

VALIDATIONS AND TYPIFICATIONS OF SOME SOUTH EUROPEAN SYNTAXA

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Abstract

In the course of the compilation of a list of high-rank syntaxa of Europe, it appeared that some of syntaxa from south Europe were not validly described. In this paper, the following syntaxa have been either described or validated, such as the *Potentillo montenegrinae-Festucion paniculatae* (*Festucetalia spadiceae*, *Juncetea trifidi*), the *Aquilegio nigricantis-Rhododendron hirsuti* (*Rhododendro hirsuti-Ericetalia carneae*, *Rhododendro hirsuti-Ericetea carneae*), the *Hyperico grisebachii-Pinion mugo* (*Junipero-Pinetalia mugo*, *Roso pendulinae-Pinetea mugo*), the *Lathyro veneti-Taxion baccatae*, *Quercion petraeo-cerridis* (both *Quercetalia pubescentis*, *Quercetea pubescentis*) and the *Buxo-Syringion vulgaris* (*Paliuretalia*, *Rhamno-Prunetea*).

Keywords: alliance, Balkan Peninsula, Europe, *Juncetea trifidi*, nomenclature, phytosociology, *Quercetea pubescentis*, *Rhamno-Prunetea*, *Roso pendulinae-Pinetea mugo*, validation.

Izvešček

V okviru priprave seznama seznama sintaksonov visokega ranga v Evropi, se je pokazalo, da nekateri sintaksoni iz južne Evrope niso bili veljavno opisani. V tem prispevku so veljavno opisani naslednji sintaksoni: *Potentillo montenegrinae-Festucion paniculatae* (*Festucetalia spadiceae*, *Juncetea trifidi*), *Aquilegio nigricantis-Rhododendron hirsuti* (*Rhododendro hirsuti-Ericetalia carneae*, *Rhododendro hirsuti-Ericetea carneae*), *Hyperico grisebachii-Pinion mugo* (*Junipero-Pinetalia mugo*, *Roso pendulinae-Pinetea mugo*), *Lathyro veneti-Taxion baccatae* in *Quercion petraeo-cerridis* (oba *Quercetalia pubescentis*, *Quercetea pubescentis*) in *Buxo-Syringion vulgaris* (*Paliuretalia*, *Rhamno-Prunetea*).

Ključne besede: Balkanski polotok, Evropa, fitocenologija, *Juncetea trifidi*, nomenklatura, *Quercetea pubescentis*, *Rhamno-Prunetea*, *Roso pendulinae-Pinetea mugo*, validacija, zveza.

Abbreviation and nomenclature: ICPN – International Code of Phytosociological Nomenclature, 3rd ed. (Weber et al. 2000); nomenclature of plant species follows EURO+MED (2006–)

1. INTRODUCTION

In the course of compilation of a checklist of high-rank syntaxa of Europe, it turned out that some high-rank syntaxa from the south of Europe are in a need of formal nomenclatural validation according to the International Code Phytosociological Nomenclature (Weber et al. 2000).

The present paper deals with the nomenclature of high-altitude grasslands of the *Juncetea trifidi*, alpine dwarf shrub communities of the *Roso pendulinae-Pinetea mugo* and the *Rhododendro hirsuti-Ericetea carneae* as well as thermophilous forest communities of the *Quercetea pubescentis* and thermophilous mantle communities of the *Rhamno-Prunetea*.

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2. DESCRIPTIONS AND VALIDATIONS OF THE SYNTAXA

2.1 ‘*POTENTILLO MONTENEGRINAE-FESTUCION PANICULATAE*’

This alliance was originally described under three different, yet all invalid, names: (1) *Festucion spadiceae* (Redžić et al. 1984), (2) *Carici-Festucion paniculatae calcicolum* (Redžić 2003), and (3) the *Potentillo montenegrinae-Festucion paniculatae* (Redžić 2011).

Redžić et al. (1984) has classified three units within the ‘*Festucion spadiceae*’ in the protologue of this alliance, including the ‘*Hypochoereto-Festucetum amethystinae festucetosum spadiceae*’, the *Festucetum spadiceae calcicolum*, and the *Sieglingio-Festucetum spadiceae*.

The *Festuca paniculata*-dominated communities, in a region spanning Croatia in the north as far south as Macedonia and Bulgaria, were studied by N. Randelović (1984). He included all those communities within the (suballiance) ‘*Festucion validopaniculatae*’ (*nom. inval.*; ICPN Arts. 3e, 3h, 5) that was later raised to the rank of an alliance as the *Festucion valido-paniculatae* (*nom. inval.*; ICPN Art. 5) by V.N. Randelović & Zlatković (2010).

‘*Hypochoereto-Festucetum amethystinae festucetosum spadiceae*’

We see no point for the indication of the subsociation rank in this name since there is no subdivision of the association *Hypochoerido-Festucetum amethystinae* presented in the original paper (Redžić et al. 1984). Further this syntaxon was published invalidly due to omission of the nomenclatural type in the protologue. Here we correct the form (spelling) of the name and validate the association by designation of the type relevé:

Hypochoerido maculatae-Festucetum amethystinae* Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović ex Čarni et Mucina *ass. nov. hoc loco

Syn: ‘*Hypochoereto-Festucetum amethystinae*’ Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović 1984 *nom. inval.* (ICPN Art. 5).

