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**NEW NOMENCLATRURAL COMBINATIONS
IN *BLITUM* L. AND *KALI* MILL.
(*CHENOPODIACEAE*): TAXA OCCURRING
IN EASTERN EUROPE**

Key words: new combinations, *Blitum*, *Kali*, *Chenopodium*, *Salsola*

Abstract. Five new combinations (four at the section level and one for a hybrid) are validated in the genus *Blitum* L. and one new combination at the subspecies level is made in the genus *Kali* Mill. (*Chenopodiaceae*). Segregation of these genera from *Chenopodium* L. and *Salsola* L., respectively, is briefly discussed.

Introduction

During the preparation of treatments of *Chenopodium* L. and related genera of *Chenopodiaceae* for the new checklist of the vascular flora of Eastern Europe being compiled at the V.L. Komarov Botanical Institute of the Russian Academy of Sciences, it has become evident that several new nomenclatural combinations are needed in these groups.

The new combinations validated below are partly based on our previous taxonomic research (Mosyakin, 1993, Mosyakin, Clemants, 1997; Мосякін, 2002, 2003, etc.), as well as on new results of molecular phylogenetic studies of *Chenopodiaceae* (Akhani et al., 2007; Kadereit et al., 2003, 2005, 2010, etc.).

Discussion

Results of recent molecular studies confirmed the deep phylogenetic split between at least three branches containing taxa previously traditionally placed in *Chenopodium* sensu lato (Kadereit et al., 2003, 2005, 2010), roughly corresponding to commonly recognized subgenera of *Chenopodium* (subgen. *Ambrosia* A.J. Scott, subgen. *Blitum* (L.) I. Hiitonen, and subgen. *Chenopodium*), with addition of taxa from other traditionally recognized genera. In particular, these results confirmed the taxonomic and nomenclatural decisions of S.L. Mosyakin and S.E. Clemants (2002, 2008), who transferred to the expanded genus *Dysphania* R. Br. glandular-pubescent taxa previously placed in *Chenopodium* subgen. *Ambrosia*. The new circumscription of *Dysphania* was used in treatments prepared for the *Flora of North America north of Mexico* (Clemants, Mosyakin, 2003) and the *Flora of China* (Zhu Gelin et al., 2003), and now is gaining wider recognition in other regional floras of the world and taxonomic and floristic databases (Shepherd, Wilson, 2008, 2009; Verloove, Lambinon, 2006, etc.).

It seems now that the Linnaean genus *Blitum* L. has to be resurrected from its temporary taxonomic oblivion. Consequently, new combinations will be needed for taxa

currently treated in *Chenopodium*, *Monolepis* Schrad., and probably some other groups, for which no valid names are currently available in *Blitum*. The clade containing *Blitum* also contains *Spinacia* L., which may cause serious nomenclatural problems if these two simultaneously validated genera are considered congeneric. In my opinion, nomenclatural conservation of *Blitum* against *Spinacia* would be desirable in the future, which would minimize possible nomenclatural changes. Earlier we validated or re-circumscribed some infragenetic taxa within *Chenopodium* subgen. *Blitum* (Mosyakin, Clemants, 1997). Now these taxa have to be transferred to the genus *Blitum*.

In my treatments of *Salsola* L. sensu lato for the *Flora of North America north of Mexico* (Mosyakin, 1996, 2003) I agreed with some other authors in recognizing that *Salsola*, as traditionally circumscribed, is a non-monophyletic aggregate rather than a natural genus. Recent molecular phylogenetic research (Kadereit et al., 2003; and especially Akhani et al., 2007) greatly contributed to a better understanding of relationships between various representatives of *Salsoloideae* and *Salsoleae*. In particular, the genus *Kali* Mill. was recognized to house taxa related to *Kali soda* Moench (= *Salsola kali* L.), and several new combinations have been proposed (Akhani et al., 2007). However, one infraspecific taxon occurring in Eastern Europe has not been transferred to the genus *Kali*. The relevant nomenclatural transfer in *Kali* is also validated below.

Validation of new combinations

Here I validate new combinations only for taxa occurring in Eastern Europe, for their subsequent inclusion in the mentioned annotated checklist of East European vascular plants (in preparation). Other new names and combinations will be published later, after further studies and proper discussion with colleagues.

Genus *Blitum* L.

Blitum* L. sect. *Blitum* subsect. *Foliosa (Kowal ex Mosyakin & Clemants) Mosyakin, comb. nov.

Basionym: *Chenopodium* L. [subgen. *Blitum* (L.) I. Hiitonen *Blitum* (L.) Hook. f. in Benth. & Hook. f.] subsect. *Foliosa* Kowal ex Mosyakin & Clemants, 1996, Novon 6(4): 398. — Typus: *Chenopodium foliosum* Asch. (= *Blitum virgatum* L.).

— *Chenopodium* sect. *Eublitum* (Moq.) Aellen subsect. *Foliosa* Kowal, 1953, Monogr. Bot. (Warszawa) 1: 113, nom. inval. (descr. polon.).

This subsection includes taxa of the *Blitum foliosum* aggr., while *B. capitatum* L. (= *Chenopodium capitatum* (L.) Ambrosi) should be placed in *Blitum* L. sect. *Blitum* subsect. *Blitum* (*Chenopodium* L. subgen. *Blitum* (L.) I. Hiitonen sect. *Blitum* (L.) Hook. f. in Benth. & Hook. f. subsect. *Capitata* Kowal ex Mosyakin & Clemants, 1996, Novon 6(4): 399. — *Chenopodium* sect. *Eublitum* (Moq.) Aellen subsect. *Capitata* Kowal, 1953, Monogr. Bot. (Warszawa) 1: 113, nom. inval., descr. polon.).

