

*Dr. Eng. Mihailo Vučković, Director  
Republic Institute for Nature Conservation Titograd*

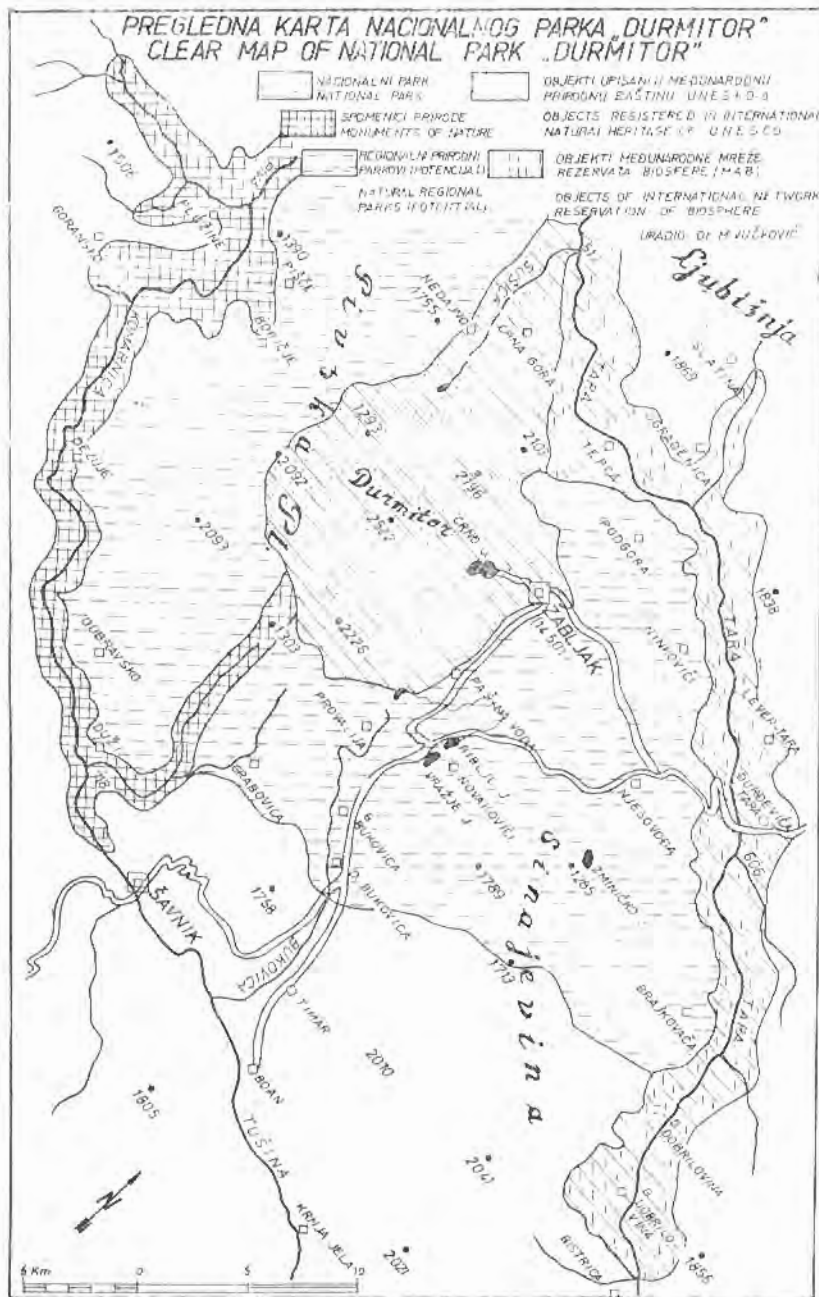
### NATIONAL PARK »DURMITOR«

National Park »Durmitor« is one of better preserved and most valuable objects of this kind in Europe and in wider area; due to this reason in 1980 it was included in List of International Natural Heritage of UNESCO.

This mountainous massive was proclaimed for national park by the Statute already in 1952. The new Statute on national parks of Montenegro from 1978 regulates basic questions concerning borders, organization and sources of funding of the object. The headquarters of this park are in the town Žabljak, the center of the community having the same name. It is a center of development of mountainous tourism for the large area of Durmitor massive and one of most complete areas of touristic offer in Yugoslavia, also including the territory of this National Park. Žabljak by its geographical situation composes an entity with National Park, since it is situated on the outer border of this object. It is linked with Adriatic Sea and with centers of neighbouring communities by good communication tranches and railway Belgrade — Bar; the closest railway station (Mojkovac) is 70 km distant.

After the Prokletije, Durmitor is the highest mountain in the Dinarids (2,523 m above the sea level). The lowest peak elevation of this National Park is at the mouth of the Sušica River, rating 512 m. Height amplitude of the Park is 2,011 m, what indicates the dynamic and versatile biota in it.

It is situated between 42°58' and 43°17' of northern geographical width and 18°16' and 19°27' of eastern geographical length (according to Greenwich). It has the surface area of around 390 km<sup>2</sup>, and extends on the territory of five communities: Žabljak, Mojkovac, Pljevlja, Plužine and Šavnik. Besides Durmitor, it seizes parts of mountainous massives of Ljubišnja and Sinjavina. Durmitor is hemmed by the deep canyons of the Tara River in length



of 78 km, the Piva and the Komarnica in length of 60 km, average depth of their canyons being around 1,000 m. Steep sides of canyon valley of the Tara extend to Mountainous plateaus, whose average height is 1,460 m.

By action of glaciers' erosion and tectonic movements of the land, on Durmitor were formed smaller or larger canyons and gorges, rivers and creeks, hollows, depressions, plateaus and 16 glaciers lakes. They have a total surface area of around 700,000 m<sup>2</sup> with around 9.800,000 m<sup>3</sup> of water mass and a number of other phenomena, as the following: over 30 condensed mountain peaks as high as 2,523 m of altitude (Bobotov kuk, the highest peak of Durmitor), 10 clean and clear rivers (the Piva, the Tara, the Bukovica, the Sušica, Mala Kamenica, Divlja Grabovica, Jezerštica, Ljuta, Draga and the Vaškovska River). Significant value of this Park are the forests, extending to around 9,000 ha; particular scientific value and tourist attraction has the wood of black pine (*Pinus nigra*) with beech (*Fragus moesiaca*), with total wood mass of 1.645,570 m<sup>3</sup>/ha, where black pine participates with 87%, as well as flora and fauna and other natural and man-made values of this park.

