47
Birži Secular stone

Secular stone

The height of the stone is 2.8 m, the circumference – 12.8 m, the volume – 22 m^3, the weight – about 57 t. Until 1980, only a small part of the secular stone was visible. It was in a ravine, surrounded by trees, bushes and a pile of stones. When in the 1980s, land reclamation works were carried out, the pile of stones was removed, the field was levelled, but the Birži Secular stone remained. In 1983, efforts were made to move this giant to the centre of Birži in Sala Rural Territory. When the ground was excavated, the sheer size of the stone was revealed, making it impossible to move and the idea remained unrealised.

There is a well-equipped recreation area next to the stone, located in a field. The stone can also be viewed from the road, from where it is clearly visible. Suitable for nature lovers or motorsport enthusiasts because of its proximity to the race track. It is also possible to plan a visit of the secular stone when going to a competition.

Birži, Sala Rural Territory, Jēkabpils Municipality

visit.jekabpils.lv

56.407026, 25.797232

Jēkabpils – 16 km, Viesīte – 18 km

48
Sūnas (Moss) pond

Pond with springs

There are 12 springs starting in the pond, the temperature is no higher than 5 to 7 degrees, and it has no bottom but white, bubbling sand. The Baron family once cultivated various algae in the pond. It is located in Zasa Manor Park, which is a specially protected object of local importance and consists of a system of ponds and islets, which is why the park has several bridges. In the 18th century, the park was created as a landscape park by the cascade of mill ponds on the River Zasa, and is equipped with benches and resting places. An excellent place for relaxation, with a wide range of entertainment options.

Zasa Manor Park, Zasa Rural Territory, Jēkabpils Municipality

visit.jekabpils.lv

56.29475, 25.97468

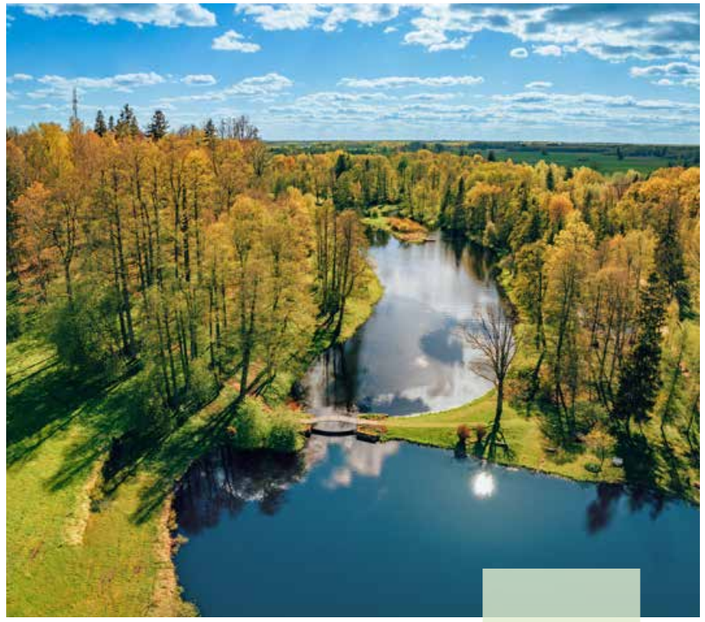
Aknīste – 30 km, Jēkabpils – 35 km

49
Ancient Selonian spring

Spring

The Ancient Selonian Sacred spring is located in Zasa Manor Park. The spring flows eastwards. The spring was used by Ancient Selonians who lived here in the 5th-7th centuries.

The 18th-century park, created as a landscape park by the cascade of mill ponds on the River Zasa, is a specially protected object of local importance. The park is well equipped with bridges, benches and seating areas. There is also the Sūnu pond and other sights in the park of Zasas Manor.



Zasa Manor Park

Zasa Manor park, Zasa Rural Territory, Jēkabpils Municipality
visit.jekabpils.lv
56.294956, 25.975832
Aknīste – 30 km, Jēkabpils – 35 km

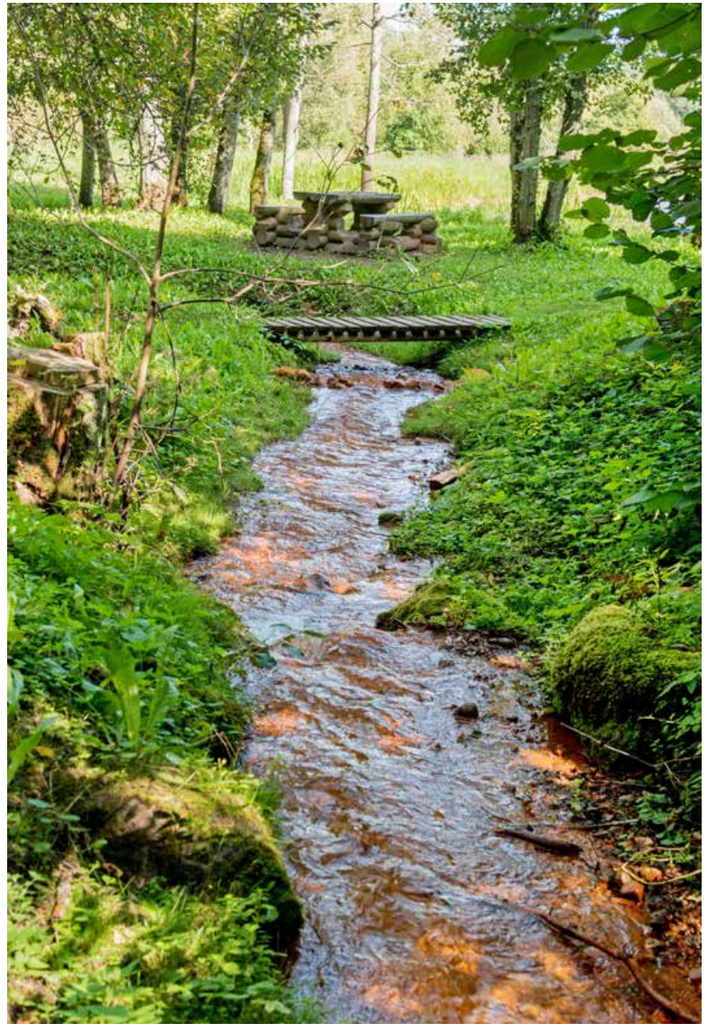
The spring flows eastwards, and ancient Latvians believed that such springs were healing, especially on the day of Māra – 25 March. Drinking the water and washing the face with it makes women more beautiful and healthy and men healthier and stronger.

50
Saltupe Sacred spring

Spring

The sacred spring flows out of the lower part of the southern slope of the River Dienvidsusēja valley and is so rich in water that it forms a small river – Saltupe, which, after about 100 metres, flows into the River Dienvidsusēja.
As it filters through the Devonian sedimentary rocks, the spring's groundwater has been enriched with iron, which makes its bed bright orange. In the bed of the Saltupe sacred spring, 3.5 m from the largest source of the spring, there is a stone with a natural, gently sloping depression in its surface. It is small in size, but presumably in its original location. There is a story that it is an ancient cult stone on which offerings were placed. The spring is easily accessible and well signposted.

Torņa Street, Aknīste, Jēkabpils Municipality
visit.jekabpils.lv
56.171686, 25.735198
Gārsene – 11 km, Jēkabpils – 46 km, Viesīte – 29 km



51
Dienvidsusēja valley

River valley

Labieši,
Gārsene Rural Territory,
Jēkabpils Municipality

visit.jekabpils.lv

56.0994, 25.8098

Jēkabpils – 55 km,
Aknīste – 8 km

It is located in the Gārsene Nature Paths area, where the paths along the valley are about 7 km long. It offers an unusually meandering river, steep cliffs, giant trees and secular stones. The paths start at Gārsene Castle, where you can also see and walk through the 4 ha former manor park. The nature paths were historically created simultaneously with the construction of the castle complex, and the entrance to the paths can be found at the artificially created, cobblestone-lined Baron's swimming pond.
At the beginning of the path there is also an ash tree avenue, which was once planted by the Baron's gardener, while in the middle of the path visitors can sit on the Baron's chair – a stone with a man-made seat in it.
There are well-maintained walking and cognitive paths of various lengths in Gārsene forest – Cultural and Historical Path, Green Path, Barons walking path, Staburags path, with resting and campfire places. In total, there are more than 40 unique natural objects – both stones and trees – as well as the most significant architectural and cultural secular stones of the municipality.
From May 2016, there is also the Twilight hour path, which is especially suitable for inquisitive little travellers. The path tells the story of the lives of Gnomes in the forest and is based on stories from the Great Gnome Encyclopaedia. The trail can be either cycled or peacefully walked. There are several well-maintained recreation areas and bridges; it will also be interesting for children.

Dienvidsusēja valley

52
Romza Secular stone

Secular stone

Ancene, Asares pagasts,
Jēkabpils novads

visit.jekabpils.lv

56.102000, 26.005000

Aknīste – 20 km,
Gārsene – 17 km

The Romza secular stone is as yet unweighed and unexplored, but still attractive for its unexplained history. The question still remains – is the stone cracked, broken, brought here or has it been here for ages? The stone and its north-western fragment were most probably one whole stone, but split or broken (the forged areas are not visible). The length of most of it is 3.4 m, width 2.3 m and height 2.4 m. The two parts have a total length of 5.9 m and a width of 2.6 m. The two parts have volumes of 10 and 6 m^3 respectively. Large crystalline and giant crystalline red granite.

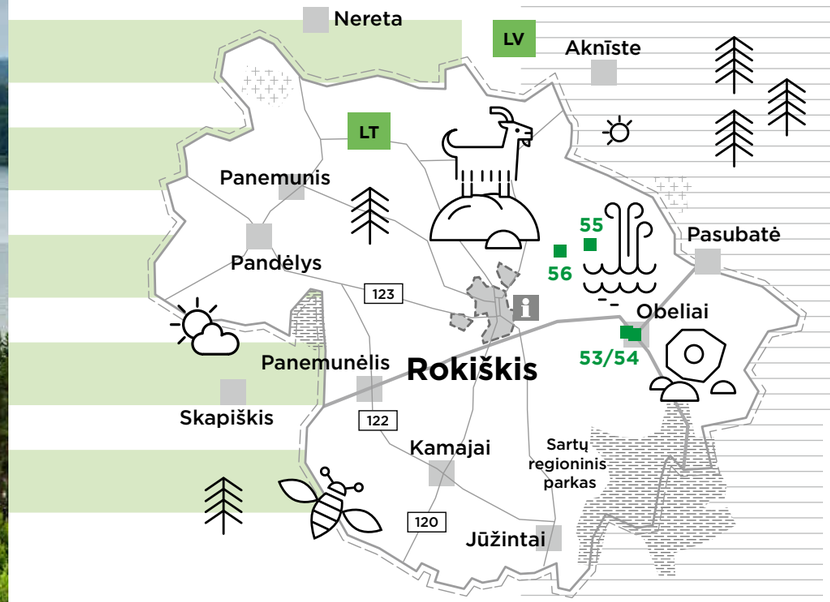
The stone is located in a natural rural setting, close to a rural road. It can be reached by entering Ancene, crossing the crossroads towards Bebrene and following the signs. The secular stone is located on private land, but access is easy as it is close to an access road.

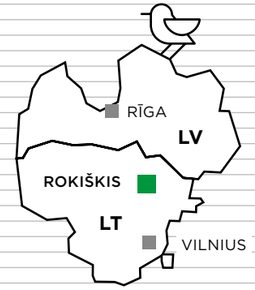
Romza Secular stone

-- FIND THE BIGGEST STONE!
WHEN GOING TO SEE NATURAL OBJECTS WITH THE FAMILY, EVALUATE WHICH OF THE STONES IS THE LARGEST BY COVERING IT – IT WILL BE A REAL TEAM WORK AND WILL PROVIDE AN OPPORTUNITY TO DETERMINE THE APPROXIMATE SIZE OF THE STONE.

LITHUANIA
PANEVĖŽYS COUNTY

ROKIŠKIS
AND SURROUNDINGS





WHERE TO EAT OR STAY OVERNIGHT?
LOOK IN THE NEAREST TOURIST INFORMATION CENTRE, POINT
WWW.ROKISKIOTIC.LT

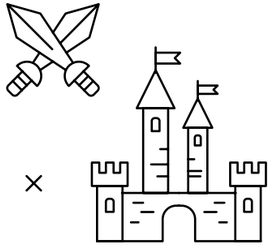
Pictured left:
Sartai lake

53
Raminta Spring

Spring

The spring is decorated with a bricked stone wall with a pipe and a gutter to drain the water. The source of the beautifully carved spring is surrounded by a park where wooden benches, gazebos, and even three bridges over the Rastupys stream await visitors in the shade. The water is clear, colourless, odourless, and cold (8.9 °C). Composition - calcium, magnesium sodium - bicarbonate, sulphate water. The (yellowish) colour of iron deposits is visible on the stones.

