

INADEQUATE ZONING IN PROTECTED AREAS OF BOSNIA AND HERZEGOVINA - CASESTUDY NP SUTJESKA

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Abstract: The subject of this work is inadequate zoning in protected natural areas in Bosnia and Herzegovina, case study - National park Sutjeska. Protected natural areas are under increasing anthropogenic impact, therefore their adequate zoning is the key to sustainable development and sustainable management. Recently, the performed zoning of the Sutjeska National Park, as well as most of the protected areas in Bosnia and Herzegovina, is inadequate and it is mainly established in order to exploit natural resources. As a confirmation of the above, it indicates that the zone III of protection level, where traditional economic activities are permitted, the construction of housing and tourist infrastructure, occupy a significant part in protected areas. General and specific geographical methods and techniques of research are used in this paper. The main focus is GIS method because throughout which is established significant database and maps of inadequate protection zones in the parks.

Keywords: zoning, inadequate, protected areas, Bosnia and Herzegovina, NP Sutjeska

INTRODUCTION

On the territory of Bosnia and Herzegovina, the first officially protected area was established in June 1954 in the southwestern part of the country in the Perućica stream. After that, in August 1954, the National Institute for the Protection of Cultural Monuments and Natural Rarities of the Republic of Bosnia and Herzegovina, protected Prokoško Lake on the mountain Vranica as a natural rarity (The Law on the Protection of Cultural Monuments from 1947). A few years later, in 1962, the first national park of Sutjeska in Bosnia and Herzegovina was established. Perućica was the nucleus of the protection of this park. By the establishment of laws at the national level in 1964, categories of protection have been defined: a strict nature reserve, a nature reserve, a national park, special reserves, a protected natural landscape, a monument of nature, plant species,

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protected species, birdwatchers, wetlands, birds of prey. Protected areas in Bosnia and Herzegovina were established and declared in accordance with the defined legal provisions, where the national parks, Sutjeska and then Kozara in 1967 were first allocated as protected areas. Until 1990, in accordance with the Law on Nature Protection and the Law on the Protection of Cultural, Historical and Natural Heritage, only 0.55% of the territory of Bosnia and Herzegovina was protected. According to the Spatial Plan of Bosnia and Herzegovina for the period of 1981-2000, it is planned that by the year of 2000, around 8,300 km² which is 16.2% of the total area of the country will be placed under different regimes and levels of protection. Structurally, the stated nature protection plan at the level of individual categories had the following indicators:

- national parks (1,730 km²),
- regional parks (4,500 km²,
- particularly valuable natural areas (1,200 km²),
- memorial parks (100 km²),
- forest and other reserves,
- nature monuments (10 km²),
- water areas,
- coastal area,
- natural and artificial lakes (440 km²),
- other forms of protected nature (about 350 km²).

The modern concept of protection in Bosnia and Herzegovina is in line with IUCN (International Union Conservation Nature). The main purposes of establishing and managing protected areas are: scientific research, protection of wildlife, preservation of diversity of species and genes, maintenance of ecological services, protection of specific natural and cultural features, tourism and recreation, education, sustainable use of resources from natural ecosystems and maintenance of cultural and traditional attributes. Based on the IUCN categorization six categories of natural areas have been identified in Bosnia and Herzegovina, within 29 areas are protected, of which 2 are strict nature reserves (category Ia), 4 national parks (category II), 16 nature monuments (category III), 5 nature parks - protected landscapes (category V) and 2 areas for resource management - park forest (category VI) on a total area of 127,557.4 hectares. In addition, there are a large number of highly valuable natural areas on the territory of Bosnia and Herzegovina, which are planned for future protection. For the planning documents of entity, cantonal and municipal level. Analyzing the planning documentation at the entity level, it is planned to protect about 17% of the total area in the Federation of Bosnia and Herzegovina, about 15.5% of the total area in the Republic of Srpska, which is 16% of the total country territory.

