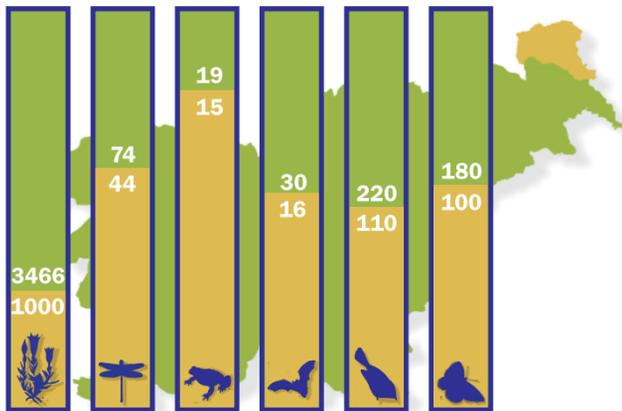


Goričko

Goričko denotes a picturesque landscape in the northeasternmost part of Slovenia. It is located in the transition zone between the Alps and the Pannonian Basin. It is rich in diverse habitats created by man through small-scale farming, forming a mosaic-like cultural landscape with small-scale meadows, fields, orchards, vineyards, mixed forests, hedges, solitary trees and natural streams. The most significant habitats are the meadows, which attract an abundance of wildlife. Purple meadow orchids make the dry

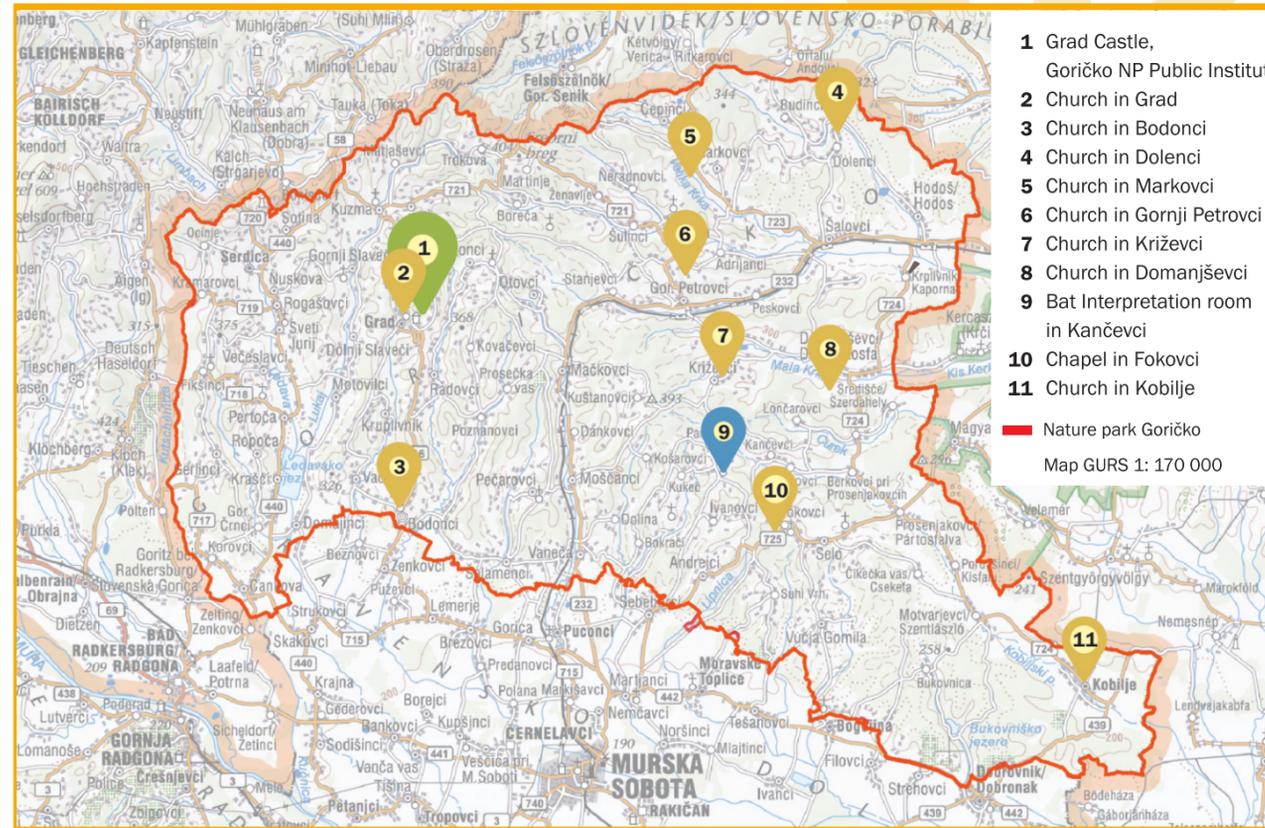
meadows distinctive, while the yellow daylily (*Hemerocallis lilioasphodelus*), the marsh gentian (*Gentiana pneumonanthe*) and the Siberian iris (*Iris sibirica*) grow in late-mown wet meadows. The wet meadows are also home to the endangered large copper (*Lycaena dispar*). Besides meadows, another very important wildlife habitat are high-trunk orchards. The Eurasian hoopoe (*Upupa epops*) and the common redstart (*Phoenicurus phoenicurus*) both nest in the cavities of high-trunk fruit trees. Streams and alluvial forests with the black alder (*Alnus*