These and other natural values interested numerous domestic and foreign investigators, especially naturalists and ethnologists, which, mainly in second half of last century with enormous efforts, due to that time's inaccessibility and impassability of this mountainous massive, carried out certain investigations (Hassert K, 1895; Cvijić J. 1899, 1921; Pantoczek, 1872; Knapp 1869; Baldacci A, 1891; Rohlena — 6 times: 1901, 1904 and later) and many others. Fascinated by the contents, the original nature and beauty of the landscape there was a minority of those who after their first visit to this mountain did not come again to this unique natural area. Known geographers: Davis W. American, and Oestreich K, Dutch (1916), had written that the Tara canyon in Montenegro-Yugoslavia, after the Colorado River canyon in North America, is the most beautiful canyon in the world. Due to some specific features the canyon valleys of the other two rivers: the Piva and the Komarnica do not retreat much from the beauty of the Tara's canyon.

#### GIOLOGICAL AND PAEDOLOGICAL FEATURES

This Park is composed of moraine sediments of Triassic, Jurassic, and Carbon, land strata belonging to Quarternary. Numerous high reefs of mountainous massive of Durmitor are made of Jurassic limestones.

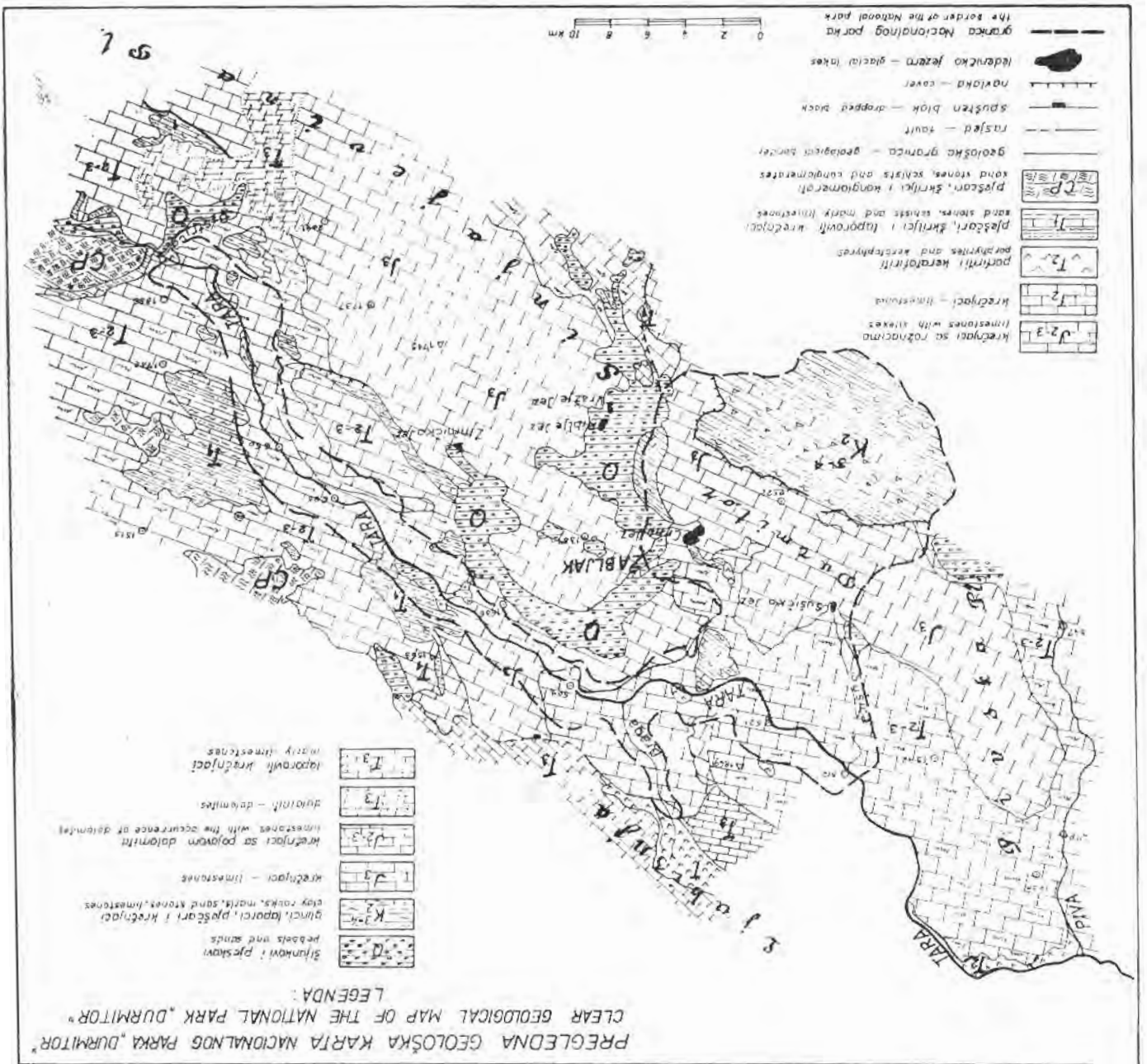
Great expanse on this mountain seizes characteristic »Durmitor's flych« whose strata belong to Upper Carbon. These strata of complex petrographic structure and strength, which are compo-

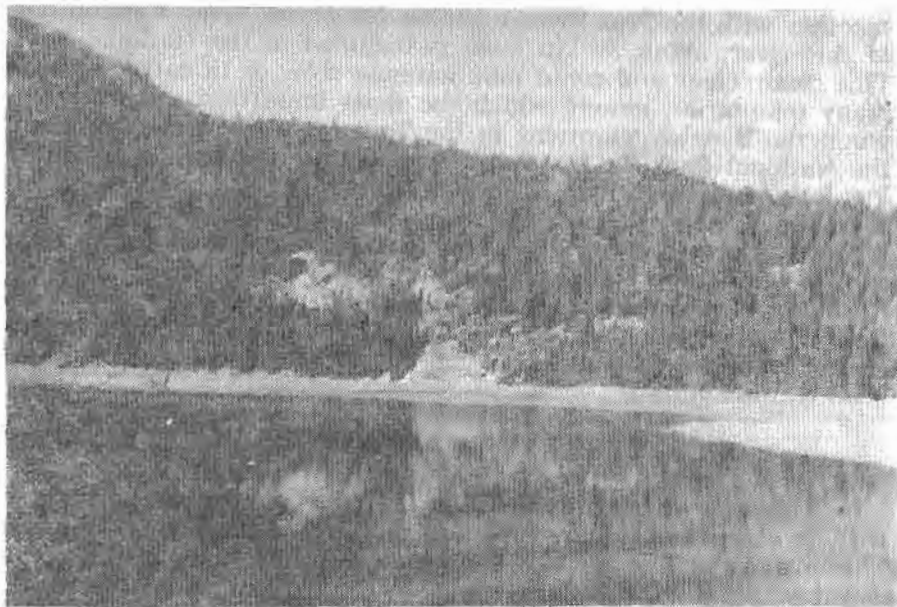
sed of marl, clay schists of green, grey, black or red color, as well as of different color marlish limestone schists, brecca, clastic rocks and others, compose many interesting and specifically shaped mountain ranges like Stožina (1905), Prutaš (2393), Sedlo (2227), Ranisava (2084) and others, as well as numerous mountainous lakes (Crno, Zmijanje, Malo, Skrčka lakes etc) than springs like: Ravnjak, Bjelovac, Ljutica and underground courses representing a particular natural value.

