ILLYRIC BELT OF BEECH, FIR AND SPRUCE (*Piceo-Fago-Abietetum* Čol. 65) IN SOUTHWEST SERBIA

Zagorka TOMIĆ[1] & Ljubinko RAKONJAC[2]

[1]*Faculty of Forestry, University in Belgrade,*
[2]*Ministry for Natural Resources and Environment Protection, Serbia*

ABSTRACT

Tomić Z., & Rakonjac Lj. (2004). Illyric belt of beech, fir and spruce (*Piceo-Fago-Abietetum* Čol. 65) in Southwest Serbia . *Proceedings of the 2nd Congress of Ecologists of the Republic of Macedonia with International Participation, 25-29.10.2003, Ohrid*. Special issues of Macedonian Ecological Society, Vol. 6, Skopje.

The zonal (climate-regional) association *Piceo-Fago-Abietetum* Čol. 1965 occurs on Pešterska Visoravan. It grows at the altitudes of 1200-1450 m, at various exposures, slopes, bedrocks and soil types. The floristic composition, structure, and the two spectres of life forms and areal types were analysed based on the Plant Community Table. Based on our own research and discussion, it was concluded that the community *Piceo-Fago-Abietetum* Čol. 1965 is an Illyric altitudinal belt in Southwest Serbia.

Key words: plant community of beech, fir, spruce; zonal vegetation; Southwest Serbia.

Introduction

The order of acidophilous coniferous forests (*Vaccinio-Picetalia* Br. Bl. 1939 emend K.Lund 1967) in Southeast Europe consists of montane and alpine communities formed in the conditions of cold and moist boreal climate. The most important alliance in the order *Waccinio-Piceion* Br. Bl. (38) 1939 is divided into two sub-alliances: alpine forests of spruce and fir (*Abieti-Piceenion* Br. Bl. 1939) and subalpine forests of spruce (*Eu-Vaccinio-Piceenion* Oberd. 1957).

Three-dominant beech-fir-spruce forests in the former sub-alliance had previously been considered only a variety of beech-fir forests. It was only recently that they were given the rank of association (*Piceo-Abieti-Fagetum* Stef. et al. 1983) and a significant position in the climate-regional belt in the vegetation of the inland Dinarids (Stefanović V. et al., 1983). In Serbia, this community was mainly treated as the feature of the contact zone between the belt of beech and spruce forests, growing on smaller areas in a disjunct area.

Although it was found on several mountains in Serbia, it is only on the mountain Tara plateau, at the altitude above 950 (1050 m), that the community *Piceo-Fago-Abietetum* Čol. 1965 builds an oro-climatogenic belt similar to that in Bosnia (Čolić, D. 1965).

The existence of a similar belt on Pešterska Visoravan (Rakonjac, Lj., 2002) confirms that, based on the floral-geographical classification, Southwest Serbia belongs to the Illyric province, with which it has similar altitudinal zones of vegetation. For this reason, the community of beech-fir-spruce on Pešter, being specific for only one, smaller part of Serbia, is presented in detail in this paper.

Material and methods

The area of field study is the natural conserved stands of beech-fir-spruce on Pešterska Visoravan. The basic ecological conditions were evaluated at twelve points, the soil profiles were analysed and plant community records were made after Braun-Blanquet's method. In addition to morphological determination in the field, the soils were also analysed in the laboratory conditions. Plant community records were listed in the Tab.. Two life spectres of the association were analysed: life forms and floral-geographical elements.

Results

The range and site conditions

This forest grows in a discontinuous range of the region towards Montenegro and Zlatar, in smaller groups and in village preserves. Its larger sites, in somewhat larger stands, but in mosaic with other communities, as the consequence of site conditions and human impact, occur from the village Trijebine towards Montenegro on the stretch to Bare. In Adilov Gaj, on the north boundary of Giljeva, on the border with Ozren, towards the fertile Trijebinsko Polje, there is a substantial complex of this forest, which must be protected from further excessive felling. Only a little farther towards Dubočica, in Vrletnica and Jasikovac, there is a very significant site exposed to intensive

degradation, and aspen and birch appear in these stretches. In Sohe, Bela Stena, Markoviča Potok, there are smaller stands, which occur with the changes of the relief forms, without the long and wide slopes, more characteristic of Jasikovac.

