

FLORISTIC STRUCTURE OF *JUNIPERUS COMMUNIS* SUBSP. *COMMUNIS*-DOMINATED SCRUB FROM HILLY AND MONTANE AREAS OF ROMANIA

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Abstract: Two new *Juniperus communis* subsp. *communis* syntaxa from Romania are presented from floristic, ecological and syntaxonomic points of view, completing the picture of the European distribution area of these shrubby communities. The phytocoenoses of *Thymio odoratissimi-Juniperetum communis* ass. nova are present on calcareous substrates and are rich in continental Eurasian, meso-xerophilous species, for which reason we assigned it to alliance *Brachypodio pinnati-Juniperion communis* Mucina et al. 2016, and class *Crataego-Prunetea* Tx. 1962. The communities belonging to *Vaccinio myrtilli-Juniperetum communis* Kovács ex Filipaș et al. *campanuletosum abietinae* subass. nova occur on acidic substrates, crystalline schists and gresous formations, and are rich in acidophilous species, characteristic for the class *Calluno-Ulicetea* Br.-Bl. et Tx. ex Klika et Hadač 1944. We assigned this new syntaxon to alliance *Vaccinio-Juniperion communis* Passage in Passage et G. Hoffman 1968 because of the high presence of *Vaccinium* species (*V. myrtillus*, *V. vitis-idaea*) in the sub-shrub layer of these phytocoenoses.

Key words: common juniper, scrub, Romania, new syntaxa.

Introduction

The common juniper (*Juniperus communis* L.) is a Mediterranean-circumboreal species which belongs to the monophyletic genus *Juniperus* [20, 21]. It is the most widespread of all gymnosperm species in Europe [1].

Based on leaf morphology, in addition to *Juniperus communis* subsp. *communis* another two subspecies are recognized at present: *J. communis* subsp. *nana* Syme (syn. *J. communis* var. *alpina* Suter (non Chaix 1785); *J. communis* var. *saxatalis* Pal), and *J. communis* subsp. *hemisphaerica* (C. Presl) Nyman (Flora Europaea-EuroMed) [17].

Even though the populations of *J. communis* subsp. *communis* and *J. communis* subsp. *nana* share the same geographical areas, these two subspecies are quite well separated into two broad categories based on altitudinal ranges. The communities dominated by *J. communis* subsp. *communis* are present from plains to hilly and montane areas [2, 4, 34], whereas the *Juniperus communis* subsp. *nana* scrub occurs just in the subalpine vegetation belt [5, 14, 31].

In this paper we are dealing only with low-altitude *J. communis* subsp. *communis* scrub. These communities occur in a wide geographical area, with a broad range of climates and soil

types [2]. The juniper scrub communities are currently separated into two broad categories (syntaxa) [22] based on pedo-ecological characteristics. The acidophilous scrub belongs to *Vaccinio-Juniperetalia communis* Passarge 1972, whereas that on neutral, base-rich soils belongs to *Prunetalia spinosae* Tx. 1952 [22].

The low-altitude acidophilous juniper scrub (belonging to *Vaccinio-Juniperion communis* Passarge in Passarge and Hofmann 1968 [24]) is mentioned from Sweden, Denmark, the Netherlands, Germany and Poland [2, 3, 13, 27, 38-40]. The juniper scrub developed on neutral and base-rich soils (belonging to *Pruno-rubion radulae* Weber 1974) is mentioned from the Netherlands and Germany [3, 13, 27, 34, 36-39]. Thermophilous temperate and sub-Mediterranean juniper scrub (belonging to *Berberidion vulgaris* Br.-Bl. ex Tx. 1952) [22] is reported from the southern part of Europe (France, Italy and Spain) [7, 8, 10, 11, 18, 23, 25, 26]. Beside these, there are also low-altitude juniper scrub communities on calcareous substrates (belonging to *Brachypodio pinnati-Juniperion communis* Mucina et al. 2016) mentioned from Germany and Croatia [3, 29, 33].

In Romania, the information regarding the low-altitude juniper scrub is scarce. *Juniperus communis* subsp. *communis* scrub communities have been very little studied as they are sporadic and only occur on small areas compared to those dominated by *J. communis* subsp. *nana*, which are present along with *Pinus mugo* in the subalpine vegetation belt of the South-eastern Carpathians. Some earlier works [9, 19] mentioned the *J. communis* subsp. *communis*-dominated communities as seral stages within the series of acidophilous beech forests (*Luzulo-Fagion sylvaticae* Lohmeyer et Tx. in Tx. 1954).

The aims of this paper are to: i) analyse and complete the previous reports of low-altitude acidophilous juniper scrubs with new data regarding their occurrence, ii) investigate (for the first time) the species composition (floristic structure) of the thermophilous juniper scrub on calcareous substrates from hilly and montane areas of western part of Romania, and iii) allocate these syntaxa to the latest European coenosystem [22].