The legend speaks of the love between a girl named Raminta and the warrior Žvitrius, who did not return from battle.
There is also a well-known story about the lake of Obeliai, which speaks about the sunken palace of a German and a money box. Finding a treasure of money in the muddy aging lake is not as easy as it is to meet the brave blond-haired Lithuanian woman and her white horse in the spring. Without anyone seeing, Raminta helps, comforts, and reassures only an honest Man who loves his land.



Obeliai town, Rokiškis district
www.lgt.lt
55.942256, 25.79328
Rokiškis - 18 km

It is believed that sitting on the stone can bring happiness and success.

54
Obeliai Stone

Boulder

In the park in the centre of Obeliai, you can find an interesting object - the Obeliai Stone. The Obeliai stone lies where it was found, only now slightly raised. Archaeologists have not provided concrete, tangible facts, but there are opinions that there used to be a pagan sanctuary in this place.

Obeliai town, Rokiškis district
www.rokiskiotic.lt
55.943072, 25.792667
Rokiškis – 18 km

55
Lukštai Spring

Spring

The water flows out in a picturesque hollow in at least three different locations. At the source, the confluence forms a rather fast-flowing stream, and a few tens of metres away, it flows into the Šaltuoja stream, which is an inflow of the River Vyžuona. The water is clear, colourless, and odourless, its temperature is quite constant at 7.7 °C. The water is fresh, contains few minerals (488 mg/l), has low iron concentration (0.05 mg/l), and is hard. Composition - calcium, magnesium bicarbonate.

Lukštai village, Juodupė eldership, Rokiškis district
www.lgt.lt
56.019023, 25.726875
Rokiškis – 14 km

56
Goat's Stone

Boulder

Goat's Stone is located in Ignotiškis forest. Its dimensions are 5.1 m x 3 m x 3.3 m, composition - plagiogranite with biotite. The sides of the boulder have markings that may have come from the horns of deer, elk, or roe deer.

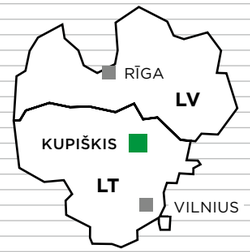
The legend says that a wild goat once jumped on this boulder to defend itself from wolves. It is said that a white goat can be seen at night near the Goat's Stone.

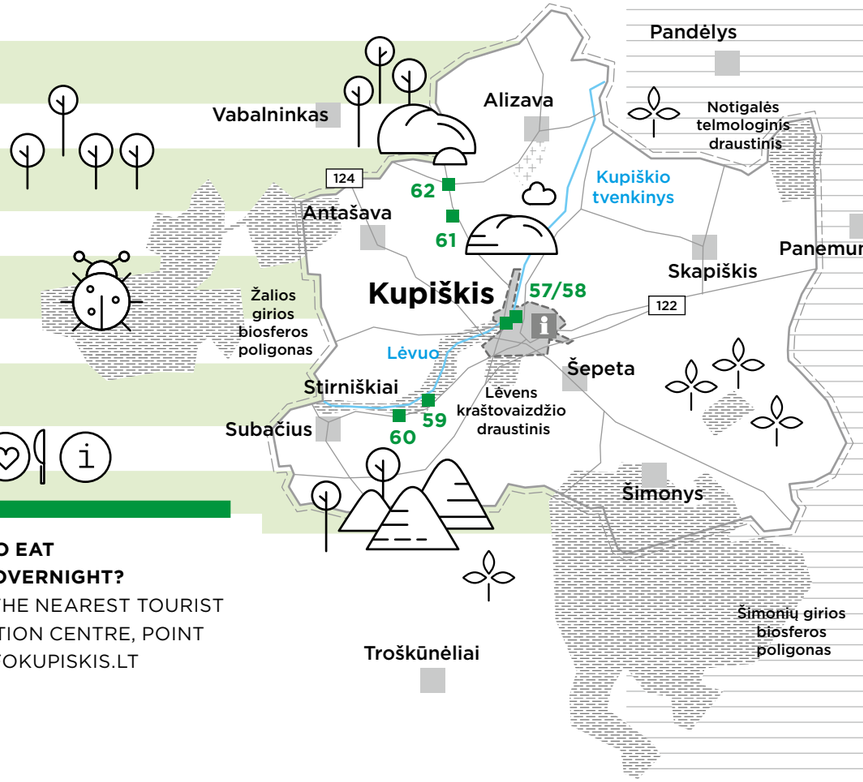
Ragučiai village, Juodupė eldership, Rokiškis district
www.lgt.lt
56.014049, 25.681654
Rokiškis – 10 km

LITHUANIA
PANEVĖŽYS COUNTY

KUPIŠKIS

AND SURROUNDINGS





WHERE TO EAT
OR STAY OVERNIGHT?
LOOK IN THE NEAREST TOURIST INFORMATION CENTRE, POINT
WWW.INFOKUPISKIS.LT

Mother-in-Law's Tongue Dendropark

57
Akmenytė Spring

Spring

The spring flows on the left bank of the River Lėvuo and it is a hydrogeological nature monument of local significance, reflecting the natural diversity of the Kupiškis region. From 1951-1952, the depths of the city of Kupiškis were explored with deep boreholes that reached the rocks of the Upper Devonian Šventoji suite. This spring flows from the mouth of the 88.31 m deep borehole drilled at that time. Before that, the spring gushed out of a pit about 3 m long and 1.5 m wide, on the bank of the River Lėvuo, and flowed into the river in a stream just a few metres long. Water composition: calcium, magnesium, sodium bicarbonate, sulphate. The name Akmenytė (stone in Lithuanian) comes from the abundance of stones in this area.

P. Matulionis street, Kupiškis

www.infokupiskis.lt

55.844555, 24.967426

Biržai – 51 km

Akmenytė Spring

58
Kupiškis Dolomite Quarry Stone

Boulder

The largest boulder in the vicinity of Kupiškis. It was most likely taken from the nearby dolomite quarry. The composition of the stone is grey granite gneiss (worn). The height of the stone is 2.20 m, the length is 4.00 m, the width is 3.30 m, and the perimeter is 12.40 m.

Palėvenės street, Kupiškis

www.lgt.lt

55.841808, 24.965493

Biržai – 52 km

Kupiškis Dolomite Quarry Stone

Lėvuo River

Paulianka

59
Paulianka

Wall in a quarry

Paulianka is accumulations of rounded boulders of sedimentary, igneous, and metamorphic rocks. It is located in protected area- Lėvuo Landscape Reserve and is unique because of breakthrough morainic deposits in the stones.

Palėvenės town, Kupiškis district

www.lgt.lt

55.792202, 24.866407

Kupiškis – 13 km

60
Stirniškiai Outcrop

Outcrop

The dolomite outcrop is on the left side of the Lėvuo River valley, where the Suosa flows, in the village of Stirniškiai, Noriūnai eldership. Its height is 3 m, and its length is 40 m. In it, the layers of Suosa dolomites from the upper part of the Devonian part of the Franconian are exposed. Cavernous layered dolomite can be seen in it.

The Stirniškiai Outcrop together with the nearby building with dolomite columns has been declared a geological monument in 1964.
The aforementioned columns of the building made of dolomite are not only a geological, but also a cultural-ethnographic-historical monument. The dolomites of the Suosa layers in the Buivėnai and Stirniškiai quarries have been quarried for construction since long ago. In 1988 in the vicinity of Noriūnai, the lower reaches of the Suosa stream between the villages of Pasuosiai, Karaliūniai, Radžiūniai, and Stirniškiai have been declared a geological reserve. Its area is 21,6 hectares.

The purpose of the reserve is to protect the outcrops and outcrops of the Late Devonian Suosa strata in the bed of the Suosa stream. These Devonian layers began to be explored by geologists as early as the 19th century.

Stirniškiai village, Subačius eldership, Kupiškis district
www.infokupiskis.lt
55.782953, 24.834447
Kupiškis – 16 km

61
The Stone Devil's Foot

Boulder

The stone is famous for its size and for the fact that the impression visible on its top resembles a devil's hoof. Part of the stone is embedded in the ground. The height of the stone is 1.55 m, the length is 3.35 m, the width is 2.6 m, and the perimeter is 9.9 m. The size of the recess "Devil's Foot" is 10x6 cm, and the depth is 6 cm.

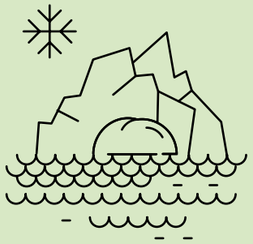
Gyvakarai village, Alizava eldership, Kupiškis district
www.lgt.lt
55.915311, 24.895755
Kupiškis – 11 km

62
Salamiestis Stone

Boulder

Boulder height - 2.45 m, length - 4.45 m, width - 3.45 m, perimeter - 12.50 m.
The massive boulder stands at the intersection of roads "Vabalninkas–Salamiestis–Kupiškis" and "Salamiestis–Alizava–Kupreliškis–Galintiškis".

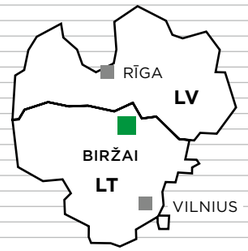
Nodiejiškiai village, Alizava eldership, Kupiškis district
www.saugoma.lt
55.933513, 24.894291
Kupiškis – 14 km

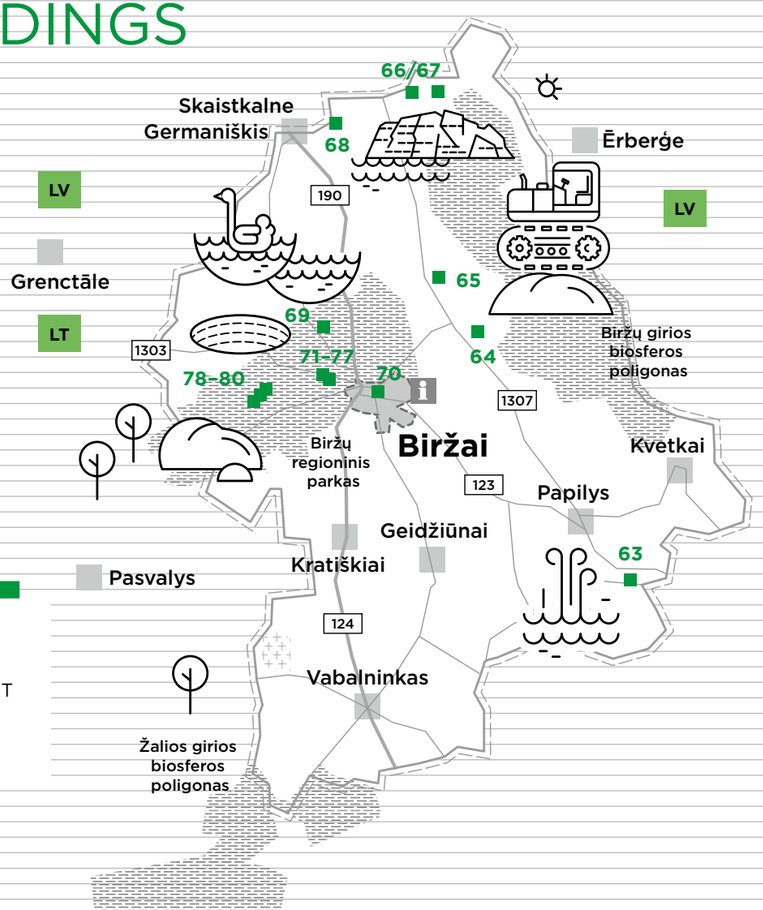


– – WHAT IS A BOULDER (GLACIAL ERRATIC)?
A BOULDER (GLACIAL ERRATIC) IS GLACIALLY DEPOSITED ROCK DIFFERING FROM THE TYPE OF ROCK NATIVE TO THE AREA IN WHICH IT RESTS. ERRATICS CAN RANGE IN SIZE FROM PEBBLES TO LARGE BOULDERS.

LITHUANIA
PANEVĖŽYS COUNTY

BIRŽAI AND SURROUNDINGS





WHERE TO EAT
OR STAY OVERNIGHT?
LOOK IN THE NEAREST TOURIST INFORMATION CENTRE, POINT
WWW.VISITBIRZAI.LT

Širvėna Lake

63
Kučgalys Spring
Spring

The spring has a rather interesting history. It is said that in 1946 Russia faced an oil shortage which made Russia start looking for it in Lithuania. Many boreholes were drilled, but no oil was found, but in Kučgalis, the place where holes were bored, water started flowing, creating a spring. The spring water flows into the River Apaščia. In 2015, the area around the spring was renovated and tidied up - a fireplace was installed, a birch grove was arranged, a new gazebo was built, and the roof for the spring was renewed.

Kučgalys village,
Papilys eldership,
Biržai district

www.visitbirzai.lt

56.073751, 25.07252

Biržai – 26 km

64
Juodžionys Field of Erratic Boulders
Boulder field

The boulder field is naturally formed and consists of many crystalline rocks, some overgrown with moss. The rocks were pushed by a glacier from Fennoscandia during the Pleistocene period. The boulders can be found scattered in a 5 hectares field.