Type: Redžić et al. (1984: 171–172, Table II, relevé 1), *holotypus hoc loco*.

‘*Festucetum spadiceae calcicolum*’

The *Festucetum spadiceae calcicolum* (Redžić et al. 1984) was described invalidly (missing nomenclatural type; ICPN Art. 5) and the name carries an ecological epitheton that would make the name illegitimate if it was not invalid. Later (Redžić 2011) corrected this name and suggested the name ‘*Potentillo montenegrinae-Festucetum paniculatae*’ whereby he introduced three changes: (1) removed the ecological epitheton, (2) rightly corrected the identity of the eponymous *F. spadicea* L. (recte: *Patzkea spadicea* (L.) G.H. Loos and replace it by *F. paniculata* (L.) Schinz & Thell. (recte: *Patzkea paniculata* (L.) G.H. Loos) since the former taxon does not occur in the Balkans and hence was misidentified in the original Redžić et al. (1984) publication, and (3) designated *Potentilla montenegrina* Pant. as the other eponymous species of the association, possibly implying that *Potentilla heptaphylla* L. in original diagnosis of the *Festucetum spadiceae calcicolum* was apparently wrongly identified. However, Redžić (2011) failed however to designate the nomenclatural type, hence the concept of the *Potentillo montenegrinae-Festucetum paniculatae* remained invalidly published according to ICPN Art. 5. Here we remedy this omission and validate the *Potentillo montenegrinae-Festucetum paniculatae*:

Potentillo montenegrinae-Festucetum paniculatae* (Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović 1984) Redžić ex Čarni et Mucina *ass. nov. hoc loco

Syn: *Festucetum spadiceae calcicolum* Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović 1984 *nom. inval. et nom. illeg.* (ICPN Arts. 5, 8 & 34a); *Potentillo montenegrinae-Festucetum paniculatae* (Redžić et al. 1984) Redžić 2011 *nom. inval.* (ICPN Art. 5).

Type: Redžić et al. (1984: Table II, relevé 9), *holotypus hoc loco*.

‘*Sieglingio-Festucetum spadiceae*’

The ‘*Sieglingio decumbentis-Festucetum spadiceae* Redžić et al. 1984’ was not described validly according to the ICPN due to omission of the type relevé (ICPN Art. 5). Here we choose the *lectotypus* of the *Danthonio decumbentis-Festucetum paniculatae*:

Danthonio decumbentis-Festucetum paniculatae
Redžić, R. Lakušić, Muratspahić, Bjelčić et
Omerović ex Čarni et Mucina *ass. nov. hoc loco*.
 Type: Redžić et al. (1984: Table II, relevé 14), *lectotypus hoc loco*.

We replace the name-giving *Sieglingia decumbens* (L.) Bernh. with the currently used *Danthonia decumbens* (L.) DC. (see www.emplantbase.org; last accessed on 23 October 2014).

Having sorted the nomenclature of all candidate associations for the nomenclatural type, here we validate the alliance name:

Potentillo montenegrinae-Festucion paniculatae
Redžić ex Čarni et Mucina *all. nov. hoc loco*
 (*Festucetalia spadiceae, Juncetea trifidi*)

Syn.: *Festucion spadiceae* Redžić et al. 1984 (ICPN Arts. 2b & 31); *Carici-Festucion paniculatae calcicolum* Redžić 2003 (ICPN Arts. 2b & 34a); *Potentillo montenegrinae-Festucion paniculatae* Redžić (2003) 2011 (ICPN Arts. 2b & 5).

Type: *Danthonio decumbentis-Festucetum paniculatae* Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović ex Čarni et Mucina 2015 (this paper), *holotypus hoc loco*.

Character species of this alliance are: *Knautia dinarica* (subsp. *dinarica*; see Peruzzi et al. 2013), *Patzkea paniculata* (L.) G.H. Loos (syn. *Festuca paniculata*), *Potentilla montenegrina*.

This alliance comprises tussock grasslands on decalcified deep soils at high altitudes of the Balkan Peninsula. The communities of this alliance occur along the Dinaric Alps from Croatia in the north to Macedonia and Bulgaria in the south (Horvat 1935, Muravjov 1939, Jovanović-Dunjić 1955, Blečić 1960, Horvat et al. 1974, N. Randelović 1978, 1984, Mišić et al. 1978, Redžić et al. 1984, Micevski 1994, Rexhepi 2007, V.N. Randelović & Zlatković 2010, Redžić 2011, Biserkov et al. 2011).

