour, *Flora Rossica* – S.M.] In umbrosis ad Selengam et [illegible, some abbreviation]. 1829. Turcz.;" printed label: "Herb. Steven" (image available from: https://
Figure 2. Original specimen of *Artemisia umbrosa* (KW001000449) from the Turczaninow historical herbarium at KW. See the label information in the text.
Figure 3. Original specimens of *Artemisia umbrosa* (KW001000452 and KW001000453, on the same sheet) from the Besser historical herbarium at KW. See the label information in the text.
plants.jstor.org/stable/10.5555/al.ap.specimen.h1437728).

K000891891: Turczaninow’s label: “Artemisia vulgaris var. cinerea umbrosa” [“cinerea” corrected to “umbrosa”], most probably by Turczaninow — S.M.] m. in umbrosis ad Selengam. 1830 [the name of Turczaninow added on the sheet above the label by another hand — S.M.”] (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.k000891891).

K000891890: curatorial label: “Ex herbario horti Petropolitani [printed text]. Artemisia vulgaris L. var. umbrosa Turcz. Ad Selengam. Turczaninoff [printed slip attached to the label: “Received Nov. 1867”]” (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p02284369).

P02284369: “Artemisia vulgaris L. var. cinerea umbrosa” [“cinerea” corrected to “umbrosa”, most probably by Turczaninow — S.M.] in umbrosis ad Selengam. 1830. Turczaninow 1840 [the name of Turczaninow and the date of provenance at P are added in darker ink and by another hand — S.M.”]” (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.p02284369).

**Some names misapplied to Artemisia umbrosa**

*Artemisia codonocephala* Diels

Probably the first author who synonymized *A. umbrosa* and several other names with *A. codonocephala* (but excluded *A. dubia* sensu stricto!) was Hara (1980), who listed the accepted name (*A. codonocephala*) and its synonyms, with nomenclatural references, and briefly commented: “After having examined the type material, I came to the conclusion mentioned above. *Artemisia dubia* Wall. ex Besser (1834) of India is a caespitose suffrutex without creeping rhizome or stolon, and I have cultivated it in Japan for more than 10 years” (Hara, 1980: 326).

Judging from the original description (Diels, 1912: 186–187) and the high-resolution images of the type of *A. codonocephala* (E00417272 and E00417273), 2 sheets, parts of the same gathering/specimen: http://plants.jstor.org/stable/10.5555/al.ap.specimen.e00417272 and http://plants.jstor.org/stable/10.5555/al.ap.specimen.e00417273), its isotype (P02284351; http://plants.jstor.org/stable/10.5555/al.ap.specimen.p02284351), and paratype (P02284350; http://plants.jstor.org/stable/10.5555/al.ap.specimen.p02284350), this taxon is not conspecific with *A. umbrosa*; instead, it is closer to *A. verlotiorum* or probably even conspecific with it. *Artemisia codonocephala* and *A. verlotiorum* share the following characters: leaves very similar in shape, sparsely pubescent above (becoming glabrous at senescence?), with slightly convolute margins; synflorescences not much branched, with branches often reflexed and curved down (“nodded spikes” in Diels, 1912); rather large and almost sessile erect capitula arranged in rows on synflorescence branches. It seems that *A. codonocephala* has somewhat more pubescent upper surfaces of leaves as compared to *A. verlotiorum*; however, this character is rather variable and also partly depends on the age of leaves.

In any case, even if *A. umbrosa* and *A. codonocephala* are considered conspecific (which is not the case, in our opinion), the first name is of priority. The name *A. codonocephala* was used for *A. umbrosa* in several East European publications (Mosyakin, 1992: 36, “with some doubt”; Yena, 2005, etc.).

*Artemisia lavandulifolia* DC.

*Artemisia lavandulifolia* Salisb. (Salisbury, 1796: 191) is illegitimate because it has been published as a superfluous substitute name for *A. caerulescens* L. (Linnaeus, 1753: 848). However, the name proposed by Salisbury is valid and because of that the name *A. lavandulifolia* DC. (de Candolle, 1838: 110; published as "lavandulaefolia", an orthographic variant correctable under Art. 60.8 of the ICN: McNeill et al., 2012) is also illegitimate (Art. 53.1 of the ICN), despite the illegitimacy of its earlier homonym.