Material and Methods

We identified and surveyed several calciphilous juniper scrub communities in the hilly and mountainous areas of the Apuseni Mountains (Damiş, Ponor, Râmeţ), Şureanu Mountains (Crivadia) and Preluca Massif (Preluca Veche) (relevés 1 to 11) (Fig. 2). Also, Dihoru mentioned these communities from the Siriu Mountains (Mreaia) (relevé 12) [9]. Acidophilous *Juniperus communis* s. str. communities have previously been investigated in the Bodoc Mountains (relevés 3-7) [18] and more recently in the Poiana Ruscă Mountains (Rusca and Padeş peaks) (Filipaş and Coldea, unpublished data, relevés 1 and 2). Relevés were carried out according to Braun-Blaquet approach [6]. A GPS device was used to record geographical coordinates for each relevé. QGIS v.3.22 software [15, 16, 28] was used for mapping spatial distribution of the relevés.

Taxonomic nomenclature for species recorded in the phytosociological tables (Table 1, 2) follows *Flora Europaea* [17].

Results and Discussion

The two types of *Juniperus communis* s. str. shrubby communities, which we herein describe from Romania, are floristically distinct among themselves and from the ecologically analogous ones reported from Europe and are grouped into two distinct syntaxa: *Thymio odoratissimi-Juniperetum communis* ass. nova (Table 1, holotype, relevé 2) and *Vaccinio myrtilli-Juniperetum communis* Kovács ex Filipaş et al. *campanuletosum abietinae* subass. nova hoc loco (Table 2, lectotype, relevé 5).

Thymio odoratissimi-Juniperetum communis ass. nova (Table 1) is present on rendzinic soils in the sessile oak zone and has a conspicuous thermophilous profile, given by *Thymus odoratissimus*, *Phleum montanum* and *Galium album* subsp. *pycnotrichum*, considered characteristic for the association, also by the numerous xerophilous species typical for class *Festuco-Brometea*. The occurrence of shrub species characteristic for class *Crataego-Prunetea* [35] and order *Prunetalia*, as well as of those few herbaceous species typical for alliance *Brachypodio pinnati-Juniperion communis* [22], made possible to easily assign this new association in the aforementioned syntaxa. Unlike the calciphilous associations described from Germany [29], France (Watez et B. Focault ex. B. Focault et J.M. Royer, 2016) [10], Italy [26] and Spain [23], the one described here hosts some regional species, including *Phleum montanum*, *Sorbus dacica*, *Rhamnus saxatilis* subsp. *tinctoria*, *Melica transsilvanica* and *Jovibarba heuffeli*, giving it a south-eastern European profile. Since no calciphilous *Juniperus communis* syntaxa were nominated for the habitat type 5130 (*Juniperus communis* formations on heaths or calcareous grasslands) in the Interpretation Manual of Natura 2000 Habitats in Romania [12], we now report it here.

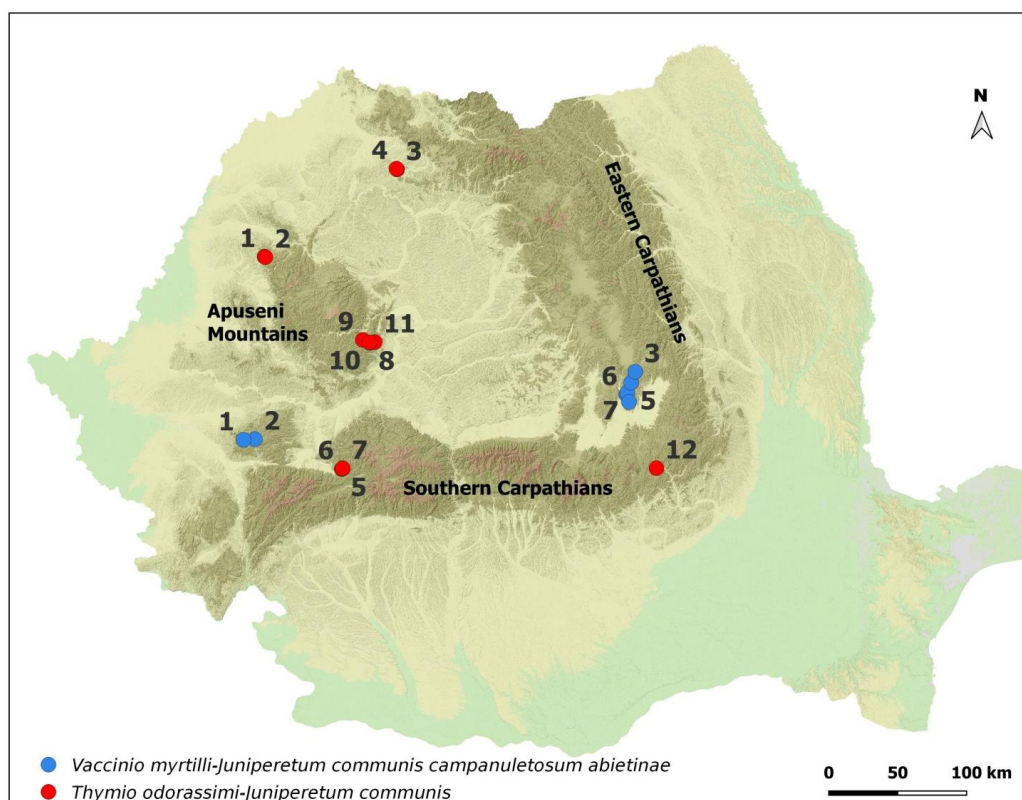


Fig. 1: Location of the relevés in Romania, grouped according to plant associations

