## Flora and Vegetation

The **floristic diversity** of **Dragišnica and Komarnica Nature Park** is exceptional and represents one of the key elements of its overall natural value. Over **1,000 plant species and subspecies** have been recorded within the park, making it one of the floristically richest areas in Montenegro. This diversity is the result of complex **geological and climatic factors**, as well as the preservation of natural habitats, ranging from river valleys and gorges to mountain pastures and rocky terrains.

Vegetation develops **vertically**, from **mesophilic deciduous forests** and **thermophilic communities** in river valleys, through **beech, fir, and black pine forests**, to **juniper communities, mountain meadows, and subalpine rocky areas**.

The richness of the flora and vegetation in the **Komarnica watershed**, the **Dragišnica forest reserve**, and the surrounding area can be explained by the **refugial character** of these regions, which serve as significant centers for the conservation and development of **native flora and vegetation**. The Komarnica and Dragišnica areas show the presence of two main groups: **Central-Southern European mountain species**, **Arctic-Alpine and Boreal species** as primarily glacial chronoelements, and **Southern European mountain species** as tertiary chronoelements, with some variation in the relationship of the main chrono- and geo-elements from the high-mountain to mountain zone.

Similar to the richness of the flora, the vegetation of the Komarnica and Dragišnica watershed exhibits **exceptional community diversity**. This high diversity can be primarily explained by the **specific geographic and geomorphological characteristics** of the area, which determine the ecological conditions and lead to vegetation differentiation. The relatively large **vertical profile** of the park, ranging from about **700 m in the Nevidio Canyon** to **2,091 m at the highest peak of Boljske Grede**, combined with the area's unique geomorphology, has resulted in **meso- and macroclimatic differentiation**, allowing numerous and very interesting plant communities to develop within a relatively small space.

In addition to the presence of numerous **syntaxonomic units**, it is important to note that three main **zonal vegetation types** are present in the area: **deciduous forests, coniferous shrub communities, and high-mountain grasslands**, which are characteristic for **vertical vegetation zonation in the mountains of the western Balkan Peninsula**.

## Recorded Plant Communities

### Subalpine Beech Forests (*Fago-Aceretum visianii*)

In the **Komarnica and Dragišnica** areas, subalpine beech forests occupy the central, mid-elevation zones, at heights between **1,600 and 1,850 m above sea level**. Phytosociologically, these subalpine beech stands belong to the **Fago-Aceretum visianii** community.

Apart from the **edificatory species**—*Fagus moesiaca*, which dominates, and *Acer heldreichii* ssp. *visianii*, which is extremely rare in this area—these forests are characterized by a large

number of mainly Central European species, including:
*Asarum europaeum, Asperula odorata, Carduus personata, Calamintha grandiflora, Doronicum austriacum, Dryopteris filix-mas, Epilobium montanum, Galeobdolon luteum, Gentiana asclepidea, Geum urbanum, Moehringia muscosa, Paris quadrifolia, Poa nemoralis, Ranunculus polyanthemos, Saxifraga rotundifolia, Senecio nemorensis, Silene dioica, Telekia speciosa, Valeriana officinalis,* and others.

Significant elements of these forests also include **high-mountain species** typical of the mountains of Southern and Central Europe, such as:
*Asyneuma trichocalycinum, Cherophylum aureum ssp. balcanicum, Cicerbita alpina, Cirsium erysithales, Geranium nodosum, Heracleum orsinii, Lonicera alpigena, Lonicera caerulea ssp. borbasiana, Ranunculus platanifolius, Silene monachorum, Silene vulgaris bosniaca, Sorbus aucuparia, Stellaria nemorum, Vaccinium myrthyllus,* etc.

Subalpine beech forests occur as a distinct belt between **1,400 and 1,800 m**, on all exposures and moderately steep slopes. In the subalpine belt of the Durmitor sector, the association of **subalpine mesophilic beech forests with mountain maple** (*Fagetum moesicae montanum*) is notable, growing on **Mesozoic limestone substrates** and soils classified as **Calcomelanosols** and **Calcic Cambisols**.

In addition to beech, tree strata include: *Acer platanoides, Acer pseudoplatanus, Fraxinus excelsior,* and others.

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**Mixed Fir-Beech Forests (*Abieti-Fagetum moesiacum*)**

Mixed **beech-fir forests**, which dominate the entire Komarnica watershed and the Dragišnica forest reserve, occur only in the **lowest parts of the area**, up to around **1,500 m above sea level**.

Apart from **beech (*Fagus moesiaca*)** and **fir (*Abies alba*)**, which are the main edificatory species, other woody species include:
*Acer platanoides, Acer pseudoplatanus, Acer heldreichii, Sorbus aucuparia, Fraxinus excelsior, Rhamnus fallax, Sambucus racemosa*.

Herbaceous species present in these forests include:
*Tanacetum macrophyllum, Allium ursinum, Campanula trachelium, Cicerbita pancicii, Geranium macrorrhyzum, Geranium pheum, Heracleum orsinii, Linaria peloponessiaca, Lunaria rediviva, Origanum vulgare, Scutellaria altissima, Sedum maximum, Silene nutans, Thalictrum aquilegifolium,* and others.