This forest grows on Pešter at the altitudes from 1200 to 1450 m, but the greatest part of its stands is above 1350 m. The exposures are different, and the slopes are rather steep amounting to 20° in Jasikovac and 45° on Revuša. The community occurs on diverse bedrocks: at the lower altitudes in Aljinovići, the bedrock is composed of sandstones, claystones, hornfels and marls. In the area of Bare, the forest grows on bedded limestones with hornfels, spilites, gabbro-amphibolites; in Vrletnica and Adilov Gaj, on diabase hornfels; on Bela Stena, on diabase, and in Jasikovac, on gabbro-amphibolites.

The soils are dystric cambisol, eutric cambisol, eutric ranker, pseudogley and limestone black soil. The majority of stands occur on eutric soils-from eutric ranker to eutric cambisol.

Limestone black soil on the cliff Revuša is 40 cm deep, and its textural class is sandy loam. Soil pH in water is 6.8 and in KCl 6.4. A horizon is rich in nitrogen (0.90%) and humus (12.73%).

Eutric ranker in beech, fir and spruce communities is up to 43 cm deep, and its textural class is loam. According to its pH in water and KCl, A horizon is eutric (4.8–5.6 and 4.4–4.8).

The depth of eutric cambisol in this community is 55–76 cm. Soil textural class in the upper part of the profile is silty clay loam to loam and in the lower parts of the profile, loam to clay. pH in water is 4.8-6.3, and in KCl 4.0-5.5. Soil is rich in total nitrogen (0.65–0.76%) and humus (2.24–10.02).

Dystric cambisol is about 60 cm deep, and its textural class is loam, it has a light textural composition, so its capacity of total adsorption is not high. The soil is very acid, pH in water and KCl is 4.0–4.8 and 2.9–4.0 respectively.

Floristic composition and structure

Floristic composition and structure are presented in the attached Plant Community Table. The Plant Community Table includes 92 plant species: in the tree layer, the dominant species are *Abies alba, Fagus moesiaca, Picea abies*, but also the percentage of *Pinus silvestris*is significant. *Betula pendula, Pinus nigra, Populus tremula* and *Tilia cordata* occur individually (which indicates the initial phase of degradation). The second layer consists of a greater number of woody and shrub species-total 31. 59 species (without the seedlings of plants from the tree and shrub layers) occur in the layer of ground flora. Among the ground flora species, 4 species are ferns and 55 species are flowering plants.

The degree of crown cover in the **tree layer** is very different and it ranges from 0.4–0.9, but mostly above 0.7. Tree height differs very much, depending on the stand age, degree of stand conservation and it is between 13 and 27 m, mostly 22–25 m. Mean diameter of trees in the tree layer is very uniform, which is the result of the uniform management operations and it is rather large for the conditions of Pešter forests, from 17 to 35 cm. In the majority of stands, mean diameter is about 30 cm or above 30 cm. The highest value is attained on the north-west slope of Soha, where the trees have considerable diameter and height,-diameter up to 50 cm and height above 25 m. The proportion of the species mixture in the tree story differs from stand to stand, but it could be claimed that fir, by its values of abundance, coverage and sociability has the highest significance in this community. Its marks are mostly about 3.3. Beech and spruce have a lower share in the community, but in individual records they dominate occasionally. The **shrub layer** consists of a great number of species, even 31, and depending on the degree of presence, the dominant species are *Abies alba* and *Picea abies*. The species *Rosa pendulina, Sorbus aucuparia, Betula pendula, Corylus avellana, Fagus moesiaca, Juniperus communis, Lonicera nigra, Populus tremula* and *Rosa arvensis* also have significant degrees of presence. The **ground flora** layer is not vigorous and the degree of coverage ranges between 0.2 and 0.4. The highest degree of coverage is in the stands with *Erica carnea* and *Vaccinium myrtillus*, which succeeded even under the intensive canopy of the first story, to create dense populations of plants in the ground flora layer and to attain a significant degree of coverage. In the third layer, the following species reach the highest degrees of presence: *Aremonia agrimonioides, Luzula luzuloides, Vaccinium myrtillus*. The following plants appear in a very significant part of stands in this community: *Anemone nemorosa, Daphne blagayana, Euphorbia amygdaloides, Gentiana asclepiadea, Glechoma hirsuta, Oxalis acetosella, Polygonatum verticillatum,* etc.

