STORIES FROM THE LAND OF MEADOWS

A quest game handbook in SPA Ostrovné lúky

LIST OF CONTENT

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Introduction

This brochure will guide you through the Land of Meadows – the Golden Garden. The magical Golden Garden once spread across our largest alluvial island, abounding with life, richness of plants and animals, and mysterious undines* dancing in misty meadows. Since then, much has changed in the Land of Meadows, and the Danube carried off the Golden Garden. Fortunately, you can still find treasures to be seen no place else. This handbook will guide you through three routes in search for the gems of the Land of the Meadows. Routes are colour-coded and differ mainly in length. The shortest one – The Green Garden – will walk you through the EEC SEA Dropie. The medium one – The Land of the Meadows – will guide you along river *Dudváh*; and the longest one – Cyklo *Ostrovné lúky* – is ideal for cycling. A worksheet prepared for each route will lead you to the treasure. At the end, you can find helpful links, shall you need a hand. Keep your heart open while searching, you may meet the last undine.

** In Slavic mythology, an undine (SK rusalka) is a water fairy, whose long hair gives her power, and by combing it, she could cause a flood. Once upon a time, they were the free spirits of the meadows, often playing jokes on those who saw them.*

THE LOWER RYE ISLAND – THE LAND OF MEADOWS

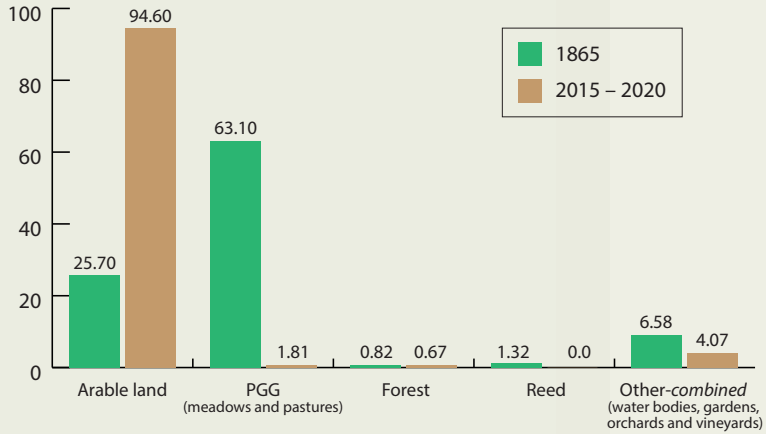
When standing in SPA *Ostrovné lúky*, you are actually on the largest alluvial island in Europe, in its lowest-lying part called The Lower Rye Island (SK: *Dolný Žitný Ostrov*), in the tip surrounded by rivers Danube, *Malý Dunaj* and *Váh* with an area of approximately 520 km^2. Administratively, it falls under the *Nitra* region and 64% of the population is of Hungarian nationality. The larger municipalities with extensive estates and scattered agricultural farmsteads – a *taňa* – are typical for the Lower Rye Island.

Their numbers increased in the middle of the 19th century, when draining of the Rye Island began. At the beginning of the 20th century, there were about 1,000 *taňas* per 30 km^2. Mostly, there were meadows, which also reflected in the local names – There was a district called *meadows* (SK: *lúky*) in almost every municipality. Water shaped and formed the Land of Meadows during centuries, and also brought dramatic changes, when Danube massively flooded the region in 1965.

DID YOU KNOW...?

In the past, reed was the key material for roof building. Large reed areas were cut every year to get quality building material. The reed was cut when “mature” — the leaves separated from straws, and young leaves not yet sprouted — in winter or in early spring. Uncut reed was set on fire or rolled flat to make the new growth clean and uniform. Mowing was a seasonal work and required special tools, such as special scythe and ice spurs.

Past and Present Land Use



SPA OSTROVNÉ LÚKY

You have wandered off to the Special Protection Area of *Ostrovné lúky*. I will be your guide. My name is Mike the Shrike, and I live here. I will tell you more about my mates and myself later on. SPA *Ostrovné lúky* occupies total of 83 km^2 (8,300 ha) of agricultural lowlands. A *Dudváh* meander flows right through it, bringing life to the area. In 1934, the meander was 80 m wide, and was surrounded by multiple side arms. Nowadays, it is barely 40 m wide. It must have been a mighty river once. River *Částa* and its arms flowed almost in parallel with *Dudváh*. In the 19th century, it was still possible to sail these rivers. In the country with just few roads, they served as shortcuts, both in winter and summer time. Tractors have destroyed a large part of them.

