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VALIDATION OF LIMESTONE SCREE VEGETATION SYNTAXA FROM THE CRIMEAN MOUNTAINS

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Some syntaxa of scree vegetation from the Crimean Mountains are validated on the basis of the International Code of Phytosociological Nomenclature. The validations concern syntaxa of different hierarchical levels (one alliance, one association, two subassociations) belonging to class *Thlaspietea rotundifolii*: *Rumici scutati-Heracleion stevenii*, *Sobolewskio sibiricae-Heracleetum stevenii*, *S. s.-H. s. lamietosum glaberrimi*, *S. s.-H. s. lactucetosum vimineae*.

Key words: *syntaxonomy, validation of names, scree vegetation, Thlaspietea rotundifolii, Rumici scutati-Heracleion stevenii, Sobolewskio sibiricae-Heracleetum stevenii, Crimea.*

Introduction

In 2007 we have published the paper with description of some new syntaxa of scree vegetation of the Crimean peninsula on the basis of Braun-Blanquet approach: the alliance *Rumici scutati-Heracleion stevenii* Ryff 2007 nom. inval. (Art. 3g & 5), the association *Sobolewskio sibiricae-Heracleetum* Ryff 2007 nom. inval. (Art. 3g & 5) and two subassociations – *S. s.-H. lamietosum glaberrimi* Ryff 2007 nom. inval. (Art. 3g, 4 & 5) and *S. s.-H. scarioletosum vimineae* Ryff 2007 nom. inval. (Art. 3g, 4 & 5) [4]. However, the names of these syntaxa were invalidly described because the holotypes were not identified in *expressis verbis* (Art. 5 of the International Code of Phytosociological Nomenclature) and because it was not clear from what taxa names (in particular, from what species of *Heracleum* L. and from what subspecies of *Rumex scutatus* L.) they have been formed (Art. 3g of ICPN) [7]. The names of the subassociations were also published illegitimately according to Article 4 of ICPN.

The aim of this paper is to validate the syntaxa names of endemic limestone scree vegetation of the Main Ridge of the Crimean Mountains.

Materials and methods

The objects of our study are syntaxa of limestone scree vegetation at higher altitudes of the Mountainous Crimea. Field studies were carried out during 1996 – 2016 years. The Braun-Blanquet approach was used for classification. Species cover-abundance values are given in the modified Braun-Blanquet scale. Syntaxonomic system was built on the basis of more than 100 relevés. Nomenclature of the syntaxa follows 3rd edition of International Code of Phytosociological Nomenclature (ICPN) [7]. Nomenclature of the taxa follows the Euro+Med PlantBase (<http://www.emplantbase.org/home.html>) and A. Yena [8] if not indicated otherwise.

Results and discussion

The communities of scree vegetation occur in all altitudinal belts and on different types of rocks in the Crimean Mountains. However peculiar plant communities both in floristic composition and ecology were found on Upper Jurassic limestone screes at higher altitudes of the Main Ridge.

According to concept of broadly conceived class developed in the 1990s by L. Mucina, M. Valachovič and other phytosociologists [3, 6] it was decided to include all European communities of scree vegetation in one class *Thlaspietea rotundifolii* Braun-Blanquet 1948. Montane and subalpine plant communities on limestone and other base-rich screes in this scheme were included in the order *Thlaspietalia rotundifolii* Braun-Blanquet in Braun-Blanquet et Jenny 1926. Therefore the Crimean syntaxa of scree vegetation also have been included in these class and order despite the fact that there are very few diagnostic taxa of *Thlaspietea rotundifolii* and *Thlaspietalia rotundifolii* in the floristic composition of Crimean communities.

Proposed by E.A. Belonovskaya and coauthors [1] taxonomic concept for the integration of the all Crimean scree syntaxa in class *Drypidetea spinosae* Quézel 1964 seem to us not quite justified because the fact that Crimean and Balkan units have not common species at all. In our opinion the Crimean high-altitude scree vegetation is closer to the Turkish endemic class *Heldreichietea* Quézel ex Parolly 1995. However more comprehensive study is needed for the final decision.

