

# ENVIRONMENTAL PROTECTION AND MAJOR ECOLOGICAL PROBLEMS IN THE NATIONAL PARK DURMITOR

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**ABSTRACT:** *Durmitor National Park is the second largest national park in Montenegro. Located in the northwestern part of the country, i.e. in the furthest southeastern part of the Dinaric Alps, where they are the highest and the widest. Its most important parts are the main mountain mass of Durmitor and the canyons of Tara, Sušica, Draga and Komarnica. National Park was established in 1952 and, owing to its primarily outstanding natural values, was added to the UNESCO List of the World Natural and Cultural Heritage in 1980. NP Durmitor is a very important tourist destination that goes beyond Montenegro and the region. As such, it is heavily exposed to the negative direct and indirect anthropogenic impact. The authors of this paper discuss the issues related to the environmental protection, that is valid for the relevant zones and protection regimes, as well as for the types of permitted use and activities within the border of NP Durmitor. Then, they analyze the main ecological problems in the national park, in particular: illegal construction, land degradation, illegal deforestation, drying forests, frequent fires, lack of adequate communal infrastructure, exploitation of construction materials from moraine deposits and others.*

**Key words:** *NP Durmitor, environmental protection, ecological problems, tourist destination*

## INTRODUCTION

Based on their extremely diverse nature, unique natural assets and values, as well as beautiful landscapes, five national parks were declared in Montenegro: NP Durmitor (1952), NP Biogradska Gora (1952), NP Lake Skadar (1983), NP Lovćen (1952) and NP Prokletije (2009). These national parks make up about 10% of the surface area of the country. For more than half a century, Montenegro has been showing serious efforts to

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develop and follow ecological principles, which is evident in the fact that five national parks were declared back in 1952, and the Parliament of this country adopted the Declaration on the Ecological Country of Montenegro on September 20<sup>th</sup> 1991 on Žabljak. However, the real situation on the ground shows that the ecological principles in the country are not respected so often, even in the protected areas. A very good example for non-compliance is the situation in the Durmitor National Park, a protected area rich in geodiversity and biodiversity of national and international importance. Namely, this national park, otherwise a major tourist destination, is under the threat of numerous ecological problems, which cause a significant degradation of the environment in some parts of the protected area.

Furthermore, current protection zones within the NP Durmitor will be presented and analyzed, including protection regimes and the permitted activities within each zone. This will be followed by recognizing and presenting major environmental problems in the national park in order to highlight the emergency of the situation related to nature conservation within this natural asset and the need to take concrete steps in resolving these problems.

## GEOGRAPHIC POSITION AND SIZE NP DURMITOR

Durmitor National Park is located in the northwestern part of Montenegro, in the area which represents the highest and widest part of the Dinaric Alps (Map 1). It comprises the main mountain massif of Durmitor, some areas around the Lakes and the Piva Mountain, the canyons of Tara (along 59 km, from the mouth of Ravnjak to the border with Bosnia and Herzegovina), Sušica and Draga, then the upper parts of the canyon valleys of Bukovica, Grabovica and Komarnica, Lake Zabojsko with its vicinity (Map 2).

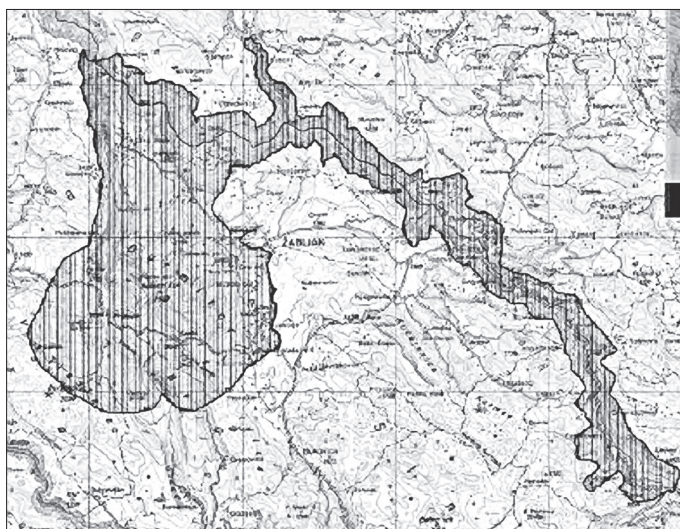
The surface area of NP Durmitor according to the current Spatial Plan of Special Landuse comprises the area<sup>1</sup> of 33,400 ha. The largest surface areas are taken by the canyon valleys of the river Tara (15,804 ha) and the central part of Durmitor (8,710 ha). The highest point of the territory of the National Park is Bobotov Kuk (2,523 m above sea level), and the lowest is in the riverbed of Tara under the spring Nozdruć (506 m above sea level). Durmitor National Park covers the surface area of the territories of five municipalities – Žabljak, Pljevlja, Plužine, Šavnik and Mojkovac (Lješević, Stijepović, 1996; Ristanović, Mrkša, 2007; www.nparkovi.me).