Paedological structure of this Park is characterized by mainly shallow, eroded and skeleton soils and brown soils as well as erysipelas (red dot).

#### HYDROGRAPHICAL CHARACTERISTICS

As already pointed out, National Park »Durmitor« is characterized by numerous hydrographical objects — rivers: the Tara, the Piva with the Komarnica, the Sušica and the Draga, underground courses, karstic springs and fountainheads: Ravnjak, Bjelovac, Ljutica, Čorbuđzak, Mušovi bukovi, Bijela vrela, Lazin kamen, Draga, Turska glava, Kućišta, Kaluđerovača, Sige, Nozdruć and others. All of 16 mountainous lakes have glaciers origin. Among them the largest and most important are Crno jezero (1442 m of altitude) with surface area of 516,200 m<sup>2</sup>, with water volume of around 8,7 milion m<sup>3</sup>, Zminje (1495 m of altitude) with surface area of 14—18,000 m<sup>2</sup>, depending upon the water level, having the water volume of around 41,773 m<sup>3</sup>, Malo jezero (1,788 m of altitude), surface area around 17,400 m<sup>2</sup>, and water volume of around 52,828 m<sup>3</sup>, Škrčka jezera (Veliko) 56,800 m<sup>2</sup> and (Malo) 10,800 m<sup>2</sup> are on 1,700 to 1,730 m above the sea level, with water mass of 334,940 m<sup>3</sup> (Veliko) and 63,560 m<sup>3</sup> Malo jezero. On somewhat lower elevations than a few previously mentioned lakes, there are Modro jezero (1628 m of altitude), surface area of 7,300 m<sup>2</sup>, Valovito (1695 altitude), surface area of 11,600 m<sup>2</sup>, volume around 10,540 m<sup>3</sup>, Pošćansko jezero (1495 m of altitude), surface of around 15,300 m<sup>2</sup>, volume around 15,000 m<sup>3</sup> — its waters in summer months warm up over 20°C, Zabojsko jezero (1477 m of altitude) surface around 27,600 m<sup>2</sup> and volume around 167,785 m<sup>3</sup>. In addition to mentioned, there are a few smaller or larger mountainous lakes »okos« (sublacustrine springs) which have multiple significance in protection and improvement of this National Park; these are the following: Srablje, the lake Suva lokva, Nikolin do, as well as a few larger lakes in closest surrounding of the border of National Park, like, for example, Vražje, Riblje and Zminjičko jezero, which are abundant in salmonid fish species, particularly brook trout and other fauna, ducks etc.





Mješovite šume smrče i jele na Durmitoru  
Foto: M. Vučković (1983)  
Mixed forests of spruce and fir on Durmitor  
Photo: M. Vučković (1983)

The water in these lakes is crystally clean, clear and has great transparence. They are absorbing the surface and the underground water courses, permanent and temporary springs, i. e. estavelas. Most of them are mainly settled by salmonid fish species, among which the brook trout is predominating (*Salmo trutta m. fario*); such lakes are Crno, Zmijanje, Škrčka and Pošćansko jezero.

The surface layer of water in Crno jezero in July reaches the temperature of up to 20°C. All lakes are pretty well accessible and convenient for rest and recreation of visitors, where the largest and best accessible Crno jezero (Black lake) is excelling. A special feature of this lake are the underground courses by which the water from the lake drains out into the drainage basins of two rivers — the Tara on the northeast and the Piva i. e. the Komarnica on southwest; this way Crno jezero represents a watershed between these two river drainage basins.

Among the rivers flowing through the National Park, the most important is the Tara, whose basin was, already in 1977, included in the network of objects of biosphere (MAB), from the origin under the mountainous massive Komovi, to the mouth on Šćepan Polje, in total length of 150 km; on Šćepan Polje (Šćepan Field)

together with the Piva River it makes the Drina River. Canyon part of this river, about 59 km long, is included in the National Park. This clean, clear and rapid mountainous river of Ia category, has many tributaries, among which the most important are the following: the Bistrica, emptying in the Tara on the starting border of the National Park on the altitude of 726 m. The Sušica, about 15 km long, and the Draga around 6 km long, have average fall of 88 m/km. (The spring of this river is on 1.080 m of altitude and its mouth is at 552 m). The Tara River is convenient for floating logs, kayaking and other sports on the water and it is real challenge for fishermen, since it is settled by brook trout (*Salmo trutta m. fario*), huchen (*Hucho hucho*), grayling (*Thymallus thymallus*), *Leuciscus cephalus*, as well as *Leuciscus sauffai aquassizi* and bull-head (*Cottus gobio*).

#### BASIC CLIMATIC FEATURES

The area of Durmitor is characterized by continental climate with long, cold and snowy winters and short and cool summers. The autumns in average are somewhat warmer than springs. The warmest parts of the Park are in the valley of the Tara River, where mean annual air temperatures rate around 8°C. The coldest month is January with mean temperature from -2°C to -6°C, and in higher areas of the Park, this temperature falls to -8°C. Absolute temperature minimum ranges around -30°C. Mean July air temperature ranges from 12° to 16°C, and on the peaks on over 2,000 m of altitude from 8° to 10°C. In average during the year there are only 8 days with air temperature of 25°C, and in extremely warm years 31 day.

Mean annual cloudiness is 58% (station at Žabljak); it is highest in December (70%), in months July, August and September it decreases to less than 50%. Minimum of cloudiness is being achieved in August (43%). Majority of clear sunny days occurs in August, September and October, and minority in February and May.