Comparison: Number of known plant, dragonfly, amphibian, bat, bird and butterfly species in Slovenia and in Goričko

glutinosa) and the European ash (*Fraxinus excelsior*) are inhabited by the Eurasian otter (*Lutra lutra*), the Balkan goldenring (*Cordulegaster heros*) and the common kingfisher (*Alcedo atthis*). The sunny sides of forest edges in the northeastern part of Goričko are home to an endemic subspecies of the rose daphne (*Daphne cneorum* f. *arbusculoides*). In order to preserve its diversity of habitat and wildlife, the Republic of Slovenia declared Goričko a Nature Park in 2003. One year later it became a part of the European network of Natura 2000 sites.

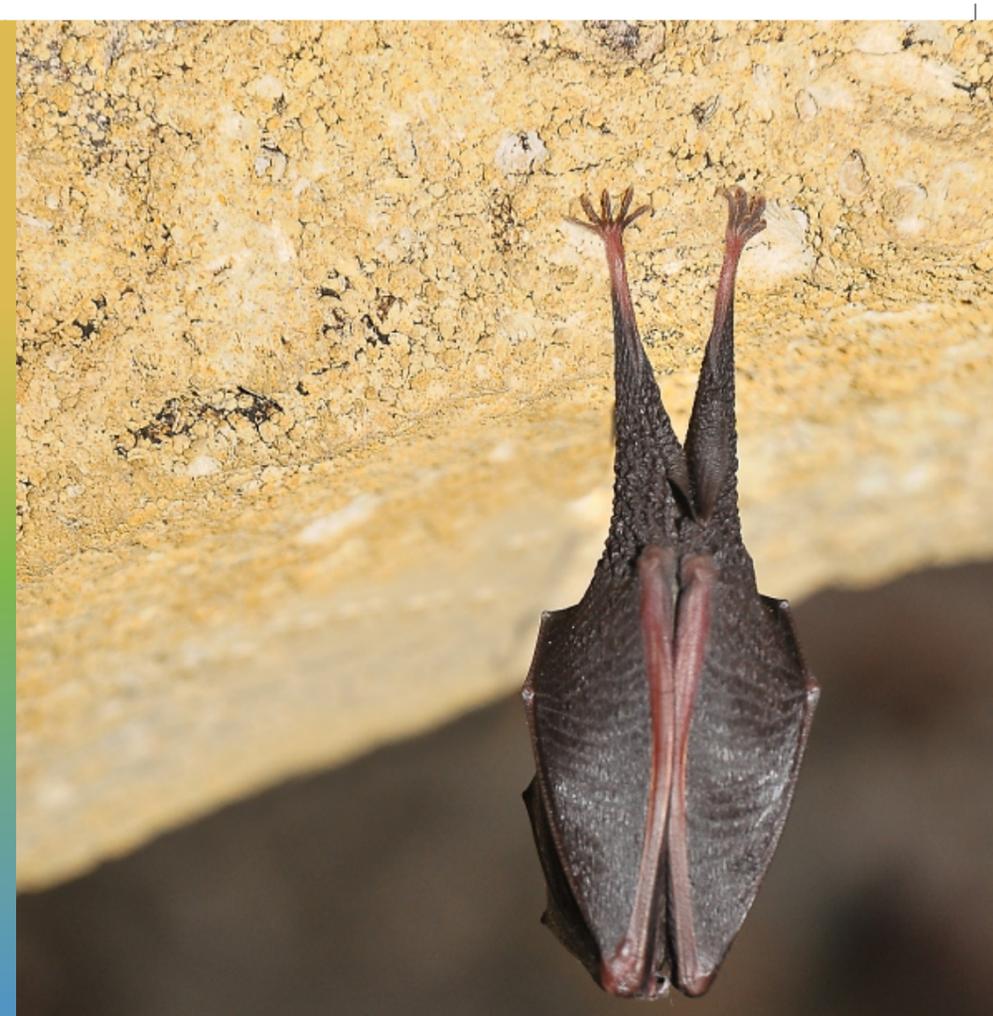
Important bat roots and locations of churches and a chapel with new bat-friendly lights