Table 1. Protected natural areas in Bosnia and Herzegovina

	Name	Entity	IUCN categorization	Area in hectares
A Strict Nature Reserve				
1.	SNR Prašuma Janj	RS	I a	295,00
2.	SNR Prašuma Lom	RS	I a	297,82
Special Nature Reserve				
1.	SNR Gromiželj	RS	I b	831,33
2.	SNR Lisina	RS	I b	560,64
National Park				
1.	NP Kozara	RS	II	3.907,54
2.	NP Sutjeska	RS	II	16.052,34
3.	NP Una	FBiH	II	19.800,00 + 14970,21
4.	NP Drina	RS	II	6315,32
Monument of Nature				
1.	MN Pećina Orlovača	RS	III	27,01
2.	MN Pećina Ljubačevo	RS	III	45,45
3.	MN Žuta bukva	RS	III	0,50
4.	MN Pećina Rastuša	RS	III	11,39
5.	MN Prokoško jezero	FBiH	III	2.119,00
6.	MN Skakavac	FBiH	III	1.430,70
7.	MN Tajan	FBiH	III	3.591,98
8.	MN Vrelo Bosne	FBiH	III	603,00
9.	MN Jama Ledana	RS	III	28,26
10.	MN Vaganska pećina	RS	III	12,00
11.	MN Pećina Đatlo	RS	III	43,42
12.	MN Pavlova pećina	RS	III	13,40
13.	MN Girska pećina	RS	III	25,37
14.	MN Pećina pod lipom	RS	III	6,10
15.	MN Pećina Ledenjača	RS	III	7,40
16.	MN Velika pećina	RS	III	820,92
Nature Park - Protected landscape				
1.	NP Blidinje	FBiH	V	35.800,00
2.	NP Hutovo blato	FBiH	V	11.093,98
3.	NP Konjuh	FBiH	V	8.016,61
4.	NP Bijambare	FBiH	V	367,36
5.	NP Trebević	FBiH	V	400,20
Resource Management Area				
1.	RMA Univerzitetski grad	RS	VI	27,38
2.	RMA Slatina	RS	VI	35,73
Total protected areas at the RS level				29.364,32
Total protected areas at the FBiH level				98.193,04
Total protected areas at the level of Bosnia and Herzegovina				127.557,4

In addition to previously mentioned concept of protection, three Ramsar areas have been established in Bosnia and Herzegovina: Hutovo blato, Bardača and Livanjsko polje with total area of 0,6 km². In accordance with the European Directive for the Establishment of the European Ecological Network, the process of establishing NATURA 2000 has been initiated in Bosnia and Herzegovina, where all the most significant natural habitats have been identified, listed and mapped.