Average annual precipitation on Durmitor ranges from 1100 to 1700 mm. Maximum of precipitation days is in November (in average 17) and December (19), minimum occurring in August (8). Around 50% of precipitation days are snowy and snow cover stays around 30 days in period from October to May. Maximum height of snow cover in lower regions of Durmitor ranges from 70 to 110 cm and on Durmitor's plateau and higher regions from 110 to 200 cm, and partially significantly more, especially in hollows and on the part of northern slopes. That is basic predisposition for ever more organized winter sports in this Park.

## FLORA AND VEGETATION

More significant investigations of flora and vegetation of Durmitor started as late as in second half of 19th century. The first important floristic data were given by Pantoczek in 1872 and the most complete floristic treatment was given by Bohemian botanist Josef Rohlena in his work »Conceptus florae Montenegrinae« (Prague 1942). Although this mountainous massive was treated by more than 30 known botanists who published over 70 papers, there is not yet a complete, unique review of flora and vegetation of this mountain. Durmitor, being the biggest mountain in Dinaric system, having very expressed height difference of over 2,000 m, represents one of the most important centers of development of Balkanian and particularly Dinaric flora. As refugiums of endemic flora canyon valleys of the Piva and the Tara rivers are very interesting.

Among the Montenegrin endemics, the following were established in flora of Durmitor: *Gentiana laevicalyx* Rohl., *Edrainatus glisici* Šernj., *Soška*, *Vebrascum durmitoreum* Rohl., *Carum vele-novsky* Rohl., *Viola nicolai* Pant., *Daphea malyana* Blečić and *Valeriana braunii* blanketie (recorded under the peak Bobotov kuk on 2400 m of altitude).

Among the lower systematic categories of plant species the following represent important specificities: *Trifolium alpestre* L. var. *durmitoreum* Rohl., *Paronychia capela* (Hacq.) kern. var. *durmitorea* Rohl., *Cerastium lanigerum* Clem. var. *durmitoreum* Rohl., *Trinia glauca* (L) durm. var. *durmitorea* Rohl. and others.

From Balkanian endemics significant by their presence are: *Dahme blagayana* Frever., *Acer heldreichii* Orph., *Pinus heldreichii* Christ., *Moltkea petraea* (Tratt.) Gris., *Iris bosniaca* Back., *Potentilla montenegrina* Pant., *Amphoricarpus autariatus* Blečić Mayer and others.

As rare, endangered and decorative species, mainly separately protected in larger area, the following are important: *Leontopodium alpinum* Coss. *Taxus baccata* L., *Adenophora lillifolia* (L.) Bess., *Gentiana*, represented by more species: *G. laevicalyx*, Rohl., *G. lutea*, *G. cruciata*, *G. asclepiadea*, *G. verna*, *G. crispata*, *G. ciliata*; it is supposed that in bottom of the Durmitor there is also *G. kochiana*, since it was recorded on the neighbouring mountains. It is important to point out that flora of Durmitor has the characters of alpine flora, characterized by obese blooms in comparison to other organs of the plant and bright colours; due to this they are very decorative and attract a great attention of visitors.

Among the woody species, particular attention for their attractiveness should be paid to *Sorbus acuparia*, *Sambucus racemosa*, *Ribes petraeum*, *Pinus mughii montenegrinum* Bleč., which re-



present upper border of forest vegetation on this mountain and it penetrates to the highest peaks.

An especially interesting botanic site in this National Park is peat bog of Barno jezero (lake), on which lately 9 moss species, which were not recorded in Montenegro before, were reported; some of them are new for Yugoslavia. Among them there are four species of genus *Sphagnum* (*S. cantortum*, *S. recurvum*, *S. plumbulosum* and *S. squarrosum*). On this locality another four vascular plants, also unknown in other areas of Montenegro, were found: *Utricularia minor*, *Eleocharis autstiacae*, *Carex cutta* and *Sparganium minimum*. Due to these and other natural values this locality has the character of strictly natural reserve. In flora of Durmitor around 150 species of medical herbs were recorded as well as around 40 species of edible mushrooms as cited by Blečić, Pulević and Vučković (1983).



Posebno zaštićena zona kod Crnog jezera

Foto: M. Vučković (1983)

Particularly protected zone nearly Crno jezero (Black Lake)

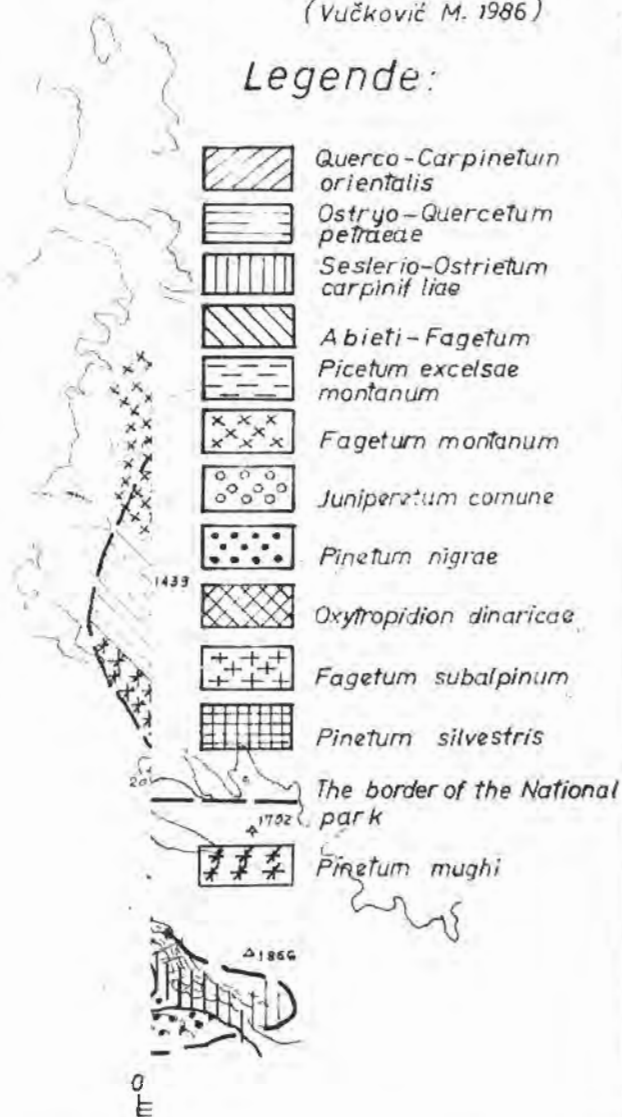
Photo: M. Vučković (1983)