Ling et al. (2011) accepted *A. lavandulifolia* DC. (mainly corresponding in their treatment to *A. umbrosa*, as accepted here) in a very wide circumscription, including the following names cited as synonyms: "Artemisia araneosa Kitamura; *A. argyi* H. Léveillé & Vaniot f. eximia Pampanini; *A. clemensiana* Pampanini; *A. codonocephala* Diels; *A. codonocephala* var. maiarena Pampanini; *A. grisea* Pampanini; *A. lavandulifolia* var. pekinensis Pampanini; *A. selengensis* Turczaninow ex Besser lusus umbrosa (Turczaninow ex Besser) Regel; *A. selengensis* var. umbrosa (Turczaninow ex Besser) Ledebour; *A. tristis* Pampanini; *A. vulgaris* Linnaeus var. umbrosa Turczaninow ex Besser”. At least some of these names are in fact misapplied to *A. umbrosa*. Distribution data provided by Ling et al. (2011) are also in need of correction: in our opinion, true *A. umbrosa* most probably occurs only in the northern part of the vast range reported for “*A. lavandulifolia*” by Ling et al. (l.c.).
The proper taxonomic application of the name *A. lavandulifolia* DC. still remains obscure. De Candolle (1838) described his species based on a collection from China by Staunton. Judging from the image of an original specimen (BM000839138, an incomplete specimen, only the upper part of the plant with simple leaves, probably a duplicate of the specimen(s) used by de Candolle, on the same sheet with BM000945896; digital image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.bm000839138), the plant BM000839138 is indeed similar to *A. umbrosa*, but it might be also a form of *A. lancea* Vaniot (= *A. feddei* H. Lév. & Vaniot), to which the fragment BM000945896 probably belongs. In the *Flora of the USSR* Polyakov (1961: 453) accepted the name *A. lavandulifolia*, but in fact his concept of that species was directly referable to *A. lancea*, as it is understood now (accepted as *A. feddei* in: Korobkov, 1992: 134; Zuev, 2012: 315). That species was also reported as a rare alien from Eastern Europe (Baranova et al., 1992; Tzvelev, 1994, etc., as "A. fedder") and Romania (Sirbu, Oprea, 2011, as *A. lancea*).

In any case, the name proposed by de Candolle is illegitimate and thus it does not affect the nomenclature of currently accepted taxa. Consequently, the true identity of de Candolle's "*A. lavandulifolia*" is nomenclaturally irrelevant. The name *A. lavandulifolia* was misapplied to European plants of *A. umbrosa* in several publications (Boiko, 2009; Ostopko et al., 2010), the latest one probably being Sirbu and Oprea (2011).

*Artemisia selengensis* Turcz. ex Besser
As commented above, this name definitely refers to a morphologically very distinct southeastern Siberian and East Asian species with narrow serrate-dentate leaf lobes. It was for the first time misapplied to European plants of *A. verlotiorum* by Bonnet (1883; see also Brenan, 1950). Ledebour (1844) treated *A. umbrosa* as a variety of *A. selengensis*, and that was most probably the reason why Bonnet, who may have used Ledebour's *Flora Rossica* as a standard taxonomic reference, misapplied that name for plants from France.

*Artemisia selengensis* was reported originally as occurring "in insulis Selengae ad Selenginsk Turtsch." by Besser (1832: 50; 1834: 50) and "in insulis Selengae ad Selenginsk Ircutiæ et pratis humidis Dahuriae legit cl. Turczaninow" by de Candolle (1838: 112). Turczaninow (1846: 197, 1856) later reported it "in insulis Selenge prope Selenginsk et in Dahuria orientali prope Czalbuczi", corresponding to the town of Selenginsk (Kabansk District of Buryatia, see above), and the village of Chalbuchi (Чалбучи or Чалбучи-Кылга in Russian) in Zabaykalskiy Kray (Trans-Baikal Province), Russia. Korobkov (2014: 14) designated the following specimen from Buryatia as the lectotype: "Lectotypus (Korobkov, hic designatus) et isolectotypi (2): Восточная Сибирь, Бурятия, "In insulis Selengae ad Selenginsk, 1829 [fl.], Turcz." (LE).