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND



The project **Gorička krajina** is funded by the Republic of Slovenia and the European Union under the European Regional Development Fund. **Cover photo:** The lesser horseshoe bat (K. Malačič) **Photos:** G. Domanjko, K. Malačič, P. Presetnik, G. Pintar **Proofreading:** Mamblin d.o.o. **Print:** DEMAGO d.o.o. **Published by:** Goričko NP Public Institute, Grad 191, 9264 Grad, Slovenia, 2019



BATS IN GORIČKO

www.park-goricko.org

The Goričko Landscape Story

Dear reader, welcome to Goričko, a lovely hilly area in the countryside, with meadows, forests, and scattered farms and villages. Goričko is one of the best-preserved traditional landscapes in Slovenia, with numerous endangered animals and plants. However, due to intensive farming and the abandonment of land in the past 20 years, this landscape has changed significantly, and with it also the conservation status of the Goričko wildlife. In order to improve the conservation status

Main project activities will include:

- restoration of 106 ha of abandoned grasslands,
- establishment of 20 ha of new high-trunk orchards,
- renewal of 20 ha of existing high-trunk orchards,
- establishment of 3 km of new hedgerows,
- conservation contract farming to improve grassland habitats and orchards for targeted habitat types and animals,
- reduction of light pollution and awareness raising.



Goričko landscape

of three grassland habitat types and the habitats of ten animal species, the Goričko Nature Park Public Institute, together with DOPPS (BirdLife Slovenia) and the Chamber of Agriculture and Forestry of Slovenia – Institute Murska Sobota, has started a 4-year-long project called Gorička krajina (“the Goričko landscape”), funded by the Republic of Slovenia and the European Union under the European Regional Development Fund. In the next four issues of the project’s newsletter, you will be able to read more about the rich biodiversity of Goričko, as well as the actions implemented to protect this biodiversity and the environment’s ecosystem services.

FACTS about the project

Duration: December 2017 – November 2021

- 🎯 **Targeted Natura 2000 habitat types:** FFH codes 6210, 6410 and 6510
- 🎯 **Targeted bird species:** the scops owl (*Otus scops*) and the woodlark (*Lullula arborea*)
- 🎯 **Target butterfly species:** the scarce large blue (*Phengaris teleus*), the dusky large blue (*Phengaris nausithous*) and the marsh fritillary (*Euphydryas aurinia*)
- 🎯 **Target bat species:** the Schreiber’s bent-winged bat (*Miniopterus schreibersii*), the greater mouse-eared bat (*Myotis myotis*) and the lesser horseshoe bat (*Rhinolophus hipposideros*)
- 🎯 **Target beetle species:** the hermit beetle (*Osmoderma eremita*) and the *Cucujus cinnaberinus*.

