

Sulejman REDŽIĆ, Radomir LAKUŠIĆ*

**COMPARATIVE ANALYSIS OF ECOLOGICAL AND PHYTOCE-
NOLOGICAL CHARACTERISTICS OF MESOPHYLL MEADOWS
OF THE ALLIANCE PANCICION LAKUŠIĆ 1966 FROM THE
AREA OF NATIONAL PARK »BIOGRADSKA GORA« AND
OF THE MOUNTAIN OZREN NEARBY SARAJEVO**

UPOREDNA ANALIZA EKOLOŠKIH I FITOCENOLOŠKIH KARAKTERI-
STIKA MEZOFILNIH LIVADA SVEZE PANCICION LAKUŠIĆ 1966. SA
PROSTORA NACIONALNOG PARKA »BIOGRADSKA GORA«
I PLANINE OZREN KOD SARAJEVA

Izvod

Mezofilne livade gorskog i subalpinskog pojasa planine Bjelasice i N.P. »Biogradska gora« pripadaju svezi *Pancicion* Lakušić 1966. Diferenciraju se na dvije asocijacije — *Trifolio-Polygaletum azurae* Lakušić 1966 i *Ranunculo-Pancicium montenegrinum* Lakušić 1966. Na prostoru planine Ozren kod Sarajeva livade sveze *Pancicion* diferenciraju se na sedam asocijacija — *Violeto-Festucetum fallacis* Ht 1960, *Ranunculo-Pancicium serbicae* Lakušić 1976, *Conyzifolio-Lilietum bosniacae* Bjelčić 1966, *Pancicio-Lilietum bosniacae* Bjelčić et Lakušić 1969, *Hypochoereto-Crepidetum conyzifoliae* Redžić 1990, *Knautio-Pancicium serbicae* Redžić 1990. i *Pediculari-Astrantietum elatioris* Redžić 1990.

Synopsis

The mesophyll meadows of the mountain and subalpine zone of the mountain Bjelasica and National Park »Biogradska gora« belong

* Sulejman Redžić, Radomir Lakušić, Faculty of Science University of Sarajevo — Department of Ecology and Biogeography 71000 Sarajevo, V. Putnika, St. 43—A. (YU)

to alliance *Pancicion* Lakušić with community *Trifolio-Polygaletum azureae* Lakušić 1966 and *Ranunculo-Pancicium montenegrinum* Lakušić 1966.

In the area of the mountain Ozren nearby Sarajevo meadows alliance *Pancicion* Lakušić are differentiated in seven associations — *Violeto-Festucetum fallacis* Ht 1960, *Ranunculo-Pancicium serbicae* Lakušić 1966, *Conyzifolio-Lilietum bosniacae* Bjelčić 1966, *Pancicio-Lilietum bosniacae* Bjelčić et Lakušić 1966, *Hypochoereto-Crepidetum conyzifoliae* Redžić 1990, *Knautio-Pancicium serbicae* Redžić 1990 and *Pediculari-As-trantietum elatioris* Redžić 1990.

INTRODUCTION

In series of biological-ecological particularities of Natural Park »Biogradska Gora« and of the mountain Bjelasica, the mesophyll mountain and subalpine meadows have a special position. Lakušić (1966) was the first one researching mesophyll meadows of this area in detail and sorting them out in one special alliance *Pancicion* Lakušić 1966 having an endemic Balkanic character, the center of spreading directed to the southeastern Dinaric Alps. During further phytocenological and ecological researches the meadows of this alliance were found also in other areas — Mokra gora on Kosovo Provincie (Stanković-Tomić, 1970), in the southeastern Serbia, wide spread in Montenegro (Blečić et Tatić, 1966; Lakušić, 1970; Markišić, 1984), on middle and partly on continental Dinaric Alps (Bjelčić, 1966; Bjelčić et Lakušić, 1969; Lakušić et al. 1969, 1973, 1979, 1982, 1987a, 1987b; Mišić, 1984).

In the recent time the meadows were found and researched in detail also in the area of the mountain Ozren nearby Sarajevo, where is situated one of the northernmost habitats of the characteristic and builder species *Pancicia serbica* Vis. (Lakušić, 1965).

In this report are also presented the results of comparative researches of structure, dynamics, horology, syngeneses and ecology of communities of the alliance *Pancicion* from the area of these two mountains.

MATERIAL AND METHODS

The phytocenological and ecological data concerning the researches of meadows of the mountain Bjelasica derive from Lakušić (1966) and Redžić (1986 mscr.) and of the mountain Ozren from Redžić, and these have been collected in the last 10 years.