Vaccinio myrtilli-Juniperetum communis Kovács ex Filipaş et al. hoc loco (Syn. *Vaccinio-Juniperetum communis* Kovács S. 1979 (Art. 3g, 5, 15) (Table 2) includes acidophilous phytocoenoses dominated by *Juniperus communis* s. str. developed within the beech vegetation belt, on crystalline schists in the Poiana Ruscă Mountains and on gresous formations and folded conglomerates in the Bodoc Mountains. These communities occur on acidic soils with low base saturation (disticambosols). The shrub layer is dominated by *Juniperus communis*, *Rosa pendulina*, *Betula pendula* (young individuals); *Rubus idaeus* and *R. schleicheri* are sporadically present here and there. *Vaccinium myrtillus* dominates the sub-shrub layer, whereas a high number of acidophilous species characteristic of class *Calluno-Ulicetea* are present in the herbaceous layer, for which reason we assigned the association to this syntaxon. We mention that some Carpathian-Balkan species are also present in this plant association, which distinguish it from its acidophilous counterparts described in central-western Europe [2, 7, 24, 30, 34] and confer on it a regional, south-eastern European character. We underline that this scrub association is floristically and partially pedo-ecologically different from *Solidago virgaureae-Juniperetum communae*, recently described from Poland [40] and *Vaccinio-Juniperetum communis* from Germany [24], for which reason we consider it to be a distinct subassociation *campanuletosum abietinae* (Table 2, lectotype, relevé 5).

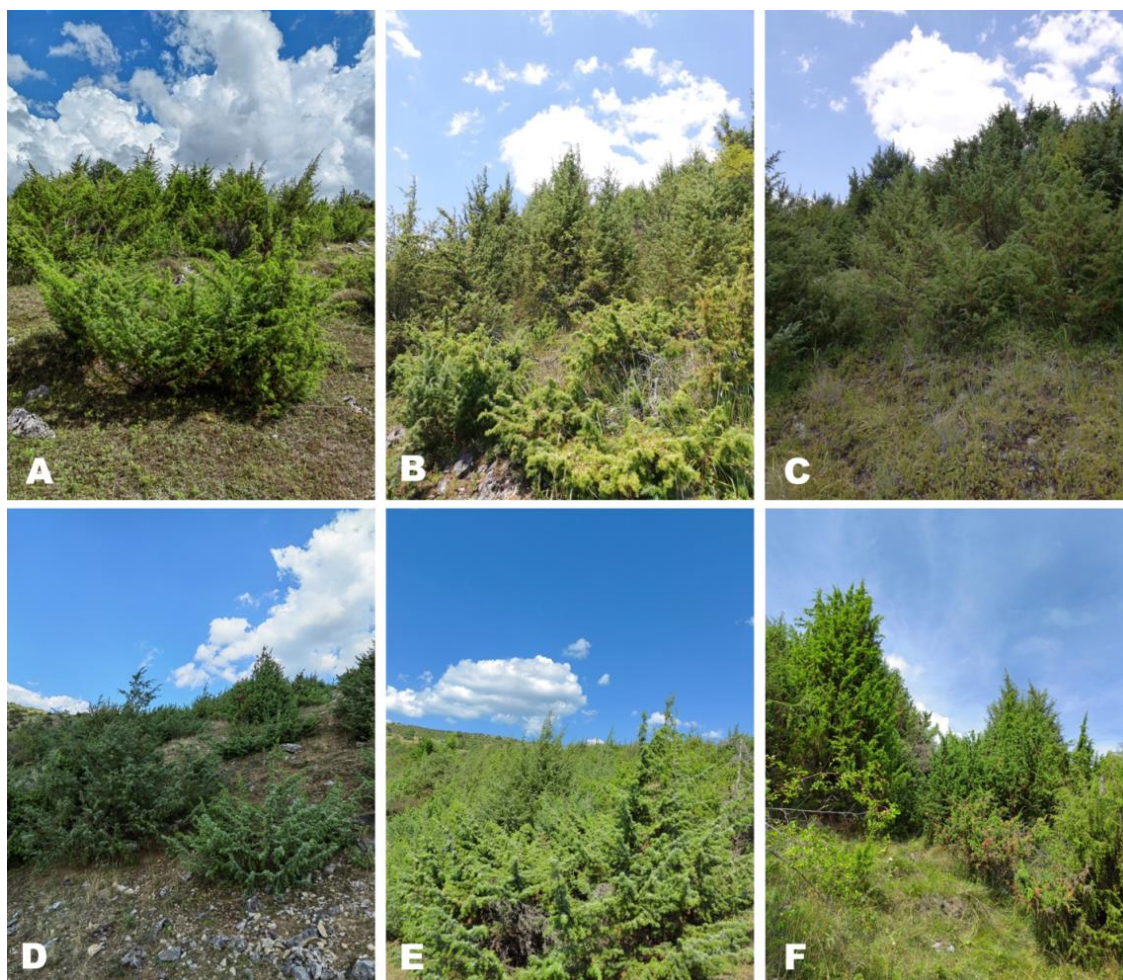


Fig. 2: Physiognomy of the *Juniperus communis* subsp. *communis* scrub; A-Crivadia, B and C-Damiş, D and E-Preluca Veche, F-Râmeţ (Photographs: Liviu Filipaş)