<sup>1</sup> In different literature and other valid sources, there are different data concerning the surface area of NP Durmitor. Thus in the document of the PC 'National Parks of Montenegro' entitled 'National Park Durmitor – Management Plan 2011-2015', which refers to the Spatial Plan of Special Landuse, the surface area is 33,400 ha. In the same document, the areas of the three protected zones are also given, whose total sum adds up to the total area of the national park of 34,000 ha. In another document of the aforementioned public company entitled 'Durmitor Management Program for 2012', the given area is 33,895 ha. The official website of PC 'National Parks of Montenegro' gives an area of 39,000 ha. The same surface area is given by B. Ristanović and M. Mrkša (2007). M. Lješević and M. Stijepović (1996) and N. Čurčić (1999) reported that the area of Durmitor covers 36,857 ha, etc.



**Map1.** Geographic position of NP Durmitor within the territory of Montenegro (1:950,000)

*Source: [www.nparkovi.me](http://www.nparkovi.me)*



**Map 2.** Border of NP Durmitor (1:320,000)

*Source: Public Company 'Montenegro National Parks'*

## HISTORY, ZONES AND PROTECTION REGIMES

The idea to establish Durmitor National Park was given by an engineer, Aleksandar Vasić, back in 1934. The actual declaration of national park followed almost two decades later, more precisely in August 6th 1952 after the decision adopted by the Parliament of the NR Montenegro (Official Gazette of NR of Montenegro, No. 16-17/52). Upon establishment, NP Durmitor had an area of 8,000 ha. In terms of nature protection, it could be said that NP Durmitor was preceded by the royal reserve that was the declared in 1907, following the suggestion of the King Nikola. The reserve covered the area of Black Lake and its vicinity and the area of black pine, Crna Poda, in the canyon of Tara ([www.nparkovi.me](http://www.nparkovi.me)).

Durmitor operated independently until January 1993. It used to be organized as the Community of Durmitor National Park comprising the following bodies: the Assembly, the Executive Committee and the Scientific Council. As of January 1993, the national park stopped operating independently and became a part of the Public Company 'National Parks of Montenegro' (Official Gazette of Montenegro, No. 39/1992).

At the session of the International Committee for the World Natural and Cultural Heritage, which took place in the period September 1-6th 1980 in Paris, Durmitor was included in the World Natural and Cultural Heritage List under the auspices of the UN, after being nominated by the Federal Executive Council of SFR Yugoslavia and fulfilling the three conditions - geological, hydrological, and biological phenomena. In this way, Durmitor National Park enjoyed double protection - as a national park within the national context and as a world natural heritage within UNESCO. Also, it is worth mentioning that several years earlier, i.e. on January 17th 1977, by the decision of UNESCO, the Tara River Basin, which is largely an integral part of NP Durmitor, was listed in the ecological reserve of our planet within the program 'Man and Biosphere' (MaB). ([www.durmitor.wordpress.com](http://www.durmitor.wordpress.com)).

According to the current Spatial Plan for Special Land Use, which should also be kept in the future plans, as it was proposed by relevant institutions, Durmitor National Park is divided into three protection zones and a safety zone.