2.2 'LONICERO BORBASIANAЕ-ROSION ALPINAЕ'

Redžić (2007) has published the name '*Lonicero borbashianaе-Rosion alpinae* Redžić 2000' and included two associations within this alliance – the '*Aquilegio-Rhodoretum hirsuti* Lakušić et al. 1979' and the '*Erico carneaе-Rhodoretum hirsuti* Redžić 2000'. The paper by Redžić (2000) is obviously a manuscript and therefore the names '*Lonicero borbashianaе-Rosion alpinae*' and '*Erico carneaе-Rhodoretum hirsuti*' have not been effectively pub-

lished in 2000. There is a clear bibliographic reference (in Redžić 2007) to the protologue of the '*Aquilegio-Rhodoretum hirsuti*' (Lakušić et al. 1979), however this association has not been published validly in the latter source because none of the relevés of the '*Aquilegio-Rhodoretum hirsuti* Laukšić. et al. 78' in Table XXIV (Lakušić et al. 1979: 667) has been assigned as the *holotypus* (ICPN Art. 5).

Here we choose another name for the invalid '*Lonicero borbashianaе-Rosion alpinae*' and suggest recognition of the following syntaxon:

Aquilegio nigricantis-Rhododendrion hirsuti
Čarni et Mucina *all. nov. hoc loco*

(*Rhododendro hirsuti-Ericetalia carneaе,*
Rhododendro hirsuti-Ericetea carneaе)

Syn. *Lonicero borbashianaе-Rosion alpinae* Redžić 2000 (ICPN Art. 1); *Lonicero borbashianaе-Rosion alpinae* Redžić 2007 (ICPN Arts. 2b, 5).

Type: *Aquilegio nigricantis-Rhododendretum hirsuti* R. Lakušić, Pavlović, Adžić, Kutleša, Mišić, Redžić, Maljević & Bratović ex Surina 2013, *holotypus hoc loco*.

Diagnostic (character and differential) taxa of the alliance: *Aquilegia nigricans*, *Alchemilla velebitica*, *Lonicera caerulea* subsp. *borbasiana*, *Carex kitaibeliana*, *Erica carnea*, *Festuca bosniaca* *Helianthemum nitidum*, *Hieracium stelligerum*, *Hypericum richeri* subsp. *grisebachii*, *Ranunculus scutatus*, *Phyteuma orbiculare*, *Rhododendron hirsutum*, *Rosa pendulina*, *Salix waldsteiniana*, *Scabiosa leucophylla*.

The first association of this alliance was described as the *Rhododendro hirsutae-Juniperetum nanae* by Horvat et al. 1974 (see also Horvat 1962) and classified within the *Pinion mugo* Pawłowski et al. 1928 (*Vaccinio-Piceetea*). Then Lakušić et al. (1979) described the *Aquilegio-Rhododendretum hirsutae* from Vranica Mts. and classified it within the '*Daphno-Rhodoretalia*'. In the same work these authors classified the heaths on acid soils within the '*Vaccinietalia*'. In this way they made a discerned the heath on carbonate from those on non-carbonate. Later Redžić (2007) described the *Lonicero borbashianaе-Rosion alpinae*, recognised the *Daphno-Rhodoretalia hirsutae* Lakušić et al. 1979 and classified it within the class of acidophilous dwarf heath of the *Loiselureo-Vaccinietea*. Surina (2013) proposed the classification of these associations within the alliance of the alpine heath over calcareous soils (the *Ericion carneaе*) that he placed within the class of calcicolous pine forests of the *Erico-Pinetea*.

We suggest that the calcareous heath should be separated from the forests as well as from acid-soil heath. Its floristic individuality at the European level deserves recognition of the calcareous heath as an alliance of its own right – the *Aquilegio nigricantis-Rhododendron hirsutae*, classified within the *Rhododendro hirsuti-Ericetalia carnea* Grabherr et al. 1993 (*Rhododendro hirsuti-Ericetea carnea* Schubert et al. 2001). The latter alliance should be seen as a geographic (Central Balkans) analogon of the *Ericion carnea* Rübél ex Grabherr et al. 1993 (see Grabherr et al. 2003).

2.3 REDŽIĆ'S SUBALLIANCES WITHIN THE *PINION MUGO*

In the past, the subalpine *Pinus mugo* krummholz vegetation has been classified within the floristic and ecological differences between the *Pinion mugo* Pawłowski et al. 1928 and placed within the *Junipero-Pinetalia mugo* Boşcaiu 1971 – an order which only recently has been recognised which has form the basis of the *Roso pendulinae-Pinetea mugo* (Theurillat et al. 1985). The latter order and the class comprise *Pinus mugo* krummholz on both acidic and calcareous substrates since the usually ecological and floristic differences between these substrates are overcast by the influence of thick layer of acidic humus layer accumulating below the krummholz. The geographical differentiation of *Pinus mugo* krummholz in the Balkan was identified by Fukarek & Fabijanić (1968) have proposed an alliance '*Pinion montanae* prov.' comprising '*Pineto-Ericion* Br.-Bl. 39, *Erico-Pinion* Ht. 62, *Pinion mugii* (Pawl.) Ht. 38 and *Rhodoreto-Vaccinon* Br.-Bl. 26'.

