A photograph of a butterfly with brown wings and black spots feeding on a dark red flower spike in a green field. The butterfly is positioned on the right side of the frame, facing left. The flower spike is dark red and has a textured, cylindrical appearance. The background is a soft, out-of-focus green field. The overall image has a vertical gradient bar on the left side, transitioning from yellow at the top to blue at the bottom.

# **BUTTERFLIES AND BEETLES OF GORIČKO**

[www.park-goricko.org](http://www.park-goricko.org)

## Butterflies of Goričko

Goričko is home to one hundred species of butterflies and a few thousand species of moths. The high species diversity is a result of the geographical location of Goričko, which lies at the transition zone from the Alpine to the Pannonian region. The sub-mountainous conditions are suitable for the Scotch argus (*Erebia aethiops*). The bright forests with *Carex brizoides* are inhabited by the woodland brown (*Lopinga achine*). Forest edges and blackthorn hedges are important for a couple of species of hairstreak and the eastern egg

moth (*Eriogaster catax*). But the most important and at the same time the most endangered butterfly habitats are all types of meadows – from extremely wet to dry meadows. Dry meadows with field thyme (*Thymus pulegioides*) are the habitat of the eastern baton blue (*Pseudophilotes vicrama*) and the large blue (*Phengaris arion*). Only a few decades ago, the dry southern forest edges with broom shrubs were inhabited by the Danube clouded yellow (*Colias myrmidone*), which is now considered to be extinct in Slovenia.



1 Large copper (*Lycaena dispar*)  
2 Dusky large blue (*Phengaris nausithous*)  
3 Clouded apollo (*Parnassius mnemosyne*)

Molinia meadows are important for a variety of butterflies. The Alcon blue (*Phengaris alcon*) deposits its eggs on the endangered marsh gentian (*Gentiana pneumonanthe*) while the large copper is still widespread and common. Hay meadows with the great burnet (*Sanguisorba officinalis*) are a key habitat for two butterflies of European importance: the scarce large blue (*Phengaris teleius*) and the dusky large blue.

The Jersey tiger (*Callimorpha quadripunctaria*) moth inhabits forest edges with hemp-agrimony (*Eupatorium cannabinum*).



## A story of two cousins

The scarce large and the dusky large blue are closely related species of butterflies of the family *Lycanidae* (“the blues”). The presence of both species depends on the availability of their caterpillar food plant – the great burnet – and ruby ants. The life cycle of both species begins with laying eggs on great burnet blossoms. The newly hatched caterpillars start to feed on the blossoms.

A few weeks later, after falling to the ground, they are adopted by ruby ants. In the anthill, the newcomers start to

Conservation agreements with owners will be signed for an additional 30 ha of *Phengaris*-meadows to ensure proper habitat management.



Dusky large blue



Scarce large blue



Life-cycle of the large blues



*Sanguisorba*-rich meadow

feed on the ants' brood. *Sanguisorba*-rich meadows in the Natura 2000 site Goričko, together with the cross-border Órség area in Hungary, maintain the largest continuous distribution of these two species of European importance in Central Europe. Both species most often occur on molinia meadows and semi-wet hay meadows. Because these habitats are vanishing at an almost alarming rate due to land abandonment on one hand and agricultural intensification with fertilization, drainage and overly intensive mowing on the other, 30 ha of abandoned meadows were restored within the Gorička krajina project.

### FACTS about the large blues

**Wingspan:** 28–36 mm

**Generation per year:** 1

**Flight period:** June–August

**Caterpillar food plant:** Great burnet

**Conservation status:** protected species in Slovenia and Natura 2000 species

During the 2018 survey, both butterflies were found on more than 282 ha of *Sanguisorba* meadows throughout the Natura 2000 site Goričko.



## Marsh fritillary – the vanishing jewel

In the past, the marsh fritillary (*Euphydryas aurinia*) lived throughout the Natura 2000 site Goričko. In 2018 and 2019, as part of the project Gorička krajina, biologists revisited the formerly-known locations and other grassland habitats with its caterpillar food plant, the devil's-bit scabious (*Succisa pratensis*). The butterfly was present only in one location in the eastern part of Goričko. Because this remaining population is one of the last in northeastern

premature and too frequent mowing. For the conservation of species it is important that the eggs or the caterpillar nest on the food plant are left untouched. As a result, the found caterpillar nests were marked in order to prevent unintentional damage to the nests during mowing. The key to a long-term conservation of the species is extensive grassland management, using sensitive approaches to the conservation of caterpillar nests. Similar measures are also being implemented abroad.



Marsh fritillary is distinguished by row of black dots.



Devil's-bit scabious



The colour of the eggs changes from yellow to violet during time.