Table 1: *Thymio odoratissimi-Juniperetum communis* ass. nova hoc loco

Relevé	1	2	3	4	5	6	7	8	9	10	11	12*
Locality	Damiş	Damiş	Preluca Veche	Preluca Veche	Crivadia	Crivadia	Crivadia	Râmeţ	Ponor	Râmeţ	Râmeţ	Mreaja
Altitude (m asl)	560	582	624	667	1114	1237	1273	1116	1006	1064	1033	800
Aspect	S	S	SW-W	SW	W-SW	W	SE	NE	S-SW	NE	SE	SW
Shrub cover (%)	80	75	70	35	40	35	35	35	35	65	60	70
Herbs cover (%)	35	20	10	10	20	55	50	40	25	15	20	10
Surface (m ²)	400	400	400	400	400	400	400	400	400	400	400	400
Characteristic for ass.												
<i>Thymus odoratissimus</i>	1	1	+	+	+	+	+	.	+	.	+	.
<i>Galium album</i> subsp. <i>pycnotrichum</i>	+	+	+	+	+	+	+	+	+	+	+	+
<i>Phleum montanum</i>	+	.	.	.	.	.	.	+	.	+	.	.
<i>Brachypodio-Juniperion</i>												
<i>Juniperus communis</i> subsp. <i>communis</i>	4	4	4	3	3	3	3	3	3	4	2	4
<i>Linum catharticum</i>	+	+	+	+	+	+	+	+	+	+	+	.
<i>Brachypodium pinnatum</i>	1	+	+	.	.	.	.	+	2	.	.	+
<i>Primula veris</i> subsp. <i>canescens</i>	.	.	.	.	1	1	1	.	.	.	+	.
<i>Koeleria macrantha</i>	.	.	.	.	.	.	.	.	.	.	+	.
<i>Crataego-Prunetea</i> (incl. <i>Prunetalia</i>)												
<i>Rosa canina</i>	1	1	1	+	1	.	+	+	+	+	+	+
<i>Crataegus monogyna</i>	1	1	+	+	+	+	+	+	+	.	+	.
<i>Fragaria vesca</i>	1	+	+	+	+	+	+	.	+	.	+	.
<i>Ligustrum vulgare</i>	+	.	+	+	+	.	.	.	.	+	.	.
<i>Rubus praecox</i>	1	1	+	+	.	.	.	.	.	.	.	.
<i>Prunus spinosa</i>	1	+	.	+	.	.	.	.	.	.	.	.
<i>Glechoma hederacea</i>	.	.	.	.	.	+	.	.	.	+	.	.
<i>Rhamnus saxatilis</i> subsp. <i>tinctoria</i>	.	.	.	.	.	.	.	.	.	.	3	.
<i>Rhamnus cathartica</i>	.	.	.	.	.	.	.	.	.	+	.	.
<i>Cornus sanguinea</i>	.	+	.	.	.	.	.	.	.	.	.	.
<i>Festuco-Brometea</i>												
<i>Euphorbia cyparissias</i>	+	+	+	+	+	+	+	+	+	+	+	+
<i>Teucrium chamaedrys</i>	2	2	+	+	+	.	.	1	1	+	2	+
<i>Festuca stricta</i> subsp. <i>Sulcata</i>	1	1	1	1	.	.	.	.	+	.	+	+
<i>Pimpinella saxifraga</i>	+	+	.	.	.	+	+	+	+	+	+	+
<i>Arabis hirsuta</i>	+	+	.	.	+	+	+	+	.	.	+	.
<i>Hypericum perforatum</i>	+	.	+	+	+	.	.	+	+	+	.	.
<i>Clinopodium acinos</i>	+	.	+	+	+	.	+	.	+	.	.	.