The phytocenological sampling on both mountains was performed by the method of Braun-Blanquet (1964). Belonging to

the floral element and to the life form was detached for a large number of species according to Oberdorfer (1983,) and for endemic and relicts according to Beck (1903—1927), Beck et al. (1950—1983), Hayek (1927—1933), Rohlena (1942), Lakušić (1966), (1968) Lakušić et al. (1989).

RESULTS AND DISCUSSION

In the highland and in lower parts of subalpine zone of the mountain Bjelasica mesophyll meadows of the alliance *Pancicion* in two association — *Trifolio-Polygaletum azureae* Lakušić 1966, and *Ranunculo-Pancicium serbicae montenegrinum* Lakušić 1966, are differentiated.

They are spread on the altitudes between 900 and 1800 m, on different expositions and on the ground inclination between 0 and 25°. The geological foundation on their habitats consists of diabase, sandy ground, and schists, and the soils are district cambisol, deeper ranker and in lower and plain districts there are luvisoll. The community *Ranunculo-Pancicium serbicae montenegrinum* is very wide spread. It is differentiated in three subassociations. — R. — *P.s.m. asphodeletosum albi* Lakušić 1966, R. — *P.s.m. typicum* Lakušić 1966 and R. — *P.s.m. poetosum alpinae* Lakušić 1966 by means of which is achieved an ecological continuity with mountain pastures of the alliance *Jasionion orbiculatae* Lakušić 1966. In the construction of these communities are included over 100 species — 76 in the first one and 117 in the second one.

The communities *Fagetum moesiaca montanum* Blečić et Lakušić 1970, and *Fago-Aceretum* Blečić et Lakušić 1970 and partially *Abietetum dinaricum* Lakušić 1990 are spread on former habitats.

The mesophyll meadows of highland and of lower parts of the subalpine zone on the district of the mountain Ozren are spread on the altitude from 1300—1500 m, on different expositions and on the ground inclination up to 30°. The geological foundation on the habitats of these communities is represented by different siliceous stouns, and limestones being very often intercalated by siliceous stouns. The soils are district cambisols, luvisoll, rankers and limestone cambisol and kalkomelanosols.

The communities *Abieti-Piceetum illyricum* Fuk. 1960 emend. Stef. 1963, and *Abieti-Fagetum moesiaca piceetosum* Lakušić are spread on former habitats.

A more distinct variation of ecological circumstances, especially of air temperatures makes about 70°, more heterogenous geological foundations and ground types, the position and distance from the mountains of middle Dinaric Alps and from the sea, the climate continentality caused spreading of some communities — *Violeto-Festucetum fallacis* Ht 1960, *Ranunculo-Pancicium serbicae*

Lakušić 1966, *Conyzifolio-Lilietum bosniacae* Bjelčić 1966, *Pancicio-Lilietum bosniacae* Bjelčić et Lakušić 1969, and *Hypochoereto-Crepidetum conyzifoliae* Redžić 1990, *Knautio-Pancicietum serbicae* Redžić 1990 and *Pediculari-Astrantietum elatioris* Redžić 1990, for the time being distinctive for the mountain Ozren.

With regard to floristic, the communities are very good differentiated. By means of comparative analysis of characteristic species of communities from these two mountains it was found a very high level of differentiation. In this regard the *Pancicia serbica* is the only being common for three communities. Other communities are characterized by other species (Tab. 1). These are mainly endemic and relict forms of Dinaric and Balkanic spreading.

The communities from the area of Bjelasica are differentiated through 50 different species. Are the most important ones *Polygala major* f. *azurea*, *Galium verum* f. *pallidum*, *Centaurea jacea* var. *weldeniana*, *Hypericum barbatum*, *Crepis conyzifolia* var. *montenegrina*, *Jasione orbiculata*, *Pedicularis verticillata*, *Thymus albanus*, *Meum athamanticum* and others (Tab. 2).

The communities of the alliance *Pancicion* from Ozren are differentiated from the communities of Bjelasica through a larger number of species. The largest plantgeographical and phytocenological significance have *Knautia sarajevensis*, *Minuartia junipernina*, *Silene bosniaca*, *Gentianella*, *crispata*, *Laserpitium marginatum*, *Lilium bosniacum*, *Scabiosa leucophylla*, *Arnica montana*, *Thymus balcanus*, *Pedicularis hoermanniana* and others (Tab. 2).

The researched communities connect a lot of species, that are distinctive for the alliance *Pancicion*, and order *Arrhenatheretalia* Pawl. in Pawl. et al. 1928, and class *Molinio-Arrhenatheretea* R. Tx. 1937 (Tab. 2). Are the most important ones *Pancicia serbica*, *Ranunculus montanus*, *Scorzonera rosea*, *Silene sendtneri*, *Hieracium pavichii*, *Alchemilla vulgaris*, *Festuca nigrescens*, *Leucanthemum vulgare*, *Cynosurus cristatus*, *Trifolium pratense* and others.