The calcareous krummholz of the Alps, the Carpathians and the Northern Dinarides has been classified within the *Erico-Pinion mugo* Leibundgut 1948 *nom. invers. propos.* whereas that of the Apennines has been classified within the *Epipactido atropurpureae-Pinion mugo* Stanisci 1997. Redžić et al. (2007) was first who recognised the uniqueness of calcareous *Pinus mugo* krummholz vegetation in the region and introduced new syntaxonomic concepts when he subdivided the *Pinion mugo* Pawłowski et al. 1928 into two suballiances – the silicolous *Homogyno alpinae-Pinenion mugo* Redžić 2000 (which should rather be called the *Pinenion mugo*), and the calcicolous *Violo biflorae-Pinenion mugo* Redžić 2000. Both the *Homogyno alpinae-Pinenion mugo* and the *Violo biflorae-Pinenion mugo* have not been published effectively by

Redžić et al. (2000), and they also remained invalidly published also in Redžić (2007).

Four associations were listed by Redžić (2007) within the *Homogyno alpinae-Pinenion mugo* (using of 'quotation marks' means that we present the name of the syntaxon in exactly same form as it had been used in the original source):

- 1) '*Pinetum mugii silicicolum* Lakušić et al. 1973' *nom. illeg.* (no direct bibliographic reference was made to 'Lakušić et al. 1973' in Redžić (2007) and this name was listed as the synonym (sic!) of the *Homogyno alpinae-Pinenion mugo*;
- 2) '*Vaccinio-Pinetum mugo* Redžić 2000' (ineffectively published in Redžić 2000; ICPN Arts. 2b, 5 & 8 in Redžić 2007);
- 3) '*Piceo abietis-Pinetum mugo* Redžić 2000' (ineffectively published in Redžić 2000; ICPN Arts. 2b, 5 & 8 in Redžić 2007);
- 4) '*Sorbo aucupariae-Pinetum mugo* Redžić 2000' (ineffectively published in Redžić 2000; ICPN Arts. 2b, 5 & 8 in Redžić 2007).

Here we refrain from validating the suballiance name *Homogyno alpinae-Pinenion mugo* Redžić 2007 *nom. inval.* because (1) we do not recognise the syntaxonomic necessity to lump the silicolous and calcicolous krummholz of the Balkan Peninsula into one alliance and, (2) because even if recognised, this suballiance should actually bear name *Pinenion mugo* if there was other validly published suballiance coined within the *Pinion mugo* Pawłowski et al. 1928.

Two associations were listed by Redžić (2007) in the '*Violo biflorae-Pinenion mugo* Redžić 2000' (Syn.: *Pinetum mugii calcicolum* Lakušić et al. 1973):

- 1) '*Gentiano symphyandrae-Pinetum mugo* (Lakušić et al. 1973) Redžić *nom. nov. hoc loco*' (Syn.: *Pinetum mugii dolomiticum* Lakušić et al. 1973)'

The introduction of the *nomen novum* by Redžić (2007) remains ineffective since there is no clear reference to 'Lakušić et al. 1973' in Redžić (2007);

- 2) '*Geranio silvaticae-Pinetum mugo* Redžić 2000' *nom. inval.* (ineffectively published in 2000; ICPN Arts. 2b, 5 & 8 in Redžić 2007).

Under these circumstances (no available validly published association) it is not possible to establish the type association of the suballiance and therefore the name *Violo biflorae-Pinenion mugo* also remains invalidly published.

Redžić (2007) further suggested to include the '*Erico carnea-Pinetum mugo* Redžić 2000' (ineffectively published in Redžić 2000' and invalidly published in Redžić (2007) in the '*Erico carnea-*

Pinion mugo Leibundgut 1948 *nom. inversum em.* Redžić 2000'. We doubt that the latter unit, recognised as currently valid concept for the calcicolous krummholz of the Alps, is applicable for the vegetation of the Vranica Mts in Central Bosnia.

Zupančič (2013) proposed two suballiances of dwarf pine within the *Erico-Pinion mugo*, such as the *Rhodothamno-Pinenion mugo* for southeast Alps and the *Hyperico grisebachii-Pinenion mugo* for Dinaric and the Central Balkans. Both of the alliances were, however, published invalidly (ICPN Art. 5). Here we are suggesting that the calcicolous krummholz dominated by *Pinus mugo* of the Balkan Peninsula should be recognised syntaxonomically at the level of an alliance and therefore we introduce and validly describe such a new concept:

Hyperico grisebachii-Pinion mugo* Čarni et Mucina *all. nov. hoc loco

(*Junipero-Pinetalia mugo*, *Roso pendulinae-Pinetea mugo*)

Syn.: *Pinion montanae* P. Fukarek et Fabijanić 1968 (ICPN. Art. 3b).

Incl.: *Violo biflorae-Pinenion mugo* Redžić 2000 (ICPN Art. 1); *Violo biflorae-Pinenion mugo* Redžić 2007 (ICPN Arts. 2b & 5); *Hyperico grisebachii-Pinenion mugo* Zupančič 2013 ICPN Art. 5).

Type: *Hyperico grisebachii-Pinetum mugo* (Horvat 1938) Zupančič, T. Wraber et Žagar 2004, *holotypus hoc loco*.