**Zone I under a strict protection regime** covering 3,400 ha (10% of the national park area) includes special nature reserves: the rain forest of fir and spruce in the catchment basin of Mlinski stream; Black Pine forest of 'Crna Poda'; Lake Barno and its vicinity; Lake Zabojsko and its vicinity; the catchment basin of Škrčka lakes with the canyon valley of the river Sušica and Lake Sušica to the canyon of Tara and the speleological reserve Surutka – Vjetrena Brda. So, this zone includes areas with exceptional and universal significance.

**In Protection Zone I**, only strictly controlled scientific research, controlled educational activities and very strictly controlled public presentations are allowed with a special permission from the national park, excluding any activities that might disturb the natural environment and immovable cultural assets in any way. Thus, its main purpose is scientific research and educational activities, and the main conservation objectives are preserving natural resources in their original form, maintaining the existing ecological processes in an undisturbed condition and preserving genetic resources. In cer-

tain specific circumstances, an exceptional permission can be issued in this zone for the purpose of damage control and the control of diseases of flora and fauna. Forest use is strictly prohibited as well as an unorganized tourist access or performing any activities that would result in the spatial changes (Durmitor National Park - Management Plan 2011-2015, Public Company 'National Parks of Montenegro').

**Zone II with a special protection regime** covers an area of about 25,400 ha (75% of the national park). It consists of the forests around Black Lake with a forest in the close vicinity and the canyon of the river Tara without settlements: Tepca, Lever and Đurđevića Tara, Upper and Lower Dobrilovina; then forests in the area of Dragišnica with Boljske Grede. Apart from these reserves and areas, this zone also includes the areas of natural monuments as well as the proper massif of Durmitor with its spacious grassland, where one can find a large number of rare and endemic flora; then pine 'kri-vulja' forests; the woodland of Mala Crna Gora along the border between the canyon of Tara and Durmitor; then numerous glacial cirques and valleys, mountain peaks exceeding 2,000 m, as well as numerous geomorphological forms. Within this zone, there is a large number of habitats with rare and endemic species. In its smaller part, Zone II intersects the valley of Sušica (the route to Nedajno).

In the area of special protection regime, limited and strictly controlled use of certain natural resources is allowed, the activities that can improve conditions or the presentation without any consequences. Namely, in addition to scientific research and educational activities in the zone, organized visits of holidaymakers, hikers and recreationists are allowed. Rafting and kayaking, fishing and hiking with sightseeing and photographing natural phenomena are also allowed in the canyon of Tara. There are also sanitation measures, treatment of diseased trees, fallen trees removal, clearing forest roads (Durmitor National Park - Management Plan 2011-2015, Public Company 'National Parks of Montenegro').

**Zone III with the liberal form of protection** covers 5,200 ha (15% of the national park) comprising the entire agricultural land around village communities of Mala Crna Gora, Pitomine, Bosača, Tepca, Lever Tara, Đurđevića Tara, Upper and Lower Dobrilovina in the Tara Canyon. This zone also includes parts of agricultural land around the village communities of Rasovo, Bogomolja, Šljivansko, Brajkovača, Premćani and Rudinci, Razvršje, Motički Gaj, Virak, Javorje, Pašina Voda and Pošćenski Kraj.

In the area of Protection Zone III, natural values are mainly preserved, but there are also considerable anthropogenic activities present in the villages, transport and technical infrastructure, agriculture, forestry, tourism and recreation.

This zone allows selective and limited use of resources with controlled activities (tourism and business in order to meet the needs of visitors and local residents) that are compatible with sustainable use of the area. This zone also has a protective function, in a weaker form, incorporating a key objective of protection zones I and II that is protection against direct negative anthropogenic influence.

Zone of liberal protection is a very attractive tourist area, the fact that is evident in very favorable spots for winter sports and recreation within its border (Savin Kuk, Šljeme, Mali and Veliki Štuoc), as well as in numerous shepherd's shelters called 'katun', etc. (Durmitor National Park - Management Plan 2011-2015, Public Company 'National Parks of Montenegro').