Characteristics of syntaxa validated in this paper are given below.

***Rumici hastifolii-Heracleion stevenii* all. nova hoc loco**

(*Thlaspietalia rotundifolii* Braun-Blanquet in Braun-Blanquet et Jenny 1926 ?, *Thlaspietea rotundifolii* Braun-Blanquet 1948)

Synonym: *Rumici scutati-Heracleion stevenii* Ryff 2007 [4] (ICPN Art 3g & 5).

Holotypus hoc loco: Sobolewskio sibiricae-Heracleetum stevenii Ryff ass. nova hoc loco (see below).

Diagnostic taxa: *Heracleum stevenii* Manden., *Rumex scutatus* L. subsp. *hastifolius* (M. Bieb.) Borod., *Allium nathaliae* Seregin.

The alliance represents the vegetation of base-rich (mostly calcareous) screes of the montane and subalpine belts of the Main Ridge of the Crimean Mountains.

***Sobolewskio sibiricae-Heracleetum stevenii* ass. nova hoc loco**

Synonym: *Sobolewskio sibiricae-Heracleetum* Ryff 2007 [4] (ICPN Art 3g & 5).

Holotypus: Ryff, 2007, p. 11–12, Table 1, relevé 8 [4]. Crimean peninsula, southwestern slope of the Chatyrdag massif under the top Eklizi-Burun. Coordinates: 44° 46' 00" N, 34° 17' 30" E. Altitude 1200 m asl. Habitat: large mobile scree on outcrops of Upper Jurassic limestone in humid climate conditions. Relevé area 10 m². Aspect: South. Slope: 30. Substrate: limestone colluvium with marl-like substrate. Vegetation cover: 20%. Vegetation height 1 m (max), 40 cm (average). Author L. Ryff, 4 June 1998.

Heracleum stevenii 2a, *Heracleum ligusticifolium* M. Bieb. 2a, *Sobolewskia sibirica* (Willd.) P.W. Ball 1, *Rumex scutatus* subsp. *hastifolius* +, *Allium nathaliae* +, *Scrophularia rupestris* Willd. +, *Lamium glaberrimum* (K. Koch) Taliev +, *Asperula taurica* Pacz. +, *Oberna crispata* (Steven) Ikonn. +, *Crepis purpurea* (Willd.) M. Bieb. r, *Pimpinella tragium* Vill. r, *Thalictrum minus* L. r.

Diagnostic taxa: *Sobolewskia sibirica*, *Heracleum stevenii*, *Scrophularia rupestris*, *Lamium glaberrimum*, *Asperula taurica*, *Crepis purpurea*, *Heracleum ligusticifolium*.

The association includes Crimean endemic scree community occurring in the higher part of the Main Ridge of the Crimean Mountains. It occupies the slopes of various aspects in yailas (elevated plateaus) of the Chatyrdag, Babugan, Gurzuf, Nikita, Yalta, Ai-Petri mountains at the altitudes of 1000 to 1400 m, but their variants can also be found at lower altitudes (from 500 m). The climate of this zone is humid with moderately cool or cool temperate regime during growing season, with moderately cold winter. Average annual air temperature is 3,5 – 6⁰ C, annual precipitation is 800 – 960 mm. The community occupies

large mobile screes and talus composed by Upper Jurassic limestone colluvium and marl-like weathering products. Most diagnostic species associations are rare stenotopic endemics (including relict endemics). Association is represented by two subassociations.

Sobolewskio sibiricae-Heracleetum stevenii lamietosum glaberrimi subass. nova hoc loco

Synonym: *Sobolewskio sibiricae-Heracleetum lamietosum glaberrimi* Ryff 2007 [4] (ICPN Art 3g & 5).

Holotypus is the same as for the association: Ryff, 2007, p. 11–12, Table 1, relevé 8 [4] (see above).