As you walk through the country, you certainly ask yourself *How can this be a protected area*? 95% of the territory is used for intensive agriculture, and small natural patches spread only alongside the *Dudváh* river. Now, I have to tell you about Natura 2000, which protects such areas. Natura 2000 is a European network of protected areas. Its purpose is to protect the most valuable habitats in Europe. That does not necessarily mean the unspoiled mountain nature. The wildlife of European agrarian areas is in danger, too. Singing birds, once a common sound of the fields, has now vanished. The fields went quiet. Natura 2000 does not try to protect the country *from* people, but *with* people. People are an important element in an agricultural country. The LIFE programme helps to protect nature and biodiversity. Under the LIFE12 project NAT/SK/001155 Conservation of birds in the SPA *Ostrovné lúky*, meadows and pastures were restored, 17 km of biocorridors were created, 500 pollard willow trees were saved, and wetlands of *Dudváh* now abound with life. On the top of it, I am here to accompany you in your treasure hunt.

DID YOU KNOW...?

The Lower Rye Island was once a land of water. Therefore, every one centimetre in altitude mattered. In the past, people did not fight the water, they learned to live with it. And they used about 20 different terms to describe the water environment.

A painted map of

SPA Ostrovné lúky

THE TAWNY PIPIT
(Anthus campestris)

A dry meadow with scarce grass that looks as if it was trampled by a herd of horses? A rocky dirt road with low grass? My friend Piper the Pipit just loves all that. Maybe because she is a discreet brown coloured bird herself. She even sneaks back to her nest unnoticed – she lands a bit farther, and approach the nest running. Are her brown colours the reason why the males' fly is so wavy and their songs full of sorrow? Piper the Pipit likes to sit on elevated lookouts – fences, stones or poles. Other than that, she keeps a low profile – picks her food from the ground and nests there, too. She loves to eat bush crickets and their larvae, caterpillars, beetles, mosquitoes and ants. With the current decrease in insect numbers, there is no food left for her. In order to increase the amount of insects, meadows and pastures were established. These are also important nesting places for the tawny pipit. Nature does not care if the grass on the meadow is perfectly even, dense and green, it does not mind some bald earthy spots. On the contrary, together with piles of stones and fence poles, the naked ground is the ideal spot for Piper.
Look, such a sleek girl, isn't she?

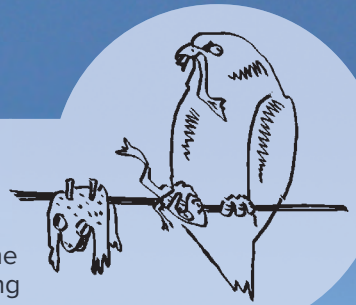
DID YOU KNOW...?

The instrumental value of the tawny pipit (Anthus campestris) is € 1,140. The instrumental value of a protected species has nothing to do with the price you would pay for it at a market. It represent an assigned value of an animal for society, or nature. Moreover, it equals the fine you will get, if you catch or manipulate with a protected species without a proper license. If you do this in a Special Protection Area, the fine is increased by 300%, i.e. € 5,520 in case of the tawny pipit.

THE RED-FOOTED FALCON
(Falco vespertinus)

Our friend, the falcon, is the rarest one of us here. He is critically endangered in the whole of Slovakia. He didn't want to disclose his personal information. However, I can tell you he is the smallest and the most colourful falcon in the country. He mostly feeds on insects – he prefers beetles, grasshoppers, bush crickets and dragonflies. If insect is scarce, he would not spurn a frog.

Not only does he suffer for his insect addiction, he also pays for his friendship with the rooks. Since he is not able to build his own nest, he likes to use old rook's ones. Unfortunately, due to lack of food in the agricultural country, the rooks moved to towns. And the poor falcon has no place to nest! Therefore, he gladly makes use of nesting boxes and platforms. As part of the project, more than 530 nesting boxes and platforms were installed in SPA *Ostrovné lúky*, and we hope they will soon be occupied by happy tenants. 20 years ago (2000), there were about 40 nesting falcon couples in Slovakia, while in 2019, there were only 10.



DID YOU KNOW...?

The red-footed falcon (*Falco vespertinus*) is quite a traveller. They are migratory birds, and they fly to the savannahs of Namibia or Botswana every year. According to the transmitter, the record holder is Ubul the Falcon – he flew to 33,000 km.