Among the large number of forest communities the biggest spaces in lower areas are the ones with *Carpinus orientalis*, and through the zone of black hornbeam, thermophilic beech woods with *Sesleria autumnalis*, then mesophytic mountainous beech fo-

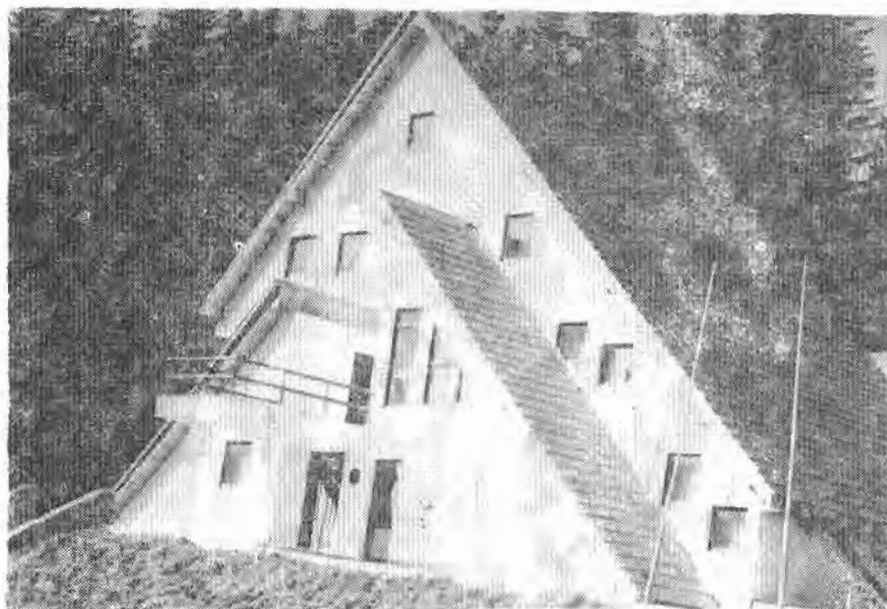
# L PARK DURMITOR ETACION MAPE

(Vučković M. 1986)

## Legende:



rests, beech-fir and subalpine beech forests with *Acer platanoides* to the zone of woods of *Pinus mugo* (*Pinetum mughi montenegri-num* Bleč.). They have expressed protective and decorative function in specific landscape of mountainous massive of Durmitor between 1900 — 2200 m of altitude. Large space of this mountain is seized by spruce and spruce-fir forest. Among forest communities with specific and also endemic features the forests of black pine (*Pinetum nigrae* Blečić) are excelling, as well as the forests of white pine (*Pinetum silvestris montenegrinum* Blečić and Lakušić), *Ostrya carpinifolia* and *Corilus colurnus* (*Colurno Ostryetum carpinifoliae* Blečić), forests of *Carpinus orientalis* in Piva (*Aceri paradoxi* — *Carpinetum orientalis* Blečić and Lakušić) and others.



Upravna zgrada Nacion, parka »Durmitor« sa Prirodnjačkom zbirkom  
 Foto: M. Vučković (1986)  
 Headquarters of the National Park »Durmitor« with Naturalist Collection  
 Photo: M. Vučković (1986)

#### FAUNA

Fauna of Durmitor deserves particular attention. In more details ichthyofauna, mammals and birds were studied. During the last years the enthomofauna is being systematically studied through the Montenegrian Academy of Sciences and Arts. These investigations brought to important results which are in phase of treatment and preparation for publishing. Here we will mention only

**PREGLEDNA KARTA NACIONALNOG PARKA „DURMITOR“**  
**CLEAR MAP OF NATIONAL PARK „DURMITOR“**  
**KARTA OSNOVNIH VRSTA FAUNE**  
**MAP OF BASIC FAUNA**



- Ursus arctos* L.
- Capreolus capreolus* L.
- Rudolphea mansuetor* I.
- Canis lupus* L.
- Felis ussuricus* L.
- Tarastes bairdii* L.
- Alcedo irrorata* Steph.
- Picus polonicus* L.
- Asio chrysolatus*
- Falco tinnunculus* L.



UR-4100 57° 14' 00" S 19° 10' 00" E 14350 14340 14330

some of basic species of mammals and birds which are the most presented in National Park »Durmitor«. The higher areas and canyon valleys of this Park are mainly settled by chamois (*Rupicapra rupicapra*), and passing zone belongs to the roe deers (*Capreolus capreolus*). In zone of spruce forests and forests of white pine (*Pinus silvestris*) in some parts of mixed conifer woods and on lower border of *Pinus mugo*, capercaillie (*Tetrao urogallus* L.) were recorded. From the order of rodents (Rodentia) hare (*Lepus europaeus* Pall.) is represented, while from the order of beasts (Carnivora) there are fox (*Vulpes vulpes* L.), pine and stone marten (*Martes martes* L. and *M. foina* L.), wolf (*Canis lupus*) and on the very narrow space of the canyon of the Sušica River there is brown bear (*Ursus arctos*). From the order of hens (Galli), in addition to a large number of capercaillie, hazelhen (*Tetrastes bonasia* L.) is numerous, and roch partridge (*Alectoris graeca* Meisner) is partially represented; flying over is quail (*Coturnix coturnix* L.), and in 1977 (M. Vučković) a locality of field partridge (*Perdix perdix* L.) was recorded. By the research it has been established that there was no small capercaillie (*Lyrurus tetrix* L.) although its presence in first half of this century was reported in literature; that is why it was introduced again in 1981 from North Italy.

Among predators (Order Falconiformes) which anyway are rather rare or endangered species in this National Park there are: gold eagle (*Aquila chrysaetos* Sav.), then griffon vulture (*Gyps fulvus* Habl.), goshawk (*Accipiter gentilis* L.) and sparrow hawk (*Accipiter nisus* L.) and other common species of shaggy and feathery game and numerous species of ornithofauna, which is also in phase of further investigation.

#### SOME CULTURAL—HISTORICAL VALUES

This National Park is extraordinary rich in cultural-historical monuments and commemoration objects from older and more recent past. Well known are the ruins of medieval monasteries from XVI century in Đurđevića Tara and Monastery of St. Djordžije in Dobrilovina also built in XVI century, as well as Monastery of St. Arhandjelo, whose ruins are situated nearby the main bridge on the Tara River (over this bridge there is the road leading to Pljevlja). This bridge was an sui generis construction and architectonic solution of this century; it is around 366 m long and over 150 m high. It played an important strategic role in liberation of the country from the enemy in Second World War. The tombstones near Riblje jezero (lake) on the plateau of Durmitor are one of oldest cultural monuments. In this area there is Medieval town Pirlitor on 1450 m above the sea level which originates from 14th century, as well as many other monuments which are included in this Park or which are situated in its close surround-

ding. Among the latter ones the most important is the Piva's Monastery, built 1573—1586 and the monasteries in Podmalinsko and Bijela by the town of Šavnik.

