



**PLITVIČKA
JEZERA** Nacionalni park
National park

biodiversity
IN THE NATIONAL PARK



Water makes up less than 1% of the entire protected area in Plitvice Lakes National Park, but represents its most attractive part. The specific chemical composition of the water depends primarily on the type of bedrock. Today, all inland water, from the smallest pond to the largest lake, is inhabited by insects. Mosquito larvae feed on microscopic organisms in the water, while dragonfly nymphs eat larger prey, catching it with their strong jaws. When these insects become mature, they leave the water. Hard water, rich in limestone, is suitable for animals which build calcium carbonate shells, such as crayfish. Water is also very rich in oxygen, which makes it suitable for predatory fish, such as **Trout (*Salmo trutta*)**.



Photo by A. Belančić

Dragonflies (*Odonata*) are among the oldest evolutionary animal groups in the National Park. With their specific life cycle, they bring together the aquatic and terrestrial ecosystems. In their nymph stage, they live in the water and serve as food for fish and crayfish. The adult dragonfly emerges from the skin of the nymph, matures and mates, again laying its eggs in the water. They can be seen hovering above the water's surface, their large eyes searching for prey or a mate. While mating, the bodies of the dragonflies bend to form a heart-like shape, unique in the animal world. Virtually half of the 70 dragonfly species in Croatia are found in the National Park - this is more than a quarter of all European species! Several species have been included in Croatia's Red List of endangered dragonflies.

The **Stone Crayfish (*Austropotamobius torrentium*)** is one of two species of freshwater crayfish in the park. The Plitvice waters are home to a stable population of this otherwise sensitive species, which is listed as vulnerable on the European Red List.

Crayfish play an important role in the food chains of aquatic ecosystems. They feed mostly on aquatic and semi-aquatic vegetation, thereby helping clear the lake bottom of excessive growth.

In addition to higher plants and animals, **algae** also make up a part of the living world of Plitvice's aquatic environment. There are seven species of the green algae ***Chara*** (stoneworts) which cover the bottom of the Plitvice lakes to depths up to 20 m. These algae are food for several aquatic animals, and they are specific as they become encrusted with calcium carbonate. Certain species of this genus are water quality indicators and ecological habitat characteristics.



Photo by M. Zekhuis

The **Eurasian Otter (*Lutra lutra*)** is an extremely timid animal which leads a solitary life and is mostly active at night, which makes it almost impossible to see. It has a waterproof coat, webbed paws and stiff whiskers which allows it to feel the movement of prey under water. It mostly hunts fish, crayfish and other prey living in the water or near it. It marks its territory by scent marks or excrement. Today, the otter is one of the most endangered mammal species in Central Europe.



Photo by I. Špoljarić



Photo by A. Plenković-Moraj

life IN THE GRASSLANDS

On the grasslands (meadows and pastures) of the national park, soil diversity means a diversity of plants. In less than 7000 ha, we find dry habitats with acidic or carbonate soils, moderately wet habitats and moderately deep soils, very wet habitats with alkaline or acidic soils, peat habitats and more.

The **wet mountain grasslands** are particularly interesting as they contain numerous specific floral species and provide a habitat for many endangered animals.



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Photo by S. Harvancik

The **Corncrake (*Crex crex*)** is a bird which lives in the flooded and wet grasslands, grassy peat and mountain meadows. It nests in grasslands throughout the Park, but mostly in the meadows at Homoljac and Brezovac. The nest, built by the female, is a shallow hole in the ground lined with leaves and other vegetation.



Photo by M. Šašić

Large Blues, a species of the ***Maculinea* genus (*Lycaenidae* family)** are among the most endangered **butterflies** in Europe. They are all on the IUCN Red List of Threatened Species, and they are also encompassed in the European Red List of endangered butterflies.

Three species of this genus live in the Plitvice Lakes National Park:

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Photo by I. Špoljarčić

The **Siberian Rayflower (*Ligularia sibirica*)** is found in the wet valley meadows. Plitvice Lakes National Park is the only place this plant can be found in Croatia and in the whole of Southeast Europe.

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Maculinea alcon (photo)

Maculinea arion

Maculinea rebeli

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Photo by A.Bionda

Large Blues all have unique life cycles which begin when they lay eggs on their feeding plants: for example, ***Gentiana pneumonanthe*** is the feeding plant for ***M. alcon***. This plant can be found in the wet grasslands of the Park.

Caterpillars hatch out of the eggs, feed for a short time and leave the plant. On the ground they are adopted by ants from the genus ***Myrmica***. Large Blue caterpillars winter in ant colonies near the food plants. In the summer adult butterflies leave the pupa. Each species of Large Blue requires its "own" species of food plant and ant host in order to close their life cycle and survive.

life IN THE FOREST

Over 80% of Plitvice Lakes National Park is covered by forest. These are mostly mountain beech forests or mixed beech and pine forests, with a special Forest Reserve - the Čorkova uvala virgin forest.

The forest serves as a shelter and home to large predators and mammals, while the layer of leaves is one of the richest microhabitats in the world. This deep layer of decomposing material is home to vertebrates, such as salamanders and various mammals, and many invertebrates which either feed on decomposing leaves, fungi and bacteria or prey on other species in this habitat.

One interesting invertebrate is the beetle *Molops plitvicensis*, a regional endemic in beech forests and one of the few species which carries the name of Plitvice Lakes in its scientific name.