Diagnostic (character and differential) taxa of the alliance: *Arabis scopoliana*, *Achillea alexandri-regis*, *Doronicum columnae*, *Geranium caeruleatum*, *Geum bulgaricum*, *Hypericum richeri* subsp. *grisebachii*, *Jasione orbiculata*, *Lilium bosniacum*, *Lonicera caerulea* subsp. *borbasiana*, *Pimpinella serbica*, *Senecio procerus*, *Sesleria rigida*, *Pinus mugo*, *Rhododendron hirsutum*, *Rosa pendulina*, *Salix silesiaca*, *Saxifraga rotundifolia* subsp. *rotundifolia*, *Sorbus mougeotii*, *Thymus praecox* subsp. *polytrichus*, *Wulfenia carinthiaca*.

The following associations belong to the *Hyperico grisebachii-Pinion mugo*:

***Hyperico grisebachii-Pinetum mugo* (Horvat 1938) Zupančič, T. Wraber et Žagar 2004**

Syn.: *Pinetum mugo croaticum* Horvat 1938 *nom. illeg.* (ICPN Art. 34a); *Lonicero borbasianae-Pinetum mugo* Horvat 1938 (phantom name); *Pinetum mughi illyricum* P. Fukarek et Stefanović 1958 *nom. illeg.* (ICPN Art. 34a); *Lonicero bor-*

basianae-Pinetum mughi (Horvat 1938) Borhidi 1963 (phantom name); *Mughetum illyricum* P. Fukarek 1969 *nom. inval. et illeg.* (ICPN Arts. 2b, 8 & 34a); *Mughetum illyricum* P. Fukarek 1970 *nom. illeg.* (ICPN Art. 34a).

Type: Horvat (1938: Table 9, relevé 7), *lectotypus* (not 'neotypus'), selected by Zupančič et al. (2004).

Geographical distribution: Northern Dinarides (Slovenia, Croatia).

This association has often been mentioned in the literature under several names, bases on Horvat's table (1938), namely as the *Pinetum mugo croaticum* Horvat 1938 (Horvat 1962, Janković & Bogojević 1967, Marinček & Čarni 2002), the *Pinetum mughi illyricum* (e.g. Fukarek & Stefanović 1958), the *Lonicero borbasianae-Pinetum mugo* (Trinajstić 1998, Alegro et al. 2000, Antonić et al. 2000, Španjol et al. 2003, Šikić 2007, Ljubičić et al. 2010) and the *Hyperico grisebachii-Pinetum mugo* Zupančič et al. 2004 (Surina 2005, 2013, Vukelić 2012).

Lilio bosniacae-Pinetum mugo* Čarni et Mucina *ass. nov. hoc loco

Syn.: '*Pinetum mugo montenegrinum* prov.' Blečić 1958 *nom. inval. et nom. illeg.* (ICPN Arts. 3b, 8 & 34a).

Type: Blečić (1958: Table 9, relevé 5), *lectotypus hoc loco*.

Geographical distribution: Zelengora, Maglić, Volujak, Peručica, Golja (Bosnia and Herzegovina) and Durmitor (Montenegro).

Sorbo mougeotii-Pinetum mugo* (B. Jovanović 1955) Čarni et Mucina *nom. nov. hoc loco

Original form of the name: '*Sorbeto-Mughetum serbicum* Jov.' (Jovanović 1955).

Syn.: *Sorbo mougeotii-Pinetum mugo* B. Jovanović 1953 (phantom name); *Sorbo mougeotii-Pinetum mugo serbicum* B. Jovanović 1955 *nom. illeg.* (ICPN Art. 34a), *Sorbo mougeotii-Pinetum mugo* B. Jovanović 1955 corr. Zupančič et Žagar 2003' published in Zupančič et Žagar 2004 (ICPN Art. 5).

Type: Jovanović (1955: Table 23 'Tab. br. 23', relevé 5), *lectotypus hoc loco*.

Geographical distribution: Suva Planina (Serbia).

***Wulfenio carinthiaca-Pinetum mugo* Janković et Bogojević 1967**

Original form of the name: '*Wulfenio carinthiaca-Pinetum mughi*' (Janković & Bogojević 1967).

Syn.: '*Pinetum Mughi*' Grebensčikov 1943 *nom.*

illeg. (ICPN Art. 31); *Pinetum mughi typicum* Janković 1972 *nom. inval.* (ICPN Arts. 2b & 8).
Type: Janković & Bogojević (1967: Table, relevé 4), *lectotypus hoc loco*.
Geographical distribution: Prokletje (Kosovo).

Geo bulgarici-Pinetum mugo* Amidžić ex Čarni et *Mucina ass. nov. hoc loco

Syn.: *Geo bulgarici-Pinetum mugo* Amidžić 2003 *nom. inval.* (ICPN Arts. 5 & 18).
Type: Amidžić (2003: Tab. 1, rel. 7) *holotypus hoc loco*.
Geographical distribution: Prokletje (Kosovo).