Tab. 1. Spectre of life forms of the plants in the community *Piceo-Fago-Abietetum* Čolić 1965

Life forms							
Phanerophytes	Nano-phanerophytes	Woody chamaephytes	Herbaceous chamaephytes	Hemi-cryptophytes	Geophytes	Terrophytes	Terrophytes/ chamaephytes
p	np	dc	zc	h	g	t	th
12%	9%	4%	2%	54%	14%	2%	4%
21%		6%					

Life form spectres of the association

The spectre of life forms-biological spectre

The biological spectre of the association *Piceo-Fago-Abietetum* Čolić 1965 is presented in Tab. 1.

The biological spectre of the association shows a very high presence of hemicryptophytes (54%). The percentage of phanerophytes is 21% (12% phanerophytes and 9% nano-phanerophytes). The share of chamaephytes is not significant; 2% herbaceous chamaephytes and 4% woody ones. The percentage of geophytes is significant, 14%, which is characteristic of mesophilous mixed community of beech, fir and spruce. Terrophytes amount to only 2% and terrophytes/chamaephytes-4%. Consequently, the biological spectre of the community *Piceo-Fago-Abietetum* is hemicryptophyte-phanerophyte.

Spectre of floral elements

The plant-geographical characteristics of the community are presented by the spectre of floral elements in Tab. 2.

In the community of beech, fir and spruce, there is a very high number of individual areal types. Central European floral elements have the highest percentage (38%) as the collective areal types and they are from that aspect the dominant group. Then also the Eurasian floral elements have a significant percentage (22%). The group of circumpolar and cosmopolites (14%), together with floral elements of north regions have a high collective percentage of 19%. Sub-Mediterranean floral elements are few (4%). Balkan and Balkan-Apennine percentage is more significant (9%). Pontic-Central-Asian elements are few, only 2%, as well as Sub-Atlantic elements (3%).

The percentage of Mesophilous plants (Central European and Sub-Atlantic areal type) is 41%, and with frigoriphilous plants (floral elements of northern regions and circumpolar)-19%, they compose an abundant group of 60%. This means that floral-geographical elements of colder and moister regions are prevailing in the community. The plants with a wide ecological range (Eurasian floral elements and cosmopolites) are represented with 26.5%.

The same as the association *Piceo-Fago-Abietetum* on Tara, the community on Pešter has the Central European character because, based on the spectres of floral elements, Central European and sub-Central European floral elements have the dominant role.

Discussion

The scientists in Serbia categorise the three-dominant community of beech, fir and spruce as the transition between beech forests or beech-fir and spruce forests-*Piceo-Abieti-Fagetum* Greb. 1941/Gaj. 1992, or *Abieti-Fagetum suass. piceetosum* (Gajić, M. 1989). Mišić, V. and Jovanović, B. (1983) evaluated this community as a separate association-*Piceeto-Abieti-Fagetum* Miš. et. Jov. 1983, but without the characteristics of zonality. Even in West and Southwest Serbia, which after Gajić, M. (1984) belong to the Illyric province, on Mt. Zlatar (Obratov, D. 1992) and in the surroundings of Prijepolje (Matović, M. 1986), this community was not reported as a climate-region-