Juodžioniai village,
Parovėja eldership,
Biržai district

www.visitbirzai.lt

56.244642, 24.88089

Biržai – 11 km

65
Medeikiai Stone
Boulder

An unbroken large boulder that was accidentally left on site, originally used as a pedestal for an exhibit of old equipment – a crawler tractor. Its length is 3.5 m, width is 2.7 m, height is 0.95 m, and horizontal circumference is 11.25 m. Composition – coarse-grained, porphyritic granite.

Medeikiai village,
Parovėja eldership,
Biržai district

www.lgt.lt

56.283029, 24.833847

Biržai – 13 km

66
Outcrop of Tabokinė
Outcrop

In the Outcrop of Tabokinė, the vertical walls of the Devonian rocks are incompletely arranged on two levels. The upper cliff is impressive in that its wall usually reaches a height of 3 to 4 m and consists of rather large pieces of cracked dolomite which have been penetrated by the strong roots of birch and other trees growing on the cliff. The length of the outcrop along the River Nemunėlis reaches 130 m, and its height is 11.2 m.

Tabokinė village,
Nemunėlio Radviliškis
eldership, Biržai district

www.visitbirzai.lt

56.410337, 24.832798

Biržai – 31 km

67
Muoriškiai Outcrop

Outcrop

It is a natural outcrop that came into being as a result of long-term deep and lateral erosion of the River Nemunėlis. It has a steep wall with sharp protrusions of hard rocks, lots of niches, caverns, deep cracks, micro creases, and other changes that occurred in the rocks. It is a very remarkable, beautiful range of precipitous slopes in the valley of the River Nemunėlis. The outcrop forms part of the State Geological Reserve of the Rivers Nemunėlis and Apaščia which was established in 1960. Muoriškiai Outcrop outlooks the northern outskirts of the undulated moraine plain of the Rivers Mūša-Nemunėlis with the valley of the River Nemunėlis that is etched into the northern outskirts. The absolute altitude of the water level of the River Nemunėlis at the foot of the outcrop is 35.5 m. The absolute altitude of the terrain varies from 33 m (the water level of the River Nemunėlis in Muoriškiai village) to 61 m (in Benupė village) in an area of approximately 2 kilometres radius, and the highest spot in Pučiakalnė is about 75 m. The most impressive upright segment along the River Nemunėlis is 80 m long. However, at least 30 metres from both ends should be included in the length of this outcrop. Thus, the total length of the entire stretch is 140 m. The outcrop is 7.4 m in height, the valley slope is 9.6 m in height, and its foot is 0.8-1 m above the water surface of the River Nemunėlis and in some places is up to 6 m above the river.

Confluence of Nemunėlis and Apaščia

Muoriškiai village, Nemunėlio Radviliškis eldership, Biržai district

www.visitbirzai.lt

56.411291, 24.802997

Biržai – 30 km

68
Velniapilis Rock

Outcrop

Velniapilis Rock is a dolomite and gypsum outcrop that is situated on the left bank of the River Nemunėlis. This geological natural asset situated in Biržai district, in Nemunėlio Radviliškis eldership, consists of rocks from the Devonian period of marine and lagoon origin. The outcrop, which is situated about 6 km away from the River Nemunėlis rises to a height of up to 5 m and is about 8 m in width. A crack with a width of 0.5 m that opens, rises, and leads to a cave with a depth of 4.3 m plays a unique role. Here, the intertwined layers of dolomite, gypsum, and other geological structures are perfectly visible. An old karst sinkhole with a diameter of 10-12 m that descends to a depth of up to 2.5 m is situated at the top of the slope.

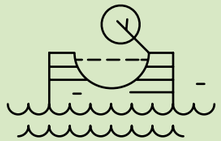
There are various legends about this natural geological asset. It is said that the devil lived here since ancient times. The outcrop also served as an asylum for the local men of the village who were affected by various woes and were desperately in need of comfort.

Padvariečiai village, Nemunėlio Radviliškis eldership, Biržai district

www.visitbirzai.lt

56.38613, 24.702729

Biržai – 27 km



– – HOW ARE DRY AND WET SINKHOLES FORMED? WHAT IS THE DIFFERENCE BETWEEN THEM?

A SINKHOLE IS A CAVITY THAT FORMS WHEN UNDERGROUND WATER DISSOLVES UNDERGROUND LAYERS OF SOLUBLE ROCKS. UNDER THE ACTION OF GROUNDWATER, THE UPPER SOIL BECOMES HEAVY, COLLAPSES AND FILLS THE CAVITY WITH ROCKS AND SOIL FROM THE TOP. SINKHOLES CAN BE DRY OR WET DEPENDING ON THE SEASON AND MULTIPLE CLIMATIC FACTORS – CHANGES IN POSITIVE AND NEGATIVE AIR TEMPERATURES, THE NATURE OF PRECIPITATION, ITS AMOUNT, AND THE FROST DEPTH.

SINKHOLES THAT FORM BELOW THE GROUNDWATER LEVEL FILL WITH WATER AND FORM SMALL LAKES CALLED LAKELETS.

69 Kirkilai Karst Lakelets

Karst lake

The karst lakelets of Kirkilai Lake have formed during karst processes and are the youngest lakelets of this type in Europe. Most of them are located in the Kirkilai and Drąseikiai villages and their surroundings. The area of these water bodies is from 30 to 100 cubic m. The average depth of the lakelets is from 0.8 to 4.5 m. The karst lakelets do not always sit in one sinkhole, but rather often integrate several sinkholes or even form groups. One sinkhole can repeatedly collapse several times, and the collapse of the partitions of the adjacent sinkholes leads to the formation of karst lakes with an intricate contour.

Kirkilai Lake (also called Ilgasis or Upėgalis), which is the most outstanding of all lakes in the entire karst lake-land area, is situated on the northwest outskirts of Kirkilai village. The lake is formed of at least 30 water-filled and united sinkholes of different ages and sizes (there are also plenty of individual waterlogged, boggy, and dry sinkholes in the access area of the lake). This territory with an approximate area of 3,9 to 6 hectares is considered to be a laky labyrinth with a very winding coastline with horns. The length of the coastline is more than 2.5 km.

Various biological processes take place in the karst lakelets. Different sulphur bacteria colonies that are visible to the naked eye are only found in these lakelets. Various species of aquatic plants, including stonewort, Ceratophyllum demersum, commonly known as hornwort, lemna, and bulrush also grow in the lakelets. The coastal area of the older karst lakelets is overgrown with trees. During the summer, when the water level drops, communities of bentgrass form on their edges.

During the spring melt and after a pouring rain the water level rises significantly and the water covers the peninsula.

	Ežerėliai street, Kirkilai village, Širvėna eldership, Biržai district
	www.saugoma.lt
	56.248296, 24.688952
	Biržai – 8 km

Ceratophyllum demersum

This causes more islands to form. The maximum length of this lake with a very complicated shape is about 600 m, the width – is 300 m, and its maximum depth is 6-7 m. The land reclamation ditch that was dug in 1926 from the southernmost branch of the Kirkilai Lake (that influenced the formation of new sinkholes along the route of this canal) connects the lake with Užubaliai peat-bog

that is situated on the southwest side three kilometres away from the lake. The reclaimed stream Šilinėlis outflows the Kirkilai Lake at its north end. At the distance of 1 kilometre the stream flows through the lakelet Jonava (Šilinis) with an area of 3,5 hectares and then at the distance of 1.2 km it reaches the River Apaščia. The surplus of water outflows the Kirkilai Lake through the stream Šilinėlis, and when the water level in the River Apaščia is higher, the flood water rushes upstream by the stream Šilinėlis and, through the same Lake Jonava (Šilinis), reaches the Kirkilai Lake. This raises its water level which usually upholds at an absolute altitude of 46.7 m (the water level fluctuation amplitude is 2.4 m).

Kirkilai Lake and its surrounding area with the rural homesteads are considered to be attractive and memorable by every visitor.

The observation tower of Biržai Regional Park was built in 2015. The tower overlooks a unique landscape of Kirkilai karst lakelets. The observation tower is almost 32 metres high, and its observation deck is 30 metres high. This deck overlooks not only the karst lakelets but also Kirkilai village and the nearby locations.

WHAT WILL HAPPEN IF ONE THROWS A PIECE OF DOLOMITE INTO THE KIRKILAI KARST LAKELETS AT EXACTLY MIDNIGHT ON DECEMBER 31ST?

ANSWER –
IT WILL GET WET:)

70
Biržai Regional Park Visitor Centre

Visitor centre, exposition

The exposition of the visitor centre introduces visitors to the unique values of Biržai Regional Park - sinkholes, rocks, and geological processes. Visitors can interact with interactive exhibits which reveal the process of karsts, rocks, and more.

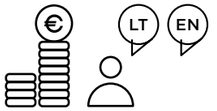
Biržai Regional Park Visitor Centre houses the exposition intended to introduce the exceptional values of this protected area.

The exposition is mainly focused on the topic “The region of the collapsing ground” because Biržai region is known for sinkholes, land subsidence, and interesting geological processes.

Biržai is a unique region with a land surface that goes through active formation which changes the landscape. The ground sinking occurs after gypsum deposits are washed out by groundwater followed by the formation of mysterious sinkholes: some sinkholes are dry (e.g., Karvės ola (Cow‘s Cave), a famous object of natural heritage), while others have turned into small lakes full of sulphur bacteria that are visible to the naked eye (e.g., Kirkilai lakelets).

The exposition in Biržai Regional Park Visitor Centre, dedicated to this region, is very vivid and intriguing. The cold glass reception of the centre is reminiscent of a sinkhole and therefore creates an impression of being inside a sinkhole. The exposition offers interactive stands, and two games – “Process of sinkhole development” and “Ecosystem of the karst lakelets”. The stand that operates as a sandglass imitates a collapsing sinkhole, while other stands are used to show sinkholes before and after the collapse. All these things help the visitors understand the natural phenomena that are common in Biržai region.

The second exposition hall offers an exposition of minerals and rocks that introduces the geological riches of the region. Here the visitors will find another interesting cairn interactive exposition stand. Thanks to this stand the visitors can experience the depth of the borehole and get to know the changes in geological layers.



Rotušė street 10, Biržai

www.saugoma.lt

56.202479, 24.755325

Pasvalys – 29 km

Also, the outdoor exposition has been set up to acquaint visitors with the geological curiosities in Biržai region. The outdoor exposition consists of an exposition of boulders and rocks, a sinkhole layout, a layout of sinkhole formation, a model of underground caves, and a geological time scale layout. In the exposition, visitors can see the boulders and rocks of various compositions of Biržai region and get acquainted with the process of sinkhole formation using interactive models. The model of the underground caves makes visitors feel as if they are in the dungeons of the Cow’s Cave, and the model of the geological time scale introduces visitors to the process of the earth’s evolution.

71
Geologists' Hole

Sinkhole

Geologists' Hole is located in the Karajimiškis Landscape Reserve. The diameter of the sinkhole is about 12 x 9.5 m, the depth is 5 m. The sinkhole opened on the 22nd of April 2003, a few days before Lithuanian Geologists' Day, therefore, it was named the Geologists' Hole. At the time, the sinkhole was 4.8 x 4.2 m in diameter and 8.11 m deep.

On the 15th of October 2004 the dimensions determined were as follows: diameter 5.35 x 5.05 m, depth 9.25 m. At the end of 2004, a new karst sinkhole was observed, opening 1 m from the north-western edge of the Geologists' Hole. The moraine loam of the Quaternary sediments was exposed in the upper part of the wall, followed by rocks of the Upper Devonian Tatula Suite. The sinkholes merged in 2005 and now form one sinkhole.

Karajimiškis village,
Širvėna eldership,
Biržai district

www.saugoma.lt

56.210133, 24.693008

Biržai – 4 km

72
Sinkhole "Badger's Cave" Cognitive Geological Trail

Sinkhole

In the spring of 2011, in the sinkhole area of Karajimiškis Landscape Reserve of Biržai Regional Park where karst phenomena actively form the land surface, in Mantagailiškis "Gojelis" (Grove) forest, at the foot of the wall of the north slope of a karst old sinkhole, between blocks of rock, speleologists found a burrow leading to a cave. Shortly after, the sinkhole, in which this cave was detected and signs that testify to the presence of a badger were found, was named Barsuko ola (Badger's Cave). In the autumn of 2012, a cognitive-geological path with a compacted soil pavement was built in the territory with an area of approximately 2,5 hectares. The total length of the path is about 700 m. A sinkhole Geologų duobė (Geologist's Hole) marks the beginning of the path. The path further leads through sinkhole Lapės ola (Fox's Cave), and after reaching the southwest outskirts of Gojelis forest the path brings the visitors to a sinkhole area

that is situated here, where the sinkhole Badger's Cave and other even larger and deeper sinkholes are located. The path continues to run to the north and leads along the sinkholes that are situated on the outskirts of the forest, then goes downhill through a karst remnant, arches one of the largest sinkholes, and on the way back descends to another sinkhole, from which, after ascending between the smaller ones, the visitors once again return to the outskirts of Gojelis. The visitors can overlook 13 sinkholes from the path, of which three are more complex in shape. Two or three sinkholes that opened earlier connect to the pit of the preceding sinkholes.