Relevé	1	2	3	4	5	6	7	8	9	10	11	12*
<i>Botriochloa ischaemum</i>	+	+	+	+	.	.	.	.	+	.	.	+
<i>Scabiosa ochroleuca</i>	+	+	.	.	+	.	.	+	+	+	+	+
<i>Plantago media</i>	+	.	.	.	+	1	1	+	+	+	.	.
<i>Poa angustifolia</i>	1	+	+	+	.	.	.	.	.	+	.	.
<i>Asperula cynanmica</i>	.	.	+	.	.	.	.	+	+	+	+	.
<i>Anthyllis vulneraria</i>	.	+	.	.	.	.	.	+	+	.	+	.
<i>Potentilla incana</i>	+	+	1	+	.	.	.	.	.	.	.	.
<i>Salvia pratensis</i>	.	.	+	.	.	.	.	+	+	.	+	.
<i>Sanguisorba minor</i>	+	.	+	.	.	.	.	.	+	.	+	.
<i>Medicago falcata</i>	.	.	+	+	.	.	.	+	.	+	.	.
<i>Teucrium montanum</i>	.	.	.	.	1	2	2	.	.	.	.	.
<i>Prunella laciniata</i>	+	+	+	.	.	.	.	.	.	.	.	.
<i>Dianthus carthusianorum</i>	.	+	.	.	.	.	.	+	+	.	.	.
<i>Helianthemum canum</i>	.	.	.	.	1	1	+	.	.	.	.	.
<i>Salvia verticillata</i>	.	.	+	.	.	.	.	.	+	.	.	.
<i>Filipendula vulgaris</i>	+	.	.	.	.	.	.	+	.	.	.	.
<i>Stachys recta</i>	.	.	.	.	.	.	.	.	.	.	+	.
<i>Galium verum</i>	+	.	.	.	.	.	.	+	.	.	.	.
<i>Campanula sibirica</i>	.	.	.	.	.	.	.	.	.	.	+	.
Meso-Bromion												
<i>Medicago lupulina</i>	+	.	.	.	+	+	+	.	+	+	.	.
<i>Carlina vulgaris</i>	+	.	+	.	+	.	+	.	+	.	.	.
<i>Leontodon hispidus</i>	.	+	+	.	+	+	.	.	.	+	.	.
<i>Helianthemum nummularium</i>	.	+	.	.	.	.	.	+	+	.	+	.
<i>Euphrasia stricta</i>	.	.	.	.	+	+	+	+	.	.	.	.
<i>Carlina acaulis</i>	.	.	.	.	+	+	.	+	.	.	.	+
<i>Stachys germanica</i>	+	+	+	.	.	.	.	.	.	.	.	.
Trifolio-Geranieta												
<i>Agrimonia eupatoria</i>	+	+	.	.	.	.	.	+	+	+	+	.
<i>Silene nutans</i>	.	.	.	.	+	+	+	.	+	.	+	.
<i>Trifolium alpestre</i>	+	+	.	.	.	.	.	+	+	.	.	.
<i>Viola hirta</i>	+	+	+	.	.	.	.	.	+	.	.	.
<i>Trifolium medium</i>	.	+	.	.	.	.	.	+	+	.	.	.
<i>Securigera varia</i>	.	.	.	.	.	.	.	+	+	+	.	.
<i>Geranium sanguineum</i>	+	.	.	.	.	.	.	.	.	.	.	.
Companions												
<i>Agrostis capillaris</i>	+	+	+	.	1	1	1	1	+	2	.	1
<i>Anthoxanthum odoratum</i>	+	.	+	.	+	1	1	1	.	+	.	.

Relevé	1	2	3	4	5	6	7	8	9	10	11	12*
<i>Plantago lanceolata</i>	+	+	.	+	+	+	+	+	.	+	.	.
<i>Festuca rubra</i>	+	+	.	.	1	1	1	1	.	.	.	1
<i>Achillea collina</i>	+	+	+	.	+	.	.	.	+	.	+	.
<i>Poa compressa</i>	+	+	.	1	.	.	.	+	1	.	+	+
<i>Pilosella hoppeana</i>	.	.	+	+	+	+	+	.	.	.	.	+
<i>Alyssum alyssoides</i>	.	+	+	.	.	.	+	.	+	.	+	.
<i>Briza media</i>	.	+	+	.	+	.	.	1	+	.	.	.
<i>Genista sagittalis</i>	.	.	.	.	.	.	+	1	+	+	+	.
<i>Lotus corniculatus</i>	+	.	+	.	.	.	+	+	.	+	.	+
<i>Veronica chamaedrys</i>	+	+	.	.	+	.	+	.	.	+	.	.
<i>Pilosella bauhinii</i>	+	+	.	.	+	+	.	.	+	.	.	.
<i>Sedum sexangulare</i>	.	.	+	+	+	.	.	.	.	.	+	.
<i>Trifolium pratense</i>	.	.	.	.	+	+	.	+	.	+	.	.
<i>Erigeron acris</i>	.	+	+	.	.	.	+	.	+	.	.	+
<i>Viola canina</i>	.	.	.	.	+	+	+	+	.	.	.	.
<i>Carex pallescens</i>	.	.	+	.	+	+	+	.	.	.	.	.
<i>Medicago falcata</i>	.	.	+	+	.	.	.	+	.	+	.	.
<i>Carex caryophylllea</i>	+	+	+	.	.	.	.	.	.	.	.	+
<i>Veronica officinalis</i>	.	.	.	.	+	+	+	.	.	.	.	.
<i>Acer campestre</i>	+	.	.	+	.	.	.	.	.	+	.	.
<i>Achemilla micans</i>	.	.	.	.	+	+	.	.	.	+	.	.
<i>Prunus avium</i>	+	.	.	.	.	.	.	.	.	+	+	.
<i>Asplenium ruta-muraria</i>	+	.	.	.	.	+	.	.	.	.	1	.
<i>Danthonia decumbens</i>	.	+	+	.	+	.	.	.	.	.	.	+
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	+	.	.	.	+	.	.	.	.	+	.	.
<i>Centaurea phrygia</i>	.	+	.	.	.	.	.	+	.	+	.	.
<i>Taraxacum officinale</i>	.	.	.	.	+	+	.	.	.	+	.	.
<i>Prunella vulgaris</i>	.	.	.	.	.	+	.	+	.	+	.	.
<i>Juniperus sabina</i>	.	.	.	.	.	.	.	1	+	.	.	.
<i>Betula pendula</i>	.	.	.	.	+	.	.	.	+	.	.	1
<i>Picea abies</i>	.	.	.	.	+	.	+	.	.	.	.	.
<i>Pyrus communis</i> subsp. <i>pyraster</i>	.	+	.	.	.	.	.	.	.	.	+	.
<i>Malus pumila</i>	.	.	.	.	.	.	.	+	+	.	.	.
<i>Lonicera xylosteum</i>	.	.	.	.	.	.	.	+	.	+	.	.
<i>Pilosella officinarum.</i>	+	+	.	.	.	.	.	.	.	.	.	.
<i>Leucanthemum vulgare</i>	.	+	.	.	.	.	.	.	.	+	.	.
<i>Avenula pubescens</i>	.	.	.	.	.	.	.	+	+	.	.	.
<i>Luzula campestris</i>	+	.	.	.	.	.	.	+	.	.	.	.