Tab. 2. Spectre of floral elements of the community *Piceo-Fago-Abietetum* Čolić 1965

Group of floral elements	Number of plants	Percentage		Floral element	Number of plants
FLORAL ELEMENTS OF NORTHERN REGIONS	5	5%	5%	Boreal-Eurasian	2
				Sub-Boreal-Eurasian	2
				Sub-Boreal-circumpolar	1
CENTRAL EUROPEAN	36	38%	38%	Central European	21
				Sub-Central European	13
				Alpine-Carpathean	2
SUB-ATLANTIC	3	3%	3%	Sub-Atlantic-Sub-Mediterranean	3
SUB-MEDITERRANEAN	4	4%	16%	Sub-Mediterranean	4
East Sub-Mediterranean	3	3%		East Sub-Mediterranean	3
Balkan and Balkan-Apennine	8	9%		Moesian	1
				Sub-Moesian	1
				Sub-Illyric	2
				Sub-Illyric-subApennine	2
				Sub-Central-Balkan	1
				SubBalkan-Apennine	1
PONTIC-CENTRAL-ASIAN			2%		
Pontic	2	2%		Pontic	1
				Pontic-East-Sub-Mediterranean	1
EURASIAN FLORAL ELEMENTS	21	22%	22%	Sub-south Siberian	6
				Eurasian	8
				Sub-Eurasian	7
CIRCUMPOLAR and COSMOPOLITE	12	14%	14%	Circumpolar	7
				Sub-circumpolar	1
				Cosmopolite	4
TOTAL:	94	100%	100%	TOTAL:	94

al community. The exception is Čolić, D. (1965), who assessed the wide range and the and the climate-regional character of the community on Mt. Tara. For this reason, the authors' priority has been given to the name *Piceo-Fago-Abietetum* Čol. 1965.

The study of vegetation on Pešterska Visoravan (Rakonjac, Lj. 2002) confirms the existence of a distinctly differentiated association *Piceo-Fago-Abietetum* Čol. 1965, which is floristically and ecologically very similar to the zonal alpine community *Piceo-Abieti-Fagetum* Stef. et al. 1983 in the zone of inland Dinarids. The zonal (climate-regional) character of the community is indicated by the altitude above 1300 m, as well as the different slopes, exposure, bedrocks and soil types. Unfortunately, the number of conserved natural stands on Pešter is very small, due to the advanced degradation on large areas of the potential range of this community. Because of this fact, i.e. because of a small number of plant community records, it was not possible to carry out any further syntaxonomic differentiation, i.e. to single out a subassociation.

Conclusions

Based on the above, we can conclude as follows:

- In Southwest Serbia, on Pešterska Visoravan, the zonal community *Piceo-Fago-Abietetum* Čol. 1965 is distinctly differentiated as the alpine belt.
- Conserved stands occupy small areas in a disjunct area, whereas various stages of degradation are widely distributed and they characterise a considerable potential area of this community.
- The altitude ranges between 1200 and 1450 m (mostly above 1300 m) and the exposure, slopes, bedrocks and soil types are different, which definitely indicates the zonal (climate-regional) character of the community.
- The floristic similarity of the association, and the similarity of vertical zonation of vegetation (beech-fir-spruce forests are above beech-fir forests), with the alpine zone of inland Dinarids in Bosnia, confirms the designation of Southwest Serbia as the Illyric floral-geographical province.

References

Čolić, D. (1965): Ekološki uslovi za opstanak i razvoj glavnih vrsta četinarskih šumskih edifikatora u zaštićenom području planine Tare. Zaštita prirode, 27-28, Beograd.

Gajić, M. (1989): Flora i vegetacija Golije i Javora. ŠPIK Ivanjica, 1-592, Ivanjica, Beograd.

Gajić, M., Kojić, M., Karađić, D. et al. (1992): Vegetacija Nacionalnog parka Tara. 1-288, Bajina Bašta.

Matović, M. (1986): Monografija o biljnom pokrivaču okoline Prijepolja. 1-153, Prijepolje.