Bat roosts within Natura 2000 Goričko

Since the first discovery of bat roosts in Goričko, man-made structures have proved to be very important bat habitats in the area. In order to find new ones, 35 old and abandoned houses, farms, mills, churches and chapels were surveyed in 2018 as part of the Gorička krajina project. Bats or bat excrement (guano) were found in 13 churches and chapels and 3 old houses. Besides these buildings, the Grad castle has long been known to be a very important roosting habitat for bats within the Natura 2000 site



Lesser horseshoe bat females with offspring

Goričko. Since 1999, ten bat species (one third of all Slovenian species) have been found in this castle. In the spring, up to 50 Schreiber’s bent-winged bats use its cellars as a seasonal roosting site before they move, most probably to the church in Klösch (Austria), where they give birth to their young ones. They return in autumn to use the cellars as a roosting site and mating quarters before heading towards the Huda luknja cave near Velenje for hibernation. In 2014, biologists found a second nursery group of lesser horseshoe bats within the Natura 2000 site Goričko in the attic of the old school in Kančevci. Due to the poor condition

of the school roof, the Kančevci Parish, as the owner of the building, was asked to fix the roof in order to save the lesser horseshoe bat nursery colony and the entire building. After the roof renovation in March 2018, an agreement was signed between the owner and the Goričko Nature Park Public Institute to maintain favourable living conditions for the bat colony. The renovation proved to be successful as 49 specimens of the lesser horseshoe bat were counted in the school attic in August 2018.



Schreiber’s bent-winged bat and greater mouse-eared bats in the Grad castle

Bats in the Grad castle



- The lesser horseshoe bat** (*Rhinolophus hipposideros*) **4-7**
- The barbastelle** (*Barbastella barbastellus*) **7-10**
- The long-eared bat** (*Plecotus spp.*) **7-14**
- The common bent-wing bat** (*Miniopterus schreibersii*) **10-14**
- The serotine bat** (*Eptesicus serotinus*) **18-25**
- The greater mouse-eared bat** (*Myotis myotis*) **20-27**
- The common noctule** (*Nyctalus noctula*) **21-30**

New bat-friendly lights

Bats in Goričko have their daily roosts in belfries, church attics, the cellars and attics of abandoned buildings, as well as in the cavities of older trees. After sunset, bats emerge from their shelters to forage in the area. Biologists discovered that artificial light at night can significantly disrupt the bats’ natural behaviour. Because of light pollution, bats living in artificially lit belfries and church attics leave their roosts later in the evening and miss the



The chapel in Fokovci before (left photo) and after light replacement (right photo)

maximum abundance of moths, beetles and other night-active insects on which they prey, leading to females and their offspring getting less nutrition or even abandoning their building roosts. In order to reduce light pollution and improve bat habitats in the Natura 2000 site Goričko, old lights were replaced with new, bat-friendly lights in 8 churches and 1 chapel as part of the Gorička krajina project. All the selected churches and the chapel are roosts or even maternity roosts for the greater mouse-eared bat and the lesser horseshoe bat. New lights will reduce light pollution as they illuminate only facades and roofs.

Moreover, they will also cut down on the electricity costs of illumination by up to 90%. The new bat-friendly lights do not illuminate the bat emergence entrances on the churches. The lights have weaker light bulbs which emit warm yellow and white light, to the benefit of all nocturnal animals. With the installation of these new lights, the negative effects of light pollution will be reduced not only for nocturnal animals but also for humans.

FACTS about the bat-friendly lights

- 💡 13 new lights, which replaced 25 old lights on 8 churches and one chapel.
- 💡 The lights use max. 150 W light bulbs instead of 400 W light bulbs.
- 🕒 The lights will be switched off after 11 p.m.
- 🏠 Artificial light at night has adverse effects on human health.
- 🦉 Nocturnal insects are important pollinators and food for other rare animals, such as the scops owl.