Photo by K. Pobjoljšaj

As a result of the latest research*, the **Alpine Salamander (*Salamandra atra*)** was found for the first time in the national park and the Mala Kapela mountains in the Čorkova uvala forest. The alpine salamander is a very rare species, inhabiting only high mountain areas above the tree line, at altitudes of 1200-2500m in the Alps and rarely comes down below an altitude of 1000 m.

*research conducted as part of the KEC project (N. Tvrtković)



Photo by A. Bionda

The **Yellow Lady's Slipper (*Cypripedium calceolus*)** is one of 50 species of orchid found in the national park. This species has been protected in Croatia under law since 1972. It is usually found in beech forest stands. Many consider this to be the most beautiful European orchid species.



Photo by N. Matočec

Camarops tubulina is a species of fungus which lives as a saprotroph on the large trunks of fallen old trees - mainly fir, but also beech and spruce - after they die naturally. This is why this species cannot survive in regularly managed forests. It is found in a small number of countries in Europe, where it is categorized as endangered or protected. In Croatia, this species was recorded for the first time in August 2005 in mycological research* conducted in the Čorkova uvala virgin forest within Plitvice Lakes National Park.

*research conducted by N. Matočec and I. Kušan



Photo by I. Pavlinić

The **Barbastelle Bat (*Barbastella barbastellus*)** is the resident forest bat species in Plitvice Lakes National Park. It hides under tree bark or in tree hollows. This species is very sensitive to disturbances, reduced food sources or loss of habitat, usually old trees with crevices in the bark and hollows. A stable population has been recorded in the park territory. Forest species account for the largest number of endangered bat species.



Photo by M. Zekhuis

The **Pygmy Owl (*Glaucidium passerinum*)**, the smallest owl in Europe, lives in the coniferous and mixed forests of the National park. It collects mostly on small rodents and birds. During the year, but specially in winter, it makes caches of prey, usually in tree holes. It nests in tree holes, most often in abandoned woodpecker nests.

Significant and rare woodpeckers of the Plitvice forests are the **White-backed Woodpecker (*Picoides leucotos*)** and the **Three-toed Woodpecker (*Picoides trydactylus*)**.

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three-toed woodpecker (*Picoides trydactylus*).

life ON THE ROCKS

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Photo by J. van der Straaten

The **Peregrine Falcon** (*Falco peregrinus*) nests in the canyon of the Korana River.

This is one of the fastest birds in the world. It is the most widely distributed among all the terrestrial day birds, and can be found on all continents except Antarctica.

It attacks its prey in a steep dive attack, reaching speeds of up to 230 km/h. This species nests on cliffs, rocks or other inaccessible spots.

It feeds almost exclusively on birds.

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Photo by I. Špoljarić

In the Korana River Canyon, the rare plant ***Spiraea cana*** is found, endemic to the Adriatic-Dinaric region. It covers cliffs and steep and rocky sun-drenched slopes.

life IN THE CAVE

In the karst areas of the national park, caves and pits are common and each has a multitude of various cave microhabitats and specific living conditions. Among the caves discovered to date, three are geomorphological nature monuments - Golubnjača, Šupljara, and Crna pećina or pećina Vile Jezerkinje.

In these places of eternal darkness, high humidity and stable temperatures, **cave animals** (*troglobionts* and *stygobionts*) make their home. They feed off one another or the waste of birds or bats. While bats use echolocation, most cave dwellers navigate their environment using the sense of touch. When they look for food, they often use their sense of smell, while poking with their long legs and antennae for food.

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Photo by B. Jalžić

Machaerites udrzali - a new species of **cave beetle** discovered in one of the Plitvice caves, Rodičeva cave. For now, Plitvice Lakes National Park is the only place in the world where this species is found!

In Croatia, all cave fauna is protected by law.



Photo by B. Jalžić



Photo by A. Bionda



TUFA WATERFALLS as a habitat

The most attractive part of Plitvice Lakes National Park, the countless tufa waterfalls are also a specific habitat for the living world. The moss and higher plants visible to the eye conceal a diversity of microscopic life - algae, bacteria, insect larvae and invertebrates. These organisms are part of the complex and fascinating process of **tufa deposition**, which has been occurring in the Plitvice falls for thousands of years.

One of the common characteristics of the living organisms of the tufa barriers is that they forever leave behind their petrified body in the rock which forms **tufa**.



Photo by A. Bionda



Photo by A. Bionda



LEGEND

- Species included in the Croatian Red Book of Endangered Species, according to IUCN criteria
- cr CR - Critically endangered
- en EN - Endangered
- vu VU - Vulnerable
- nt NT - Near Threatened
- dd DD - Data Deficient
- lc LC - Least Concerned
- prop Species proposed for the Red Book
- natu Species included under the Habitat Directive or Bird Directive Natura 2000
- rh Species protected by law in the Republic of Croatia
- bern Species protected under Bern Convention
- bonn Species protected under Bonn Convention

Biodiversity of Plitvice Lakes National Park

Group	Number of species in Plitvice Lakes NP
BUTTERFLIES AND MOTHS	272
CADDISFLIES	80
FISH	7
CRAYFISH	2
AMPHIBIANS	12
REPTILES	13
BATS	21
BIRDS	162
MAMMALS	50
TOTAL VASCULAR PLANTS	1400
ORCHIDS	55

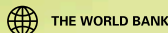
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