Mišić, V., Jovanović, B. (1983): Mešovita šuma bukve, jele i smrče (Piceeto-Abieti-Fagetum moesiacum s.l.) u Srbiji i njen značaj. Zaštita prirode br. 36, 33-45, Beograd.

Obratov, D. (1992): Flora i vegetacija planine Zlatar. Doktorska disertacija, Biološki fakultet Prirodno-matematičkog fakulteta, 83-157, Beograd.

Rakonjac, Lj. (2002): Šumska vegetacija i njena staništa na Pešterskoj visoravni kao osnova za uspešno pošumljavanje. Doktorska disertacija, Šumarski fakultet Univerziteta u Beogradu.

Stefanović, V., Beus, V., Burlica, Č., Dizdarević, H., Vukorep, I. (1983): Ekološko-vegetacijska rejonizacija Bosne i Hercegovine. Šum. fak., Posebno izdanje, br. 17, 1-51, Sarajevo.

***** (1970-1986): Flora SR Srbije, I-X. SANU, Odel. prirod.-matem. nauka, Beograd.

***** Geološka karta Jugoslavije 1: 100000 (listovi Sjenica, Bijelo Polje, Prijepolje, Ivanjica), tumači geoloških karata, Savezni geološki zavod, Beograd.

Plant community Tab. 1.- Association PICEO-FAGO ABIETETUM Čolić 1965

Record Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Degree of presence**
Field symbol of the record	A3	A1	s14a	S6a	s13	s15	s11	s9	9C	8B	s6	R1	
Date of record	19.7.97	19.7.97	19.6.96	22.6.96	19.6.96	19.6.96	20.6.96	20.6.96	19.6.97	20.6.96	22.6.96	20.7.97	
Locality	Aljinovići		Bare	Vrletnica	Bare-Sohe	Bare	Bela Stena	Lokva	Bare M.P.	Jasikovac	Adilov Gaj	Revuša	
Area (m^2)	900											700	
Altitude (m)	1210	1235	1350	1390	1350	1230	1320	1350	1380	1380	1390	1410	
Exposure	SZ	S	JI	S	SZ	S	Z	SI	SZ	SZ	S	S	
Slope (°)	30				25		30	20	35	20	25	40	
Bedrock	sandstones, claystones, hornfels and marls		bedding limestones with hornfels	diabase hornfels	bedding limestones with hornfels	spilites	diabase	gabbro-amphibolites			diabase hornfels	limestone	
Soil	dystric cambisol				eutric cambisol				eutric ranker		pseudogley	limestone. black soil	
I STOREY													
Canopy	**0.8**	**0.7**	**0.9**	**0.8**	**0.9**	**0.7**	**0.8**	**0.8**	**0.7**	**0.7**	**0.9**	**0.4**	
Height - mean (m)	**25**	**25**	**22**	**19**	**27**	**15**	**22**	**25**	**22**	**25**	**22**	**13**	
Diameter-mean (cm)	**31**	**30**	**30**	**22**	**35**	**20**	**30**	**30**	**30**	**25**	**35**	**17**	
Spacing-mean (m)	**2-4**	**1-3**	**3**	**3**	**3**	**4**	**4**	**4**	**3**	**3**	**1-5**	**5**	
Abies alba	2.1	2.2	4.4	2.2	3.3		3.3	4.4	3.3	1.2	2.3	+.1	V
Fagus moesiaca				3.3	1.1	3.3		+.1	+.1	1.2	1.2	1.1	IV
Picea abies	3.3	3.3			2.2	2.2	1.1	1.1	1.2	2.3		3.3	IV
Pinus silvestris							1.1			+.1		+.1	II
Betula pendula				1.1					+.1				I
Pinus nigra												1.1	I
Populus tremula				2.2								+.1	I
Tilia cordata											+.1		I
II STOREY													
Canopy	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.4	0.3	0.2	0.4	
Mean height (m)	2	1.5	1.5	2	1.5	1.5	1.5	2	1.5	2	2	2	
Abies alba	1.1	1.1	1.1	2.2	1.1		1.1	2.2	3.3	1.1	2.2		V
Picea abies	1.1	1.1	+.1	+.1	+.1		1.1	+.1	1.2	+.1	1.1	1.1	V
Rosa pendulina	+.1	+.1		+.1							1.1	+.1	III
Sorbus aucuparia			+.1		+.1			+.1		+.1		+.1	III