The following three syntaxa may constitute vegetation units of their own right, however, all carry either invalid or illegitimate names. The validation of these names is not possible at this stage since there are not enough data to conclude if these taxonomic concepts are acceptable. Equally unavailable are published relevés amenable to be analysed for comparative purposes or select nomenclatural types.

***Achilleo alexandri-regis-Pinetum mugii* Rexhepi 1983' *nom. inval.* (ICPN Arts. 2b, 8)**

Syn: *Pinetum mugii calcicolum* Rexhepi 1986 *nom. illeg.* (ICPN Art. 34a).
Geographical distribution: Šar Planina (Kosovo).
Rexhepi (1991) has published only brief description of this unit, yet failed to present any relevé or phytosociological table.

***'Pinetum mugo serpentanicum* Rexhepi 1983' *nom. inval. et illeg.* (ICPN Arts. 2b, 8, 34a)**

Geographical distribution: Šar Planina (Kosovo).
This vegetation unit was suggested by Rexhepi (1991) who presented a brief description of the unit, however failed to published any relevés or a phytosociological table.

***'Pinetum mughi macedonicum* subass. *calcicolum*' Em 1962 *nom. illeg.* (ICPN Art. 34a)**

Syn.: *Pinetum mughi macedonicum* Horvat 1946 (phantom name).
Geographical distribution: Jakupica (Macedonia; Em 1962).

2.4 'LATHYRION VENETI'

The *Lathyrion veneti* (described validly for the first time by Gamisans (1975; see also Gamisans

1977, 1991) to accommodate the relict (see Reille et al. 1999) mixed forests dominated largely by deciduous oaks (e.g. *Q. pubescens*), with notable presence of relict *Taxus baccata*, on siliceous substrates (scree and steep-slope) of Corsica. Some communities of this alliance were also reported from Sardinia (Ubaldi 2003, Bacchetta et al. 2004, Farris et al. 2012).

This alliance (in its original concept: Gamisans 1975, 1977) comprises submediterranean forest forests ecologically (and to an extent also floristically) analogous to other *Quercus*-dominated forest of the *Quercetalia pubescenti-petraeo* Klika 1933.

Analogous vegetation from Sardinia was classified by Ubladi (2008) within the *Oenanthe pimpelloidis-Quercion humilis* Ubaldi (2003) 2008. First, Ubaldi (2003) validly described the *Oenanthe pimpelloidis-Quercion humilis* (in the rank of suballiance) and assigned the '*Oenanthe pimpelloidis-Castanetum* Arrigoni 1996' (as 'syntypus'). The *Oenanthe pimpelloidis-Castanetum* originally carried an illegitimate name '*Luzulo-Oenanthetum pimpinelloidis* Arrigoni in Arrigoni et Marras 1990 (Arrigoni et Marras 1990) since no taxon of the tree layer was listed (Art. 29b). Later Arrigoni et al. (1996) corrected the the name and introduced a *nomen novum* – the *Oenanthe pimpelloidis-Castanetum* (Arrigoni et Marras 1990) Arrigoni in Arrigoni, di Tommaso, Camada et Satta 1996. The *Oenanthe pimpelloidis-Quercion humilis* was described to typify the montane *Quercus pubescens* and similar *Castanea sativa* forests of Sardinia; this suballiance was classified in the '*Quercion humili-petraeae* Braun-Blanquet 1932' (Ubaldi 2003). As the last step, Ubaldi (2008) reclassified the latter suballiance to the alliance rank and introduced the *Oenanthe pimpelloidis-Quercion humilis* Ubaldi (2003) 2008 (Art. 3i).

Bacchetta et al. (2004) and Farris et al. (2012) recognised floristic and ecological similarity between the Corsican deciduous forests with *Taxus baccata* (namely the *Asperulo-Taxetum*) and the Sardinian *Polysticho setiferi-Taxetum baccatae*, however they preferred to classify these forests within the *Pino calabricae-Quercion congestae* described from Sicilia (Brullo et al. 1999).

The *Lathyrion veneti* is an illegitimate name as it is derived on eponymous species of the understory (*Lathyrus venetus*), while this is multi-layered forest vegetation (ICPN Art. 29b). Here we introduce a new name for this taxonomic concept and select its *lectotypus*:

***Lathyro veneti-Taxion baccatae* Čarni et Mucina all. nov. hoc loco**

(*Quercetalia pubescenti-petraeae*, *Quercetea pubescentis*).

Syn.: *Lathyrion veneti* Gamisans 1975 nom. illeg. (ICPN Art. 29b); *Lathyrion veneti* Gamisans 1977 nom. illeg. (ICPN Arts. 29b & 31).

Type: *Stellario glochidispermae-Buxetum* Gamisans 1975, holotypus hoc loco.

Type of the *Stellario glochidispermae-Buxetum*: Gamisans (1977: Tab. 43, relevé 5), lectotypus hoc loco.

Diagnostic species of this alliance are: *Allium ursinum*, *Buxus sempervirens*, *Lathyrus venetus*, *Taxus baccata*.