Karajimiškis village,
Širvėna eldership,
Biržai district

www.saugoma.lt

56.210133, 24.693008

Biržai – 4 km

73
Fox's Cave

Sinkhole

The Fox's Cave is located in the Karajimiškis Landscape Reserve. The diameter of the cave at the top is an almost perfectly round circle (16x17 m). The sinkhole is about 7.4 m deep, and it stands out from the other sinkhole because of the blocks of dolomite with gypsum interlayers that are lying chaotically inside it. Fox's Cave is always dry - it does not get waterlogged in spring when the snow that has accumulated in the sinkhole melts thanks to openings on the bottom of this sinkhole that are still unclogged. These openings are related to the cavities that occurred during the karst processes in the soluble rocks that have sunk underground.

Karajimiškis village, Širvėna eldership, Biržai district

www.saugoma.lt

56.207509, 24.690701

Biržai – 4 km

74
Maple Hole

Sinkhole

The Maple hole is located in the Karajimiškis Landscape Reserve. It got its name because of the maples growing on the slopes and in the environment. The sinkhole is thought to have formed more than 100 years ago (according to the age of the oldest trees growing in it). The Maple hole was formed by the surface soil penetrating deeper into the void formed in the underground, which was replaced by gypsum belonging to the layers of the late Devonian Tatula Nemunėlis and possibly Pasvalys.

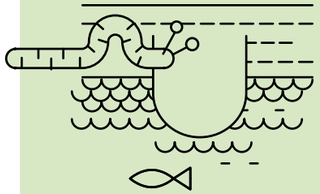
The contour of the pit is oval, its diameter is 23 x 27 m, and its depth is 6.7 m. The sinkhole is deepest at the eastern slope, the lower and middle parts of which reveal Devonian gypsum rocks, finely overlapping gypsum, and dolomite.

Karajimiškis village, Širvėna eldership, Biržai district

www.saugoma.lt

56.207509, 24.690701

Biržai – 4 km



- - WHERE SINKHOLES OCCUR? THEY ARE FORMED IN PLACES WHERE UNDERGROUND VOIDS ARE CREATED BY RINSING GROUNDWATER.

- - HOW SINKHOLES AFFECT THE ENVIRONMENT? MOST OF THE IMPACTS ARE LOCAL, BUT SINKHOLES CAN HAVE FAR-REACHING EFFECTS ON THE GROUNDWATER RESOURCES IN THE AREA, WHICH CAN ALSO AFFECT HYDROLOGICAL SYSTEMS, LAKES AND SPRINGS, CHANGING THE CHEMICAL COMPOSITION OF THE WATER AND THE RATE OF REGENERATION OR RUNOFF.

WORTH KNOWING: SINKHOLES CAN CONTRIBUTE TO THE FORMATION OF UNDERGROUND VOIDS AND ARE ALMOST UNPREDICTABLE.

75
Cow's Cave
Sinkhole

Karajimiškis village, Širvėna eldership, Biržai district
www.saugoma.lt
56.20672, 24.694397
Biržai – 5 km

Cow's Cave is arguably the best-known and most researched geological object with national significance in the northern part of Lithuania. The sinkhole is unique with its well-like form reaching a depth of 12.6 m, its composition of late Devonian dolomite, gypsum rock outcrops on the sinkhole walls, and a five-cave system underneath.
Cow's Cave is a well-type funnelled karst sinkhole that formerly was almost circular. It was about 12 m in diameter at the top north-south direction, and about 10 m in diameter in the east-west direction. Today an adjacent smaller sinkhole in the northeast part has mingled with Cow's Cave. The total length of the long axis is 22.2 m. The western great part is 15.3 m in diameter, its depth is over 12.5 m, the eastern small part is 9.4 m in diameter, and its depth is about 5.3 m. An underground cavity that formed due to dissolved gypsum opens up at the bottom of the sinkhole, from the depth of 9.5 m (it is 3.1 m in height and of similar width).

Several caves also extend to the sides of the cavity. The volume of the underground cavity with caves is 28 cubic m, the floor area is 42 sq. m, and its total length is 46 m (one cave is 10 m long). There are five caves in total: Šlapioji ola (Wet Cave), Siauroji landa (Narrow Burrow), Šikšnosparnių landa (Bat Burrow) (detected by bats), Rupūžės ola (Toe Cave) with an underground "lakelet" (1.5 m in depth) and Blizganti ola (Lustrous Cave).

Cow's Cave

Legend says that a cow once fell in with only the end of its chain visible where there is now a sinkhole. This is how the sinkhole received its name.

76
Easter Hole
Sinkhole

Easter Hole is located in the Karajimiškis Landscape Reserve and it opened on the 18th of April 1981. Its name was chosen because it collapsed during Easter. Dimensions of the sinkhole: diameter 19.9 x 19.5 m, depth 6 m. Easter Hole is dry and overgrown with trees. The slopes of the Easter Hole are Quaternary sediments. It is a natural karst sinkhole, the slopes of which are already fully formed and stable.

Karajimiškis village, Širvėna eldership, Biržai district
www.saugoma.lt
56.206579, 24.697370
Biržai – 4 km

Easter Hole

77
Eve's Hole
Sinkhole

Eve's Hole is located in the Karajimiškis Landscape Reserve. It received its name thanks to the bird cherry shrubs called ievas (Eve in Lithuanian) that grow on its slope. The diameter of the sinkhole is 13 x 14 m, and the depth is 5.8 m. On the northern slope of the sinkhole, you can see an outcrop up to 3.2 m high, which is layered with Devonian rocks, gypsum, dolomite and dolomite powder inclusions.

Karajimiškis village, Širvėna eldership, Biržai district
www.saugoma.lt
56.204947, 24.696386
Biržai – 5 km

78
Smardone Spring
Spring

Smardone Spring is a karst spring considered a hydrogeological nature monument. Once the spring had a high flow rate of 540 l/s, but after the installation of drainage systems in the region the rate reduced to 122 l/s.
This spring of karst origin which was declared a geological monument in 1985, is situated in Biržai region, in Likėnai village. It is the birthplace of the Smardonė stream that flows into the River Tatula. The pit of the spring consists of a sinkhole that is reminiscent of an oval funnel with a very sloping bottom. The cross diameters of the sinkhole are 15 and 17 metres. Loamy banks with a height of up to 1.5 m that are covered with green turf rise above the water level of the spring.

There are two stream pools with lots of whirlpools (especially during the spring melt) in the pit of this spring, and with sludge deposits and rocks (boulders) on its bottom. These streams penetrate 1.5-3 m deep into the ground.

Likėnai village, Pabiržė eldership, Biržai district
www.saugoma.lt
56.200105, 24.623613
Biržai – 10 km

The water flows to Smardonė spring from the karst sedimentary rock layers (gypsum, dolomite, etc.). The water is slightly bitter and has a slight odour of sulphur hydrogen gas that is reminiscent of rotten eggs. This is where Smardonė spring draws its name from (in Lithuanian "smirda" means "it stinks"). Theodor von Grotthuss, the chemist who specialised in electrochemistry, was the first to perform analyses of the composition of the spring water and to announce their results in 1816. The spring water was formerly used for treatment, but it is no longer used for this purpose.

79
Salomėja Spring

Spring

Salomėja Spring is a karst spring on the right slope of the Smardonė stream's canalised section. The width of the spring pit is 2-3 m, the depth is 0.5-0.8 m. The water is low in mineralisation, it contains calcium sulphate, and bicarbonate, it is slightly alkaline, cold (the temperature is about 7.4 °C), clear, and has a bitter taste. It does not freeze in winter. The spring was founded around 1995, and in 2005 named in memory of the geologist Salomėja Bucevičiūtė, who explored the depths of this region.

Likėnai village, Pabiržė eldership, Biržai district

www.lgt.lt

56.198054, 24.617897

Biržai – 10 km

Kiršoniai village, Pabiržė eldership, Biržai district

www.saugoma.lt

56.194247, 24.609678

Biržai – 10 km

80
Kiršoniai Stone

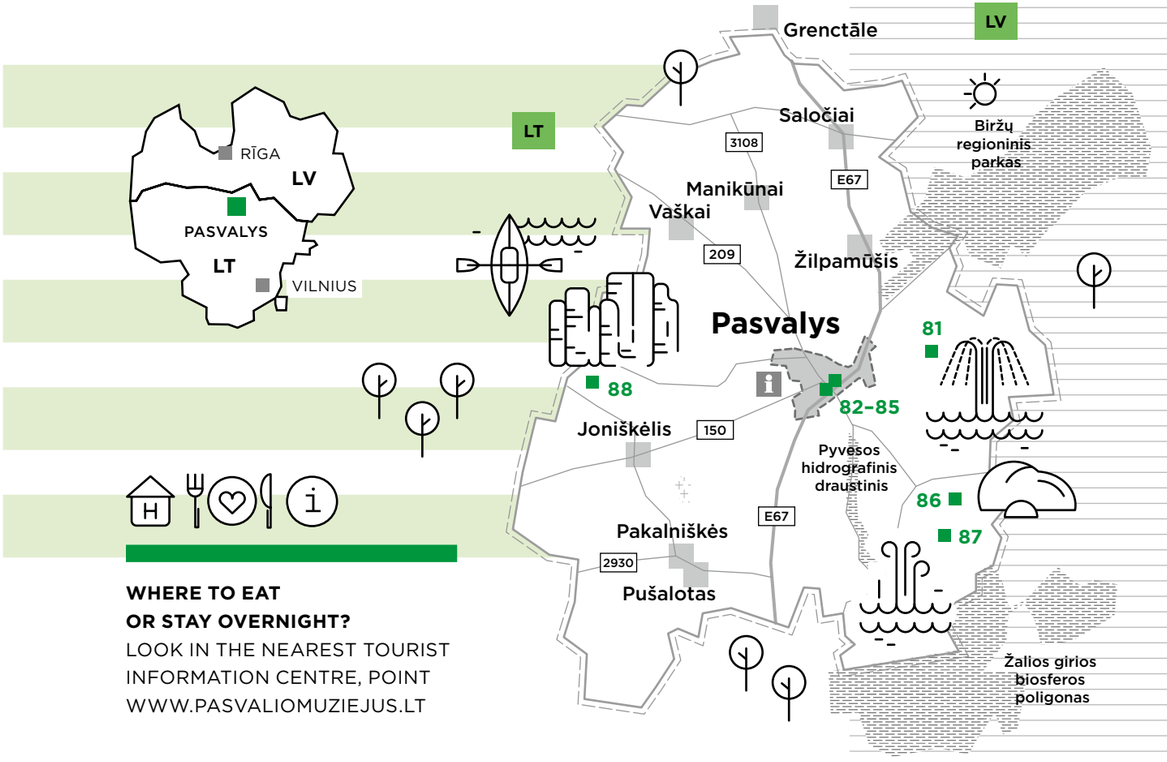
Boulder

In the village of Kiršoniai, about 1 km southwest of Likėnai Park, on the site of a former gravel quarry, there is a large boulder brought by the last glacier - the Kiršoniai Stone. Its length is 5.05 m, its width is 3.44 m, its height is 1.9 m, and its horizontal circumference is 12.98 m. Its composition is pink granite and it is one of the largest boulders in the Biržai region.

Kiršoniai Stone

LITHUANIA
PANEVĖŽYS COUNTY

PASVALYS
AND SURROUNDINGS



WHERE TO EAT
OR STAY OVERNIGHT?
LOOK IN THE NEAREST TOURIST INFORMATION CENTRE, POINT
WWW.PASVALIOMUZIEJUS.LT

Collection of bowl stones and millstones

82

Collection of bowl stones and millstones

Exposition

The Pasvalys Region Museum has a collection of of an ethnographer Antanas Stapulionis of bowl-shaped stones and millstones under the open sky, which contains about 320 exhibits: 214 millstones, 64 bowl-shaped stones, 7 “footstool” stones, 2 stones-landmarks, and an exhibition of mill gears.
It took nearly three decades to collect and describe all the exhibits.

The largest in the set is a more than 1-metre wide bowl-shaped stone, and the smallest has a diameter of only 20 cm. The exhibits began to be collected in 1979 and now it is one of the most visited objects in Pasvalys.

Lėvuo street 2, Pasvalys
www.pasvaliomuziejus.lt
56.065253, 24.406022
Biržai – 29 km

Krinčinas Spring

81

Krinčinas Spring

Spring

The treasure of the town of Krinčinas in the Pasvalys district is a spring saturated with hydrogen sulphide and various minerals that have been gushing from the depths of the earth since ancient times. The spring’s water has a bitter taste and a smell of hydrogen sulphide. Locals say that the water of the spring has healing properties.

