LJUBLJANSKO BARJE NATURE PARK

We’re truly blessed. It would be hard to find another national capital adjacent to a landscape as wonderful and unique as the Ljubljana Marsh (Ljubljansko barje in Slovenian).

People have tried to subjugate it many times, but they’ve never succeeded. Thank goodness! It protects us from floods, and it offers us fresh air, healthy drinking water, and many recreational opportunities. **Ljubljansko barje Nature Park** was established in 2008 to make sure the stays the way it is.

At first glance, the Ljubljana Marsh might seem dull and monotonous. But soon you’ll see that it conceals amazing treasures. You just have to get to know it up close!

www.ljubljanskobarje.si

The Ljubljana Marsh is a mosaic of meadows, fields, untilled land between fields, watercourses, and drainage ditches, with a network of field paths among them.

The tree frog (**Hyla arborea**) is clever at hiding from predators, but like most amphibians it’s very vulnerable to the pollution caused by human activity.

The sundew (**Drosera rotundifolia**) is a small, very rare plant found in active peatlands—but it has a big appetite. Its weak roots don’t absorb nutrients from the soil, and so it has adapted to feed on insects.

The great egret (**Casmerodius albus**) has been overwintering in the Ljubljana Marsh with increasing frequency, enlivening the gray winters in the marsh.

The Ljubljana Marsh is a natural protected area. During your visit, be considerate and respectful to our hosts: the people, the plants and animals, and their natural habitats. If you’re not too loud, you’ll be able to hear hundreds of voices of nature. If you take nothing but pictures and leave nothing but footprints, many others will also be able to enjoy this natural treasure.
THE IŠKA RIVER MEANDER NATURE TRAIL

The Iška is a river with three faces. It flows on an exciting journey through the wild Iška Gorge (Iški vintgar in Slovenian), and then across the fertile Iška Fan and through the swampy Ljubljana Marsh. Its unique and secretive character has attracted the attention of ranks of scholars and the curious. Are you one of them? Do you know when and why people “tamed” the river and what can happen when the Iška River’s mighty power rises and falls? Would you like to know why the peat formed and how thick its layers were? How many Olympic-size pools of drinking water do you think the Brest Pumping Station draws every day? Finally, what’s a meander, and how many do you think you’ll see?

Join our mascot Salameander on a trip along the magical Iška and get to know what it was like in the past and how it is now! The trail is 13 km long. Because of its length and the flat land it runs through, it’s best to bicycle the trail, which takes about two and a half hours. There are eleven signs along the trail, with attractive illustrations and maps.

CONTEST

There’s also a contest at the stations along the trail. Answer each question correctly to get a letter of the secret word. Then e-mail it to us at www.ljubljanskobarje.si/en/tourism/the-iska-trail, and we’ll enter your name in a drawing for a nice prize!

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THE WILD GORGE

The Iška Gorge is a picturesque gorge between Mount Krim and Mount Mokrec. But do you know what a gorge is? It's a very narrow, deep V-shaped valley with steep slopes. Since the Iška Gorge has almost vertical slopes in some places along the gorge, some call it a “vintgar”. It cuts through thick layers of dolomite and limestone, and in some places it’s over 400 m deep. It formed because of the rapid sinking of the nearby Ljubljana Marsh. The big differences in elevation caused the Iška to cut material away faster. During colder time periods the slopes probably had less vegetation, and so the Iška was able to carry material away more easily and deposit it in the Iška Fan.

Only a few gorges in Slovenia are referred to as “vintgars”. The first one was the Vintgar Gorge at Bled, which was named after the nearby hamlet of Vintgar. In 1953 Rudolf Badjura, a scholar of folk expressions, wrote that “one can’t use the Slovenian word vintgar to refer to just any gorge, but exclusively for the romantic river gorge along the Radovna River between Hom Hill and Dobrava Hill near Bled.” Even so, the Slovenian name Iški vintgar was already established before the Second World War.

The Iška Gorge was formed by the river quickly cutting through the rocky substratum. Here’s a three-step simplification of how it formed.

Look at the map to see how diverse the Iška watershed is. Do you recognize the deeply cut valley of the Iška Gorge?

CONTEST

What do we call a gorge with vertical walls in Slovenian?

- glacial valley C
- vintgar: N
- marsh: S

SECRET WORD:

The narrowest part of the Iška Gorge is only wide enough for the river.
THE SECRETS OF THE IŠKA CATCHMENT AREA

There’s very little running surface water on the karst plateau above the Iška River because precipitation disappears into the cracked, porous ground. It has many karst features such as caves and sinkholes. Because of the lack of surface water and steep slopes small villages predominate in this area. The surrounding karst plateaus have large forests, where beech and fir predominate, mixed with spruce and sycamore maple. The shady slopes of the Iška Gorge are an important natural habitat for Austrian pine. The forest on the steepest and most exposed slopes is protected to prevent soil erosion.