A few particularities were found through a plantgeographical analysis. In the communities from Bjelasica there are considerably more species of Dinaric and especially of Balkanic spreading (for about 2% of Dinaric and 10% of Balkanic) and e.t.c. (Tab. 3). In the communities from Ozren there are more alpine and prealpine species, subatlantic and continental species, definite speaking about the relationship of these communities with similar communities from the of Alps, Tatra and Carpathians (Tab. 3).

The analysis of life forms shows, that the communities from Bjelasica have a haemocryptophyt — haemophyt character and those from Ozren have mainly a haemocryptophyt — geophyt character pointing out, that the climate on Ozren is a bit more humid. (Tab. 4).

LOCALITY (LOKALITET)	BJELASICA	O	Z	R	E	N
COMMUNITY (ASOCIJACIJA)	TRIFOLIO-POLYLETUM AZUREAE LAKUŠIĆ 1965					
	RANUNCULO-PANCIZIETUM SERBICAE LAKUŠIĆ 1965					
	RANUNCULO-PANCIZIETUM SERBICAE LAKUŠIĆ 1965					
	PANCIPIO-LILLETUM BOSNI- ACAE EVELIČIĆ ET LAKUŠIĆ 1963					
	KNAUTIO-PANCIZIETUM SERBICAE REDZIĆ 1990					
	VIOLICO-PESTUGIETUM PALLACIS ET LILLO-PANCIZIETUM LAKUŠIĆ ET AL. 1979 IN LAKUŠIĆ ET AL. 1979					
	PEDICULARI-ASTRANTIIETUM ELATIORIS REDZIĆ 1990					
	HYPOCHOEREO-CREPIDIETUM CONTIZIFOLIAE REDZIĆ 1990					
	CONYZOFOLIO-LILLETUM BO- SNIACAE EVELIČIĆ 1966					
FLORISTIC COMPOSITION: (FLORISTIČKI SASTAV):						
POLYGALA MAJOR JACQ. F. AZUREA PANT.	3					
TRIFOLIUM CAMPESTRE SCHREBER	3					
GALIUM VERUM L. F. PALLIDUM CEL.	3					
CENTAUREA JACEA L. VAR. WELDENIANA (ROCHE) BERTH.	5					
RHINANTHUS ALECTOROLOPHUS SCHL. ET VUK.	5					
CREPIS CONYZIFOLIA (GOU.) D. T. VAR. MONTENEGRINA (ROCHE) HAY.	2					
KNAUTIA PURPUREA (VILL.) BORE. VAR. MONTENEGRINA (BECK) SZABO	1					
RANUNCULUS MONTANUS WILDL.	5					
PANCIPIA SERBICA VIS.	5					
VIOLA ELEGANTULA SCHOTT	5					
KNAUTIA SARAJEVENSIS (G. BECK) SZABO	4					
ALECTOROLOPHUS MINOR W. ET GR.	1					
CREPIS CONYZIFOLIA (GOUAN) A. KERNER	5					
LILLETUM BOSNIACUM (G. BECK) G. BECK EX FR. (FRIV.) E. HALY	5					
SILENE SENDNERII BOISS.	5					
SCORZONERA ROSEA WALDB. ET KIT.	5					
TRIFOLIUM ALPESTRE L.	5					
TRIFOLIUM MONTANUM L.	4					
ALCHEMILLA XANTHOCHLORA ROTEM	5					
GARUM CARVI L.	5					
FESTUCA NIGRESCENS LAM.	5					
ASTRANTIA MAJOR L. SUBSP. ELATIOR (FRIV.) E. HALY	5					
PEDICULARIS HOERMANNIANA L. HALY	5					
HYPOCHOERIS MACULATA L.	5					
AVENASTRUM BLAVI G. BECK P. ALPINUM G. BECK.	5					
ORCHIS GLOBOSA L.	5					
TRIFOLIUM PANNONICUM JACQ.	5					
SILENE BOSNIACA (G. BECK) HAND.-MAZZ.	5					

X -

- Označe od 1 do 5 označavaju stepen stalnosti.