**Protective (contact) zone** includes the urban area of Žabljak, the area of lakes with Riblje and Vražje Lake, Zminičko and Pošćensko Lake, the lower part of Komarnica, catchment area of Bistrica, Jelov Panj, Kosanica. Although outside the border of the national park, it forms a natural entity with the park and requires a specific regime of protection (Durmitor National Park - Management Plan 2011-2015, Public Company 'National Parks of Montenegro').

## MAJOR ECOLOGICAL PROBLEMS OF NP DURMITOR

Numerous ecological problems were detected within the limits of Durmitor and its vicinity, which significantly disturb the natural balance and contribute to an overall degradation of protected areas. According to the data obtained from the Durmitor National Park and in the field, we can distinguish the following environmental issues: illegal construction, land degradation, illegal deforestation, forests drying out, frequent fires, lack of adequate community infrastructure, exploitation of construction materials from moraine deposits, etc.

**Illegal construction** represents one of the biggest problems in the municipality of Žabljak whose territory includes the most endangered area NP Durmitor. Illegal construction in the municipality of Žabljak reached a peak in the period 1997-2006, when there were more than 1,000 weekend and regular houses illegally built in the municipality. Out of that number, more than 350 illegal buildings were built on the territory of the national park (over 240 in Motički Gaj), according to the records of NP Durmitor. This almost completely undermined the concept of environmental protection in the construction area (deforestation, permanent degradation of more than 2,000 ha of land, destruction of habitats for plant and animal species, etc.) This situation will probably result in the exclusion of four villages from the protected area of NP Durmitor (Motički Gaj, Razvršje, Poljana and Virak) and its spatial expansion towards Dragišnica<sup>2</sup>, parts of Komarnica and the canyon Nevidio.

The construction of informal structures<sup>3</sup>, which affected the entire foothills of Durmitor, ignored the fact that the development of Žabljak must comply with the requirements of NP Durmitor, its limitations and conditions related to the environmental protection and the concept of sustainable development. Illegal construction led to the ambient disturbance of the wider suburban areas without following the basic rules of urban development and styles of traditional construction. It also resulted in the significant landscape degradation and the destruction of natural resources, and led to the problems of installing necessary infrastructure in an area with very scarce infrastructure options.

**Illegal deforestation** is one of the big problems of NP Durmitor. According to data collected in the field, cutting took on a large scale in some periods, to such an extent that

<sup>2</sup> The woodland of Dragišnica is situated at 800 m above the village Komarnica and stretches from Dobri Do on Durmitor to the source of the river Komarnica.

<sup>3</sup> Informal structures according to the Law on Legalization of Informal Structures (established in July 2012) is a structure or a part of a structure built without a construction permit, i.e. contrary to construction permit.

the forest from the national park was illegally distributed as firewood to numerous municipalities in Montenegro. Also, such incidental situations and activities occurred there that had an impact on the destruction of parts of the woodland and on total devastation of the national park. Certainly, the aforementioned illegal construction was one of these negative activities. A high extent of human negligence is also evident in the fact that the company responsible for the aforementioned road, built it across the protected area, instead of relocating 11 km of the road outside the national park, without destroying a significant part of the forest Dragišnica.

**Dry forests**, as a long-term degradation process, have been substantially present within the limits of NP Durmitor. The causes of dry forests are numerous and it is difficult to determine precisely the primary and dominant factor of extinction. What can be stated with certainty is that the drying process can be influenced by a combination of abiotic and biotic factors which act connectively or successively. According to D. Obradović (2001), one of the main causes of drying forests in the Durmitor National Park is a climate change, particularly changes in pluviometric regime, which resulted in increased humidity that provided favorable conditions for pathogenic fungi to spread, which is the second very important factor of drying forests. According to the same author, spruce is extremely vulnerable to wood-decay fungi in nature reserves Mlinski Potok and Black Lake with their surroundings. In the reserve Mlinski Potok, fir has reached its physiological maturity of extinction and is exceedingly deteriorating like spruce. In the Reserve Crna Poda, black pine, located on beech habitat, is also dying because of its physiological maturity of extinction, and age (over 400 years old). So, the main cause of dry forest growth here is growing in another habitat, namely the primary habitat of beech that is threatening to regain its former area. The syndrome of drying of spruce and fir indicates the influence of air pollution. But, since the presence and concentration of pollutants have not been established precisely, it cannot be stated with certainty to which extent air pollutants are harmful to forests in NP Durmitor (Obradović, 2001).