THE LESSER GREY SHRIKE
(Lanius minor)

And now something about me. I am a lesser grey shrike, the raptor of the songbird world. I feed on insects and rodents, and I like to stockpile – I impale them on plant thorns. In some languages, they call me The Impaler. Look at that!

I live here, in lowlands, in an agricultural area. As many other, I have a problem, too – I build my nests in thickets and tree alleys, in about 6 m height. And there are less and less trees I can use. Not to mention the time it took to prepare a meal 20 years ago, and how demanding it is now. Because there are almost no insects...

DID YOU KNOW...?

In 2014, at the start of the project, our numbers were at all-time low – only four nesting lesser grey shrike couples in the area. Thanks to the project, the number of nesting couples increased to eight in 2020. This is a great evidence of how quickly the agricultural landscape can react to positive changes.

OTHER REMARKABLE SPECIES OF OSTROVNÉ LÚKY

We are not the only ones to enjoy the meadows and pastures created for us. The place was immediately discovered by insects – bees, butterflies, grasshoppers or bush crickets. And since the *Dudváh* river, new wetlands and old willow trees are right around the corner, the insectivorous birds find this a nice place to live, too. In the spring of 2020, the "up-up-up" song of **the Eurasian hoopoe *(Upupa epops)*** was heard here again. They nested in the area after a long time. Otherwise, they are proper punks – not only for the beautiful crest, but also because they enjoy going through dung on pastures in search for nice fat larvae.

The barn owl *(Tyto alba)* also enjoys the perches in meadows and pastures. They had almost disappeared from the Danubeland (SK: *Podunajsko*), but in 2018-2019, 50 owls were released into the wild, and luckily enough, some of them began to nest. The released owls came from two rescue stations – in *Bartošovice*, CR and in *Zázrivá*, SR. It is our most beautiful owl with the most terrifying voice. In the evening, when it flies quietly over my head, all my feathers bristle in fear. They feed on mice and may catch a sparrow in the winter. The barn owl prefers shrews that other owls find quite smelly. They do not build any nests – they nest in attics, in-

side roofs of farm buildings or inside church towers. However, not just a meadow keeps a creature alive. In 2020, **the European pond turtle *(Emys orbicularis)*** was repeatedly observed. They need a diverse water environment – e.g. deeper waters for the adults – to hunt and to hide; and shallower waters with vegetation for the youngsters. All turtles love to sunbathe lying on stones or bare shore. They hunt small invertebrates, beetles, and earthworms. Under the water, they catch tadpoles, frogs or sick fish. I hope we will meet the European pond turtle again. My former neighbours, such as partridges and swallows, are in decline, while we have a bunch of newbies that do not behave that well. One of them is **the walnut husk fly *(Rhagoletis completa)***. The larvae develop in green seed cases of nuts and make them go black and fall off. It is one cheeky yellow fly with green eyes. They appeared in our area in 2019 and are quickly spreading to the north.

The coypu *(Myocastor coypus)* now sprawls out in meanders, canals and rivers. It looks like a big rat, easily to be confused with the beaver. The difference lies in the tail – beaver's tale is flat and wide, while the coypu has it round. They feed on water, meadow and field plants, using their massive orange teeth. They dig their 15 m deep dens in river shores. In the past, they were kept for fur. They escaped or were released to the wild.

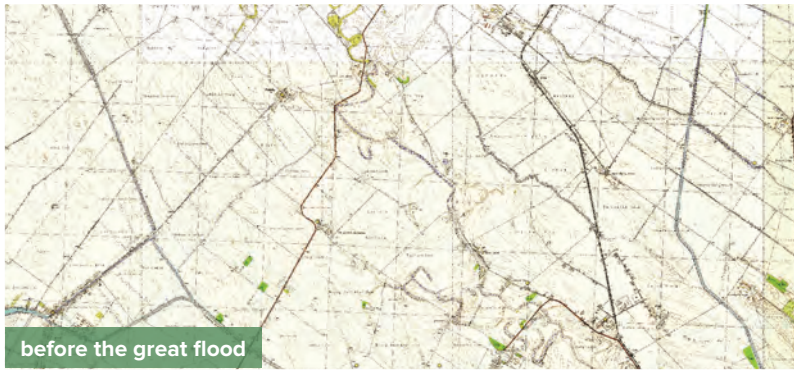
DID YOU KNOW...?

The plant and animal "newcomers" can be divided into two groups – allochthonous and invasive species. Allochthonous species are those that are not native to the country and were imported or spread from abroad. Invasive species are such allochthonous species that not only spread quickly, but also have a negative impact on our native species and habitats.