Massive of Durmitor as a whole, being an extraordinary significant historical area from period of national liberation war 1941 — 1945, may be treated by the category of memorial monuments of nature. This is the territory of great happenings, which coincides with territory of Durmitor Partizan's Republic from 1941; Central partizan's hospital was situated here in 1941/42, Supreme partizan's headquarters in 1943; in this area the most important decisions in struggle for liberation were being brought — like the decision about breach a front on the Sutjeska River towards the direction of East Bosnia and others. In order to keep a lasting memory of these events, 21 monument or commemoration objects from National Liberation War were erected in this area: 10 commemoration plaques, 7 commemoration busts, 1 commemoration fountain, 1 commemoration mausoleum and 1 house of birth arranged as a museum. Among the monuments which were erected later special historical and architectonic value belongs to the monument to victims of fascist terror in Žabljak.

#### PLANS OF PROTECTION AND DEVELOPMENT

By the Statute from 1978 in National Park »Durmitor« 7 reserves were separated and protected (Crno jezero with forest in its direct surrounding, drainage basin of Škrčka jezera and narrower canyon valley of the Sušica River, old fir and spruce forest in the drainage basin of the Mlinški potok (creek), Barno jezero (lake) with closest surrounding, the woods of black pine in reserve Crna noda, Zabojsko jezero with its close surrounding and canyon valley of the Tara River). Although the entire territory of the Park enjoys the character of special protection it was intended to point out by the Statute the particular value and necessity of more detailed study and more expressed protection of mentioned spaces as special values of this Park, as well as better protection of more sensible ecological entities. The reserve of black pine (*Pinus nigra*) and relicts of old forest of spruce and fir in Mlinški potok have exclusively the character of objects for scientific research. The separation of these zones with status of reserve is the product of new scientific findings which point to further detailed investigations, especially the research of alive nature in the reserves. Their objective is the undertaking of measures of protection and creation of most favourable conditions in bioecological relations in this park. All developmental activities in the Park are caused by requests for protection of cultural and natural values. The ways of development in it are directed exclusively on creation of favourable conditions for rest and recreation.

Self-managing community of interest (SIZ) of National Park, with headquarters in Zabljak, directly takes care about the conservation, arrangement and study of this object. Financial means for carrying out of annual plans are given by budget of the communities on whose territories the Park is situated, as well as by attaining some financial aid from the Executive Council of SR Montenegro; the largest amount of money is collected from contributions of interested organizations from the field of culture, science and economic organizations — the members of association of Park. The part of these funds is realized through own income from tourist service and selling of souvenirs.

#### TOURISM AND RECREATION

Durmitor has the extraordinary possibilities for the development of massive summer and winter, as well as health and scientific tourism. According to previous visits it is equally interesting both in summer and in winter. Touristic-recreation value of the Park reflects firstly in quantitative and qualitative features and typical characters of morphological-relief contents; in originality and conservation of the nature as a whole and of some locations in particular, in wealth and versatility of hydrography in abundance and specificity of landscape, of climatic and other natural values. Although the anthropogenic contents are insufficient in relation to quality of natural tourist resources, nevertheless it is clearly obvious that to smaller or greater extent all anthropogenic factors are well included in natural environment of the Park, so that together they compose a solid basis and indivisible entity of touristic-recreational offer. Almost all kinds of contemporary tourism for all ages are organized; they are based on the following motives:

- active rest — picnics and walks;
- sporting: climbing the mountains, alpinism, skiing, kayaking, height preparations of sportists, photo safari, sport fishing etc.
- log floating by the Tara River in organized tours of 3 or 5 days,
- tourism with scientific, tematic contents — natural, ethnological and other investigations;
- types of the so called manifestational tourism and similar ones.

Summer tourism, especially for visitors from urban and industrialized environments, offers excellent conditions through the experience of unrepeatable natural environment with elements of traditional way of life. Such rests act as an efficient »therapy« on

psycho-physically burdened human of contemporary civilization with the accelerated living tempo in highly urbanized areas. Winter — Spring tourism also has wonderful natural conditions relating to the conditions of the terrain, height of snow cover and its period of lasting.

Skiing season lasts three to six months and in some parts five to six months, depending upon the precipitation distribution and exposition of skiing paths. For these needs a number of skiing terrains was built and up-to-dated for the capacity of 11,000 skiers at the same time.

An intensive development of tourism on Durmitor starts around 1960's, and its organizer is a separate organization of associated labour »Durmitor« with headquarters in Žabljak. This organization possesses around 1,000 beds in the hotels and rests and around 500 beds in private lodging. During 1981 for example, 17,859 visitors were recorded, and among them 7,118 were foreign guests. This number increased in 1982 to 18,798 visitors and 74,550 overnight stays. Total use of capacities was 77 days and further use of around 160 days is planned.

Until 1990 total construction of lodging capacities is planned to be 6,000 beds; share of hotels in this number is 55%, camps 6.7%, private lodging 15%, and rests, tourist settlements and special objects 23.3%. Tourist business is planned to around 900,000 overnight stays, counting the relatively high extent of average use of capacities to around 150 days, taking place in two seasons — winter and summer. Employment of 1,230 permanent and 830 seasonal workers is foreseen for the needs of tourism and recreation.

For skiing activity it is foreseen to create the conditions for 11,000 users (in Kuk zone 5,320, Štulac 4,820 and in Žabljak 680 skiers). According to the natural conditions and ecological abilities of space burdening, these capacities could be increased without consequences for natural environment for another 20%; in these conditions the optimum would be attained and the good organization of nature protection would also be exercised.

This Park is linked by four basic communications: from the direction of Belgrade by highway Mojkovac — Žabljak (headquarters of the Park); from Titograd by two roads Mojkovac and Nikšić Šavnik, as well as by Prijepolje; from the direction of Belgrade, through Pljevlja; from the direction of Sarajevo it is linked by caseway Foča, Plužine and Trsa.

Inside the Park there is a well developed network of roads and paths.

Introduction of some values of this park has been enabled through the exhibition part of Natural Collection — Museum, which was opened in newly constructed building in October 1983.