Slovenia, the risk of local extinction is much greater. An estimation of the population size was conducted in 2019 by using the MRR (mark-release-recapture) method. Wet meadows are home to a hygrophilous ecotype, which is decreasing throughout Europe. Arguably, the main cause of decline is the land-use change. The marsh fritillary prefers nutrient-poor wet meadows with drier areas, where the devil's-bit scabious grows in rather short sward. In the past, such wet meadows were mown mosaically. Nowadays, the loss of a suitable habitat is a consequence of the changed species composition as a result of fertilization and

### FACTS about the marsh fritillary

**Wingspan:** 36–46 mm

**Generation per year:** 1

**Flight period:** May–June

**Caterpillar food plant:** Devil's-bit scabious

Estimated population size within the Natura 2000 Goričko area in 2019: 741 butterflies (95% CI = 438–981)

**Maximum flight range:** 980 m

In 2018, 21 caterpillar nests were found. The nests were marked and the host plant with the nest was not mown. In 2019, already 68 nests were found in the same area.



## Beetles with residential concerns

Among the ten target species there are two species of beetles – the hermit beetle (*Osmoderma eremita*) and the cinnabar flat bark beetle (*Cucujus cinnaberinus*). The hermit beetle is known only from the western part of the Natura 2000 site Goričko in the Ledava valley. This open landscape along the river Ledava is known for its numerous hedges of pollarded willow trees. These trees, with a lot of decaying wood mould in their cavities, are the main habitat of the hermit beetle.

The distribution of the cinnabar flat bark beetle within the Natura 2000 site Goričko was almost unknown until 2020. Within the project, a survey of suitable forest habitats was carried out by entomologists. The flat bark beetle was found under the bark of dead trees in the eastern part and later also throughout the Natura 2000 area of Goričko. Larvae and adults were found in the black locust (*Robinia pseudoacacia*), the common oak (*Quercus robur*), the Scots pine (*Pinus sylvestris*), the Eurasian aspen (*Populus tremula*) and the bird cherry (*Prunus padus*).



Branches of willow trees were pruned to prevent wind damage.



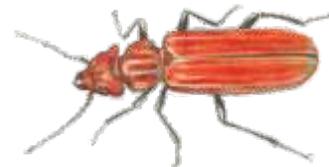
Typical habitat of the cinnabar flat bark beetle with dead wood

Within the project Gorička krajina, 230 suitable trees were examined for the identification of the most important hermit beetle habitat trees. Agreements with the owners of 40 willows were signed to pollard the trees with the aim of reducing wind damage. Due to the poor dispersal ability of the hermit beetle, each tree is crucial for a long-term conservation of this species, the population of which in Goričko represents 2% of the Slovenian population. With a little bit of luck and by paying good attention, summer visitors to the Goričko area can smell the fruity, peach-like or plum-like smell emitted by males to attract females from one of the numerous willows along the river Ledava.

Maintaining a suitable amount of dead trees at an early stage of decay seems to be a key factor for preserving the population of this beetle of European conservation concern, which got its first scientific description based on specimens from Slovenia in the 18th century.



Hermit beetle



Cinnabar flat bark beetle

## Natura 2000 site Goričko

More than 40 years ago, in 1979, the predecessor of today's European Union, the European Community, adopted the Birds Directive. Today, this legal act aimed at protecting wild birds and their habitats is considered to be the first environmental legal act of the European Union.

In 1992, the Habitats Directive was adopted to protect endangered plant and animal species and habitat types relevant to the European Union.

In order to implement the aims of both directives, the European Union set up the Natura 2000 ecological network. Natura 2000 is a European ecological network of nature protection areas declared in EU member states.

The main goal of this nature conservation system is the protection of Europe's rare and endangered species and habitats.

Natura 2000 is composed of Special Protection Areas, designated under the Birds Directive for the protection of birds and their habitats, and Special Areas of Conservation, designated for the conservation of natural habitats and wild fauna and flora under the Habitats Directive.

### Within Gorička krajina project conservation measures are being implemented for three grassland habitat types:

	Semi-natural dry grasslands and shrubland facies on calcareous substrates ( <i>Festuco-Brometalia</i> ) HT 6210(*)		Extensive lowland meadows ( <i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i> ) HT 6510		Molinia meadows on calcareous, peaty or clayey-silt-laden soils ( <i>Molinion caeruleae</i> ) HT 6410
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### Other four protected habitat types:

	<i>Luzulo-Fagetum</i> beech forests HT 9110		Illyrian oak-hornbeam forests ( <i>Erythronio-Carpinion</i> ) HT 91L0
	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) HT 91E0(*)		Oligo- to mesotrophic standing waters with amphibious communities of classes <i>Littorelletea uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i> HT 3130

### The Natura 2000 site Goričko is designated for the protection of 7 types of habitats and 39 species.



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