Krinčinas town, Krinčinas eldership, Pasvalys district
www.pasvaliomuziejus.lt
56.084594, 24.529207
Pasvalys – 10 km

83

Greenish Spring

Spring

The Greenish Spring, located in Pasvalys, on the left bank of the River Lėvuo, is Lithuania’s deepest cave with a depth of 20 m. The spring, which gushed from a sinkhole in 1960, flows into the River Lėvuo. The groundwater erupting from the bottom of the sinkhole snapped through a floodplain several metres along the riverbed. The bottom of the spring is covered with light

grey, almost greenish sediments, which give the spring water its greenish tint. In its sinkholes, we can see some pieces of gypsum and dolomite. The source water is clear and cold with an odour of hydrogen sulphide.
It is the largest water source in Pasvalys district and the deepest cave in Lithuania.

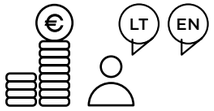
The Greenish Spring is included in the Lithuanian Book of Records “Factum”. In 2006, underwater research began, and in 1985, the Greenish Spring was declared a natural monument. The first well of this underwater cave-spring is about 5 m in diameter and 21 m deep, ending in a gate of stones and rock debris. Further, the cave branches into two chambers: “Sunny” and “Aenigma”. The Chamber of Aenigma leads in the south-southeast direction, sloping, its width varies from five to twelve metres, and it slopes down from seven to sixteen metres deep.
The ceiling vault is uneven and stepped, its height goes up to 5 m. The floor of the chamber is covered with rock fragments and blocks falling from the ceiling.
The Sunny Chamber continues in the north-northwest direction, its structure is very similar to The Chamber of Aenigma, but a little narrower: the width is from five to ten metres, it slopes down to fifteen metres, and at this depth, the ceiling and floor seem to come together. There are no clear boundaries, where the ceiling and floor of the chamber meet, and the passages narrow to such an extent that there remains a gap, closed by debris from the ceiling. At the end of the chamber, there is a narrow vertical passage leading to The Lower Chamber.
The flow of water at the bottom of the spring and in the chambers is practically unnoticeable. Visibility quickly disappears after touching the walls, the water becomes cloudy, and natural light on a sunny day is absent or not felt at all. The biggest difficulties for divers in the Greenish Spring can arise from the highly turbid water. The vault consists of layered gypsum or limestone rock, which is quite unstable and when swimming in horizontal cavities, bubbles of exhaled air drop rock fragments from above, very similar to falling snow. Sometimes larger stones also break off. The very narrow passageways in the chambers are also problematic.

Kalnas street, Pasvalys
www.saugoma.lt
56.06455, 24.40086
Biržai – 29 km

84
Pasvalys Region Museum

Museum

The museum's geological exposition is a rich collection of samples of minerals, rocks, and plant and animal fossils from Pasvalys, Lithuania, and other parts of the world. Visitors are introduced to the geological structure of country, and the oldest exhibits, which are like a link between the ancient periods of the Earth's history and the present. The museum was opened in 1998 based on ethnographic and archaeological collections accumulated by local researcher Antanas Stapulionis (1930–2011). There are expositions of geology, archaeology, history, and ethnography, among others.



P. Avižonis street 6, Pasvalys

www.pasvaliomuziejus.lt

56.060227, 24.398898

Biržai – 29 km

85
Park of Sinkholes

Sinkhole

This unique park of sinkholes was started in 2004 in the farmers' lands of Avižoniai and covers an area of nearly 8 hectares with dozens of sinkholes of various sizes and ages. The park is equipped with bicycle and pedestrian paths, skateboard platforms, playgrounds, sports, training grounds, swings for little visitors, lamps, plenty of wooden sculptures, and benches.

Panevėžys street, Pasvalys

www.pasvaliomuziejus.lt

56.055673, 24.397229

Biržai – 29 km

One empty sinkhole was equipped as an amphitheatre with six hundred seats. It hosts various Pasvalys cultural and sports events.

Park of Sinkholes

86
Stone of Petraičiai

Boulder

It is one of the largest boulders in this plain region. Its dimensions are 5.15x4.80 m, height - is about 3.50 m. It is brown with a grey tint and it splits into slabs.
The large boulder opens almost to its full height on the left side of the road, surrounded by a forest. The stone was lying in the nearby Šimkūnai homestead next to the house. It was brought here by glaciers. Only a small part of the giant rock was visible above the ground. In 1985, during land reclamation, the boulder was dug up and dragged closer to the road by powerful tractors. However, the stone started to jam in the lowest part, the ropes broke, so the boulder had to be left here, stuck about a metre in the ground.

Liukpetriai village, Daujėnai eldership, Pasvalys district

www.pasvaliomuziejus.lt

55.982666, 24.556897

Pasvalys – 16 km

87
The White Spring
Spring

The spring is a state natural monument and is unique for its pungent odour and bitter taste. The pebbles at the bottom of the stream and the grass on the edges are so white that the spring was given the name “White Spring” or sometimes Orija spring.
The current spring spurts from the stream Orija, on its left bank, but previously the spring used to be located in another place and had a larger stream of water – a 30–40 cm fountain.

Barklainiai village, Daujėnai eldership, Pasvalys district
www.pasvaliomuziejus.lt
55.958949, 24.544269
Pasvalys – 16 km

The spring erupted on the stream Orija bank and reached the height of one metre then it curved into the stream by a 3 m long and 0.4 m wide channel. The spring water is clear, colourless, and has a pungent odour of hydrogen sulphide. It is tasteless because there are a lot of sulphates (gypsum) and other chemical compounds. It comes out of the Tatula karst region formations of gypsum deposits, occurring in 10–15 m depth under the Quaternary period deposits.
The spring water is very cold – 8 degrees Celsius. Although there are more sulphate and water springs in Lithuania, this water is more saturated with chemicals: white sediment covers the entire bed. Animals do not drink this water.

88
The Outcrop of Skaliai Mountain
Outcrop

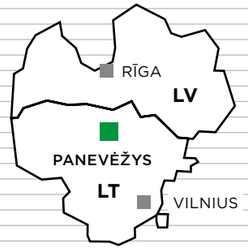
A dolomite outcrop on the right bank of the River Mūšais on a steep slope that descends into the river, located near the village of Stipinai and is also called Stipinai outcrop.
Length of the outcrop – 45 m, width – 6 m, area – 0,083 hectares. The aim is to preserve the sedimentary carbonate rocks of the Stipinai Formation of the Upper Devonian, formed 350 million years ago from carbonate sediments accumulated on the seabed, and the carbonate-clay layers of the Pamūšis Formation that sink below them. With a steep slope, the outcrop falls to the river, in the east, it gradually descends to the fluvial terrace, in the west - on a steep slope several hundred metres long and 7 m high, covered with grass and bushes. The hill is composed of the rocks of the Pamūšis and Stipinai regions from the Devonian Period. These rocks are rich in pyrite, limonite, and shells, and have some cavities. In the western cliff, the oldest rocks are visible – clay and dolomite formations of

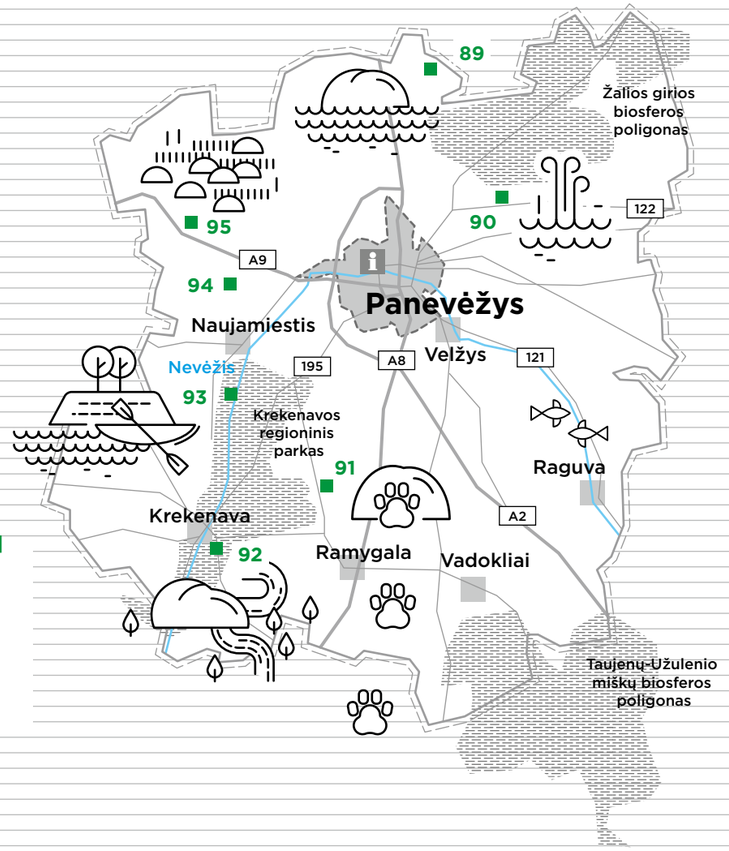
Stipinai village, Joniškėlis eldership, Pasvalys district
www.pasvaliomuziejus.lt
56.065902, 24.113519
Pasvalys – 25 km

the Pamūšis region. In the eastern part, one can see the dolomite formations of the Stipinai region and on the cliff top, there are some rocks from the Devonian Period with sediments up to 1 m thick from the Quaternary Period. Below this rock exposure, the water is gushing and wetting the grass. Dolomite formed approximately 350 million years ago in the seabed of dissolved carbonate sediments. The seas were swallowed and the seabed appeared. The rocks oxidized and changed their colour – the grey dolomite became yellowish-grey.

LITHUANIA
PANEVĖŽYS COUNTY

PANEVĖŽYS
AND SURROUNDINGS





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WWW.PANEVEZYSNOW.LT

Krekenava Regional Park

89
Banioniai Stone
Boulder

The length of the stone is 6.5-7 m, the width is 5.5-6 m, and it is higher than 3 m. The exact height has not been determined because the stone has not been completely excavated. It sinks in a pit where water collects, covering half of the stone.
Around the stone stretches the landscape of an undulating sandy plain (Mūša-Nemunėlis moraine plain). It is speculated that this stone could be one of the largest in Lithuania, even larger than the famous Puntukas.
The stone was found around 1977. An attempt was made to dig and pull out the stone in 1982, but failing to do so, it remained to lie where it lay. Water gathered in the dug pit, hiding part of this stone.

Kliuokmainiškis village,
Pajstrys eldership,
Panevėžys district

www.lgt.lt

55.901211, 24.414109

Panevėžys – 23 km

90
Vilktupis Spring
Spring

The spring bursts on the steep, forested bank of the Lėvuo. Groundwater discharge is directed through a horizontal pipe. Stones are placed where the current falls. Data: flow rate - 0.19 l/s, mineralisation - 235.92 mg/l, area - 0,002 ha ingredients - fresh magnesium hydrogen carbonate water with calcium. For the convenience of visitors, there are parking spaces, gazebos, and benches near the spring.

Paliūniškis village,
Karsakiškis eldership,
Panevėžys district

www.lgt.lt

55.800092, 24.505884

Panevėžys – 14 km

Banioniai Stone

91
Stone Devil’s foot
Boulder

The Devil’s Foot Stone (also called Devil’s Stone, Stone with Devil’s Heels) is a natural heritage object protected by the state.

The boulder is rounded in shape, further reminiscent of a coupe or cone. Its dimensions (above the ground) are a height of 1.8 m, a length of 3.82 m, a width of 2.55 m, and a maximum horizontal volume of 9.44 m. The rock forming the boulder is amphibole-biotitic gneiss (striped migmatite), grey and blackish-white (variegated), cataclased, fine-grained, and medium-grained.

Ėriškiai village,
Upytė eldership,
Panevėžys district

www.lgt.lt

55.578275, 24.266482

Panevėžys – 23 km

Stone Devil’s foot

According to the legend, the devil guarded the hidden money of a lord by standing on a stone. That is why his traces remained.

Krekenava town,
Panevėžys district

www.saugoma.lt

55.530341, 24.114818

Panevėžys – 30 km

92
Stone Rapolas

Boulder

On the bank of the River Linkava, there peacefully lies a huge boulder with a spectacular name – “Rapolas”, which was made up of blastocataclase (cataclased granite gneiss). Although according to Lithuanian fairy tales, such stones were dropped at one or another place by the Devil, they were brought to Lithuania by a much more powerful force – the glacier. Due to its spectacular size: 14.54 m in length, 2.55 in height, 5.14 m in length, and 4.18 m in width, in 1964 it was declared a natural monument. It is believed that the unusual name was given to the stone because of the name of a local farmer who lived nearby.

Nevėžis Valley

Stone Rapolas

93
Murmuliai Outcrop

Outcrop

Murmuliai Outcrop on the left bank of the River Nevėžis is a picturesque outcrop formed by the last glaciation. The height of the outcrop is 9 m, and the length along the riverbed is 60 m. Brownish-red moraine loam left by the Baltic stage of the River Nemunas (last glaciation) glacier is exposed in the outcrop.

