



Structural characteristics of the spruce – fir - beech forests: Case Study - Mountain Bjelasica, Montenegro

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In this paper we compared the main structural characteristics of the mixed forest of beech (*Fagus moesiaca* (Domin, Maly) Czecz.), fir (*Abies alba* L.) and spruce (*Picea abies* L.) from the preserve area of the Biogradska Gora with similar managed forests from the same Mountain. Biogradska Gora National Park in Montenegro is part of the Bjelasica Mountain which belongs to the montane region of the Dinaric Alps. Biogradska Gora is one of the largest long-term preserved forests in the south-east Europe. Basic insight into the structural characteristics of forests of spruce, fir and beech was obtained by analyzing the two basic structural elements - number of trees and wood volume per unit area. The results are confirmed the production potential of the studied mixed forests. The average quantity of standing volume in studied forests indicates that these are very valuable and productive forest ecosystems.

The obtained data provides overview of the structural characteristics of these forests. Presented data shows that forest ecosystems of spruce, fir and beech in in the protected area of the National Park Biogradska Gora. are characterized by structurally irregular forests with presence of old trees with relevant growing stock and optimal balance of beech and conifer species, while in managed forests on the same Mountain growing stock is very low and with structure which is far from optimal.

Species	Management unit Bjelasica									
	Volume per diameter classes									
	Sum	10 – 20 cm	21 – 30 cm	31 – 40 cm	41 – 50 cm	51 – 60 cm	61 – 70 cm	71 – 80 cm	81 – 90 cm	above 90 cm
	I	II	III	IV	V	VI	VII	VIII	IX	
Beech	163,4	23,4	29,9	31,8	31,0	20,1	12,5	7,7	3,6	3,4
Fir	50	13,1	15,7	9,9	5,7	1,6	1,6	0,8	0,7	0,9
Spruce	32,6	5,1	9,3	7,9	5,2	2,1	1,2	0,7	0,4	0,7
Other species	39,2	12,5	14,0	5,5	2,4	1,6	1,1	0,6	0,5	1,0
Total:	285,2	54,1	68,9	55,1	44,3	25,4	16,4	9,8	5,2	6,0

Species	Biogradska Gora									
	Volume per diameter classes									
	Sum	10 – 20 cm	21 – 30 cm	31 – 40 cm	41 – 50 cm	51 – 60 cm	61 – 70 cm	71 – 80 cm	81 – 90 cm	above 90 cm
	I	II	III	IV	V	VI	VII	VIII	IX	
Beech	169,7	5,2	14,1	25,8	33,2	23,9	27,8	23,1	16,6	0,0
Fir	361,0	4,5	16,4	27,9	25,5	40,1	62,0	61,2	55,9	67,5
Spruce	264,9	0,9	3,3	5,0	18,9	30,0	24,5	27,5	6,7	148,1
Total:	795,6	10,6	33,8	58,7	77,6	94,0	114,3	111,8	79,2	215,6

