

NATURE PARK ON THE EDGE OF THE CITY







LJU	IBLJANA MARSH NATURE PARK FACT FILE
Location	The Ljubljana Marsh Nature Park is located in the area of Ljubljansko barje, in Central Slovenia, in the southernmost part of the Ljubljana Basin.
Protected area total	13,505 ha or 135 km²
M ain characteristics	The Park covers Slovenia's largest complex of wet grasslands with hedges and forests, shrubs and watercourses. The area is well-known for its rich biodiversity, which is the result of specific cultivation practices (extensively-mowed meadows). Most of the protected, classified animal and plant species and habitat types are vitally dependent on the preservation of the wetland character of the Ljubljansko barje ecosystem and on the maintenance of extensively-managed meadows (rational fertilisation, late mowing).
Number of inhabitants in the Park	12,000
Land use	Over two thirds of the surface area is agricultural land, most of it taken up by meadows (46%), and fields and gardens (31%). Urban areas account for approximately 5% of the Park, and forests cover 9% of the area.
Ownership	Most of the land (83%) is privately-owned.
Establishment	The Park was founded with the Decree on the Ljubljana Marsh Nature Park (Official Gazette of RS, No. 12/08), and its managing body, Ljubljana Marsh Nature Park Public Institute, was established by a decision of the Government of the Republic of Slovenia (Official Gazette of RS, No. 55/2009).
Protection status	Extended protected area – Protected Landscape (IUCN Category V), two Ecologically Important Areas, a Natura 2000 site. It is a Special Protection Area (SPA) for 25 bird species according to the EU Birds Directive. This exceptional area of nature contains a large number of valuable natural features (59), natural monuments (9), nature reserves (6), numerous endangered wildlife plant (1) and animal (27) species with an international protection status, their habitats and habitat types (7), as well as many cultural values and a unique mosaic landscape, the product of long-term interaction between man and nature.
Protection zones in the Park	The primary purpose of the first protection zone (44.5km² or 33% of the total area) is to protect and conserve valuable natural features, to preserve the favourable status of plant and animal species and their habitats, and to safeguard adapted agricultural practices. The second protection zone (26.3km² or 19% of the total area) is important for nature conservation and intended to protect valuable natural features, biodiversity and landscape diversity, as well as sustainable forms of both agriculture and the use of other natural resources in a way that minimises environmental impact. The primary purpose of the third protection zone (64.2km² or 48% of the total area) is to conserve landscape diversity and promote sustainable development.
International status	The Park contains two groups of prehistoric pile dwellings, which are listed as UNESCO World Heritage Sites.
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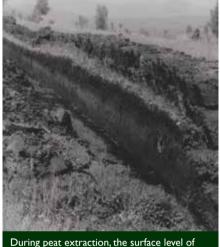


The landscape of Ljubljansko barje, the Ljubljana Marsh, is the result of thousands of years of human activity and intervention.



The first settlers of the present-day Liubljansko barje were pile dwellers. Several thousand years ago they built their dwellings along the edge of the disappearing lake. Pile dwellers were the first farmers, potters, metal workers, and wheelwrights in this area. When the lake developed into a wetland, people moved to higher ground on the edge of the Ljubljansko barie plain. The first human interventions into the central marsh areas date back to the Roman period, to the time when the road between Babna Gorica and Ig was built. However, the landscape did not undergo any radical man-made changes until the rule of the Holy Roman Empress, Maria Theresa of Austria, who wished to turn the marsh plain into a granary. Settlement of the central part of Ljubljansko barje began after the construction of the Gruber Channel and Ižanska Street. Despite the completion of the channel, the ground remained wet and soft, and houses had to be constructed on wooden piles.

Farming in the marsh area was equally demanding. Drainage ditches had to be dug along the edges of meadows, fields and paths. The inhabitants of the marsh soon realised that the surface layer of the ground, which was peat, burnt well. At first, peat was cut and dried to heat people's dwellings, but in the middle of the 19th century large-scale peat cutting began. Farming was soon replaced by peat extraction, and dried peat was sold in Ljubljana and neighbouring towns for fuel. Peat deposits which had taken several thousand years to form were depleted in just over one hundred years.