Relevé	1	2	3	4	5	6	7	8	9	10	11	12*
<i>Achillea millefolium</i>	.	.	.	.	.	+	.	.	.	+	.	.
<i>Nardus stricta</i>	.	.	.	.	+	.	.	+	.	.	.	.
<i>Cynosurus cristatus</i>	.	.	.	.	.	.	.	+	.	+	.	.
<i>Thymus pulegioides</i>	.	.	.	.	.	1	1	.	.	.	.	.
<i>Calamagrostis epigejos</i>	1	+	.	.	.	.	.	.	.	.	.	+
<i>Primula elatior</i>	.	.	.	.	.	.	.	1	.	+	.	.
<i>Cruciata laevipes</i>	.	+	.	.	.	.	.	+	.	+	.	.
<i>Cruciata glabra</i>	.	.	.	.	+	+	.	.	.	.	.	.
<i>Potentilla aurea</i>	.	.	.	.	.	+	+	.	.	.	.	.
<i>Asplenium trichomanes</i> subsp. <i>quadrivalens</i>	.	.	.	.	.	+	.	.	.	.	+	.
<i>Seseli annuum</i>	.	+	.	.	.	.	.	+	.	.	.	.
<i>Centaurium erythraea</i>	+	+	.	.	.	.	.	.	.	.	.	+
<i>Galium verum</i>	+	.	.	.	.	.	.	+	.	.	.	.
<i>Potentilla argentea</i>	+	.	.	.	+	.	.	.	.	.	.	.
<i>Echium vulgare</i>	.	.	+	.	.	.	.	.	.	.	+	.
<i>Elytrigia intermedia</i>	.	.	+	.	.	.	.	.	+	.	.	.
<i>Dryopteris filix-mas</i>	.	.	.	.	.	.	.	+	.	+	.	.
<i>Clematis vitalba</i>	.	.	+	.	.	.	.	.	.	+	.	.
<i>Verbascum thapsus</i>	.	.	.	.	+	.	+	.	.	.	.	.
<i>Campanula patula</i>	.	.	.	.	.	.	.	+	.	+	.	.

* From Dihoru, 1975 [9].

Species present in a single relevé: *Rosa villosa* (+, 6); ***Sorbus dacica*** (+, 11); *Populus tremula* (+, 2); *Salix caprea* (+, 11); *Fagus sylvatica* (+, 6); *Euonymus latifolia* (+, 11); *Pinus sylvestris* (+, 6); *Sorbus aucuparia* (+, 8); *Vaccinium vitis-idaea* (+, 6); *Cytissus nigricans* (+, 3); *Sempervivum tectorum* (+, 3); ***Melica transsilvanica*** (1, 3); ***Jovibarba heuffelii*** (1, 5); *Festuca pallens* (+, 9); *Inula ensifolia* (+, 3); ***Viola jooi*** (+, 3); *Anthericum ramosum* (1, 3); *Ajuga laxmanii* (+, 1); *Pilosella lactucella* (+, 3); *Poa pratensis* (+, 8); *Aster amellus* (+, 3); *Phleum phleoides* (+, 9); *Carex montana* (+, 10); ***Knautia dipsacifolia* subsp. *lancifolia*** (+, 9); *Knautia arvensis* (+, 11); *Gymnadenia conopsea* (+, 9); *Trifolium repens* (+, 6); *Trifolium campestre* (+, 1); *Trifolium montanum* (+, 9); *Tragopogon pratensis* (+, 2); *Campanula glomerata* (+, 9); *Sedum acre* (+, 1); *Hypochaeris radicata* (+, 1); *Geranium robertianum* (+, 11); *Urtica dioica* (+, 1); *Leontodon asper* (+, 9); *Lactuca serriola* (+, 1); *Rubus idaeus* (+, 1); *Circaea lutetiana* (+, 1); *Potentilla alba* (+, 9); *Picris hieracioides* (+, 2); *Echinops spaerocephallus* (+, 3); *Eryngium campestre* (+, 3); *Epilobium montanum* (+, 11); *Vincetoxicum hirundinaria* (+, 3); *Linum tenuifolium* (+, 10); *Pteridium aquilinum* (+, 4); *Bromus tectorum* (+, 4); *Convolvulus arvensis* (+, 4); *Verbascum nigrum* (+, 5); *Senecio errucifolius* (+, 9); *Melilotus albus* (+, 10); *Centaurea micranthos* (+, 10); *Centaurea scabiosa* (+, 10); *Campanula persicifolia* (+, 11); *Cirsium vulgare* (+, 9); *Clinopodium vulgare* (+, 11); *Dactylis glomerata* (+, 11); *Sambucus ebulus* (+, 5); *Arenaria serpyllifolia* (+, 5); *Minuartia verna* (+, 5).