Jaciniškis village,
Krekenava eldership,
Panevėžys district

www.lgt.lt

55.648551, 24.135404

Panevėžys – 22 km

Murmuliai Outcrop

94
Nauradai Stone
Boulder

Nauradai Stone is a massive boulder with height - 2.40 m, length - 7.10 m, width - 5.00 m, perimeter - 19.50 m. Stone structure: magmatized granite gneiss with pegmatite veins.

Nauradai village, Naujamiestis eldership, Panevėžys district
www.lgt.lt
55.736225, 24.134656
Panevėžys – 17 km

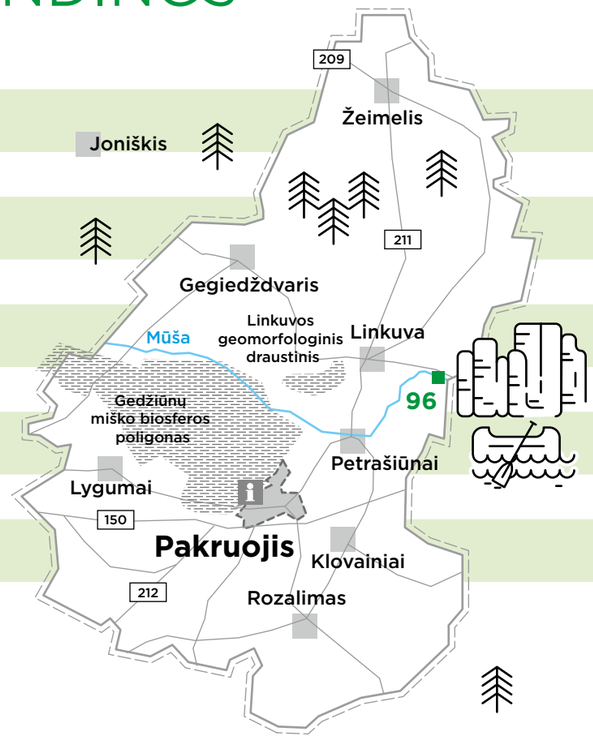
95
Perekšliai stretch
Boulder field

When describing the boulders, one should mention the characteristic witnesses of the Ice Age - the geotope Perekšliai rolls, located on the northwestern edge of the surroundings, north of the village of Perekšliai, in the Valiliškiai forest. It is a preserved fragment of a kind of natural boulder embankment formed in a glacier crevasse. The embankment is forced by boulders, consisting mainly of rocks of igneous origin.

Perekšliai village, Smilgiai eldership, Panevėžys district
www.lgt.lt
55.783574, 24.080012
Panevėžys – 22 km

LITHUANIA
ŠIAULIAI COUNTY

PAKRUOJIS
AND SURROUNDINGS



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OR STAY OVERNIGHT?
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WWW.PAKRUOJOVIC.LT

96
Raudonpamūšis Outcrop

Outcrop

The outcrop opens to the left bank of the river bend. It is composed of dolomite, stretches 35 m on the steep bank of the River Mūša, its height is 4 m, and it covers an area of 0.04 acres. The structure of dolomite rock is revealed in the outcrop. Here, visitors can see not only the River Mūša but also admire the layers of dolomite.

Guostagalio eldership, Pakruojis district
www.pakruojovic.lt
56.07120, 24.08343
Pakruojis – 25 km

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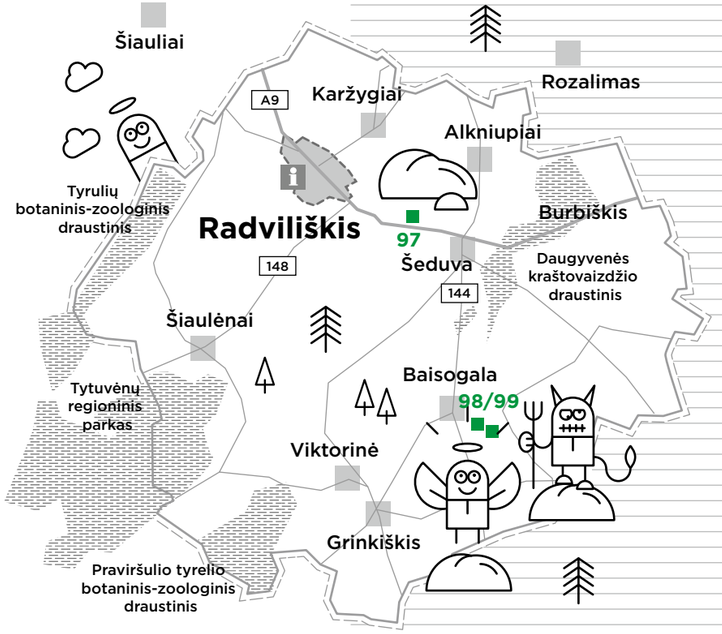
ŠIAULIAI COUNTY

RADVILIŠKIS
AND SURROUNDINGS



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WWW.INFORADVILISKIS.LT

Arimaičiai Lake

97
Kurkliai Stone
Boulder

A boulder of impressive dimensions, its' height - 1.70 m, length - 3.75 m, width - 2.90 m, perimeter - 10.75 m.

Kurkliai Stone

Kurkliai, Šeduvos eldership, Radviliškis district
www.inforadviliskis.lt
55.778261, 23.686609
Šiauliai – 40 km

98
Devils' Stone
Boulder

Object located in the forest between Baisogala and Valatkoniai.

Baisogalos eldership, Radviliškis district
www.inforadviliskis.lt
55.613080, 23.774422
Radviliškis – 35 km

Old people say that once the devil dragged a large stone on the ground to close the door of the church in Baisogala, but failed to carry out his evil intentions because the rooster crowed. A deep ditch survived to this day, the stone itself split in half from the badly attached chain, and the depressions on the surface of the boulder were pressed into the devil's legs.


Devils' Stone

99
Angel's Stone
Boulder

The boulder is considered a mythological stone.
It is state-protected, large - 2.3 m high, 5.25 m long - boulder, standing in Radviliškis district Baisogala forest, 2 km southeast of Baisogalas railway station, 2 km southwest of Valatkonys.

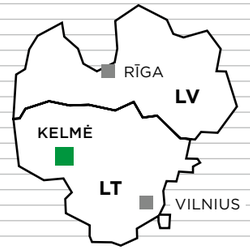
Baisogala forest, Baisogalos eldership, Radviliškis district
www.visitsiauliai.lt
55.616917, 23.764333
Šiauliai – 50 km

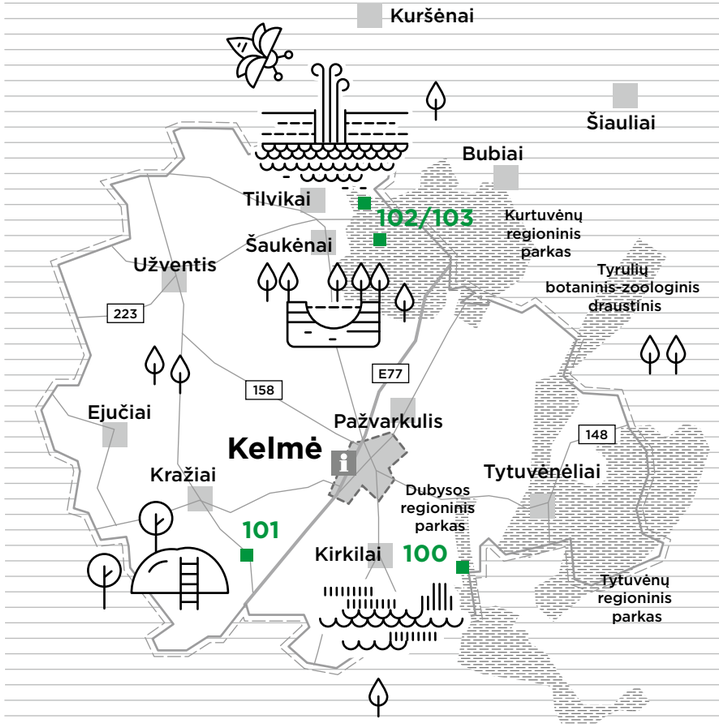
Angel's Stone

According to the tales of the people of the Radviliškis region, in ancient times a public road passed through this stone. Travelers in the dark of the night often did not notice it and were struck, so they cursed the giant stone that got in the way and prayed to God to take it somewhere further. The angels were tired of hearing the prayers and wicked speeches of these calamities so, one thunderous night they lifted the stone and threw it deep into the forest so it would not disturb anyone again. Since then, people have called the boulder Angel's Stone.

LITHUANIA
ŠIAULIAI COUNTY

KELMĖ AND SURROUNDINGS





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WWW.VISITSIAULIAI.LT

100
Skiručiai Spring

Spring

The spring erupts near the road Lyduvėnai–Maironiai, at the foot of the right slope of the Dubysa River Valley, in a natural meadow. The water lingers in the pit and collects in a small pond. The water breaking through to the surface of the earth is covered with lumps of rust and red pebbles. The object's territory is an irregular oval-shaped, smooth, marshy, spring-fed ravine.

Liolių eldership, Kelmės district
www.lgt.lt
55.533167, 23.072833
Kelmė – 20 km

101
Kriaučius Stone

Boulder

This massive boulder is the third largest in Lithuania. The locals knew of its existence since about 1930.

Vileikiai, Pakražančio eldership, Kelmė district
www.visitsiauliai.lt
55.545666, 22.761097
Kelmė – 20 km

102

Pustlaukis sinkhole

Sinkhole

The Pustlaukis Geomorphological Reserve in the western part of Kurtuvėnai Regional Park preserves unique relief forms. The most impressive of them is the Pustlaukis sinkhole - a deep drop-shaped hole, whichslopes are 13 metres high. There is a bright terrace on the southern and eastern slopes of the hole, and a channel (narrowing) at the northern end. About 400 metres to the south, there is another slightly smaller sinkhole.

Kurtuvėnai Regional Park

Vainagiai forest, Kurtuvėnai Regional Park, Pustlaukis geomorphological reserve, Šaukėnų eldership, Kelmė district

www.visitsiauliai.lt

55.80895, 22.97374

Kuršėnai – 30 km, Šiauliai – 30 km

103

Svilė Springs

Spring

It is one of the most impressive and largest springs in Lithuania - a hydrographic natural monument. More than 100 springs bubble in the meadow. Svilė, a cold-water brook, collects their waters and carries them down to the Venta–Dubysa Canal. Its water contains highly rare species of algae and water insects surviving from the ice age. In June, the endangered Lithuanian orchids, Dactylorhiza Baltica, bloom on the costs. Svilė Springs have been declared a hydrogeological natural monument included in the list of Natura 2000 sites that are important for the conservation of European Union habitats.

Šaukėnų eldership, Kelmės district

www.krpd.lt

55.840324, 22.942323

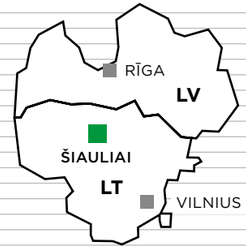
Šiauliai – 40 km

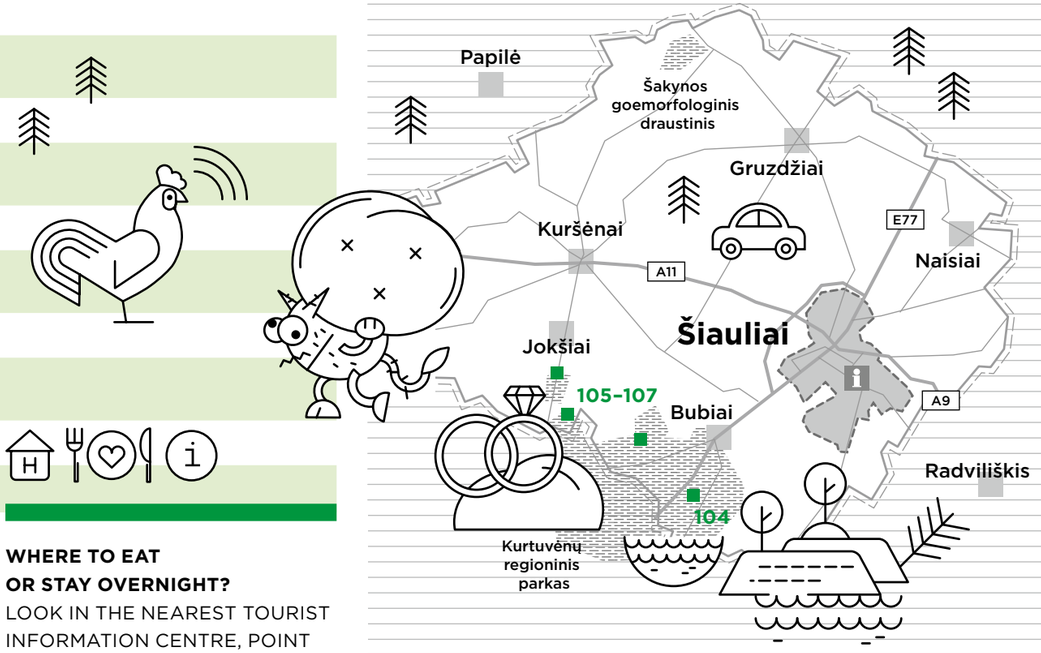
DRINK SPRING WATER AND DESCRIBE ITS TASTE, GOING BEYOND SIMPLY TASTY OR TASTELESS. DID ANYONE KNOW THAT THERE ARE PROFESSIONAL WATER TASTERS?