FLORISTIC COMPOSITION:
(FLORISTIČKI SASTAV)BJELOSLAVICA
OZRENCHAR. SPECIES OF ALL PANCICION LAKUŠIĆ 1966
(KAR. VRSTE SVEZE PANCICION LAKUŠIĆ 1966):

PANCICION SERBICA VIS.	+	+
RANUNCULUS MONTANUS WILL.	+	+
SCORZONERA ROSEA W. et K.	+	+
SILENE SENDTNERI BOISS.	+	+
HIERACIUM PAVICHII HEUF.	+	+
ALCHEMILLA VULGARIS L.	+	+
FESTUCA NIGRESCENS LAM.	+	+

CHAR. SPECIES OF ORDER ET KLASSIS
(KAR. VRSTE REDA ARRHENATHERETALIA PAWL. 1928
I KLASSE MOLINIO-ARRHENATHERETEA R. Tx. 1937):

LEUCANTHEMUM VULGARE L.	+	+
CYNOSULUS CRISTATUS L.	+	+
LEONODON AUTUMNALIS L.	+	+
ANTOXANTHUM ODORATUM L.	+	+
TRIFOLIUM PRATENSE L.	+	+
TRIFOLIUM REPENS L.	+	+
TRAGOPOGON PRATENSIS L.	+	+
ACHILLEA MILLEFOLIUM L.	+	+
BRIZA MEDIA L.	+	+
LATHYRUS PRATENSIS L.	+	+
LOTUS CORNICULATUS L.	+	+
CAMPANULA PATULA L.	+	+
F. JAHORINAE K. MALY	+	+
VICIA CRACCA L.	+	+
RUMEX ACETOSA L.	+	+
CREPIS BIENNIS L.	+	+
PHLEUM PRATENSE L.	+	+
AGROSTIS CAPILLARIS L.	+	+
TARAXACUM OFFICINALE WEB.	+	+

DIFF. SPECIES OF A COMMUNITES:
(DIF. VRSTE ASOCIJACIJA):

POLYGALA MAJOR JACQ. F.	+	+
AZUREA PANT.	+	+
GALIUM VERUM F. PALLIDUM ČEL.	+	+
CENTAUREA JACEA-WELDENIANA (RCHB.) BRIQU.	+	+
MOENCHIA HERCEGOVINA	+	+
COELOGLOSUM VIRIDE HARTM.	+	+
DIANTHUS SYLVESTRIS WULF.	+	+
GERANIUM COLLUMBINUM L.	+	+
HYPERICUM BARBATUM JACQ.	+	+
THLASPI PRAECOX BALD.	+	+
CORONILLA CORONATA L.	+	+
CREPIS CONYZIFOLIA (GOU.) D. T.	+	+
VAR. MONTENEGRINA (ROHL.) HAY.	+	+
VIOLA TRICOLOR L. SUBS.	+	+
SUBALPINA GAUD.	+	+
FREYRA CYNAPIOIDES (GUSS.) GRIS.	+	+
CREPIS AUREA (L.) CASS. VAR.	+	+
BOSNIACA K. MALY	+	+
KNAUTIA PURPUREA (VILL.) BORB.	+	+
VAR. MONTENEGRINA (BECK) SZABO	+	+
PHYTEUMA ORBICULARE L.	+	+
JASIONE ORBICULATA G. RISEB.	+	+
PEDICULARIS VERTICILLATA L.	+	+
MEUM ATHAMANTICUM JACQ.	+	+
THYMUS ALBANUS H. BR.	+	+
VIOLA LATISEPALA WETTST.	+	+
PRIMULA INTRICATA GREN. et GODR.	+	+
FESTUCA SPADICEA L.	+	+
SCABIOSA PORTAE KERN.	+	+
DIANTHUS PETRAEUS W. et K.	+	+
ASPHODELUS ALBUS (L.) MILL.	+	+
GENISTA GERMANICA L.	+	+
ACHILLEA LINGULATA W. et K.	+	+
ORCHIS BOSNIACA G. BECK	+	+
SENECIO DORONICUM L.	+	+
VERONICA AUSTRIACA L.	+	+
HYPOCHERIS ILLYRICA K. MALY	+	+
PLANTAGO RENIFORMIS G. BECK	+	+

FLORISTIC COMPOSITION:
(FLORISTIČKI SASTAV)BJELOSLAVICA
OZREN

MUSCARI BOTRYOIDES MILL.	+	+
STACHYS ALBANICA MGP.	+	+
LILIUM ALBANICUM GRIS	+	+
VERONICA ARVENENSIS L.	+	+
LUZULA SPICATA LAM. et DC.	+	+
LYCHNIS FLOS-CUCULI L.	+	+