Table 2: *Vaccinio myrtilli-Juniperetum communis campanuletosum abietinae* subass. nova hoc loco

Relevé	1	2	3*	4*	5*	6*	7*
Locality	Padeş Peak	Rusca Peak	Țețele Ridge	Beșeneu Creek	Turia	Chenciaș	Bodoc Ridge
Altitude (m asl)	1374	1340	1100	1000	850	950	1100
Aspect	N	-	S	S	N	NE	NW
Shrub cover (%)	35	35	65	65	35	35	35
Herbs cover (%)	60	45	65	40	80	75	75
Surface (m ²)	200	100	100	100	100	400	400
Characteristic for ass.							
<i>Vaccinium myrtillus</i>	4	3	2	2	3	1	2
Characteristic for subass.							
<i>Campanula abietina</i>	+	+	+	+	+	+	.
<i>Bruckentalia spiculifolia</i>	+	+	.	.	.	.	.
<i>Helictochloa planiculmis</i>	.	.	.	.	1	.	+
<i>Phyteuma tetramerum</i>	.	.	.	.	+	.	.
<i>Vaccinio-Juniperion communis</i> (incl. <i>Vaccinio-Juniperetalia communis</i>)							
<i>Juniperus communis</i> subsp. <i>communis</i>	3	3	4	4	3	3	3
<i>Vaccinium vitis-idaea</i>	1	1	1	+	.	.	2
<i>Rosa pendulina</i>	.	.	+	+	.	.	+
<i>Calluno-Ulicetea</i>							
<i>Calluna vulgaris</i>	.	.	.	.	+	.	.
<i>Luzula luzuloides</i>	1	1	+	1	+	+	1
<i>Nardus stricta</i>	+	.	4	3	4	4	4
<i>Potentilla erecta</i>	.	+	+	+	+	+	+
<i>Veronica officinalis</i>	.	.	+	+	+	+	+
<i>Viola montana</i>	.	.	+	+	+	+	+
<i>Alchemilla acutiloba</i>	.	.	+	.	+	+	+
<i>Pilosella officinarum</i>	.	.	+	.	.	+	+
<i>Hypericum maculatum</i>	+	+	.	.	.	.	.
<i>Solidago virgaurea</i>	+	+	.	.	.	.	.
<i>Festuca nigrescens</i>	.	+	.	.	.	.	.
<i>Avenella flexuosa</i>	1	1	.	.	.	.	.
<i>Antennaria dioica</i>	.	.	+	.	.	+	+
<i>Rumex acetosella</i>	.	.	.	+	+	.	.
<i>Danthonia decumbens</i>	.	.	+	.	.	+	.
<i>Luzula multiflora</i>	-	-	-	-	-	+	+
<i>Thymus pulegioides</i>	-	-	2	-	+	-	+
Companions							
<i>Festuca rubra</i>	.	.	1	+	1	2	2
<i>Agrostis capillaris</i>	.	+	.	+	2	+	1
<i>Anthoxanthum odoratum</i>	.	.	1	+	+	.	2
<i>Stellaria graminea</i>	.	.	+	+	+	.	+
<i>Cerastium glomeratum</i>	.	.	+	+	.	+	+
<i>Betula pendula</i> (juv.)	.	.	.	+	.	+	+
<i>Gentiana praecox</i>	.	.	+	.	+	.	+
<i>Lotus corniculatus</i>	.	.	+	+	+	.	.
<i>Galium verum</i>	.	.	.	+	+	+	.
<i>Achillea millefolium</i>	.	.	.	.	+	+	+
<i>Pimpinella saxifraga</i>	.	.	+	.	+	.	+
<i>Leontodon autumnalis</i>	.	.	+	+	+	+	.
<i>Veronica chamaedrys</i>	.	.	.	+	.	2	1
<i>Fagus silvatica</i> (juv.)	.	.	.	+	.	+	.
<i>Cynosurus cristatus</i>	.	.	.	+	+	.	.
<i>Rubus idaeus</i>	+	+	.	.	.	.	.
<i>Poa pratensis</i>	.	.	.	+	.	+	.
<i>Briza media</i>	.	.	+	.	+	.	.
<i>Polytrichum commune</i>	.	.	.	.	.	+	+