During peat extraction, the surface level of Ljubljansko barje decreased by about two metres, or even more in certain places.

Intense peat extraction lowered the surface of Ljubljansko barje considerably, and devastating flooding returned to the area.

As a result, many inhabitants emigrated, while others sought jobs in Ljubljana, or went back to farming. Farmers allocated a considerable part of the Ljubljansko barje plain to meadows, and cultivated

fields to grow their own food, selling surplus vegetables and milk in Ljubljana. Land plots were lined with alder trees, which absorbed excess water from the ground and provided protection against strong winds. These farming practices created a rich mosaic of meadows, fields and forests, intersected with alder hedges and a dense network of watercourses.

Despite all the interventions, the floor of the marsh has remained soft and wet. and buildings in its central part still need to be constructed on piles. Jože Plečnik's Church of St. Michael in Črna vas is living proof that majestic architecture can be built on marshland. However, recent interventions in the area show that man no longer understands the language of this natural environment, as was brutally evident in the devastating floods that hit the area in 2010. Farmers are having to cope with worsening droughts and flooding, and water managers warn of the deteriorating quality and limited quantity of drinking water. It is now time that we again learn the language of Ljubljansko barje.





The Nature Park was established to preserve the mosaic-patterned landscape which is a cradle of diversity of plant and animal species.

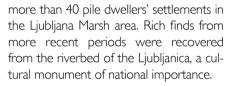


Meadows, hedges, small forests, and the dense network of watercourses are home to a wide variety of animal and plant species, at its most diverse in wet meadows. Easter is greeted in Ljubljansko barje with purple blossoms of Snake's-head Fritillaries (Fritillaria meleagris). These are soon replaced by yellow Marsh Marigolds (Caltha palustris), and in summer, meadows are brought to life by gentle pink Valerian (Valeriana officinalis L), creamy-white Meadowsweet (Filipendula ulmaria), and Purple Loosestrife (Lythrum salicaria). In the past, children picked and sold Valerian, Meadowsweet and other herbs. During summer months, meadows that are mowed later in the summer, and have not been fertilised, are adorned with wild orchids, Cottongrass (Eriophorum sp.) and Great Burnets (Sanguisorba officinalis). Nature's bounty is further enhanced with butterflies such as False Ringlet (Coenonympha oedippus), Large Copper (Lycaena dispar), and Scarce Large Blue (Maculinea teleius). Wet meadows are home to many grassland bird species: the Corncrake (Crex crex), Eurasian Curlew (Numenius arquata), and Whinchat (Saxicola rubetam). Dragonflies and amphibians live near the numerous palustrine water bodies, while otters (Lutra lutra) prefer clear watercourses.

Wetland drainage and the resulting loss of habitat have pushed most of the above to the list of endangered species, already extinct in certain parts of Europe.



Ljubljansko barje is not only important for animals and plants. It is a natural reservoir of excess (flood) water, nature's cooling and cleaning device, and a treasure chest of rich cultural heritage. In summer, water evaporates from the surface, cooling the air. Many organic remains of pile dwellers' settlements have been preserved in parts where high groundwater levels prevented decomposition of organic matter. In fact, archaeologists have uncovered finds from



In the southern part of Ljubljansko barje, where the hills meet the floodplain, rivers have deposited enormous quantities of gravel, creating alluvial fans. Hidden deep below their surface are staple reserves of drinking water. The quantity of water the Brest Water Pumping Station at Iški vršaj pumps into the water supply system every second equals the daily water consumption of an adult. Numerous treasures lie cradled in the heart of Ljubljansko barje, many not visible at first sight. In order to help people understand and appreciate this environment, Ljubljana Marsh Nature Park Public Institute has worked with the local inhabitants, researchers and the municipalities to create a series of theme trails: the Corncrake Nature Trail, Bevke Nature Trail, and the Iška River Nature Trail.