DUDVÁH

Čalovecký Dudváh is a mighty ancient river, the meanders of which can still be seen in the landscape. In the 15th century, it would empty into river *Váh* near *Kameničná* village. Around 1730, an average depth was about 2 m. Certainly, a few undines used to lark around the old willows, luring the wayfarers into immense wetlands. River *Dudváh* is a biocorridor – a green vein connecting the islands of life through the country. A long time ago, when there were almost no roads in the country, it served people for transport. Water transportation was the fastest. Often, a bit of so-called *Rye Island luck* (or *csallóközi szerencse* in Hungarian) was needed – to cross the river, the punt had to be on the "correct" river bank. This last wetland is an example of how the landscape once looked.


end of the 19th century


before the great flood


the present time

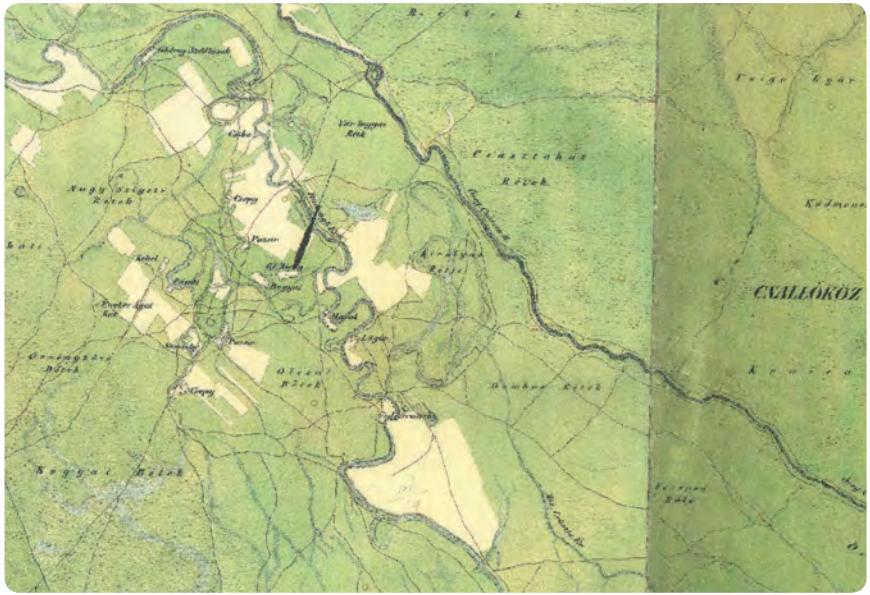
Luckily, *Dudváh* could catch a new breath thanks the LIFE – *Ostrovné lúky* project. Look, the water returned, meadows and pastures emerged alongside. There are newly planted trees and new nesting boxes.

DID YOU KNOW...?

There are rivers that once had a spring, but due to human intervention, it ceased to exist. This is the case of Dudváh. It used to spring in Čachtice, nearby Nové Mesto nad Váhom, SR. Nowadays, there is hardly any trace of it. The name Dudváh has been known since the beginning of the 13th century (1208) – Dwdwag. The 1392 Žigmund deed mentions the Dudvag river. The main stream of the Dudváh river is currently divided into three parts. Horný Dudváh, Dolný Dudváh and Salibský Dudváh. Dudváh, our bio-corridor, has been separated from the main river stream since the 15th century, approximately.

ČÁSTA AND MALÁ ČÁSTA

Oh, the water veins, old river beds and ancient meanders, all in the past! There used to be 40 ha of wetland per 1 km^2. In this magical world, the undines would dance on the meadows flooded with water. The rivers — *Dudváh*, *Částa* and *Malá Částa* — were providing enough water.



The *Částa* river represents the northern edge of the *Kameničná* municipality. It used to spring in *Trhová Hradská* municipality, flowing through villages of *Okoč*, *Opatovský Sokolec*, *Asód*, *Kolárovo*, *Balvany*, only to empty into backwaters of *Váh* in *Kameničná* village. At the end of the 19th century, newly built dykes cut the meanders off of the main streams. Due to the river bed shape, it was believed it was man-made. The soil was quite fertile, ideal for tobacco crops.

Kráľka, a little settlement, is located along *Částa* river. It once was a varied area covered with bushes, cane,

groves, and surrounded by wetlands – an ideal hunting spot for the nobles.

According to the historical records, the settlement was founded at the turn of the 18th and 19th century. Later on, a school and manor house were built. The legend has it, the manor house was Maria Theresa's hunting estate. Since there were no roads, the nobles would access the manor house sailing *Částa* river. In the 1970's, there was still a shop and a pub in the manor house.