With better activating and improvement of National Park significantly better conditions are being created for tourism and recreation, education and other activities, which are developmentally based exclusively on scientific and expert basis.

**Some activities on the protection and arrangement of NP »Durmitor« since its registration in the list of natural heritage of UNESCO-a**

In period since 1980, respectively since registration of this National Park in the list of natural heritage of UNESCO, great progress on the protection, arrangement and advancement of this National Park has been made. We shall emphasize some more important activities. In this Park, service of protection has been made firm, well organized and technically furnished; the structure of the professional service has been improved, all necessary selfmanagement bodies of Park Community have been organized and collaboration with numerous organizations and organs in the country and abroad have been established.

The assembly of self management community of interest of this National Park, with all its bodies has been actively included at the general-Yugoslav action for protection of the canyon part of the River Tara, as specially important value of National Park »Durmitor«.

In last five years, elementary suppositions for solving ever more expressive necessity of arrangement and presentation of Park, have been made and some valuable publications have been published. The home of National Park was built and put at the function in 1983 (810 m<sup>2</sup>), with administrative, cultural, informative and the other contents. In it there are: naturalist exposition — collection, information centre, indoc — centre and the store of souvenirs.

Old objects were restored, some news ones were built like: mountain home at Škrci (238 m<sup>2</sup>); 1982 with 48 beds; raft home at Radovan luka — Tara (208 m<sup>2</sup>) 1984; camp colony with 15 tents (32 beds); dwelling-place at Valoviti Do of 70 m<sup>2</sup> (15 beds) 1984, special smaller building at the locality Šljivanska Vrela — Tara 1985. During 1981/1985 some places of view and 7 watchtowers were made as well as some breeding places (28) at localities Tara — Tepca and Dragišnica. The other technical objects for protection of animal world (salting and watering places) and the main footways for visitors of Park were also arranged.

In quoted period, the Program of protection of National Park and several projects for separate branch's activities were made. Also, certain scientific investigations from the field of natural sciences (vegetation, entomology, phytopathology, hydrology etc.)

were performed. The elaboration of physical plan of Park and projects for several objects whose contents are in function of development of this Park, specially for rest and recreation are being carried out.

Also, the propagation of Park has been remarkably improved. Two guides, the clear map with legend and first book of the fauna of Durmitor (1984) were published. The other book of fauna is in press, as well as the monograph of National Park. Since 1983 the Park has been publishing special newspapers (*Soa nebeska*) which has informative — professional character. Several scientific — popular films in domestic and foreign languages were made. In this Park painting colony, whose works are dedicated to National Park, was founded two years ago. In addition to this, series of other works for interest of development protection and presentation of National Park, Durmitor have been done. All activities have significantly contributed, so that the inhabitants, relation have changed for interest of protection and advancement. To that, no doubt, immediate collaboration with population through the co-operation relations for improvement of authentic activities is contributing, including the production of souvenirs characteristic for this area and advancing the conditions and culture of living.

Republic Institute for Nature Conservation  
Titograd

*Dr Mihailo VUČKOVIĆ*

### Summary

Durmitor is one of larger national parks in Montenegro and in Yugoslavia. It seizes the parts of mountainous massive of Durmitor, Sinjavina and Ljubišnja and has the surface area of around 39.000 ha. Elevation difference of the park is 2,011 m; the lowest peak elevation is 512 m (on the Tara River) and the highest one 2523 m (Bobotov kuk). It seizes the parts of the territory of following communities: Zabljak, Šavnik and Mojkovac. Park is linked by four communications: from the railway station in Mojkovac by asphalt road leading through the picturesque canyon of the Tara River, from Prijepolje over Pljevlja, from Titograd over Nikšić — Šavnik and from Foča over Plužine and Trsa. The most important elements of the Park are the seven reserves: the most attractive part of the canyon of Tara River, which in February 1977 was included in international heritage of biosphere objects (its difference in height is over 1,200 m). Crno jezero with its surrounding forests; Barno jezero with its surrounding, old spruce and fir forest nearby the Zminje jezero; Škrčka jezera (lakes) and

Sušičko jezero with the surrounding and the valley of small Sušica River, Zabojsko jezero with the surrounding, reserve of black pine at the locality »Crna Poda«, other glacier's lakes (Zminje, Valovito, Srablje, Modro, Poščansko and Malo jezero); Ledena pečina (cave) and other speleological objects; versatile forest cover, large mountainous pastures, numerous species of flora and fauna, memorial monuments of nature and monuments of culture (authentic architecture and folklor). Among the lakes the largest one is Crno jezero (peak elevation 1422 m) with two parts: Veliko jezero, having the mean surface area of 33.85 ha and biggest depth of 24.5 m and Malo jezero with the surface area of around 11.77 ha and greatest depth of 41.9 m. It is surrounded by natural forest of spruce and fir with white pine, *Pinus mugo* and beech.

On the western side it is excelled by imposing Medjed, which to its very top is overgrown by dense association of *Pinus mugo*. It receives the water from Mlinški potok (creek), and from springs of Čelina in Spring. Overflowing waters from Veliko lake flow away through Žabljak's abysses and emerge on the Tara, and the water from Malo lake drains through the abysses into the drainage basin of the Piva River. The geological structure of the Park is composed of Mesozoic and Kenozoic layers; carbonate rocks from Triassic, Jurassic and Carbon, as well as mighty moraine sediments from quarternary are predominating. Average annual precipitation is around 1533 mm. Depending upon the ecological conditions in National Park, various types of spruce forests, forests of pine, beech and fir are represented, and on higher elevations the forests of beech and association of *Pinus mugo*, and from place to place there are the associations of beech. In addition to forest associations remarkable also is the vegetation of turfs, rocky ground, rocks, slindes and other subalpic and real mountainous phytocenosis. Mean wood mass in economic forests rates to 349.1 m<sup>3</sup>/ha, and current volume growth 7.45 m<sup>3</sup> %/ha. In the reserve of black pine (Crna poda) the largest volume on 1 ha is 1.645,570 m<sup>3</sup>, the share of black pine being 87% and of beech 13%. The most important shaggy game are chamois and roe deer, wolf is numerous and bear is rare. Among the feathery game the following live in this area: big capercaillie, hazel hen, rock partridge, numerous species of eagles etc. According to its natural significance this Park belongs to the most valuable objects of this kind in Europe and wider.

Durmitor was announced a national park in 1952. Its borders, status and organizational structure were determined by Statute on national parks from 1978 (ZNP). Necessary sanitary tree cuttings and sport fishing are permitted in the Park. The border of the park seize Žabljak and some village settlements. The protective zone is composed of potential parks of nature.