Differential taxa of the subassociation: *Lamium glaberrimum*, *Asperula taurica*, *Crepis purpurea*, *Heracleum ligusticifolium*, *Scutellaria orientalis* L. subsp. *orientalis*, *Viola oreades* M. Bieb., *Scrophularia exilis* Popl. Nomenclature of latter species is given according to Fateryga et al., Ryff [2, 5] because it was recently rediscovered in the Crimea with renewing its endemic status.

Subassociation occurs in typical for the association conditions – on large, active, mobile screes composed by Upper Jurassic limestone colluvium and marl-like weathering products. It includes the highest proportion of obligate glareophytes and Crimean endemic species among all syntaxa of Crimean petrophytic vegetation.

Sobolewskio sibiricae-Heracleetum stevenii lactucetosum vimineae subass. nova hoc loco

Synonym: *Sobolewskio sibiricae-Heracleetum scarioletosum vimineae* Ryff 2007 [4] (ICPN Art 3g & 5).

Holotypus hoc loco: Crimean peninsula, south-western slope of the Chatyrdag massif under the top Eklizi-Burun. Coordinates: 44° 46' 00" N, 34° 17' 30" E. Altitude: 1200 m asl. Habitat: the edge of mobile limestone scree. Relevé area 10 m². Aspect: South-west. Slope: 35. Substrate: limestone colluvium. Vegetation cover: 35%. Vegetation height 1 m (max), 50 cm (average). Species cover-abundance values are given in the modified Braun-Blanquet scale. Sampled by L. Ryff on 4 June 1998.

Heracleum stevenii 2b, *Sobolewskia sibirica* 2a, *Rumex scutatus* subsp. *hastifolius* 2a, *Galium mollugo* L. 2a, *Scrophularia rupestris* 2a, *Lactuca viminea* (L.) J. Presl et C. Presl +, *Allium nathaliae* +.

Differential taxa of subassociation: *Lactuca viminea*.

This subassociation is characterized by a wider environmental conditions compared to the previous one. It is found at altitude of 500 – 1200 m, in the semiarid and humid climate, occupies the edges of large mobile screes and small stabilized screes with the single-layer colluvium. It includes poor in species composition variants of association and it is characterized by the absence of differential species of the *S. s.-H. s. lamietosum glaberrimi*.

Conclusions

Thus, at present the Prodrumus of the limestone scree vegetation of the Main Change of the Crimean Mountains is as follows:

Cl. *Thlaspietea rotundifolii* Braun-Blanquet 1948

Ord. *Thlaspietalia rotundifolii* Braun-Blanquet in Braun-Blanquet et Jenny 1926 ?

All. *Rumici hastifolii-Heracleion stevenii* Ryff *all. nov.*

Ass. *Sobolewskio sibiricae-Heracleetum stevenii* Ryff *ass. nova*

Subass. *S. s.-H. lamietosum glaberrimi* Ryff *subass. nova*

Subass. *S. s.-H. lactucetosum vimineae* Ryff *subass. nova*

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Рыфф Л.Э. Валидизация синтаксонов растительности известняковых осыпей Горного Крыма // Сборник научных трудов Гос. Никитск. ботан. сада. – 2016. – Т. 143. – С. 185-188.

Несколько синтаксонов растительности осыпей Горного Крыма валидизировано в соответствии с требованиями Международного кодекса фитосоциологической номенклатуры. Валидизированы единицы различных иерархических уровней (один союз, одна ассоциация, две субассоциации), относящиеся к классу *Thlaspietea rotundifolii*: *Rumici scutati-Heracleion stevenii*, *Sobolewskio sibiricae-Heracleetum stevenii*, *S. s.-H. s. lamietosum glaberrimi*, *S. s.-H. s. lactucetosum vimineae*.

Ключевые слова: синтаксономия, валидизация названий, растительность осыпей, *Thlaspietea rotundifolii*, *Rumici scutati-Heracleion stevenii*, *Sobolewskio sibiricae-Heracleetum stevenii*, Крым