GYMNADENIA CONOPEA (L.) R. BR.	+	+
GYMNADENIA ODORATISSIMA (L.) RICH	+	+
TRISETUM FLAVESCENS (L.) BEAUV.	+	+
HYPOCHERIS MACULATA L.	+	+
HYPOCHERIS RADICATA L.	+	+
KNAUTIA SARAJEVENSIS (G. BECK) SZABO.	+	+
KNAUTIA ARVENENSIS (L.) COULT.	+	+
CENTAUREA SCABIOSA L.	+	+
MINUARTIA JUNIPERINA (L.) MEIR-PET.	+	+
SILENE BOSNICA (G. BECK) HAND.-MAZ.	+	+
VIOLA ELEGANTHULA SCHOTT.	+	+
GENTIANELLA CRISPATA (VIS.) HOLUB.	+	+
LASERPITIUM MARGINATUM W. et K.	+	+
LILIUM BOSNIACUM G. BECK	+	+
TRIFOLIUM ALPESTRE L.	+	+
FILIPENDULA VULGARIS MOENCH.	+	+
POA VIOLACEA BELL.	+	+
DANTHONIA DECUMBENS (L.) DC	+	+
ARNICA MONTANA L.	+	+
ORCHIS GLOBOSA L.	+	+
SCABIOSA LEUCOPHYLLA BORBAS	+	+
ERCMUS ERECTUS HUDSON	+	+
CARLINA ACANTHIFOLIA ALL.	+	+
HELLEBORUS ODORUS W. et K.	+	+
GALIUM LUCIDUM ALL.	+	+
GALIUM GORRUDAEPOLIUM VILL.	+	+
THYMUS BALCANUS BORBAS	+	+
GENTIANA ASCLEPIADEA L.	+	+
ANTENNARIA DIOICA (L.) GAERTN.	+	+
HIERACIUM AURANTIACUM L.	+	+
ERIGERON ACER L.	+	+
ASPERULA CYNANCHYCA L.	+	+
BOTRYCHIUM LUNARIA (L.) SW.	+	+
NIGITELLA NIGRA (L.) REICH.	+	+
CREPIS VISIDULA FROL.	+	+
TROLLIUS EUROPAEUS L.	+	+
FERULAGO GALBANIFERA KOCH.	+	+
PEDICULARIS HOERMANNIANA K. MALY	+	+
PIMPINELLA SAXIFRAGA L.	+	+
GENTIANA KOCHIANA PER. et SONG	+	+
GENTIANELLA GERMANICA (WILD.) WARB.	+	+
AVENASTRUM BLAVII BECK	+	+
ORCHIS SAMBUCINA L.	+	+
SCABIOSA COLLUMBARIA L.	+	+
GENTIANA CILIATA L.	+	+
GENTIANA TERGESTINA G. BECK	+	+
TELEKIA SPECIOSA BAUMG.	+	+

Community (Asocijacija)	I		II		III	
	n	%	n	%	n	%
din	—	—	—	—	5	—
s.din	3	5,26	3	2,56	2	2,25
din,ost.alp.	1	—	—	—	—	—
balc	5	—	17	—	14	—
o.balc	—	—	1	—	1	—
w.balc	—	6,58	2	17,95	1	6,75
balc-apan.	—	—	—	—	4	—
s.balc	—	—	1	—	—	—
balc.-alp.	—	—	—	—	1	—
s.eur	—	—	1	0,85	6	1,93
alp	—	—	2	—	8	—
alp-balc	—	—	—	2,56	5	5,14
alp-pralp	—	—	1	—	2	—
alp(-arct.)	—	—	—	—	1	—
pralp	—	—	1	—	8	—
o.pralp	—	—	—	—	2	—
(o)pralp	1	—	2	—	3	—
opralp-smed	2	—	—	—	—	—
W.pralp	—	—	1	—	—	—
pralp-alp	—	—	1	—	—	—
pralp-smed(subatl), circ	—	—	—	—	1	—
pralp-euraskont	—	—	—	—	1	—
pralp-no-subozean	—	3,95	—	4,27	1	10,93
pralp-no-(subozean)	—	—	—	—	1	—
o,pralp(-smed)	—	—	—	—	1	—
pralp(-gemässkont)	—	—	—	—	2	—
o-pralp (-gemässkont)	—	—	—	—	2	—
pralp-smed	—	—	—	—	1	—
pralp-no	—	—	—	—	2	—
pralp-alp	—	—	—	—	1	—
pralp(-smed)	—	—	—	—	4	—
pralp(no-subatl)	—	—	—	—	1	—
no-pralp	—	—	—	—	3	—
omed-kont	—	—	—	—	1	—
med-smed-euras	—	—	—	—	1	—
med-smed(-kont)	—	—	—	0,85	1	1,61
med	—	—	—	—	1	—
med-atl	—	—	1	—	—	—
med(-kont)	—	—	—	—	1	—
(pralp-)alp-arct (-no)	—	—	—	—	1	—
arct-alp(subozean), circ	—	—	1	1,71	—	0,32
circum arct-alp	—	—	1	—	—	—
atl-smed	—	—	—	—	1	0,32
circumbor.	3	3,95	10	8,55	2	0,64
subcosm.	2	2,63	3	2,56	—	—