## REFERENCES

- Baldacci A. 1981. Cenni ed appunti interno alla flora del Montenegro, III (Genova), pp. 37-59.
- Blečić V. 1951. Nova nalazišta *Leontopodium alpinum* Cass. u kanjonu Tare i Pive. God. Biol. inst. (Sarajevo) 4 (1): 23-28.
- Blečić V. 1958. Šumska vegetacija stena i točila doline reke Pive. Glasn. Priir. muz. (Beograd) B (11):1-108.
- Blečić V. and Lakušić R. 1976. Prodrromus biljnih zajednica Crne Gore Glasn. Republ. zav. zašt. prirode — Prirodni muzej (Titograd) 9:57-98.
- Blečić V. — Pulević V. Vučković M. 1983. Flora i vegetacija Durmitora (manuscript).
- Lakušić R. 1964. Planinski javor — *Acer heldreichii* Orph. God. biol. inst. (Sarajevo) 17:117-143.
- Patoczek J. 1873. Plantae novae quas aestate anni 1872 per Hercegovinam et Montenegro colleat et descripsit (I-III). Osterr Bot. Zeitschr. 23:4-6, 79-81, 265-268.
- Pantoczek J. and Knapp A. 1874: Reise nach der Hercegovina, Montenegro und Dalmatien. Schriften d. Ges. f. Naturw. Pressburg.
- Rohlena J. 1905. Neue Pflanzen aus Montenegro. Feddes Repert. 1:22-28, 33-38.
- Rohlena J. 1942. Conspectus Florae Montenegrinae. Preslia 20-21:1-506.
- Stanković S. (1975). Planinska jezera Crne Gore. Društvo za nauku i umjetnost Crne Gore. Odjeljenje prirodnih nauka, posebna izdanja, knj. 5. Titograd.
- Vučković M. 1969. National parks in the Social. Rep. of Montenegro in Jugoslavia. Zbornik ref zmežinarod. simpozijuma TANAP-u str. 605-608.
- Vučković M. 1980. Novo nalazište poljske jarebice — trčke (*Pedrix pedrix*) na Durmitoru. Simpozijum o lovstvu Beograd. Program uredjenja nac. parka »Durmitor«, 1981. (Bazne studije).

*Dr Mihailo VUČKOVIĆ*  
Republički zavod za zaštitu prirode

### Re z i m e

Durmitor je jedan od većih nacionalnih parkova u Crnoj Gori i Jugoslaviji. Zahvata dijelove planinskog masiva Durmitora, Sinjavine i Ljubišnje na oko 39 000 ha. Visinska je razlika parka 2 011 m; najniža je kota 512 d (na Tari), a najviša 2 523 m (Bobotov kuk). Obuhvata dijelove teritorije žabljačke, šavničke, plužinske i mojковаčke opštine. Parku se pristupa iz četiri putna pravca: od željezničke pruge kod Mojkovca asfaltnom cestom kroz živopisni kanjon Tare, zatim od Prijepolja preko Pljevalja, od Titograda preko Nikšića — Šavnika i od Foče preko Plužina i Trse.

Najznačajniji elementi Parka jesu sedam rezervata: najatraktivniji dio kanjona Tare, koji je u februaru 1977. uvršten u međunarodnu baštinu objekata biosfere (s visinskom razlikom preko 1 200 m); Crno jezero s okolnim šumama; Barno jezero s okolinom; prašuma smrče i jele u blizini Zminjeg jezera; Škrčka jezera i Sušičko jezero sa okolinom i dolinom rječice Sušice; Zabojsko jezero s okolinom; rezervat crnoga bora na lokalitetu zvanom Crna poda, ostala lednička jezera (Zminjeg, Valovito, Sra-blje, Modro, Poščansko i Malo jezero); Ledena pećina i drugi speleološki objekti; raznovrstan šumski pokrivač, prostrani planinski pašnjaci, brojne vrste flore i faune, memorijalni spomenici prirode i spomenici kulture (autentična arhitektura i folklor). Od jezera je najveće Crno jezero (kota 1 422) sa dva dijela: Veliko jezero, srednje površine 33,85 ha i najveće dubine 24,5 m, i Malo jezero oko 11,77 ha i najveće dubine 49,1 m. Okruženo je prirodnom šumom smrče i jele i bijelim borom, borom krivuljem i bukvom. Na zapadnoj ga strani nadvisuje impozantni Međed, koji je do samog vrha obrastao gustom klekovinom bora krivulja. Vodom ga napaja Mlinski potok, a u proljeće i vrelo Čelina. Prelivne vode iz Velikog jezera otiču kroz žabljačke ponore i izbijaju na Taru, a voda iz Malog jezera otiče ponorima u sliv Pive. Geološki sastav Parka čine mezozojske i kenozojske naslage; dominiraju karbonatne stijene iz trijasa, jure i krede i moćni morenski sedimenti iz kvartara. Prosječne godišnje padavine iznose oko 1 533 mm. Zavisno od ekoloških prilika, u Nacionalnom parku su zastupljeni različiti tipovi šuma smrče, običnog bora, bukve i jele, na višim položajima pretplaninska šuma bukve pa klekovina bora krivulja a ponegdje i klekovina bukve. Osim šumskih zajednica, markantna je i vegetacija rudina, kamenjara, stijena, točila i dr. subalpinskih i pravih planinskih fitocenoza. Prosječna drvna masa u ekonomskim šumama iznosi 349,1 m<sup>3</sup>/ha, a tekući zapreminski prirast 7,45 m<sup>3</sup>/ha. U rezervatu crnog bora (Crna poda) najveća zapremina po 1 ha iznosi 1 645,570 m<sup>3</sup>, u čemu crni bor učestvuje 87% a bukva 13%. Najznačajnija dlakava divljač jesu divokoza i srna, brojan je vuk a rijedak medvjed. Od pernate divljači tu živi veliki tetrijeb, lještarka, jarebica kamenjarka, razne vrste orlova i dr. Po prirodnim značajkama, ovaj park spada u najvrednije objekte ove vrste u Evropi i šire.

Durmitor je proglašen nacionalnim parkom 1952. Granice, status i organizaciona struktura određeni su Zakonom o nacionalnim parkovima iz 1978 (ZNP). U Parku su dozvoljeni neophodne sanitarne sječe i sportski ribolov. Granicom Parka su obuhvaćeni Žabljak i neka seoska naselja. Zaštitnu zonu čine potencijalni parkovi prirode.