Blitum* L. sect. *Degenia (Aellen) Mosyakin, comb. nov.

Basionym: *Chenopodium* sect. *Degenia* Aellen, 1926, Magyar Bot. Lapok, 25: 56. — Typus: *Chenopodium macrospermum* Hook. f.

In the Eastern European flora this section is represented by *B. chenopodioides* L. (= *Chenopodium chenopodioides* (L.) Aellen, *C. botryodes* Sm., *C. crassifolium* Hornem.).

Blitum* L. sect. *Pseudoblitum (Hook. f.) Mosyakin, comb. nov.

Basionym: *Chenopodium* L. sect. *Pseudoblitum* Hook. f. 1880, in Benth. et Hook. f., Gen. Pl. 3: 52. — Typus: *Chenopodium rubrum* L. (= *Blitum rubrum* (L.) Rehb.).

This section in Eastern Europe is represented by *B. rubrum* (L.) Rchb. (= *Chenopodium rubrum* L.).

***Blitum* L. sect. *Glauca* (Standl.) Mosyakin, comb. nov.**

Basionym: *Chenopodium* L. [unranked] *Glauca* Standl. 1916, North Amer. Fl. 21: 29. — Typus: *Chenopodium glaucum* L. (*Blitum glaucum* (L.) W.D.J. Koch).

— *Chenopodium* L. sect. *Glauca* Ignatov, 1988, Сосуд. раст. сов. Дальн. Вост. 3: 22.

This section includes *B. glaucum* (L.) W.D.J. Koch (= *Chenopodium glaucum* L.) that occurs in Eastern Europe and has almost worldwide distribution, and some related taxa, usually treated as species or infraspecific entities.

***Blitum* × *schulzeanum* (Murr) Mosyakin, comb. nov.**

Basionym: *Chenopodium* × *schulzeanum* Murr, 1906, Allg. Bot. Zeitschr. 12: 110.

Blitum × *schulzeanum* is a hybrid between *B. glaucum* and *B. rubrum*; it is sporadically registered in places of co-occurrence of its parent species. Morphologically it is rather variable but more similar to *B. rubrum*, differing from the latter mainly in having leaves more or less farinose on the lower side.

Genus *Kali* Mill.

***Kali tragus* (L.) Scop. subsp. *pontica* (Pall.) Mosyakin, comb. nov.**

Basionym: *Salsola kali* L. var. *pontica* Pall. 1803, III. Pl.: 37, tab. 29, fig. 2.

— *Salsola kali* L. subsp. *pontica* (Pall.) Mosyakin, 1996, Ann. Missouri Bot. Gard. 83(3): 389. — *S. tragus* L. subsp. *pontica* (Pall.) S. Rilke, 1999, Biblioth. Bot. 149: 133. — *S. pontica* (Pall.) Degen, 1937, Fl. Velebit. 2: 47; Цвелев, 1993, Укр. ботан. журн. 50(1): 82.

In recent publications this taxon was recognized as a species (*S. pontica*), as a subspecies of *S. kali*, or as a subspecies of *S. tragus*. My placement of this taxon in *S. kali* s. l. (Mosyakin, 1996, 2003) was mostly caused by the assumption that *S. tragus* can be also treated eventually as a subspecies of *S. kali*. However, *S. pontica* seems to be closer to or rooted in *S. tragus* (Rilke, 1999; Ryan et al., 2007).

Acknowledgments and dedication. I dedicate this article to the living memory of my friend and co-author, Steven Earl Clemants (1954–2008), who greatly contributed to American and international plant conservation and taxonomic botany, especially taxonomy and geography of *Chenopodiaceae*, *Amaranthaceae*, *Ericaceae*, *Juncaceae* and some other families.

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НОВІ НОМЕНКЛАТУРНІ КОМБІНАЦІЇ В РОДАХ *BLITUM* L. І *KALI* MILL.
(*CHENOPODIACEAE*): ТАКСОНИ, ПРЕДСТАВЛЕНІ У ФЛОРИ СХІДНОЇ ЄВРОПИ

П'ять нових номенклатурних комбінацій (чотири на рівні секції й одна для гібрида) запропоновані в роді *Blitum* L. та одна нова комбінація на рівні підвиду — в роді *Kali* Mill. (*Chenopodiaceae*). Стисло обґрунтована необхідність виділення цих родів зі складу *Chenopodium* L. і *Salsola* L. відповідно.

Ключові слова: нові комбінації, *Blitum*, *Kali*, *Chenopodium*, *Salsola*.

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НОВЫЕ НОМЕНКЛАТУРНЫЕ КОМБИНАЦИИ В РОДАХ *BLITUM* L.
И *KALI* MILL. (*CHENOPODIACEAE*): ТАКСОНЫ, ПРЕДСТАВЛЕННЫЕ
ВО ФЛОРЕ ВОСТОЧНОЙ ЕВРОПЫ

Пять новых номенклатурных комбинаций (четыре на уровне секции и одна для гибрида) предложены в роде *Blitum* L. и одна новая комбинация на подвидовом уровне — в роде *Kali* Mill. (*Chenopodiaceae*). Кратко обоснована необходимость выделения этих родов из состава, соответственно, *Chenopodium* L. и *Salsola* L.

Ключевые слова: новые комбинации, *Blitum*, *Kali*, *Chenopodium*, *Salsola*.