Community (Asocijacija)	I		II		III	
	n	%	n	%	n	%
subatl-smed-med	1		1		—	
subatl(-smed)	1		1		6	
osmed	1		1		2	
smed-subatl	4		4		4	
(eurassubozean) smed	1		—		1	
subatl-smed	3		1		14	
smed (-eurocont)	1		1		—	
smed-euras	1		1		2	
smed	2		22		12	
smed-eurassubozean	—		1		1	
smed(eurassubozean)	—		1		—	
smed-gemässkont	—		1		4	
subatl-smed(-pralp)	—		—		1	
smed-pralp	—		—		1	
subatl	—	19,74	—	12,82	2	23,15
smed,ost.balc	—		—		1	
osmed-pralp	—		—	12,82	1	23,15
osmed-kont	—		—		1	
(o)smed-pralp	—		—		1	
smed-gemässkont(-pralp)	—		—		2	
osmed(europkont)	—		—		1	
smed(-pralp)	—		—		1	
smed-(gemässkont)	—		—		1	
smed-atl.	—		—		1	
smed-med	—		—		2	
subatl-submed	—		—		1	
submed(-subatl)	—		—		1	
smed(-euras)	—		—		1	
w.smed(-subatl)	—		—		1	
(no-) subal	—		—		1	
smed-euras(kont)	—		—		1	
(eurassubozean)subatl(-smed)	—		—		1	
(o)smed	—		—		1	
(pralp-)smed-subatl	—		—		1	
osmed(-gemässkont)	—		—		1	
euras-smed	4		6		8	
euras(smed)	2		—		1	
euras(kont)(smed)	3		3		5	
no-euras	1		2		9	
euraskont	1		1		2	
euras	2		1		—	
no-euras-smed	2		1		2	
no-euras, circ	1		1		1	
(no-)euras	1		—		1	
no-euras-kont(smed)	—	22,37	1	15,38	—	12,22
no-euras(-smed)	—		1		—	
euras(kont)	—		—		3	
no(-euras)	—		1		—	
no-euras-smed, circ	—		—		1	
euras(-smed), circ	—		—		1	
no-euraskont	—		—		1	
no-euras(-smed), circ	—		—		1	
(no-)euras(kont)	—		—		1	
euras(kont)	—		—		1	
eurassubozean	3		1		7	

Community (Asocijacija)	I		II		III	
	n	%	n	%	n	%
eurassubozean-smed	4		4		16	
(no-)eurassubozean	1		1		2	
no-subozean	—		—		—	
euras(subozean)-smed	1		1		2	
no-eurossubozean	4		5		18	
no-euras(subozean)	3		3		5	
(no-)eurassubozean(-smed)	1		—		1	
eurassubozean, circ	1		1		—	
no-eurassubozean-smed	—		1		—	
у новине, а по заслуги зна	—	25,00	1	17,09	4	23,15
(arct-)no(eurassubozean)	—		1		1	
no-euras(subozean)(smed)	—		1		—	
no-eurassubozean, circ	—		—		3	
no(eurassubozean)	—		—		1	
euras(subozean), circ	—		—		2	
no-subozean-pralp	—		—		1	
euras(subozean)	—		—		2	
euras(subozean)-smed	—		—		1	
no-euras(subozean), circ	—		—		2	
eurassubozean-smed, circ	—		—		1	
(no-)eurassubozean-smed	—		—		1	
gemässkont	1		2		5	
europ-medit	1		—		—	
euraskont(smed)	1		1		2	
gemässkont(osmed)	1		1		—	
gemässkont-smed	—		1		6	
europkont	—		1		3	
euraskont-smed	—	5,26	—	5,13	2	9,32
gemässkont-opralp	—		—		2	
gemässkont(-osmed)	—		—		2	
euras(kont)-smed	—		—		1	
gemässkont-osmed	—		—		1	
nokont, circ	—		—		1	
europkont(-gemässkont)	—		—		1	
gemässkont-smed(-med)	—		—		1	
(gemäss)-kont(-smed)	—		—		1	
nokont(-pralp)	—		—		1	
oroph. süd.eur.	1		1		—	
oroph.w.kont-eur.	—		1		—	
oroph.medit.	—	1,32	1	3,42	—	
oroph,therm-euras	—		1		—	
not determonated	3	3,95	5	4,27	7	2,25
Total	76		117		311	
I — Trifolio-Polygaletum azureae						
II — Ranunculo-Pancicetum serbicae						from Bjelasica
III — Pancicion from Ozren						