Dactylorhiza Baltica

LITHUANIA
ŠIAULIAI COUNTY

ŠIAULIAI
AND SURROUNDINGS





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WWW.SIAULIURAJONAS.LT
WWW.VISITSIAULIAI.LT

Bubiai Mound

104
Barsukynas Esker

Esker

Barsukynas Esker is 700 m long and up to 24 m high. Eskers are long and narrow hills formed in the cracks of a melting glacier. Legend says that these giant trails were poured through swamps. The 1st Pageluvis Mound is located at the highest point of Barsukynas Esker. On the eastern embankment of the mound, one can find the trunks of the dried Rebel pine where, in 1863, the rebels took an oath. While walking on the hills, visitors can enjoy being in nature and admire the natural landscape.

Kurtuvėnai Regional Park

Barsukynas Lake

Barsukynas Esker

Pageluvis Lake path

Pageluvis forest, Bubių eldership, Šiauliai district

www.saugoma.lt

55.803306, 23.098944

Šiauliai – ~30 km

105
Linartai Stone
Boulder

The boulder lies on a high hillside. It is 3.6 metres long, 2.8 metres wide and 1.7 metres high. Part of this huge boulder is under the ground. The structure of the stone is dominated by fine-grained granite.

Bubių eldership, Šiauliai district
www.krpd.lt
55.847778, 23.012722
Šiauliai – 40 km

106
Martynas Stone
Boulder

In the past, the upper part of the boulder had a depression similar to a human foot.

Kuršėnų kaimiškoji eldership, Šiauliai district
www.krpd.lt
55.861500, 22.903667
Kuršėnai – 20 km

Linartai Stone

Martynas Stone

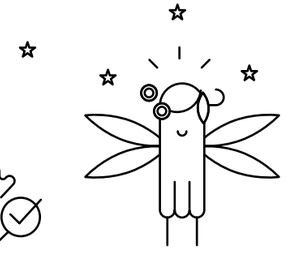
There are several stories about the origin of the name Martynas Stone. According to one of them, the groom Martynas, who escaped from the manor, was killed in this place. The master's servants found him sleeping on a boulder and cut off his head. It is said that Martynas' grave should be somewhere near the boulder.

In Lithuanian traditions, huge boulders are often associated with the devil. Martynas' boulder is no exception. It is said that one night the devil planned to destroy the Šaukėnai St.Trinity Church with this boulder, but the rooster crowed before he could. Enraged at his futile work, he threw the stone into the forest, where it still lies.

Laumė Stone

107
Laumė Stone
Boulder

The large boulder is located on the slope of a high and elongated hill (probably a ridge). Boulder dimensions: 3.9 m long, 3.7 m wide, 2.9 m high.



Urkuvėnai, Kuršėnų kaimiškoji eldership, Šiauliai district
www.siauliurajonas.lt
55.902457, 22.893846
Kuršėnai – 12 km

It is mentioned in the legend that the Devil carried the stone as a gift to his bride Laume. When the rooster crowed, he dropped the stone and fled.

LITHUANIA
ŠIAULIAI COUNTY

AKMENĖ
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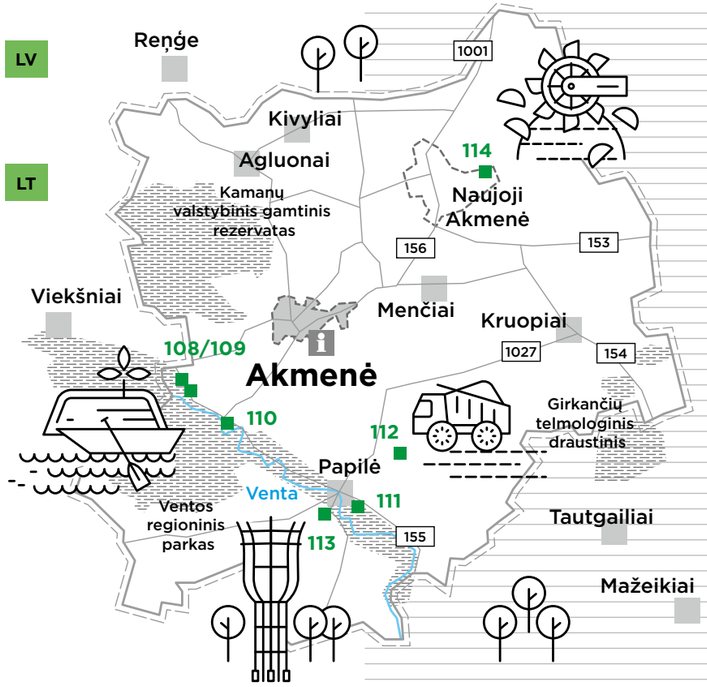


Venta Regional Park

108
Purviai Outcrop

Outcrop

The outcrop is unique with its exposed deposits of the Quaternary system of the Middle Nemunas. This is perhaps the only outcrop in the Baltic states from the 3rd warm-up of the last interglacial period of Mickūnai (35,000 years ago). The aim is to preserve the section of the Middle Nemunas glaciogenic sediments, which shows the structure of the outcrop, the formation of glacial deposits, and the paleogeography of climate change in the region. In spring, the outcrop is often exposed to river processes and lateral erosion. Clay, silt, and fine and tiny sand sediments are predominant. Microlayers of organic matter are often found in silt. Occasionally, pebbles, 1-2 cm in diameter, are also found in sedimentary material. While visiting the outcrop, visitors can admire the glaciogenic sediments and understand the formation of the layers. The object is included in the Venta River kayak route.

Purviai Outcrop

Akmenės eldership, Ventos eldership, Akmenės district
www.visitsiauliai.lt
56.204739, 22.639218
Venta – ~5 km

109
Avižlys Erosional Remnant

Erosional Remnant

It is an erosional remnant that is about 112 metres long, with steep slopes ending in a steep outcrop, at the very confluence of the Rivers Avižlys and Venta. Erosion of both rivers has created a unique form of nature - a narrow and long spur. Approaching the Venta, Avižlys falls into an ever-deepening valley and behold, hundreds of metres before the confluence, the valleys of the Venta and Avižlys become interspersed. They are separated by a steep embankment of tree-covered shrubbery slopes that ends at the confluence with a steep outcrop. The ridge shows layers of pleurisy and sand, which probably settled in a lake that was here 50 to 70 thousand years ago. Preliminary research of the outcrop has shown that this form may be a glacial tectonic fold (glaciotectonic deformation) flushed on both sides by the waters of the Rivers Venta and Avižlys. The object is included in the Venta River kayak route.

Venta regional park, Purvėnai geomorphological reserve, Purviai village, Akmenė district
www.ventosparkas.lt
56.199472, 22.643389
Venta – ~6 km

– – EXPLORE THE SHORE!
WHEN LOOKING AT THE SHORE, STUDY AND DISCUSS WHAT COULD AFFECT THE WATER QUALITY – THAT IS, WHAT PLANTS, STONES, AND POLLUTION AFFECT IT. DISCUSS WHAT NEGATIVELY AFFECTS WATER QUALITY. STUDY WHAT ECOSYSTEMS - BOTH PLANTS AND LIVING CREATURES - ARE FOUND AT THE SHORE.

Avižlys Erosional Remnant

110

Visitor Centre of Venta Regional Park

Visitor centre, exposition

The Venta Regional Park is unique in that the remains of Jurassic animals, including dinosaurs, have survived here. The curiosity of children and adults will be satisfied and many questions about the surviving history will be answered by the modern visitor centre, which has a special exhibition hall with exhibits reminiscent of dinosaur times. As you walk around the exhibition, you will see a variety of fossils – from the impressive shells of ammonites to the shells of squid ancestors.

The visitor centre is fun for visitors of all ages because it is modern and contemporary and visitors are attracted by the interesting information terminals and interactive stands. The sounds of nature are reproduced in the exhibition hall, so it is possible to feel as if a time machine has taken you millions of years back.

LT EN RU

Ventos street 30A, Venta, Akmenės district

www.ventosparkas.lt

56.18972, 22.68140

Akmenė – ~15 km

111

Raudonskardis Outcrop

Outcrop

Raudonskardis is a hill made of exclusively clay overlooking the River Venta. Glacial formations – brownish moraine layers – can be seen at Raudonskardis Outcrop which formed during the last glacial period. The panorama of the valley can be viewed from Outcrop, which overlooks the levels of several terraces. The outcrop's height reaches up to 20 m. It reveals up to the surface of the moraine plain, the upper layers formed of Quaternary deposits, the lower ones being hidden under the diluvium.

Papilės eldership, Akmenės district

www.visitsiauliai.lt

56.145519, 22.813746

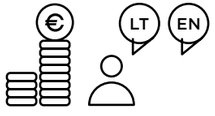
Akmenė – ~15 km

In 1933, the local historian Jonas Matas, who lived in Šemetaičiai inscribed the following testimony: "There is a hole in Raudonskardis: half of the fathom in one way, half in another, forming a square. We used to throw stones into that hole, the stones would fall to the bottom just like in a furnace – making all kinds of sounds. And we were afraid to get in it because we thought it might fall apart on us. Nobody knows who made that hole, and nobody spoke about it, not even old people. Only clay would slip down it.

112
Šaltiškiai Clay Quarry

Quarry

The quarry is located 5 kilometres northeast of Papilė, in the village of Šaltiškės. In the Early Triassic, 250 million years ago, there was a desert climate and alluvial sediments then accumulated in the muddy plains. Over millions of years, the decay of biotite and hornbeam minerals released iron, giving these layers a red colour. According to scientists, the images are reminiscent of panoramas of Mars.
Self-visits in the quarry are strictly prohibited. Guided tours are organized by guides.



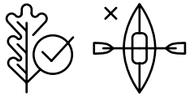
Akmenės district
www.visitsiauliai.lt Guided tours are organized by guides: karjerais.lt
56.169535, 22.850588
Akmenė – 20 km

113
Jurakalnis Outcrop

Outcrop

It is a typical form of relief formed by linear erosion. The process of linear erosion and its consequences are visible here - the erosive ravine itself, and the ravines and ditches where the springs are located. The most geologically valuable are the outcrops of the Jurassic rocks, which are naturally available for research due to intensive erosion. The 15 m high observation tower offers a magnificent view of the Venta Valley and its terraces - expressive Venta River valley, Papilė town, and attractions: Jurakalnis geological outcrop and spur, Papilė I and II mounds, St. Joseph's Church, fifteen-trunk lime tree, etc. The shape of the structure resembles a flower petal, it is made of wood and metal structures.

A resting area with information stands, benches, bathroom, also parking lot is located near. On the way towards the outcrop and spur, there is a gazebo and a fireplace. The object is included in the Venta River kayak route.



Papilės eldership, Akmenės district
www.ventosparkas.lt
56.144556, 22.782778
Papilė – ~1 km

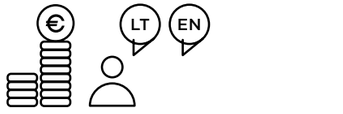
In 1936 a legend was written about the cave near Jurakalnis, which is 4 metres deep and 3 metres long and wide. The cave was once paved with boards and the chapel of St.John was close to it. And there were ghosts: a stranger appeared, and his legs were wrapped in white garments. Most likely, the cave appeared when Russian geologists searched for coal in the 19th century. Searches for ghosts were unsuccessful, but the cave remains.

114
Menčiai Limestone Quarry

Quarry

The Akmenė region is also famous for the “Canyons of Mars” - quarries of impressive beauty. Back in 1932, limestone for the production of lime, and the sugar industry began to be mined in Menčiai. Now part of the excavated quarry is flooded and there are artificial lakes that wash away the remaining limestone outcrops. The shores of flooded lakes are richly overgrown with tall grasses and shrubs. In some parts, a common white-flowered barnacle forms grassland, in others, blue-flowered vetch can be found, and so on. Visitors to the quarry are struck by the view, reminiscent of the Grand Canyon of America.

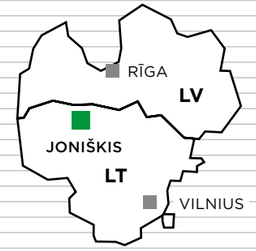
Self-visits in the quarry are strictly prohibited. Guided tours are organized by guides.