You’ve maybe heard of the Auersperg noble family from nearby Turjak Castle. They were among the most powerful landowners in Carniola. From 1260 onwards, they also owned most of the forests in the countryside around the Iška for nearly six hundred years. With the abolition of serfdom in 1848 and the later loss of easement rights, over the next few decades they lost a full four-fifths of their forests.

Look at the simplified diagram of where the most common trees grow. This mostly depends on elevation, inclination, and sun exposure, as well as soil and water.

A simplified depiction of the karst surface with subterranean water flow.

Many karst features mark the rugged forested land above the Iška.
THE IŠKA “POWER LINE”

In the past, people knew a lot about how to use water energy. Flour mills and sawmills developed in the watershed of the Iška River because of the water’s power and volume. Between the river’s source and Iška vas there were 52 mills and sawmills along the Iška and its tributaries. This made the Iška a powerhouse—a true “power line.” The structures generally stood alongside channels dug or carved by hand alongside the main bed of the river, into which the water could be diverted. These channels were called millraces, and they powered many sawmills and some flour mills. As electrical power became more widespread in the twentieth century, water-powered sawmills and mills started being abandoned. Their once widespread presence is attested to by many ruins, which are gradually being overgrown.

The steep slopes in the countryside around the Iška and its tributaries are covered in forest. Transporting timber was a special challenge. It was transported down wooden chutes to the Iška. There it was stacked in a holding area and, when there was a lot of rain, the high water floated it downstream. Driving logs was difficult and dangerous work that also led to accidents and hypothermia.

In the fifteenth century, Leonardo da Vinci designed a new type of water-driven sawmill. It spread to Slovenia through the mountainous countryside beyond Venice, and so it was referred to as the Venice frame saw.

The Iška is subject to flash floods, and so sawmills and mills were safer along millraces. This picture shows one such channel, or millrace, where the last working water-driven sawmill in the wider area is located. The picture shows the entire course of the millrace and structures in the village of Iška.

Individual sawmills and flour mills along the Iška and its tributaries were generally owned by several farms from the same village.

WHAT IS A CHANNEL THAT SUPPLIES WATER TO A SAWMILL CALLED?

- sawrace: U
- herdrace: E
- millrace: R

SECRET WORD: X

CONTEST
PRESENTING THE IŠKA RIVER

The Iška River is 29 km long with its source on the edge of the Bloke Plateau. Its course falls nearly 500 vertical meters, of which 400 m are in the first 17 km, down to the Iška Gorge Lodge (Dom v Iškem vintgarju in Slovenian). In its lower course, where it cuts through the southern part of the Ljubljana Marsh, it flows more slowly until it empties into the Ljubljanica River. On the plain the natural riverbed originally twisted into many meanders and was much longer than it is today, when it follows a considerably straightened channel. The Iška is prone to flash floods because its volume quickly increases dramatically during heavy rains. The river is usually highest in the fall, and lowest in the summer.

In fall 2010 the Iška attracted considerable media attention. Soon after it spilled over its banks and flooded, it mysteriously disappeared into the ground at Iška vas. However, this phenomenon isn’t unusual for the Iška because it was already described by Valvasor (1689) and Hochenwart (1838). The river disappears when the rushing water washes small debris out of its bed that prevented it from disappearing into the ground.

CONTEST

What affects a river with big changes in its water level?

- flash floods: A
- tributaries: O
- sinkholes: U

SECRET WORD: X

In streams prone to flash floods the water level varies a lot. These photos speak volumes!
A FAN BUILT UP

Have you noticed that the landscape around you is different than in the Iška Gorge or in the Ljubljana Marsh near the village of Lipe? You’re standing on a fan—a fan-shaped accumulation of alluvial deposits. It was piled up by the river, which loses power as it enters the plain from the gorge, and so it starts to deposit material. It gradually deposits so much gravel that it fills up its own riverbed, and so then it floods and seeks a new bed. While looking for the ideal bed, the Iška River has constantly changed its course—like a dragon wagging its tail left and right. In the past few centuries people have tried to tame this dragon, and that’s probably why they pushed it under the foothills of Mount Krim. Its naturally twisting course, full of meanders, has been replaced by a rather straight river channel.

The ground that you’re standing on is material that the Iška carved out in the Iška Gorge and brought here! Because of its gravelly foundation, very fertile soil developed on the Iška Fan. In the past, people didn’t want to waste the valuable fields and meadows in the middle of the fan, and so they built their houses on the edge of the fan. There are also many springs there, which were an important local source of drinking water in the past.

CONTEST

What shape does a fan have?  
- spreading: M  
- narrow: K  
- hilly: Z

SECRET WORD:
THE LUXURY OF DRINKING WATER

The Iška Fan is an important source of drinking water. Public drinking water is drawn at the Brest Pumping Station, one of five pumping stations in the Ljubljana water network. The other four are along the Sava River, close to the city. The Brest Pumping Station supplies about 10% of Ljubljana’s drinking water and also supplies most of the nearby settlements. The large number of private wells in the settlements on the edge of the fan shows just how much water is present there. The groundwater in the fan region has two levels. The upper level is supplied by the Iška River and precipitation, and the lower level is mostly supplied belowground from the karst countryside.