Record Number	1	2	3	4	5	6	7	8	9	10	11	12	Degree of presence
Betula pendula									+.1	+.1		+.1	II
Corylus avellana			+.1						+.1			+.1	II
Fagus moesiaca				1.1		1.1				+.1	+.1		II
Juniperus communis	+.1		+.1							1.1		2.1	II
Lonicera nigra			+.1		+.1			+.1				+.1	II
Populus tremula				+.1		+.1						1.1	II
Rosa arvensis	+.1			1.2			2.2	+.1					II
Carpinus betulus												+.1	I
Cotoneaster tomentosus	+.1												I
Crataegus calycina			+.1										I
Crataegus monogyna		+.1				+.1							I
Daphne mezereum										+.1			I
Lonicera alpigena								+.1					I
Pinus nigra												+.1	I
Prunus avium		+.1											I
Pyrus pyraster				+.1		+.1							I
Ribes alpinum											+.1		I
Ribes grossularia									+.1				I
Rosa glutinosa			+.1										I
Rubus hirtus			+.1						+.1				I
Rubus idaeus		+.1						+.1					I
Salix capreae									+.1				I
Salix silesiaca			+.1										I
Sorbus austriacus		+.1										+.1	I
Tilia platyphyllos											+.1		I
Viburnum lantana		+.1											I
Viburnum opulus		+.1											I
III STOREY													
Degree of coverage	**0.2**	**0.2**	**0.25**	**0.25**	**0.25**	**0.3**	**0.4**	**0.3**	**0.3**	**0.3**	**0.25**	**0.2**	
Aremonia agrimonioides			+.1	1.1		+.1	+.1	+.1	+.1		1.1	+.1	IV
Luzula luzuloides			+.1		1.2	+.1	+.1	+.1	+.1	1.1	1.2		IV
Vaccinium myrtillus			+.2	1.2			3.3	1.1	2.3	3.3	1.2	1.2	IV
Ajuga reptans			+.1	1.1	1.1	+.1		+.1			1.1		III
Anemone nemorosa				3.3	1.1	1.1	1.1	2.2	+.1		2.2		III
Daphne blagayana			+.1				+.1	+.1	+.1			+.1	III

Record Number	1	2	3	4	5	6	7	8	9	10	11	12	Degree of presence
Euphorbia amygdaloides				+.1	+.1	1.1			+.1			+.1	III
Fragaria vesca			+.1	1.2	1.1		+.1	+.1	+.1				III
Gentiana asclepiadea				+.1			+.1		+.1	+.1		+.1	III
Glechoma hirsuta				+.1	+.1	+.1	+.1	+.1	+.1		1.1		III
Oxalis acetosella					1.1	2.2		+.1	1.3		1.2		III
Polygonatum verticillatum				+.1	+.1		+.1				+.1	+.1	III
Athyrium filix-femina		+.1	+.1				+.1						II
Brachypodium silvaticum			+.2	1.1			1.1			1.2			II
Cardamine bulbifera				1.1		1.1					+.1		II
Dryopteris filix-mas					+.1	+.1			+.1				II
Erica carnea							2.2	1.1		1.2			II
Galium silvaticum							1.1		+.1	+.1			II
Galium verum					1.1		+.1		+.1				II
Geum urbanum				+.1		+.1	+.1						II
Helianthemum nummularium				+.1			+.1		+.1			+.1	II
Hepatica nobilis						1.1	+.1		+.1				II
Lonicera nigra			+.1					+.1	+.1				II
Mycelis muralis			+.1			1.2	1.1						II
Paris quadrifolia		+.1		1.1						+.1			II
Prenanthes purpurea	+.1		+.1					+.1					II
Pteridium aquilinum			+.1			+.1	+.1						II
Veratrum nigrum				1.1						+.1	+.1		II
Aegopodium podagraria							+.1				1.1		I
Alchemilla vulgaris							1.1		+.1				I
Asperula odorata						2.3		+.2					I
Astrantia major				+.1			+.1						I
Caltha laeta		+.1									1.2		I
Campanula patula											1.1	+.1	I
Campanula sphaerotrix		+.1							+.1				I
Chamaecytisus hirsutus							+.2		+.1				I
Doronicum columnae					+.1				+.1				I
Genista ovata							1.1	+.2					I
Geranium robertianum		+.1				+.1							I
Hieracium danubiale							+.1	+.1					I
Hieracium transsilvanicum					+.1			+.1					I