This marshy plain has always had a strong impact on Slovenia's capital, Ljubljana.



Today the area of Ljubljansko barje extends into seven municipalities: Ljubljana, Vrhnika, Brezovica, Ig, Škofljica, Borovnica, and Log-Dragomer. Throughout history the number and borders of the municipalities in this area have changed, and the connection that can be traced farthest back is that between Ljubljansko barje and Ljubljana, the capital of Slovenia. Etymologically, Ljubljana might have derived its name from the German word Laibach, denoting the Ljubljanica river. An alternative explanation, however, says that the name may have originated from an old Bavarian word labach, which denotes a marshy landscape. From the Roman period, up to the time of the construction of the Southern Railway, the Ljubljanica was the main transport route between the Roman cities of Emona and Nauport. This is evident from rich archaeological finds, in particular two excellently preserved Roman ships. In the Middle Ages this transport link grew even further in importance, since the town was located next to the river. At the time the riverbed of the Ljubljanica was much wider and shallower, before the marsh was drained and the riverbed deepened, the Ljubljanica had often crept up to the city gate, and on several occasions even to the windows of the houses in Ljubljana.

The period between the 18th and the 20th centuries saw many large-scale drainage projects: the construction of the Gruber

Channel, deepening of the Ljubljanica riverbed, and digging out of a network of drainage channels at Ljubljansko barje. People no longer feared flooding when they saw the water draining away. They believed that the issue of flooding had been resolved, and new houses were built in the Ljubljana Marsh area. However, once again, the devastating floods returned.

In the 20th century a highway ring road was built, dividing the marsh areas between the wetland part commonly known as the Barje and the city part. Since the ring road also serves as a storage reservoir for floodwater, the city part of the original marsh was built up very quickly. Merged with the city core, the area was no longer considered a marsh. The urbanisation of the entire Liubliansko



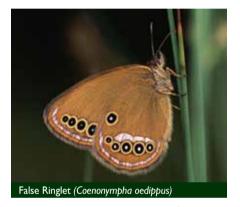
barje also continues in the 21st century. More houses, roads and intense pumping of drinking water have accelerated the sinking of the marsh floor, causing flood water to run off more slowly. The effects of human encroachment upon the environment are not necessarily seen immediately, but sooner or later they manifest themselves.

Despite the drainage measures and construction of the ring road, devastating flooding hit Ljubljansko barje again in 2010, its severity so extreme that meteorologists said it could only happen 'once in a hundred years'. However, the floods of 2013 were no less devastating, although only three years had passed between the two disasters.





Ljubljansko barje has almost entirely lost its original marsh character.



Until the second half of the 19th century, the area of Liubliansko barje was commonly referred to as the Ljubljana Swamp (močvirje), whereas local inhabitants called it mah (moss), morost (morass), or blato (mud). In his 1880 report on land drainage in the area, Fran Levstik used the term barie for the first time because he had heard old inhabitants of Ig say they were going to borje (bor is Slovene for pine), to express that the swamp was becoming overgrown with pine trees. The term barje is still used today although most of the original wetland has disappeared. In terms of natural science, barje (bog being the closest English equivalent) means a wetland with characteristic bog vegetation, where peat forms in water-logged areas. Peat is a layer of dead vegetation which does not decompose completely due to lack of oxygen. Instead, it accumulates, growing increasingly thicker.

In areas where groundwater discharges to the surface, fens are formed. Fen vegetation includes sedges and mosses, along with some reeds, rushes, grasses, and wild orchids. Several grasses and sedges host False Ringlet larvae which feed on their leaves until autumn. False Ringlets can therefore only thrive in fens that are not mowed until autumn. However, because of draining, peat cutting, early mowing and fertilisation, fens now cover only a few hectares of Ljubljansko barje.