Summarizing the syntaxonomy of the deciduous Cyrno-Sardean *Quercetea pubescentis* forests, we suggest the following syntaxonomic schemes (based on Gamisans 1991 and Farris et al. 2012 and without any claim of completeness):

Lathyro veneti-Taxion baccatae Čarni et Mucina 2015.

Lathyrenion veneti Gamisans 1975 nom. illeg.

Digitali-Castanetum Gamisans 1975.

Stellario glochidispermae-Buxetum Gamisans 1975.

Asperulo-Taxetum baccatae Gamisans 1970.

Cardamino-Buxetum Gamisans 1975.

Buxenion sempervirentis Gamisans 1975.

Oenantho-Quercetum pubescentis-petraeae

Royer et al. 1983 nom. illeg.

Ilici-Quercetum ilicis Gamisans 1975.

2.5 'QUERCION PETRAEO-CERRIDIS'

This alliance, comprising mesic, slightly acid oak forest of higher altitudes in the Balkan Peninsula, was first published as the *Quercion petraeo-cerridis* Lakušić et Jovanović in Prodrumus phytocoenosis Jugoslaviae (Jovanović et al. 1986) as *nomen nudum*. Later Čarni et al. (2009) attempted validation of this name, however in the printed version, the reference to the *Quercetum cerris* (Vukićević 1966), the intended nomenclature type of the alliance, was missing. This reference was indicated in an electronic appendix which is however not sufficient for validation according to ICPN (Weber et al. 2000). Here we remedy this situation and formally selected the nomenclatural type of the alliance:

***Quercion petraeo-cerridis* Lakušić et B. Jovanović ex Čarni et Mucina all. nov. hoc loco**

(*Quercetalia pubescentis*, *Quercetea pubescentis*)

Syn: '*Quercion petraeae-cerris* (Lakušić 1976) Lakušić et B. Jovanović 1980' in B. Jovanović et al. 1986 nom. inval. (ICPN Arts. 2b & 8); *Quercion petraeae-cerris* Lakušić et Jovanović ex Čarni et al. 2009 nom. inval. (ICPN Arts. 5 & 8)

Type: *Quercetum cerris* Vukićević 1966 (Vukićević 1966: 113), holotypus

Diagnostic species of the alliance (Čarni et al. 2009): *Acer obtusatum*, *Aremonia agrimonoides*, *Asphodelus albus*, *Astragalus glycyphyllos*, *Campanula sparsa*, *Carex caryophylla*, *C. muricata*, *Chamaespartium sagittale*, *Clinopodium vulgare*, *Cruciata laevipes*, *Fagus sylvatica* ssp. *moesiaca*, *Festuca heterophylla*, *Galium pseudaristatum*, *Helleborus cyclophyllus*, *Hieracium murorum*, *Lapsana communis*, *Lathyrus laxiflorus*, *Luzula forsteri*, *Lychnis coronaria*, *Malus pumila*, *Physospermum cornubiense*, *Poa nemoralis* agg., *Potentilla micrantha*, *Primula veris* s. lat., *Pteridium aquilinum*, *Ptilotemon strictus*, *Quercus cerris*, *Q. petraea* agg., *Scutellaria columnae*, *Silene italica*, *Trifolium patulum*, *T. pignanii*.

2.6 ON ŠIBLJAK OF THE PRUNO TENELLAE-SYRINGION AND THE BUXO-SYRINGION

We reviewed also šibljak vegetation in the Balkan Peninsula. The first alliance comprising the šibljak vegetation of the region was suggested by Fukarek (1962) as the *Buxo-Syringion*; the distribution area of this alliance coincides (on the Balkan Peninsula) with the distribution of the *Quercion confertae* Horvat 1958. On character species, Fukarek (1962: 504) wrote: "Svaka od novopostavljenih sveza šibljaka ima svoj skup karakterističkih biljnih vrsta ... koji daju osnove fizionomske i ekološke karakteristike i najprikladniji naziv (translated from Croatian: Each of the newly described alliances of the šibljak vegetation possesses its group of character species ... that determine their physiognomic and ecologic character and give them their name)". Deducing from this statement, we may consider *Buxus sempervirens* and *Syringa vulgaris* as the character species of this alliance. Fukarek (1962) classified within this alliance three associations: (1) The *Syringetum timokense* was ineffectively (in a manuscript; ICPN Art. 1) suggested by Knapp (1944); (2) the *Syringetum vulgaris* was invalidly (without any relevé or synoptic table; ICPN Art. 2b) published by Diklić

(1958) without the relevé material and, (3) the *Syringeto-Buxetum* described by (Tomašević (1959) in preliminary manner, hence invalid according to the Art. 3 of the ICPN. The *Buxo-Syringion* was validated by Diklić (1965) who assigned the validly published *Eryngio-Syringetum vulgaris* Diklić 1965 to the *Buxo-Syringion* while giving a clear reference to the paper by Fukarek (1962).