Tab. 4

Locality Community Life form	Bjelasica				Ozren	
	I		II		III	
	n	%	n	%	n	%
P	—	—	—	—	9	—
Pn	—	—	1	0,85	1	3,54
Pn(Ch)	—	—	—	—	1	—
Ch(Pn)	—	—	—	—	2	—
Ch	6	11,84	9	11,11	19	9,00
Ch(H)	2	—	2	—	5	—
Ch(T)	1	—	1	—	2	—
H(Ch)	5	—	4	—	7	—
H(G)	2	—	—	—	5	—
H, G	—	—	/1	—	2	—
H, Ch	—	—	—	—	5	—
H	48	72,37	81	74,36	197	70,42
H(T)	—	—	1	—	3	—
G(H)	1	—	—	—	1	—
G	2	3,95	8	6,84	32	10,61
T	6	7,89	7	5,98	18	5,79
Not determinated	3	3,95	1	0,85	2	0,64
Total	76	—	117	—	311	—

- I — *Trifolio-Polygaletum azureae*
 II — *Ranunculo-Pancicium serbicae*
 III — *Pancicion* from Ozren

Sulejman Redžić, Radomir Lakušić

UPOREDNA ANALIZA EKOLOŠKIH I FITOCENOLOŠKIH KARAKTERISTIKA MEZOFILNIH LIVADA SVEZE PANCICION LAKUŠIĆ 1966. SA PROSTORA NACIONALNOG PARKA »BIOGRADSKA GORA« I PLANINE OZREN KOD SARAJEVA

Rezime

Vršena je komparativna ekološka i fitocenološka analiza mezofilnih gorskih i subalpskih livada sveze *Pancicion* Lakušić 1966 sa prostora N. P. »Biogradska gora« i planine Bjelasice i planine Ozren kod Sarajeva.

Mezofilne livade sveze *Pancicion* na prostoru Bjelasice razvijaju se u zoni šuma bukve i jele *Abieti-Fagetum moesiaca* Blečić et Lakušić, subalpskih šuma bukve i javora. *Fageto-Aceretum visianii* Blečić et Lakušić 1970 i jednim dijelom u zoni subalpskih šuma jele *Abietetum dinaricum* Lakušić 1990. Diferenciraju se na dvije asocijacije — *Trifolio-Polygaletum azureae* Lakušić 1966 i *Ranunculo-Pancicium serbicae montenegrinum* Lakušić 1966.

Na planini Ozren, livade ove sveze razvijaju se na nekadašnjim staništima smrčevo-jelovih šuma *Abieti-Piceetum illyricum* Fuk, 1960 emend. Stef. 1963, i manjim dijelom bukovo-jelovih šuma *Abieti-Fagetum moesi-*

aca Blečić et Lakušić 1970. Diferenciraju se na sedam asocijacija — *Violeto-Festucetum fallacis* Ht 1960, *Ranunculo-Pancicium serbicae* Lakušić 1966, *Conyzifolio-Lilietum bosniacae* Bjelčić 1966, *Pancicio-Lilietum bosniacae* Bjelčić et Lakušić 1969, *Hypochoereto-Crepidetum conyzifoliae* Redžić 1990. *Knautio-Pancicium serbicae* Redžić 1990 i *Pediculari-Astrantietum elatioris* Redžić 1990.

U zajednicama sa Bjelasice ima nešto više elemenata jugoistočnodinarskog i balkanskog rasprostranjenja, a u zajednicama sa Ozrena alpskih i prealpskih. Proučavane zajednice su veoma dobro floristički izdiferencirane, a povezane su i preko brojnih vrsta uglavnom svojstvenih klasi, redu i svezi.