When the layer of plant residue grows so thick that it can no longer be supplied by groundwater, a raised bog is formed. These poor growth sites are home to peat mosses (*Sphagnum spp.*) and several carnivorous plants. Peat mosses can absorb up to 20 times their weight in water, which helps

their only source of water. Famous for their great water-absorbing qualities, peat mosses were even used to make babies' nappies. The most prominent among the carnivorous plants is the Round-leaved Sundew (Drosera rotundifolia). The name refers to the plant's round-shaped leaves with glandular tentacles that produce mucilage glistening in droplets on the leaf surface. Tiny insects mistake these gluey drops for dew or floral honey, and get stuck on the plant. Drainage measures and peat cutting have destroyed the raised bogs of Ljubljansko barje. Only a few small-sized areas featuring transitional mires (Mali plac near Vrhnika)

or overgrown raised bogs (Goriški mah and

them sustain long periods with no rain,





HOW CAN I HELP PRESERVE THE LJUBLJANA MARSH?

More knowledge

An important step in the preservation of Ljubljansko barje is to improve knowledge about the area. The more that is known about the marsh plain and its specifics, the more environmentally responsible the area's inhabitants, farmers and visitors can be. Further information about the park is published at www.ljubljanskobarje.si and in various printed publications, and offered on the guided tours, events and exhibitions held by the Nature Park.



Volunteer work

Management of a protected area can be considerably facilitated through the provision of adequate information about its natural and cultural heritage. Therefore, please report any sightings of typical Ljubljansko barje plant and animal species, or any other feature of relevance, to <code>info@ljubljanskobarje.si</code>. Descriptions of typical flora and fauna are published on the Park's website under the heading 'Išče se'. Volunteers can also participate in bird surveys and other volunteer activities organised by the Park.



Farming in the area of the Nature Park must comply with the provisions of the Decree on the Ljubljana Marsh Nature Park (Uredba o Krajinskem parku Ljubljansko barje), and particular attention is paid to protecting the existing meadows and their inhabitants (late mowing and rational use of fertilisers). Preservation of the mosaic landscape is vital to the conservation of the area's flora and fauna.

Responsible behaviour

Nature Park inhabitants and visitors should keep to the established paths, take care not to disturb wildlife and plants, keep their dogs on the lead, and



collect dog faeces. All waste, including excavated earth and topsoil materials, must be removed to a landfill for disposal.

When visiting the Nature Park, make sure you buy some local produce and products. The list of the suppliers is available on the Park's website.

Questions, comments or reports of any activity which may have a negative impact on the conservation status of Ljubljansko barje can be e-mailed at nadzornik@ljubljanskobarje.si.





VISITING THE NATURE PARK

When?

In summer, shade is a rare commodity at Ljubljansko barje, and early morning or late afternoon visits are recommended. In the midday heat, visitors may prefer the edge of the marsh where there are more forests and water. During spring and autumn months, water levels should be checked before each visit, as certain roads or nature trails might be flooded. From autumn to spring, visitors should also consider the increased risk of early morning fog which occasionally hovers over the marsh for most of the morning.

Where?

We advise you to start your visit at one of the Park's nature trails: the Corncrake Nature Trail, Bevke Nature Trail, or the Iška River Nature Trail. Hire a professional park guide for an in-depth experience of the Park. If you prefer to do some exploring on your own, keep to the established paths, and bear in mind that Ljubljansko barje is a maze of several thousand kilometres of channels which may easily bring your exploration to an abrupt end.

How?

Come by train or hop on one of the city buses that connect most of the towns and villages within the Park. Cyclists should consult the visitor's map of the Park in advance for possible access points and recommended bicycle routes. The best, and most environmentally-friendly, way to explore the Park is on foot, by bike, or by a rowing boat, kayak or canoe.

Organised groups?

Visitors are encouraged to come in groups of a maximum of 30 people to ensure everyone can hear the guide clearly. The number of persons on the Corncrake Nature Trail is limited to 15 at any one time.

Recommended equipment?

The visitor's map will help you find your way in the Park. Make sure you wear comfortable hiking shoes and appropriate clothes for the weather conditions. In summer months bring plenty of water and use suitable protection from the sun and insects.

Hungry or thirsty?

For more information about food and other services available in the Park, please go to www.ljubljanskobarje.si.













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