Relevé	1	2	3*	4*	5*	6*	7*
<i>Trifolium pratense</i>	.	.	+	.	.	+	.
<i>Trifolium repens</i>	.	.	.	+	.	.	+
<i>Leucanthemum vulgare</i>	.	.	+	.	+	.	.
<i>Carlina vulgaris</i>	.	.	+	.	.	+	.
<i>Helianthemum nummularium</i> subsp. <i>obscurum</i>	.	.	+	.	.	+	.
<i>Carex tomentosa</i>	.	.	.	.	+	.	+
<i>Hypericum perforatum</i>	.	.	.	.	.	+	+
<i>Primula veris</i>	.	.	+	.	+	.	.
<i>Hypericum montanum</i>	.	.	.	+	.	.	+

* From Kovacs [19].

Species in a single relevé: *Salix caprea* (+, 4); *Cytisus hirsutus* (+, 5); *Genista sagittalis* (+, 2); *Succisa pratensis* (+, 2); *Rubus schleicheri* (+, 2); *Scorzonera rosea* (+, 3); *Thesium alpinum* (+, 3); *Carex brizoides* (+, 1); *Rumex arifolius* (+, 1); *Maianthemum bifolium* (+, 6); *Campanula rotundifolia* (+, 7); *Carlina acaulis* (+, 7); *Dactylis glomerata* (+, 5); *Anthyllis vulneraria* (+, 3); *Prunella vulgaris* (+, 7); *Plantago media* (+, 6); *Urtica dioica* (+, 6); *Anemone nemorosa* (+, 7); *Asperula odorata* (+, 6); *Ajuga reptans* (+, 6); *Viola reichenbachiana* (+, 7); *Cruciata glabra* (+, 7); *Fragaria vesca* (+, 6); *Genista tinctoria* (+, 5); *Linum catharticum* (+, 3); *Ranunculus bulbosus* (+, 6).

Conclusions

Juniperus communis subsp. *communis* scrub communities from Romania are floristically distinctive compared to those described in Central Europe on both substrate categories, i.e. carbonatic and siliceous. We have grouped the basiphilous juniper coenoses in the association *Thymio odoratissimi-Juniperetum communis* ass. nova, and the acidophilous ones in the *Vaccinio myrtilli-Juniperetum communis* Kovács ex Filipaş et al. *campanuletosum abietinae* subass. nova. We assign the two described syntaxa within the framework of the latest European coenosystem, as follows:

1. Class *Crataego-Prunetea* Tx. 1962
Ord. *Prunetalia* Tx. 1952
All. *Brachypodio pinnati-Juniperion communis* Mucina et al. 2016
Ass. *Thymio odoratissimi-Juniperetum communis* ass. nova
2. Class *Calluno-Ulicetea* Br.-Bl. et Tx. ex Klika et Hadač 1944
Ord. *Vaccinio-Juniperetalia communis* Passarge 1972
All. *Vaccinio-Juniperion communis* Passarge in Passarge et Hofman 1962
Ass. *Vaccinio myrtilli-Juniperetum communis* Kovács ex Filipaş et al. *campanuletosum abietinae* subass. nova hoc loco

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**STRUCTURA FLORISTICĂ A TUFĂRIȘURILOR DOMINATE
DE *JUNIPERUS COMMUNIS* SUBSP. *COMMUNIS* DIN ZONELE COLINARE ȘI MONTANE ALE
ROMÂNIEI**

(Rezumat)

În lucrare sunt prezentați, sub raport floristic, ecologic și sintaxonomic, doi noi sintaxoni de *Juniperus communis* subsp. *communis* identificați în România, care întregesc arealul european al acestor comunități arbustive. Cenozele as. *Thymio odoratissimi-Juniperetum communis* ass. nova vegetează pe substrate calcaroase, sunt bogate în specii mezo-xerofile eurasiatice continentale, argument pentru încadrarea în alianța *Brachypodio pinnati-Juniperion communis* Mucina et al., 2016 și în clasa *Crataego-Prunetea* Tx. 1962. Cenozele sintaxonului *Vaccinio myrtilli-Juniperetum communis* Kovács ex Filipaș et al. *campanuletosum abietinae* subass. nova vegetează pe substrate acide, șisturi cristaline și formațiuni grezoase, sunt bogate în specii acidofile caracteristice pentru clasa *Calluno-Ulicetea* Br.-Bl. et Tx. ex Klika et Hadač 1944. Încadrarea sa în alianța *Vaccinio-Juniperion communis* Passage in Passage et G. Hoffman 1968, o argumentăm prin prezența ridicată a speciilor din genul *Vaccinium* (*V. myrtillus*, *V. vitis-idaea*) în sinuzia subarbustivă a fitocenozelor.