REFERENCES

- Beck-Mannagetta, G. (1903): Flora Bosne, Hercegovine i novopazarskog Sandžaka. Glasnik Zemaljskog muzeja BiH, Sarajevo, XV 15; 1—48 i 185—230, 18: 69—92 i 137—150 i 469—496
- Beck-Mannagetta, G., Malý, K. (1950): Flora Bosnae et Hercegovinae. IV Sympetalae, Pars 1:1—72. Biol. institut u Sarajevu, posebna izdanja, knjiga I.
- Beck-Mannagetta, G., Malý, K. (1967): Flora Bosnae et Hercegovinae. IV Sympetalae, Pars 2: 1—110. Zemaljski muzej BiH, Sarajevo, Prirod. odjeljenje, posebno izd., knjiga II.
- Beck-Mannagetta, G., Malý, K., Bjelčić Željka (1974): Flora Bosnae et Hercegovinae IV Sympetalae, Pars 3:1—83, Zemaljski muzej BiH — Prirodnjačko odjeljenje, posebno izd., knjiga III.
(1983): Flora Bosnae et Hercegovinae. Ibid., knjiga IV, Pars. 4:1—188.
- Beck-Mannagetta, G. (1927): Flora Bosne, Hercegovine i oblasti Novog Pazara. Srpska kraljevska akademija, knj. LXIII, Beograd — Sarajevo.
- Bjelčić, Željka (1966): Vegetacija pretplaninskog pojasa planine Jahorine. Glasnik Zemaljskog muzeja BiH. Sarajevo, Prirod. nauke, 5:31-103.
- Bjelčić, Željka, Lakušić, R. (1969): Asocijacija Pancicio-Lilietum bosniacae ass. nova. Istočno-alpsko-dinarska sekcija. Knj. sažetaka, s. 1.
- Blečić, V., Tatić, B. (1966): Association du Cynosure e cretes dans les prairies de hautes valles de Monténégro. Glasnik Bot. zav. i Bašte Univ. u Beogradu, 2(1—4): 131—137.
- Braun-Blanquet, J. (1964): Pflanzensozologie. Springer Verlag, Wien New York.
- Hayek, A. (1927—1933): Prodrpmus florum peninsulae Balcanicae. Band I, II i III, Dahlem — Berlin.
- Lakušić, R. (1964): *Seslerietalia comosae* Ordo novus der *Caricetea curvulae* Br.-Bl. 1926, auf dem Balkan gebirges. Mitt Ost. alp. — din., Sect. Heft, 5, Klagenfurt
(1965): Ekologija nekih biljnih terciernih relikata God. Biol. inst. Univ. u Sarajevu, 18: 163—197.
(1966): Vegetacija livada i pašnjaka planine Bjelasice, God. Biol. inst. Univ. u Sarajevu, 19: 25—186.
(1968): Planinska vegetacija jugoistočnih Dinarida. Glasnik Republ. zav. zašt. prirode — Prirodnjačkog muzeja, Titograd, 1: 9—76.
(1970): Florističke rijetkosti i vegetacijske zakonitosti planine Hajle. Ibid., 3: 49—66.

- Lakušić, R. et al. (1969): Biološko upoznavanje prašumskog područja Perućice u kompleksu planina Maglić, Volujak i Zelengora. Elaborat Biol. inst. Univ. u Sarajevu.
- (1973): Geobiocenoze u kompleksu planina Maglić, Volujak i Zelengora. Ibid.
- (1979): Struktura i dinamika ekosistema planine Vranice u Bosni. Zbornik II kongresa ekologe Jugoslavije, knj. II: 605—714, Zagreb — Zadar.
- (1982): Ekosistemi planine Vlašić. Bilten Društva ekologe BiH, ser. A, ekol. monogr., 1: 1—140.
- (1987a): Struktura i dinamika fitocenoza na trajnim plohama Nacionalnog parka »Sutjeska«. Ibid., 4: 53—105.
- (1987b): Pregled nešumskih ekosistema Nacionalnog parka »Sutjeska«. Ibid., 4: 29—51.
- (1989): Flora i vegetacija viših biljaka i fauna Symphola, Pauropoda i Mollusca u refugijalno-reliktnim ekosistemima kanjona rijeka Tare, Pive, Komarnire, Lima i Drine. Glasnik CANU, Odj. prirodnih nauka, 7: 93—284.
- Markišić, H. (1994): Mezofilne livade sveze Pancicion Lakušić 64 na planini Hajli. Bilten Društva ekologe BiH, ser. B, 2: 283—286.
- Oberdorfer, E. (1983): Pflanzensoziologische Exkursions Flora. Verlag Eugen Ulmer, Stuttgart.
- Rohlena, J. (1942): Conspecus florae Montenegrinae, Prestlia, 20—21.
- Stanković-Tomić, Kovičljka (1970): Prilog poznavanju livadske vegetacije Mokre planine II (Kosovo). Zbornik Filozof. fak. u Prištini, 7: 151—155.

SUMMARY

In the area of mountain Bjelasica and National Park »Biogradska gora« mesophyll meadows endemic alliance Pancicion are differentiated in two associations — *Trifolio-Polygaletum azureae* and *Ranunculo-Pancicetum serbicae montenegrinum*.

The mesophyll meadows of the mountain and subalpine zone of the mountain Ozren are differentiated in seven associations — *Violeto-Festucetum fallacis*, *Ranunculo-Pancicetum serbicae*, *Conyzifolio-Lilietum bosniacae*, *Pancicio-Lilietum bosniacae* being a little more spread, and of *Hypochoereto-Crepidetum conyzifoliae*, *Knautio-Pancicetum serbicae* and *Pediculari-As-trantietum elatioris*, for the time being distinctive for the mountain Ozren.

In the communities from Bjelasica and N.P. »Biogradska gora« there are more species of Dinaric and especially of Balcanic, and in the communities from Ozren there are more alpine, prealpine, subatlantic and continental species.