Jovanović (in Jovanović et al. 1986) suggested the name '*Pruno tenellae-Syringion Jovanović 1979*' and he classified within this alliance the *Syringetum vulgaris* Knapp 1944, the *Syringeto-Buxetum* Tomašević 1959 and the *Eryngio-Syringetum* Diklić 1965. It is therefore that we can treat the *Pruno tenellae-Syringion* as a *nomen superfluum*, hence as a synonym of the *Buxo-Syringion*. Validation of the '*Pruno tenellae-Syringion Jovanović 1979*' by Čarni and collaborators (2009) should be then considered superfluous as well.

***Buxo-Syringion* P. Fukarek ex Diklić 1965**

(*Paliuretalia*, *Quercetea pubescentis*)

Syn.: *Buxo-Syringion* P. Fukarek 1962 (ICPN Art. 2b, 8); *Pruno tenellae-Syringion* B. Jovanović 1979 (phantom name); *Pruno tenellae-Syringion vulgaris* B. Jovanović in Jovanović et al. 1986 *nom. inval.* (ICPN Art. 2b) *Pruno tenellae-Syringion* B. Jovanović ex Čarni et al. 2009 *nom. inval.* (ICPN Art. 5).

Type: *Eryngio-Syringetum vulgaris* Diklić 1965 (Diklić 1965: p. 60; Table 1 '*Eryngio-Syringetum vulgaris* N. Diklić', relevé 2, *lectotypus hoc loco*).

Diagnostic species of the alliance (*sensu* Čarni et al. 2009): *Artemisia alba*, *Cotinus coggygria*, *Fraxinus ornus*, *Melica ciliata*, *Rosa pimpinellifolia*, *Syringa vulgaris*, *Viola tricolor*.

3. SYNTAXONOMICAL SCHEME OF THE STUDIED VEGETATION UNITS

Juncetea trifidi Hadač in Klika et Hadač 1944.

Festucetalia spadiceae Barbero 1970.

Potentillo montenegrinae-Festucion paniculatae Redžić ex Čarni et Mucina 2015.

Hypochaerido maculatae-Festucetum amethystimae Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović ex Čarni et Mucina 2015.

Potentillo montenegrinae-Festucetum paniculatae (Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović 1984) Redžić ex Čarni et Mucina 2015.

Danthonio decumbentis-Festucetum paniculatae Redžić, R. Lakušić, Muratspahić, Bjelčić et Omerović ex Čarni et Mucina 2015.

Rhododendro hirsuti-Ericetea carnea Schubert et al. 2001.

Rhododendro hirsuti-Ericetalia carnea Grabherr et al. 1993.

Aquilegio nigricantis-Rhododendron hirsuti Čarni et Mucina 2015.

Aquilegio-Rhododendretum hirsutae Lakušić et al. ex Surina 2013.

Rhododendro hirsutae-Juniperetum nanae Horvat ex Horvat et al. 1974.

Roso pendulinae-Pinetea mugo Theurillat in Theurillat et al. 1995.

Junipero-Pinetalia mugo Boşcaiu 1971.

Lonicero borbasiana-Pinion mugo Čarni et Mucina 2015.

Hyperico grisebachii-Pinetum mugo (Horvat 1938) Zupančič, T. Wraber et Žagar 2004.

Lilio bosniacae-Pinetum mugo Blečić ex Čarni et Mucina 2015.

Geo bulgarici-Pinetum mugo Amidžić ex Čarni et Mucina 2015.

Sorbo mougeotii-Pinetum mugo (B. Jovanović 1955) Čarni et Mucina 2015.

Wulfenio carinthiacae-Pinetum mugo Jančević et Bogojević 1967.

Quercetea pubescentis Doing-Kraft ex Scamoni et Passarge 1959.

Quercetalia pubescenti-petraeae Klika 1933.

Lathyro veneti-Taxion baccatae Čarni et Mucina 2015.

Digitali-Castanetum Gamisans 1975.

Stellario glochidispermae-Buxetum Gamisans 1975.

Asperulo-Taxetum baccatae Gamisans 1970.

Cardamino-Buxetum Gamisans 1975.

Oenantho-Quercetum pubescentis-petraeae Royer et al. 1983 *nom. illeg.*

Ilici-Quercetum ilicis Gamisans 1975.

Quercion petraeo-cerridis Lakušić et B. Jovanović in B. Jovanović et al. ex Čarni et Mucina 2015.

Quercetum cerridis Vukičević 1966.

Rhamno-Prunetea Rivas Goday et Borja Carbonell ex Tx. 1962.

Paliuretalia Trinajstić 1978.

Buxo-Syringion Fukarek ex Diklić 1965.

Eryngio-Syringetum vulgaris Diklić 1965.

4. ACKNOWLEDGEMENTS

The present contribution is result of cooperation activities of the European Vegetation Survey (a working group of the International Association for Vegetation Science). We thank Lidija Amidžić, Simona Casavecchia and Vlado Matevski for providing us some literature sources. Jozef Šibík and Romeo Di Pietro commented on the manuscript. A. Čarni acknowledges the financial support from the state budget by the Slovenian Research Agency (P1-0236). L. Mucina acknowledges the logistic support of the Iluka Chair at The University of Western Australia, Perth.

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Received 16. 11. 2013

Revision received 10. 11. 2014

Accepted 17. 11. 2014