

Long-term* fire effects on vegetation and topsoil properties in beech forests of Manjaca Mountain (western Bosnia and Herzegovina)

Marijana Kapović Solomun^A, Carla S. S. Ferreira^{B,C}, Saša Eremija^D, Radislav Tošić^E, Nemanja Lazović^F and Goran Češljarić^{D,G}

^AUniversity of Banja Luka, Faculty of Forestry, Department of Forest ecology, Stepe Stepanovića 75A, 78000 Banja Luka, Republic of Srpska (Bosnia and Herzegovina).

^BDepartment of Physical Geography, Stockholm University, and Bolin Centre for Climate Research, Stockholm SE-10691, Sweden.

^CNavarino Environmental Observatory, Costa Navarino, Navarino Dunes, Messinia 24001, Greece.

^DInstitute of Forestry, Kneza Višeslava 3, 11030, Belgrade, Serbia.

^EUniversity of Banja Luka, Faculty of Science, Department of Geography, dr Mladena Stojanovića 2, 78000 Banja Luka, Republic of Srpska (Bosnia and Herzegovina).

^FPublic Forest Enterprise ‘Šume Republike Srpske’ a.d. Sokolac, Trg Republike Srpske 1, 78000 Banja Luka, Republic of Srpska (Bosnia and Herzegovina).

^GCorresponding author. Email: cesljargoran@gmail.com

Table S1 Number and unity of plant species per type of floor, excluding differentiated species (see Table 4) observed in 2013, within the plots installed under different fire affected areas.

Fire intensity		Medium				Low				Unburned plots			
Pilot plot No.	Floor	Number and coverage / Unity				Number and coverage / Unity				Number and coverage / Unity			
Species		1	2	3	4	5	6	7	8	9	10	11	12
<i>Acer pseudoplatanus</i> L.	A1					+							
<i>Fagus sylvatica</i> L.	A1					2 / 1		4 / 5	3 / 5	3 / 5	3 / 5	3 / 5	3 / 5
<i>Acer pseudoplatanus</i> L.	A2						+						
<i>Fraxinus excelsior</i> L.	A2					+							
<i>Fagus sylvatica</i> L.	A2					+		2 / 1	2 / 1	2 / 1	+	3 / 2	2 / 1
<i>Acer platanoides</i> L.	B1					+					+		
<i>Acer pseudoplatanus</i> L.	B1					+	2 / 2	2 / 3	3 / 3	+	3 / 5	3 / 2	3 / 2
<i>Fagus sylvatica</i> L.	B1					+	2 / 1	2 / 3	3 / 4	+		3 / 3	2 / 1
<i>Fraxinus excelsior</i> L.	B1						+						
<i>Populus tremula</i> L.	B1		+			+							
<i>Salix caprea</i> L.	B1	3 / 4	2 / 3	3 / 3	4 / 5	3 / 4	4 / 5						
<i>Sambucus nigra</i> L.	B1									2 / 2			
<i>Ulmus glabra</i> Huds.	B1							R	1 / 3	+			
<i>Acer obtusatum</i> Waldst.	B2					2 / 2	+		+		+		
<i>Acer platanoides</i> L.	B2										+		
<i>Acer pseudoplatanus</i> L.	B2	2 / 1	+		+	+	1 / 1	2 / 2	2 / 2	2 / 3	2 / 2	2 / 1	2 / 3
<i>Fagus sylvatica</i> L.	B2	2				+	3 / 3	2 / 3	3 / 3	3 / 3	1 / 1	3 / 3	
<i>Fraxinus excelsior</i> L.	B2	+									+		
<i>Populus tremula</i> L.	B2	+				+							
<i>Salix caprea</i> L.	B2	3 / 2	2 / 3	2 / 3	2 / 2	2 / 3	2 / 3						
<i>Sambucus nigra</i> L.	B2									+			
<i>Ulmus glabra</i> Huds.	B2										+		
<i>Atropa belladonna</i> L.	B3		2 / 1			+			1 / 1				
<i>Acer obtusatum</i> Waldst.	B3	+	2		+	2 / 1	+	1 / 1	1 / 1			1 / 1	+
<i>Asperula odorata</i> L.	B3		2										
<i>Acer platanoides</i> L.	B3										+		