*Artemisia dubia* Wall. ex Besser: an update on the holotype and isotypes
The name *Artemisia dubia* Wall. ex Besser (1832: 39; 1834: 39) was (and still is: see below) misapplied to the species accepted here as *A. umbrosa*. That misapplication was probably initiated by Kitamura in his several publications and supported by Ohwi (1965) in his well-known revised English edition of the *Flora of Japan* (see a nomenclatural summary in Hara, 1980: 326). In fact, *A. dubia* does not belong to the *A. vulgaris* aggregate and *Artemisia* sect. *Artemisia*, as it has been convincingly demonstrated by Hara (1980), and especially by Ling (1987; see also Ling, 1995; Ling et al., 2011), who placed the species in *Artemisia* subg. *Dracunculus* (Besser) Peterm.

Despite the taxonomic and nomenclatural explanation published by Ling (1987) and later cited in Mosyakin (1990), Ling (1995), Ling et al. (2011), Boiko (2012), and in some other sources, cases of that misapplication can be found even in recent literature, in particular, in the standard checklist by Czerepanov (1995). For example, the name "*A. dubia*" is still accepted for *A. umbrosa* in recent editions of the *Flora of the middle zone of the European part of Russia* (Mayorov, 2006, 2014) and in many other Russian publications on alien plants (Sukhorukov, 2010; Mayorov et al., 2012; Notov, Notov, 2012; Seregin, 2012, 2014; Tremasova et al., 2013, Vinogradova et al., 2017, etc.).

Besser himself was rather uncertain about the taxonomic position and affinities of his *A. dubia*, which is evident from the protologue. In particular, Besser (1832: 39; 1834: 39) commented that his specimen was too young for its certain taxonomic placement; he compared his new species with *A. vulgaris* and its relatives (such as *A. tilesii* Ledebr.) but also mentioned its possible placement in the *Dracunculus* group ("...ut eam ad Dracunculos possim referre").

Ling (1987: 443) cited a specimen from K (K-W, referring to the Wallich collection) as an isotype of *A. umbrosa* but did not mention the holotype or lectotype. The digital image of the Kew specimen of *A. dubia* (K001119019) is available from JSTOR Global.
Plants (https://plants.jstor.org). As it is evident from the protologue, when preparing the description of the species, Besser had at his disposal only one specimen of *A. dubia*, which originated from Wallich's herbarium collection ("Kamaon in Nepalia Dr. Wallich (v. sp. s. communic. ab. hon. coetu merc. angl. Ind. orient."); Besser, l.c.: 39]. Here the abbreviated text of Besser's note means that he has seen/studied some herbarium specimen provided by/through the Honourable British East India Company; the same provenance is reported for a specimen G00460453 from de Candolle's herbarium in Geneva (see de Candolle, Radcliffe-Smith, 1981). It is also reported that "Wilibald Swibert Joseph Gottlieb Besser (1784–1842) of Krzemieniec [Kremenets, Ternopil Region, Ukraine – S.M.] <...> volunteered to work on Wallich's material of the genus Artemisia. This was sent to him, and was incorporated into his Tentamen de Abrotanis in 1832" (de Candolle, Radcliffe-Smith, 1981: 339).

The protologue description of the only specimen studied by Besser (1832: 39–40; 1834: 39–40) perfectly matches the Besser's specimen in the National Herbarium of Ukraine (KW). Consequently, the specimen KW000093841 should be considered the holotype. It was originally in the Besser historical herbarium (KW-BESS) and is deposited now in the type collection at KW. The nomenclatural citation of *A. dubia* and its type specimens (holotype and two known isotypes) are provided below.

*Artemisia dubia* Wall. ex Besser, Tentamen de Abrotanis seu de sectione IIº *Artemisiarum Linnaei* [Moscow]: 39. 1832 (Besser, 1832: 39, preprint); Besser, *Novum. Mém. Soc. Imp. Naturalistes Moscou* 3: 39. 1834 (Besser, 1834: 39, preprint). Type:—[INDIA: Uttarakhand, or NEPAL?], "Artemisia dubia. Kamaon. D'. Wallich 31" [1831, date of provenance added by Besser – S.M.]; KW000093841, holotype (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw000093841).

Other original specimens (isotypes):

- K00119019, isotype: label 1 [upper left corner of the sheet]: "3307/417. Art. dubia Wall. Kamaon RB [Richard Blinkworth – S.M.]"; label 2 [upper right corner of the sheet]: "Artemisia dubia. Wall. 3307 [number added in pencil – S.M.]. Kamaon. R. Blinkworth" (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.k00119019).
- G00460453, isotype: "417 Artemisia dubia. Wall. Kamaon. Comp. angl. des Indes 1830 [received from the British East India Company in 1830; provenance text added by de Candolle – S.M.]" (image available from: https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00460453).

