

Kramer, W. 2023. The genus *Syntrichia* Brid. (Pottiaceae, Bryophyta) in the Holarctic with special consideration of North America. Nova Hedwigia, Beiheft 154: 1–234 (published on 28 March 2023).

The genus *Syntrichia* Brid. was described already in 1801, but for a long time its distinctions from other genera, and first of all from *Tortula*, were understood in a way different from the current one. For instance, Mönkemeyer (1927) in ‘Die Laubmoose Europas’ accepted *Syntrichia* including *S. subulata* Hedw., which was accepted later as a conserved type of the genus *Tortula*. Currently, this genus includes more than 100 taxa recognized at the species level, distributed throughout the world and playing a significant role in the vegetation of xeric ecosystems, often used as a model object in studies on the physiology of desiccation tolerance.

The modern circumscription of *Syntrichia* had rapidly spread among the bryologists since the ‘Genera of the Pottiaceae: mosses of harsh environments’ by Zander (1993), however already before that the quite clearly delimited group of species related to *S. ruralis* was called, either informally as a *Tortula ruralis*-group, or formally as *Tortula* sect. *Ruralis* De Not.

The revision ‘*Tortula* Hedw. sect. *Ruralis* De Not. (Pottiaceae, Musci) in der östlichen Holarctis’ has been published by Wolfgang Kramer in 1980, as a volume of Bryophytorum Bibliotheca 21, with 165 pages of text and 29 tables of illustrations (20 line drawings, and 9 photograph plates). For many years this publication served as the most comprehensive source of *Syntrichia* taxonomy in many countries of Eurasia. Later on, the treatment for *Tortula* sect. *Ruralis* for South America (1988) appeared, and finally in 2023 the taxonomic treatment of *Syntrichia* for the whole Holarctic was published. It includes 34 species (including 5 species new for science), and many of them include infraspecific taxa, so altogether in the Holarctic region 59 taxa are accepted.

Introducing numerous infraspecific taxa is a rare practice among the present day taxonomic treatments of mosses. Nowadays the bryologists usually try to avoid them, as they provide inconveniences for databasing and check-listing, calculating biodiversity indexes and similar approaches, where all taxa at the same rank are much more easy to use.

The different task is faced by taxonomists, who need to write a key to identification for a large group of very variable plants. The key for *Syntrichia* in the reviewed publication includes 81 couplets, i.e. it leads to 82 names, including repeats and three names of taxa from the other genera easily confused with *Syntrichia*. Such a number of repeats seems to be unavoidable in the key, so it works as properly as the key of such length can work. Sorting morphotypes into varieties in this case is helpful for their correct identification.

The reviewed publication is written in a style of classical taxonomic revision, without shortening “specimens

examined” for less known species, but, at the same time, not over-flooded with specimens for taxa that are well-known and the least problematic. A special attention is given to the well-known difficulties in differentiation of *Syntrichia ruralis* from superficially similar species, as well as to the differentiation of its var. *ruralis* from other varieties of this species, and finally, the differentiation of ‘typical’ var. *ruralis* from a very troublesome ‘*ruraliformis*’, with exhaustive explanations why the decision on the rank of each morphotype is made.

*Syntrichia ruralis* with all accepted varieties is described on 30 out of 155 pages of the treatment, which includes descriptions of accepted species, keys to their identification, discussion on biogeography of the genus and other important parts of the study. In addition to this, the variation of *S. ruralis* is described in 10 pages of Appendix, where for tens specimens the unusual combination of traits are listed. This part might be useful for refraining from the superfluous description of new species in the *S. ruralis* complex.

Taxonomic part is followed by the discussion of the infrageneric classification of *Syntrichia* and geographical distribution of the species.

The focus of the present study was on North American material, and all five new species were described from there. High endemism of mountains in the western part of North America is well known (Carter *et al.*, 2016, <https://doi.org/10.3732/ajb.1500484>). At the same time, Kramer argued that in Asian Russia and China mostly typical morphotypes of *S. ruralis* occur, thus he did not expect much novelties in this area and did not request additional material for his study. However, finding of *S. leptotricha* in Mongolia, together with its wide occurrence in the western North America northwards to Alaska, suggest that this species can likely be discovered in the East Siberia as well.

The monograph of *Syntrichia* is illustrated by 63 plates of line drawings, showing leaves, cells, and costa transverse sections, and also by 30 color photographs addressing the laminal cell papillosity pattern and structure of costa, with a special attention to hydroids.

Kramer’s treatment is an invaluable contribution to the study of the genus *Syntrichia*, a great step forward in knowledge of species which comprise an important component of arid ecosystems, involved in the vegetation recovery.

The monograph is available from E. Schweizerbart’sche Verlagsbuchhandlung (Nägele u. Obermiller) Science Publishers, Johannesstr. 3A, 70176 Stuttgart, Germany, web: [www.schweizerbart.de](http://www.schweizerbart.de), email: [mail@schweizerbart.de](mailto:mail@schweizerbart.de). Price: 129 € + shipping.

Michael S. Ignatov, [misha\\_ignatov@list.ru](mailto:misha_ignatov@list.ru)

Tsitsin Main Botanical Garden, Russian Academy of Sciences and Lomonosov Moscow State University, Faculty of Biology, Moscow, Russia