<i>Acer pseudoplatanus</i> L.	B3	1 / 1	1 / 2	2 / 1	2 / 1	+	+	1 / 1	2 / 2	4.1	2 / 2	3 / 2	2 / 3
<i>Atropa belladonna</i> L.	B3		2 / 1			+			1 / 1				
<i>Cirsium arvense</i> (L.)	B3		1										
<i>Crataegus monogyna</i>	B3						+						+
<i>Daphne mezereum</i> L.	B3							1	+	+	+	1 / 1	
<i>Euphorbia</i>	B3		1						1 / 1			+	
<i>Epilobium angustifolium</i>	B3		3 / 4										
<i>Fagus sylvatica</i> L.	B3	1 / 1	1 / 2	2			2 / 2	3 / 3	3 / 3	3 / 3	+	3 / 3	
<i>Fraxinus excelsior</i> L.	B3	1 / 1	+							+	+	+	+
<i>Fraxinus ornus</i> L.	B3			+				1	1 / 1				
<i>Fragaria vesca</i> L.	B3		3 / 3										
<i>Geum urbanum</i> L.	B3		+										
<i>Hedera helix</i> L.	B3		+		2 / 3	+ / 2		1	1 / 3	2 / 3			
<i>Hypericum perforatum</i>	B3		1										
<i>Lamium luteum</i> Krock.	B3		+										
<i>Lamium luteum</i> Krock.	B3		+										
<i>Lonicera alpigena</i> L.	B3	+	2	+	1 / 2	3 / 2		3 / 4	3 / 3	3 / 3	2 / 3	3 / 3	3 / 3
<i>Lonicera nigra</i> L.	B3							1 / 2					+
<i>Lonicera xylosteum</i> L.	B3	2 / 2		2	+			+					
<i>Ostrya carpinifolia</i>	B3					+							
<i>Populus tremula</i> L.	B3	+	+	1									
<i>Rosa arvensis</i> Huds.	B3							1 / 2					1 / 2
<i>Rosa canina</i> L.	B3	1 / 2		+		+ / 2							
<i>Rubus hirtus</i> Roxb.	B3	+		2		2							
<i>Salix caprea</i> L.	B3	2 / 2	2 / 2	2 / 2	1 / 1	1 / 1	2 / 2						
<i>Salvia glutinosa</i> L.	B3		2										
<i>Sambucus ebulus</i> L.	B3		+										
<i>Sambucus nigra</i> L.	B3							+	+				+
<i>Ulmus glabra</i> Huds.	B3								+	+	+	+	1 / 1
<i>Verbascum nigrum</i> L.	B3		+										
<i>Anemone nemorosa</i> L.	C				+ / 2			+ / 1	1 / 1	1 / 1	1		
<i>Acer obtusatum</i> Waldst.	C				+		+	+					+
<i>Asperula odorata</i> L.	C			1 / 3	+	R	2 / 2	2 / 2	2 / 2	1 / 1	2 / 2	1 / 2	
<i>Acer platanoides</i> L.	C	+								R			
<i>Acer pseudoplatanus</i> L.	C	+	+	+	+	+		+	1	+ / 1		+	+
<i>Brachypodium</i>	C					1 / 2	2 / 2		1 / 2		1 / 2	1 / 2	1 / 2
<i>Cardamine</i>	C							+			+	+	
<i>Cardamine bulbifera</i>	C						2	2	1	1	1 / 1	+	+
<i>Arenaria agrimonoides</i>	C					2		1 / 1	1 / 1	1 / 1	1 / 1	1 / 1	1 / 1
<i>Asarum europaeum</i> L.	C			+				+	+ / 2				
<i>Asperula odorata</i> L.	C			1 / 3	+	R	2 / 2	2 / 2	2 / 2	1 / 1	2 / 2	1 / 2	
<i>Atropa belladonna</i> L.	C	1 / 1		1 / 1	2 / 1	1 / 1	+	+		+			
<i>Clematis vitalba</i> L.	C								2				+
<i>Cirsium arvense</i> (L.)	C			+									+
<i>Crataegus monogyna</i>	C			+									
<i>Dryopteris filix-mas</i> (L.)	C	+	+		+			1	1 / 1	1 / 1	1	2 / 1	1 / 1
<i>Epilobium angustifolium</i>	C	2 / 3		3 / 4	3 / 3		2						
<i>Euphorbia</i>	C			1		+ / 1		1					
<i>Fagus sylvatica</i> L.	C				+			1 / 1	1 / 1	+		+	1
<i>Festuca drymeia</i> Mert.	C	4 / 5	3 / 4	3 / 5	3 / 5	4 / 5	2 / 3	3 / 4	3 / 4	3 / 5	3 / 3	3 / 4	3 / 5
<i>Fragaria vesca</i> L.	C	2 / 3		3 / 3	2 / 3	2 / 3	+	1 / 2	1 / 2	1 / 2	2 / 2	2	+
<i>Fraxinus excelsior</i> L.	C	+											
<i>Geum urbanum</i> L.	C					+	+						
<i>Geranium robertianum</i>	C				+			+	+		1	+ / 1	+
<i>Glechoma hirsuta</i>	C							1	1 / 2				+
<i>Hedera helix</i> L.	C										2 / 3	3 / 3	2 / 3
<i>Hepatica nobilis</i> Mill.	C				+ / 2			1	+			+	+
<i>Hordeum europeum</i>	C			2	+	+	3 / 3	2 / 3	2 / 2	3 / 3	1 / 2		
<i>Hypericum perforatum</i>	C	2											+
<i>Lamium luteum</i> Krock.	C		+				+	1	+ / 2	+	1	2 / 2	+
<i>Lamium luteum</i> Krock.	C		+				+	1	+ / 2	+	1	2 / 2	+
<i>Lathyrus venetus</i> (Mill.)	C	1						+ / 1	+	+			
<i>Lathyrus vernus</i> (L.)	C	1						+ / 1	1 / 1	1			
<i>Lonicera alpigena</i> L.	C												3
<i>Lonicera nigra</i> L.	C										2		+
<i>Lonicera xylosteum</i> L.	C					+					+		
<i>Luzula luzulina</i> (Vill.)	C		+										+
<i>Mercurialis perennis</i> L.	C				+	+	1 / 1		+		1	1	1
<i>Milium effusum</i> L.	C				+								+
<i>Mycelis muralis</i> (L.)	C			+		+	1 / 1		1	1	1		
<i>Ostrya carpinifolia</i>	C		+	+									
<i>Paris quadrifolia</i> L.	C							+		1 / 1		+	+
<i>Polygonatum</i>	C							1	+	+			+
<i>Polygonatum odoratum</i>	C			+			2	+	+				+
<i>Rosa pendulina</i> L.	C	3											
<i>Prenanthes purpurea</i> L.	C	+		+			1				+		+