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Recommended for publication by Submitted 04.01.2018 Zigmantas Gudžinskas
Східноазійський вид Artemisia umbrosa (описаний як A. vulgaris var. umbrosa), який також відомий як занесений та натуралізований у деяких євразійських країнах, має складну номенклатуру і таксономічну історію. Цю назву неправильно застосовували до споріднених таксонів Artemisia sect. Artemisia, включаючи A. verlotiorum, а декілька інших назв також помилково застосовувалися до цього таксона. Авторство виду A. umbrosa наводилось у літературі по-різному (“Turcz. ex DC.”, “Turcz. ex Besser”, “(Besser Turcz. ex DC“, “(Turcz. ex DC.) Pamp.”, “(Turcz. ex Besser Pamp.” тощо). Ми показали, що базіонім A. vulgaris var. umbrosa був опублікований Бессером у 1832 р. (а не у 1834 р.). Комбінація видового рангу A. umbrosa була дійсно оприлюднена не Пампаниним у 1930 році, а Верло у 1875 році; таким чином, правильне цитування авторства цього названня – A. umbrosa (Turcz. ex Besser) Turcz. ex Verlot. Незважаючи на те, що Верло невірно застосував назву A. umbrosa до виду, який згодом був описаний як A. verlotiorum, його комбінація є валідною та законною. Стисло розглянуті деякі інші назви, які були неправильно застосовані до A. umbrosa (наприклад, A. codonocephala auct. non Diels, A. dubia auct. non Wall. ex Besser, A. lavandulifolia auct. non DC., nom. illeg., тощо). Обговорюються лектотип та інші оригінальні зразки A. umbrosa (особливо з історичних гербарних колекцій Турчанінова та Бессера, КВ). Надано стислий огляд флористичних вказівок з історичних гербарних колекцій Турчанінова та Бессера, КВ. Представлений краткий обзор флористичних усіх A. umbrosa в Восточноазійській Европі, де від породився під декількома назвами.

**Ключові слова:** Artemisia, Asteraceae, адвентивний вид, номенклатура, систематика, типифікація

Восточноазійський вид Artemisia umbrosa (описаний як A. vulgaris var. umbrosa), який також відомий як занесений та натуралізований в деяких євразійських країнах, має складну номенклатуру і таксономічну історію. Цю назву неправильно застосовували до споріднених таксонів Artemisia sect. Artemisia, включаючи A. verlotiorum, а декілька інших назв також помилково застосовувалися до цього таксона. Авторство виду A. umbrosa наводилось у літературі по-різному (“Turcz. ex DC.”, “Turcz. ex Besser”, “(Besser Turcz. ex DC“, “(Turcz. ex DC.) Pamp.”, “(Turcz. ex Besser Pamp.” тощо). Ми показали, що базіонім A. vulgaris var. umbrosa був опублікований Бессером у 1832 р. (а не у 1834 р.). Комбінація видового рангу A. umbrosa була дійсно оприлюднена не Пампаниним у 1930 році, а Верло у 1875 році; таким чином, правильне цитування авторства цього названня – A. umbrosa (Turcz. ex Besser) Turcz. ex Verlot. Незважаючи на те, що Верло невірно застосував назву A. umbrosa до виду, який згодом був описаний як A. verlotiorum, його комбінація є валідною та законною. Стисло розглянуті деякі інші назви, які були неправильно застосовані до A. umbrosa (наприклад, A. codonocephala auct. non Diels, A. dubia auct. non Wall. ex Besser, A. lavandulifolia auct. non DC., nom. illeg., тощо). Обговорюються лектотип та інші оригінальні зразки A. umbrosa (особливо з історичних гербарних колекцій Турчанінова та Бессера, КВ). Надано стислий огляд флористичних вказівок з історичних гербарних колекцій Турчанінова та Бессера, КВ. Представлений краткий обзор флористичних усіх A. umbrosa в Восточноазійській Европі, де від породився під декількома назвами.

**Ключові слова:** Artemisia, Asteraceae, адвентивний вид, номенклатура, систематика, типифікація