**Fires** represent a frequent hazard in the Durmitor National Park, especially for forest complexes. They are most common in the canyons of the rivers Tara and Draga. According to the National Park data, the largest fires occurred in Prag near Vaškovo in 2006 and in the reserve Crna Poda (belonging to Protection Zone I) in 2012. More precisely, fires spread in the canyon of Tara across 4,000 hectares of forests and other areas in 2012. Up till now, the minimum measures were taken to repair fire damaged areas, such as reforestation of some parts of the affected areas.

The lack of adequate municipal infrastructure in municipalities covering the territory of the Durmitor National Park is also one of the most important ecological problems that significantly threatens natural values and resources in the protected area. Among the major shortcomings of communal infrastructure are the lack of sanitary landfills, the lack of or inadequacy of waste water treatment, then water supply systems, sewerage, heating systems, electric power supply, etc. The Law on Waste Management (Official Gazette of Montenegro, No. 80/2005) entails that municipalities Šavnik and Plužine share a regional landfill with the municipality of Nikšić. The landfill should be in the municipality of Nikšić (Budoš location), which is a positive thing for NP Durmitor whose territory is not in this municipality. As far as Pljevlja and Žabljak are concerned, the con-

struction of a regional landfill was planned in the municipality of Pljevlja in Jelin Potok, but this municipality gave up on the mentioned location. Many villages do not have containers or possibilities to transport garbage, so garbage dumps can often be found in the village vicinity, in the forest or along the road. On the territory of the national park, there are a few smaller landfills and garbage dumps covering larger areas as well as in zones (picnic areas) and along the frequent tourist routes.

**Exploitation of building materials** is extremely disturbing the landscape and ambience of several locations within the protection zone of NP Durmitor, the zone which is very important for nature protection in the national park and it comprises a unique area with the national park. The largest long-term gravel mine which is still active is situated in Njegovuđa, near the road junction to Žabljak and Đurđevića Tara. Exploitation is also done in the vicinity of the Pošćenski Kraj - Trsa in the part towards Stožina.

Among other environmental problems in NP Durmitor, it is important to mention poaching in the contact zones with the national park, then endangering endemic aquatic fauna in the lakes due to inadequate fish stocking, air pollution caused by exhaust fumes, noise caused by human activity, etc.

## CONCLUSION

Based on the above analysis, it can be concluded that the ecological situation in NP Durmitor is really negative in certain areas. This observation is based on the fact that this natural heritage site of national and international importance has numerous ecological problems that led to a major damage. Their negative impact has caused complete or partial degradation in some of the park's areas. Also, such an assessment of the environmental situation is a result of the fact that no concrete systemic and comprehensive steps and measures are taken in order to solve ecological problems.

Among the main causes of such ecological situation in the NP Durmitor are neglecting the existing legislations which refers to the zones and regimes of protection and permitted activities within the protected natural heritage site, as well as low level of environmental responsibility by some members of the local population and tourists. However, at the bottom of this generally poor ecological situation in the NP Durmitor, there is a tendency of some institutions and individuals to turn the area of the national park and its vicinity into a destination of mass tourism (illegal construction, lack of communal infrastructure, waste treatment, etc.) The authorities should be able to understand that this is not possible in the protected area such as NP Durmitor where tourism, i.e. tourist movements must be adjusted to the legally permitted activities in certain zones of protection. Therefore, tourism should be developed in accordance with the principles of sustainable development so as not to disturb the natural balance within the protected heritage site. In this regard, C. Young and B. Young (1993) state that if a general plan of activities for protection, development and use of national parks does not exist or cannot be complied with, but instead the activities occur accidentally in response to political pressure, the result is likely to be irreversible damage done to the resources and values of the national park.



### Remark

*The paper represents results of research conducted as part of a doctoral dissertation entitled 'Natural Values as a Basis for the Development of Tourist Offer in Northwestern Montenegro' by the candidate Mićo Srdanović, MSc.*

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