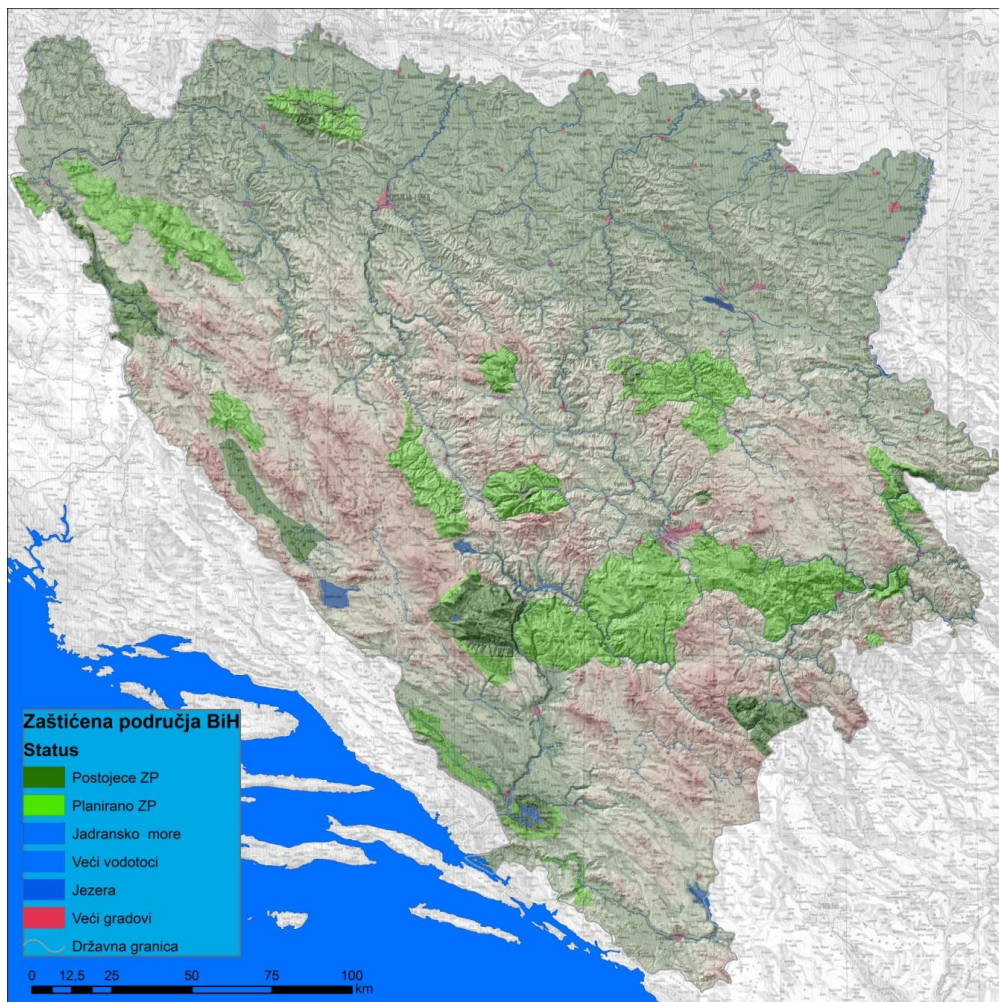


Figure 1. Protected natural areas of Bosnia and Herzegovina
Source: Authors

CAUSES AND CONSEQUENCES OF INADEQUATE ZONING IN PROTECTED NATURAL AREAS IN BOSNIA AND HERZEGOVINA

There is still no defined strategy for the establishment and management of protected natural areas at the state level in Bosnia and Herzegovina. Considering recent political and administrative arrangements in Bosnia and Herzegovina, spatial planning, planning documents and environmental management have been reduced to the entity, cantonal and municipal levels. Spatial planning (separation of protection zones) and environmental management is regulated by laws, as well as a number of regulations at the level of the Federation of Bosnia and Herzegovina, the Republika Srpska and the District of Brčko. Jurisdiction is transferred from the entity to the cantonal and municipal levels in the Federation of Bosnia and Herzegovina and at the municipal level in the Republic of Srpska. In the complex management structure, each of the cantons has competent ministries and their respective laws on spatial planning and environmental protection, and for each municipality there are specific decisions on spatial planning and protection of the environment.

Municipalities in both entities usually perform their responsibilities over environmental protection through various departments within municipalities such as utilities, spatial planning, urban planning, development, inspections, etc. The first set of legal documents in the field of environmental protection were adopted at the entity level in 2003. There are a large number of laws and by-laws on environmental management at the state, entity and cantonal levels. However, the existing legislation is often not harmonized vertically (there are many gaps between laws at the state, entity and cantonal level), and even less horizontally (the environmental legislation differs at the entity level), which contributes to many disadvantages to sustainable environmental management.

The largest number of protected nature areas in Bosnia and Herzegovina have been established on the basis of the categorization of the International Union for Nature Conservation (IUCN), whose principles are based on entity laws. Currently, the zoning of protected natural areas is inadequate and is mainly established in order to exploit natural resources, but not by law.

In all protected areas in Bosnia and Herzegovina, only three management zones are separated: nucleus zone or zone of protection of the basic phenomenon, active protection zone and zone of use.

The separation of the strict protection zone aims to preserve the fundamental phenomena of such areas. Activities that can be performed in the zone of strict protection are scientific research, monitoring of the protection, and interventions in extraordinary circumstances. The zone of active protection includes areas of great

value for which the conservation is permitted to carry out activities of maintenance, revitalization or creation of natural values important for nature conservation. The allowed activities are focused on area surveillance, scientific research, habitat monitoring, and restricted and tracked access to visitors on restricted and marked tourist routes.

The use area includes areas of lower preservation value or areas where a certain degree of use is traditionally present and is mainly managed for some other purposes significant for the development and functions of a protected natural area. In this zone there are settlements, areas of traditional agriculture, infrastructure corridors and areas for recreation and tourism.

As a confirmation that the performed zoning of protected natural areas is inadequate and is mainly established in order to exploit natural resources, it indicates that the zones of use or the third zone of protection, in which traditional economic activities are permitted, the construction of residential and tourist infrastructure, occupy significant areas in the Parks.

Thus, a case study found that 69.4% of the total area of NP Sutjeska belongs to III protection zone or zone of use. The Law on the Protected Area and Spatial Plan have enabled the exploitation and usurping of natural assets on the significant surface of the protected area, which according to the laws of circulation of matter and energy are transferred to the rest of the National Park, and also within the framework of the nuclear zone.