<i>Pulmonaria officinalis</i>	C			+			+		+		+		
<i>Rosa canina</i> L.	C												
<i>Rosa pendulina</i> L.	C					+							
<i>Rubus hirtus</i> Roxb.	C						2 / 4	1 / 2		2			
<i>Rubus idaeus</i> L.	C						2			+	1 / 2		
<i>Salvia glutinosa</i> L.	C	1			+		1 / 2	1	+		+	+ / 1	
<i>Salix caprea</i> L.	C	+		+	+		+				+		
<i>Sambucus nigra</i> L.	C						+			+	+		
<i>Sambucus ebulus</i> L.	C	+			+	+	2						
<i>Sanicula europaea</i> L.	C							1 / 2	1	+	1 / 2	1 / 2	1 / 2
<i>Sonchus oleraceus</i> (L.)	C	+								+			
<i>Tamus communis</i> L.	C				+	+							
<i>Tussilago farfara</i> L.	C			+							+ / 2		+
<i>Verbascum nigrum</i> L.	C	1			+	2							+

Type of Floor:

A1: trees above 20 m height
A2: trees with height 10-20 m
B1: trees/shrubs 5-10 m
B2: trees/shrubs 1.5-5 m
B2: trees/shrubs 1.5-5 m
C: herbaceous

Species number and coverage (according with *Braun-Blanquet*, 1964):

R: individual plant species, coverage is insignificant
+: the number is small, the coverage is insignificant
1: the number is large, the coverage is less than 5%
2: regardless the number, the coverage is between 5-25%
3: regardless the number, the coverage is between 25-50%
4: regardless the number, the coverage is between 50-75%
5: regardless the number, the coverage is greater than 75%

Species unity (according with *Braun-Blanquet*, 1964):

1: the plant grows individually
2: the plant grows in bushels, multiple plants together
3: the plant grows in the form of small pads or in small piles/groups
4: the plant grows in groups, grouped
5: the plant grows in large groups, i.e. stands