People use an enormous amount of drinking water every day. Can you believe that the Brest Pumping Station draws 150 to 180 liters of water per second? That’s as much as a single person uses in one day. To get an idea of how much water is being pumped, imagine an Olympic-size pool (50 × 25 × 2 m). To supply Ljubljana and its surroundings, about forty Olympic-size pools of drinking water are pumped every day, to which the Brest Pumping Station contributes a bit more than four pools.

The many private wells on the Iška Fan were an important source of drinking water in the past. In 1981 they were joined by the Brest Pumping Station, which is increasingly replacing the use of private wells in the area.
INTO THE CANAL!

When the river leaves the Iška Gorge, its gradient decreases and it loses more and more power. This is why the Iška River used to twist through many meanders. Look from the bridge and see how straight its lower course is now! Why? People have always tried to subordinate nature, especially in the last few centuries. After it leaves the gorge, people shortened its course primarily by cutting off the meanders. The Auersperg noble family, who owned extensive forests in the hilly countryside around the Iška, straightened the bed of the Iška even more just before 1800 in order to drive logs, and even shifted its lower course. Since then the river has no longer meandered to the east, flowing into the Ižica River, but now it flows straight north, where it empties into the Ljubljanica River.

The biggest change to the Iška riverbed was when its course was changed between 1795 and 1798. Look at the map to see how it used to flow east and empty into the Ižica.

How quickly things change! The Auerspergs’ idea of channelizing the Iška through the Ljubljana Marsh for driving logs only lasted a few decades. The construction of the road from Ljubljana to Črna vas in 1827 and the road to Ig in 1829 meant the end of this activity on the Iška. Nonetheless, its course still remains the same today.

Since the Iška was rerouted, it no longer floods the fan as often as it used to. The Kuhar wayside shrine was erected in thanksgiving in the nearby village of Staje.

Which family did the owners of the forest around the Iška belong to?

- Codelli: G
- Auersperg: E
- Kozler: P

SECRET WORD:
THE BOG

Did you know that peat is a special feature of bogs? This is a layer of dead parts of wetland plants that, because of the water and absence of oxygen, don’t decay but continually accumulate. Before the beginning of major drainage projects in the second half of the eighteenth century, the Ljubljana Marsh, also colloquially known as the Bog (Morost in Slovenian), was almost completely covered with peat. This was usually up to 2 m deep, but in places the peat deposits were an unbelievable 6 m deep! Peat soil isn’t suitable for agriculture, but the local people did use the peat to heat their homes. For over a century, cutting and burning peat was typical in the Ljubljana Marsh, even though peat has a low energy content. The local people, also jokingly called as “Bog Dwellers” (Morostarji in Slovenian), weren’t enthusiastic about large-scale peat exploitation.

Ljubljana residents burned peat for heat in the nineteenth century, and it was used to power equipment at the sugar refinery, the tobacco factory, and what is now the Union Brewery. When it was founded, it was named the Kosler Brewery and was owned by the Kozler family, who also owned extensive peatland in the Ljubljana Marsh, including near where you’re standing now.

Even before the Second World War, the geographer Anton Melik created a map of the spatial distribution of peat and its depth in the Ljubljana Marsh in 1881.
In the Ljubljana Marsh, floods are a completely ordinary occurrence, especially in the fall and winter. Enormous amounts of water flow into the Ljubljanica River via the Iška and other tributaries. When the rivers reach the Ljubljana Marsh they can’t flow away quickly because of the level terrain, and so they often overflow their banks. The people in the swampy Ljubljana Marsh felt that it had no particular value, and so they started draining it. In the mid-eighteenth century, Habsburg Empress Maria Theresa even planned to turn it into the monarchy’s breadbasket! But it soon turned out that the Ljubljana Marsh wasn’t very suitable for settlement and producing food. Efforts to drain the water from it were never entirely successful.

Before the drainage projects, there wasn’t a single house in the area you’re standing in! The villages of Črna vas and Lipe weren’t founded until 1830. They are some of the youngest in Slovenia—and they aren’t safe from flooding. Črna vas is where the geographer Anton Melik (1890–1966) was born; he was one of the greatest Slovenian geographers and among the first to study the Ljubljana Marsh. During floods he even used to travel to Ljubljana by boat!

The photo shows the effects of the flood in fall 2010, when many houses were flooded. Except for houses and trees, only corn could be seen above the water.

CONTEST

What did Maria Theresa want to turn the Ljubljana Marsh into?

- a lake: H
- a ski resort: F
- a breadbasket: D

SECRET WORD: X

Look how far the floodwater can reach! Houses in Črna vas and Lipe—the only settlements in the flat central part of the Ljubljana Marsh—are flooded most often.