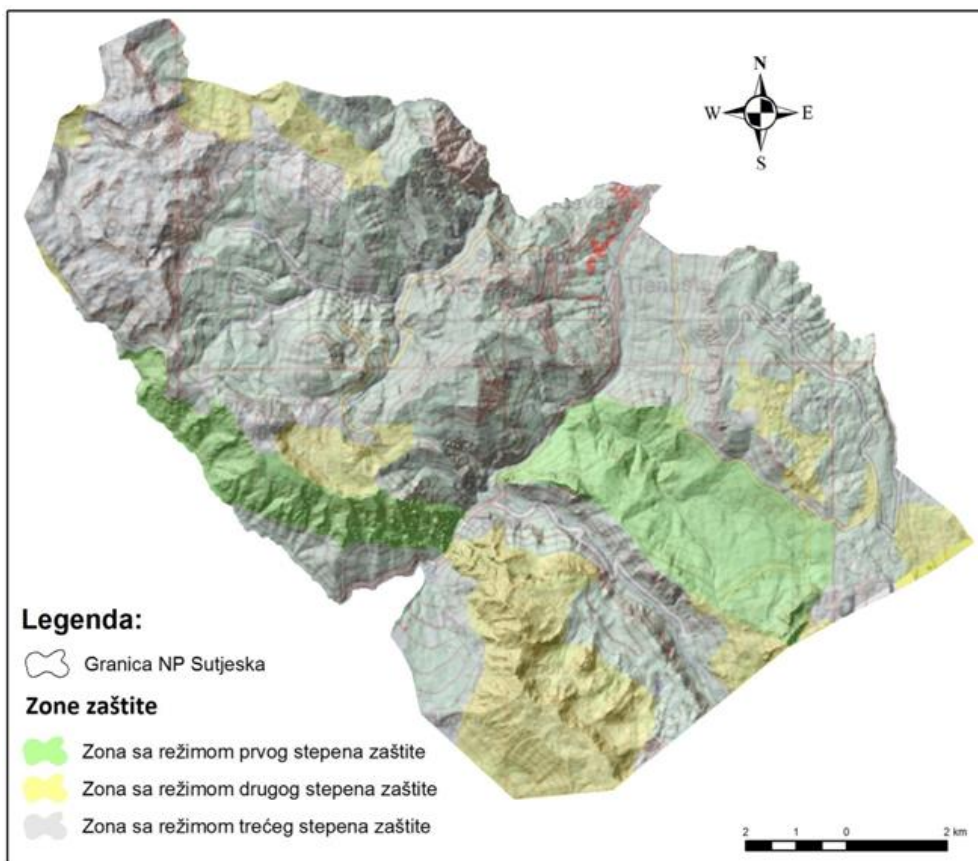


Figure 2. NP Sutjeska - selected zone of protection
 Source: Hrelja, E., 2017.

As a result of inadequate zoning of protected natural areas in Bosnia and Herzegovina, there is a significant number of settlements with permanent population, which through the function of work (agriculture, forestry, extractive industry) and housing (construction of residential and auxiliary facilities or infrastructure) is inevitably reflected in the environment. The survey found that in the area of national parks and nature parks in Bosnia and Herzegovina, according to the last census in 2013, there were 35 permanent settlements with 7,789 inhabitants. In addition to direct and indirect - more or less seasonal impact of tourism, the space and environment of the parks is, to a considerable extent, burdened with the existential functions of their permanent population.

Functional diversification of protected natural areas (function of free time) is the results of inadequate zoning. Considering this, significant area of space is spent on construction of cottages and accompanying infrastructure, and the construction of recreational and other tourist facilities.

Also, in such areas, significant consumption and illegal use of natural goods is reflected through: collection and harvesting of plants, hunting and collected land animals, non-selective felling of forests, exploitation of mineral resources.

CONCLUSION

Based on the conducted research, it can be concluded that the development of protected natural areas, based on inadequately separated zones, is unsustainable. It results in the expansion of areas for economic activities and building valuation, at the expense of protecting the underlying natural phenomena in protected areas.

Zoning in protected areas in Bosnia and Herzegovina is inadequate and has been done on the basis of earlier use of space without adequate analysis of environmental, social and economic indicators. Also, zoning was carried out only within protected natural areas, without using spatially oriented zoning models to a wider area of influence, or without integrating protected areas with the environment.

The analysis shows significant differences on the level of vulnerability of ecosystems in protected natural areas of Bosnia and Herzegovina. They are function of differences in accommodation and geographical position, especially traffic availability and the vicinity of urban agglomerations as emitting centers of some national parks and nature parks, but also their recent political and territorial affiliation.

Therefore, in order to improve the concept of protection it is necessary to establish the management and zoning of protected natural areas in accordance with the principles of the International Union for Nature Conservation (IUCN), which would include the cooperation of all (interestingly different) stakeholders in the evaluation of the area.

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