## Vegetation of Mountain Pine (*Pinetum mugo montenegrinum*)

The **mountain pine (mugo pine) vegetation** in **Dragišnica and Komarnica Nature Park** develops as the **highest belt of woody vegetation**.
It follows the **subalpine beech forests** on the vertical profile and occupies elevations between

**1,800 and 2,200 m above sea level**. This community occurs on the highest mountain massifs of Durmitor (**1,800 – 2,400 m a.s.l.**) under a **harsh mountain climate**. It develops on **carbonate and silicate substrates**.

The main **edificatory species** is the **mugo pine (*Pinus mugo*)**, forming dense stands with overall cover up to **100%**. Other woody species include:
*Betula alba, Sorbus aucuparia, Rhamnus fallax, Rosa pendulina, Lonicera alpigena, Lonicera caerulea ssp. borbasiana, Sorbus chamaemespilus, Vaccinium myrthyllus*, etc.

Common herbaceous species include:
*Veratrum album, Aconitum panthoscekianum, Senecio fuschii, Ranunculus platanifolius, Luzula sylvatica, Hypericum alpigenum, Astrantia major, Stachys subcrenata, Aethionema saxatile, Sempervivum schlechanii, Minuartia verna ssp. collina*, and others.

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## Hornbeam-Oak Forests (*Ostryo-Quercetum petraea*)

This forest community occupies **steep and poorly accessible terrains** on **moderately shallow soils over carbonate substrates**, such as the **Komarnica River canyon**.

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## Black Hornbeam and Ash Forests (*Ostryo-Quercetum*)

These forests occur in **river canyons**, on **steep, rocky limestone-dolomite slopes** with **shallow limestone soils**.

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## Mountain Dwarf Juniper Community (*Roso-Juniperetum nanae*)

This community occurs on **exposed ridges of lower peaks** and represents the **vegetation of mountain screes**. Within the protected area, it is found in **Boljske Grede** and the **northern part of the park toward Dobri Do**.

It occurs both **within and outside the mugo pine belt**. The vegetation of mountain screes is **dominated by *Juniperus nana***. The community is **homogeneous in structure** and ecologically well differentiated.

Floristic composition includes:
*Juniperus sibirica, Salix appendiculata, Rosa pendulina, Calamagrostis varia, Rubus saxatilis, Hypericum richerii, Cirsium erisithales, Primula columnae, Euphorbia amigdaloides, Fragaria vesca, Erica herbacea, Homogyne sylvestris, Adenostyles alliaria*, and others.

## Fungi – Macromycetes

**Internationally and Nationally Significant Species**

**Craterellus cornucopioides (Black Trumpet)**
This species is listed on the **Preliminary Red List of Macromycetes of Montenegro**.
In **Dragišnica**, it has been recorded in the **Robova Greda** area, in **beech forests (*Fagus sylvatica*)**.
Based on the distribution and subpopulation sizes in Montenegro, it is **currently not considered significantly threatened**.

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**Hericium alpestre (Alpine Hedgehog Mushroom / Fir Tooth Fungus)**
This species is listed on the **Preliminary Red List of Macromycetes of Montenegro**.
In **Dragišnica**, it has been recorded in **Robova Greda**, in **beech and fir forests**, on **fallen fir logs**.
The species is threatened due to the **lack of deadwood**, including old fir logs and trees, **air pollution**, and **harvesting of fruiting bodies for food in populations that are not large enough**.

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**Lactarius acris**
This species is **protected by law in Montenegro** ("S.l. RCG" no. 76/06) and is listed on the **Preliminary Red List of Macromycetes of Montenegro** as well as the **European Red List of Threatened Fungi**, category C – a species with **wide but scattered distribution, often in isolated populations, sometimes locally extinct, requiring a moderate level of protection**.
In **Dragišnica**, it is found at the **foot of Boljske Grede**, in **beech and fir forests**, on **forest litter**.
The main threat is **harvesting of fruiting bodies for food in populations that are not sufficiently large**.

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**Pycnoporus cinnabarinus**
This species is listed on the **Preliminary Red List of Macromycetes of Montenegro**.
In **Dragišnica**, it has been recorded in **Robova Greda**, in **beech and fir forests**, on **fallen beech logs**.
In Montenegro, it is recorded in numerous localities. Based on distribution and subpopulation data, it is **currently not considered threatened**, but its inclusion on the **Montenegro Red List of Threatened Fungi** requires detailed evaluation.

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**Commercially Important Fungi**

In the **Dragišnica and Komarnica** areas, the following species are registered as **commercially used fungi**, in accordance with the **Regulation on the Conditions and Methods of Collecting, Using, and Marketing Non-Protected Wild Animals, Plants, and Fungi** ("Official Gazette of Montenegro", no. 62/10):

- **Boletus edulis** – Porcini / King Bolete
- **Cantharellus cibarius** – Chanterelle
- **Craterellus cornucopioides** – Black Trumpet
- **Hydnum rufescens** – Hedgehog Mushroom
- **Marasmius oreades** – Fairy Ring Mushroom
- **Lactarius salmonicolor** – Fir Milkcap