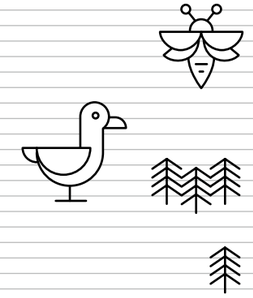


Akmenės district	
www.visitsiauliai.lt Guided tours are organized by guides: karjerais.lt	
56.322474, 22.93318	
Akmenė – 20 km	

LITHUANIA
ŠIAULIAI COUNTY

JONIŠKIS
AND SURROUNDINGS





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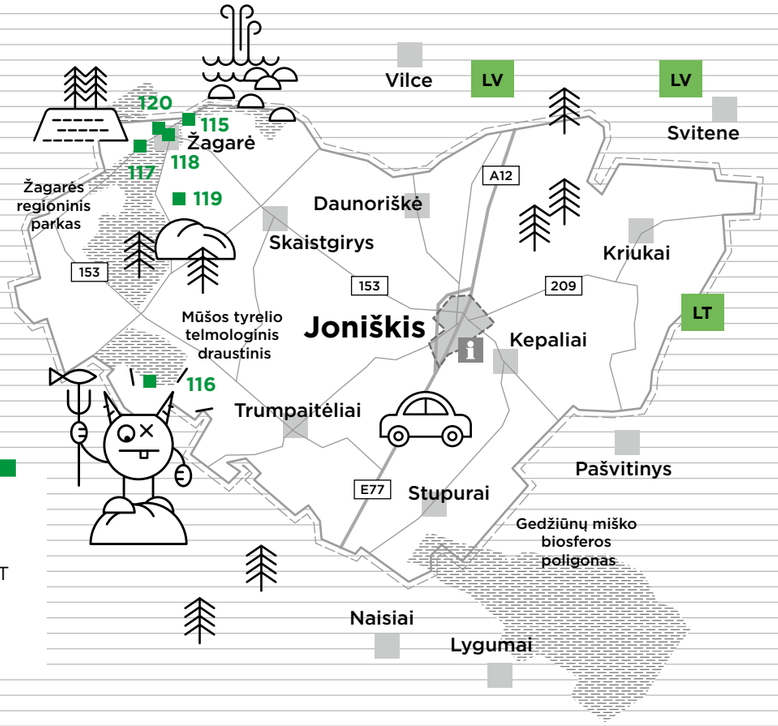
WWW.VISITJONISKIS.LT



115
Švedpolis Spring

Spring

Žagarės eldership, Joniškis district
www.saugoma.lt
56.371854, 23.282997
Žagarė – 2 km, Joniškis – 30 km, Naujoji Akmenė – 30 km

The spring of Švedpolis is in the middle of Švėtė, on the right bank (2 km below Žagarė). The spring water was used for the production of beer by the Kunsman beer brewery in the manor of Svedpol. Up to 50,000 buckets of beer were sold per year, and the famous “Dukes” beer even reached the Caucasus. The brewer’s buildings stood near the spring. The brewery operated from the end of the 19th century until the beginning of the 20th century. Later, the beer syndicate closed it and paid the owners 50 thousand litas for not working factory every year. In April 1940, a large fire broke out in the manor of Swedpol, during which the building of the former brewery burned down. The spring is included in the routes of excursions in Žagarė Regional Park.

Švedpolis Spring

116
Tyrelis Stone

Boulder

The boulder of Tyrelis is believed to be a relic of the Baltic pagan faith. The stone is in the Mūša Tyrelis swamp trail which is the longest wooden trail in the swamp in Lithuania.

The trail leads to the boulder, it can be reached by walking along the boardwalk for 3.6 km and about 0.5 km along the normal forest path. Boulder height - 1.45 m, length - 3.2 m, width - 3.0 m, maximum horizontal circumference - 11.2 m, composition - granite.

Gaižaičių eldership, Joniškis district
www.saugoma.lt
56.201694, 23.233806
Žagarė – ~30 km

Tyrelis Stone

The Tyrelis Stone is believed to be a relic of the Baltic pagan faith. This is evidenced by many essential things. Next to this stone is the so-called Devil’s Island. The devil in Baltic mythology is the god of the dead world. The origins of the Rivers Mūša and Juodupis also begin here. The name Juodupis comes from the word “black”, which means something dark, mystical, and mysterious. Nearby is the village of Piktuižiai, whose name comes from the word “angry”.

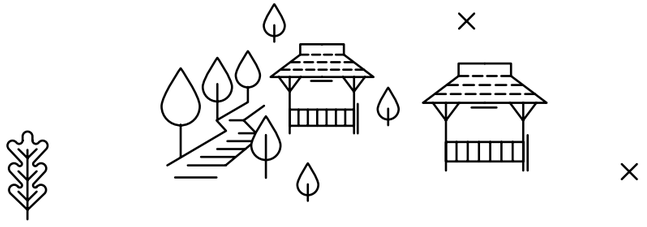
Mūša Tyrelis swamp

117
Žagarė Esker

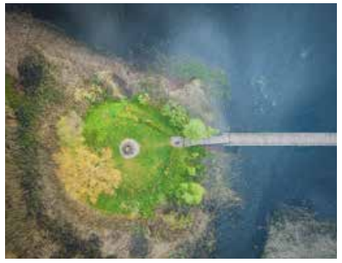
Esker

Žagarė Esker is a long, narrow hill formed by sand and gravel from the water of the broken glaciers melting into the cracks and tunnels of the glacier. It is one of the longest eskers in Lithuania, and at the same time one of the most impressive, because of the plains around. The natural relief of

the esker was destroyed in many places during the Soviet times by intensive gravel mining, but it has not completely lost its shape and remained in the recreational area of Žagarė Regional Park together with Žvelgaitis mound, which rises to a height of about 20 m. An 830 m long section on both sides of the mound has been declared a geological natural monument. Žagarė Ridge cognitive walkway is available around Zvelgaitis lake.



	Žagarė urban reserve, Žagarė Regional Park, Žagarė eldership, Žagarė, Žvelgaičiai village, Joniškis district
	www.saugoma.lt
	56.353540, 23.223845
	Joniskis and Naujoji Akmene – ~30 km



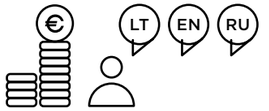
Žvelgaičių Lake

Žagarė Esker

118
Visitors' Centre of Žagarė Regional Park

Visitor centre, exposition

One of the largest visitors' centres is waiting for tourists in the restored palace, where there are several exposures under one roof - spectacular hunting trophies, antiques, sports achievements, and an interactive exposition about Žagarė Regional Park and its values. The old town of Žagarė, the impressive nature, and the longest educational trail in the swamp are all outstanding values of the Žagarė Regional Park. The forests of Žagarė are called the birthplace of red deer in Lithuania, and the dolomite layers led to the appearance of a special type of cherries called Žagarė cherries. One of the largest visitors' centres in Lithuania is waiting for tourists in the restored palace in Žagarė Regional Park, where there are several exposures under one roof - spectacular hunting trophies, antiques, sports achievements, and an interactive exposition "The Mysteries of Dolomite" about Žagarė Regional Park and its values with various installations, virtual reality, and games.



	Malūno street 1, Žagarė, Joniškis district
	www.saugoma.lt
	56.362491, 23.264636
	Joniskis, Naujoji Akmenė – ~30 km

Visitors can get such services here as excursions with a guide, various educational programmes. Visitors can also experience a night at the museum in this mansion.

Visitors' Centre of Žagarė Regional Park

119
Brother's Boulder

Boulder

One of the largest geological natural heritage objects in Šiauliai County, protected by the state. The boulder was brought by the last glacier, which withdrew from the territory of Lithuania about 12 thousand years ago.

The upper part of the irregularly conical boulder is missing a rock of about one cubic metre, which has fallen off the boulder after settling out of the glaciers where it still stands.

Veršiai village, Žagarės eldership, Joniškis district

www.saugoma.lt

56.322333, 23.265472

Žagarė – ~5 km

120
Žagarė Outcrop

Outcrop

Žagarė Outcrop is a geological natural heritage object - a 2.5 - 3.5 m high and about 200 m long dolomite wall, known since the 19th century. In the quarry, dolomite was mined by hand before World War II to burn lime, and later as rubble for road construction. The people of Žagarė, who worked in the quarry, said that they had filled the excavated dolomite into kilns, which were fired with firewood and ferries. The lime burned in 4 to 5 days. They were transported to Joniškis railway station, where they were sent in wagons according to orders, mostly to Russia. In Žagarė Outcrop, visitors can see the layers of dolomite close to the earth's surface. Zagare outcrop is included in various routes of excursions in Zagare town and Zagare Regional Park.

Žagarė town, Žagarės eldership, Joniškis district

www.saugoma.lt

56.365190, 23.256989

Joniškis and Naujoji Akmenė – ~30 km

THE MOST IMPORTANT THING TO REMEMBER IN NATURE IS "WHAT IS BROUGHT, TAKE IT AWAY".

It is important to be aware of the impact of human waste on a particular site - it not only damages the landscape, but also threatens both the site's quality and the ecosystems.

It is important not only to leave a tidy and unpolluted environment, but also not to cause permanent damage, such as leave various messages in the outcrops or stones. Move around the site safely without endangering yourself or others, making sure that the site remains in its original condition.

Think before going out -

- Think about the packaging of the products to take and plan accordingly
- What could be taken on that trip that would not have to be gotten rid of on the way?
- Do not look for small waste bins on hiking trails in the forest, swamp or other natural sites, but carry empty packaging the whole way and dispose of it in dedicated waste disposal sites.

Why is this important?

- The management of small bins in nature is expensive and difficult due to difficult access;
- Packaging can become a deadly trap for living creatures;
- Birds and animals carry waste around the area.

Find out the rules for visiting the area and follow them. Keep in mind that there may be restrictions in some locations. They are usually related to nature protection regulations, private residence, crossing of agricultural land, etc.

Be aware of the individual responsibility as a nature tourist! By choosing eco-friendly travel, we allow the opportunity for future generations to enjoy unique moments in nature.

Pictured: Nereta River, Vīpe parish (Latvia)

Pictured: Daugava River near Jēkabpils (Latvia)

This brochure has been prepared within the Interreg V-A Latvia-Lithuania Cross-border Cooperation Programme 2014-2020 project LLI-483 “Use of Unique Geological and Geomorphological Nature Values in the Development of Green Cognitive Tourism/ GEOTOUR”, which aims to create a sustainable and educational tourism offer, increase the flow of visitors to the regions, as well as improve knowledge and understanding of the unique natural values. Total project costs: EUR 649,972.10 (incl. ERDF funding: EUR 552,476.26).

This brochure has been produced with the financial assistance of the European Union. The contents of this brochure are the sole responsibility of Zemgale planning region and can under no circumstances be regarded as reflecting the position of the European Union.

Issuer: Zemgale planning region, www.zemgale.lv, 2023

ISBN 978-9934-9172-3-3

We would like to thank all those who have contributed to the brochure, especially the project partners, for their cooperation: Aizkraukle Municipality, Bauska Municipality, Žemaitija Protected Areas Directorate, Aukštaitija Protected Areas Directorate, as well as the owners of the objects and tourism information centres of Zemgale and Northern Lithuania.

Check videos about the Geo destinations here:

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The brochure uses photographs from the archives of Latvian and Lithuanian tourism information providers, owners of the objects and Zemgale Planning Region.

As well as:
Aizkraukle Tourism information centre, Selonian boats, Artis Šukots, Elizabete Lukšo-Ražinska, Tukums Tourism information centre, Shutterstock.com, pexels.com, redzet.lv archives.
Dobele Tourism information centre archive.
Bauska Tourism information centre, boat rental “Ozolaivas”, Jumpravmuiža Park complex, Kaspars Krauze (KrauzeVision), Lauris Vīksne (LTV, “PaStraumei”) archives.

Jēkabpils Tourism information centre, Kaspars Siliņš, Divi kadri, Egita Galiņa, Valija Fišere, Jēkabpils History Museum, Andris Eglītis, Andris Soms, Jānis Lācis, Viesīte museum “Sēlija”, Kaspars Sēlis archives.
Sia “Laflora”, Purvu bridējs, Elizabete Lukšo-Ražinska archives.

Sigitas Mikutis, Vidmantas Lopeta, Justas Pamparas, Sigita Teišerskė, M. Macaitis, Kurtuvėnai Regional Park, Andželika Lukoševičienė, Aušra Rukienė, Pakruojis Business Information centre, Mindaugas Riauka, Sigitas Kazlauskas, Venta Regional Park, Paulius and Odeta Lebedžiai, Dainius Mereckis, Žagarė Regional Park,

Dubysa Regional Park, Kelmė Business and Tourism information centre archives.

SkyShot Media&Photo (P. Kalamažnikas), Kupiškis Tourism information centre, V. Juknevičius, Krekenava Regional Park, Biržai Regional Park archives.

Mūša Tyrelis swamp (Lithuania)