Record Number	1	2	3	4	5	6	7	8	9	10	11	12	Degree of presence
Hypericum maculatum				+.1					+.1				I
Hypericum perforatum			+.1	+.1									I
Lapsana communis		+.1					+.1						I
Laserpitium latifolium	+.1		+.1										I
Luzula silvatica				1.1								+.1	I
Melica nutans						+.1	+.1						I
Melica uniflora				1.1			+.1						I
Melittis melissophyllum								+.1	+.1				I
Molinia coerulea										1.2	+.1		I
Phyteuma spicatum				+.1								+.1	I
Polystichum aculeatum									+.1			1.1	I
Prunella vulgaris			+.1						+.1				I
Rubus hirtus				+.1							1.1		I
Sanicula europaea			+.1	+.1									I
Scrophularia nodosa						+.1			+.1				I
Stellaria holostea				+.1		+.1							I
Veronica urticifolia				+.1								+.1	I
Vicia silvatica						+.1						1.1	I
Viola odorata				+.1				+.1					I
Viola sylvestris							+.1					+.1	I
Woody and shrubby species in III STOREY													
Abies alba	+.1	+.1	1.1	2.2	1.2		+.1	1.1	1.1	+.1	1.1		V
Picea abies		+.1			+.1	1.1			+.1	+.1			III
Rosa arvensis	+.1	+.1								+.1		+.1	II
Betula pendula										+.1		+.1	I
Corylus avellana									+.1				I
Populus tremula				+.1									I
Salix capreae			+.1										I
Sorbus austriacus												+.1	I

ILLYRIC BELT OF BEECH, FIR AND SPRUCE (*Piceo-Fago-Abietetum* Čol. 65) IN SOUTHWEST SERBIA

Zagorka TOMIĆ, Ljubinko RAKONJAC

Summary

The community *Piceo-Fago-Abietetum* Čol. 1965 on Pešterska Visoravan in Southwest Serbia was researched. Plant community records and the data on the main ecological conditions were taken in the field at twelve localities in the conserved natural stands.

The community occupies the alpine belt above 1300 m on different exposures, slopes, bedrocks (sandstones, claystones, marls, spilites, gabbro-amphibolites, diabases, diabase-hornfels and limestones) and soil types (dystric cambisol, eutric cambisol, eutric ranker, limestone black soil and pseudogley).

The Plant Community Table consists of 92 species, of which 31 are trees and shrubs. The canopy closure of the tree layer is above 0.7, and the sizes are satisfactory (height 22-25 m, diameter 17-35 cm).

The spectre of life forms has the general hemi-crypto-phanerophyte character. In the spectre of areal-types the prevailing floral-geographical elements are Central European (38%), Eurasian (22%) and Boreal (19%), which indicates the mesophilous and to some extent the frigoriphilous character of the community.

It is concluded that the community *Piceo-Fago-Abietetum* Čol, 1965 has the zonal (climate-regional) character. Its similarity with the altitudinal belt of beech-fir-spruce in Bosnia designates Southwest Serbia as the Illyric floral-geographical province.