Malá Částa used to be a side arm and spreads across 54 ha. It is a Slovak state property classified as a water body and falls under the Slovak Land Fund. Despite the fact the government should give priority to nature conservation on *any* state lot, especially those classified as Category IV protected areas, the plot is rented out for agricultural use and ploughed over in many places. Wildcat dumps are yet another serious issue along streams and rivers.

DID YOU KNOW...?

There are about 6,000 illegal and 111 legal waste dumps in Slovakia. Illegal waste dumps are much smaller than legal ones. However, their impact on the environment can be much worse. A fine for those who dump waste on a wildcat — illegal — waste dump has been increased from € 160 to € 1,500.

POLLARD WILLOW TREES – THE ISLANDS OF LIFE

Being a shrike, I myself prefer to nest on tall trees – poplars, locusts, or fruit trees. However, the most common tree in SPA *Ostrovné lúky* is the willow. You know the willow, don't you? Many of my bird mates love the willow trees, because inside the trunks, there are hollows to nest in. Especially, inside the pollard willows. *What are the pollard willows*, you ask? Let me tell you!

A willow is a pioneer. That means they are the first ones to grow on bare spots with lots of sunshine – that appear, e.g., after a flood. Under favourable conditions (enough humidity and light), they grow very fast. However, they also get old quite soon – after 30-60 years, depending on species. Willows are dioecious plants. For the comate seed to be formed, male pollen needs to get to a female pistil. And that requires the help of insects. Wind and water carry the seed far away from the mother plant. Under suitable conditions, the seed can germinate in half a day and reaches 30-50 centimetres in high in the first year. Willow is a varied genus – willows can be 30 m tall trees, as well as tiny "herbs". Most of the willows are well adjusted to water, and can sprout air roots, if necessary. By looking at them, you can see how high the water level was.

In Slovakia, there are 30 willow species – 9 "regular" species, while the rest prefers alpine or boggy zones. White and crack willows are the most common pollard willow trees. Pollard willows are man-made, they acquire their characteristic shape by pollarding every 4-5 years. By pollarding it regularly, a willow lifespan can be extended to over 150 years.

Hollows often form inside the old willow trees. Their formation depends on the wood-decaying fungi. The fungi can enter the tree through open bark, e.g. after breaking off a branch, and start decaying the wood. Older willows provide both living wood and deadwood at different stages of decay. About 400 different species – plants, animals and fungi – can be found on such a willow.

Willow as a habitat

YOU TOO CAN HELP CREATE HOLLOWS BY POLLARDING THE WILLOWS TO A HEAD-LIKE SHAPE.

The willows serve nature, as well as humans. People always needed firewood, timber, withes for basketry, wood for river banks fortifications and drying up the soil, possible due to the willow land improvement abilities. The daily water consumption of an adult willow is about 540 litres. Besides serving a sustainable wood source, it also provides shade to grazing cattle. It is of great importance to beekeepers, as it produces both pollen and nectar in early spring. People used to plant them everywhere possible, along rivers *Dudváh*, *Částa* and others. The willows are best to be planted in early spring, when meanders are still frozen over. You can get suitable planting twigs by pollarding the willows growing nearby. Ideally, use twigs of 10 cm in diameter, at least 2 m long. Dig a hole through the ice and in the dirt, and stick the twig at least 30-50 cm deep. Keep cutting off the side-slips during the first couple of years. In about 5 years, you'll get a beautiful willow, ready for first pollarding. Cut the willow at the height you wish the "head" to form. Remove all side-slips. And just wait for your pollard willow to grow.

DID YOU KNOW...?

The willow is a medicinal tree. Tanbark and salicine were used in the pharmaceutical industry. Today, we use synthetic compounds instead of willow bark. The bark extracts were used to stop bleeding and inflammations, to cure diarrhea and gastric catarrhs. It is also used in veterinary medicine. Sheep and goats enjoy eating young spring shoots.

BIOCORRIDORS – THE GREEN HIGHWAYS

You probably wonder *why the shrike needs a green highway, a biocorridor*? Well, exactly what *you* need the roads for. Surely, I can fly, but only about 800 m from the nest, so I cannot fly to the other side of SPA *Ostrovné lúky*. Look at the hare, he is a great runner, but won't go further than 1 km from his form. And what about those ground beetles I quite enjoy? They move only within a 50 to 200 m range. In order for us to travel from meadow to meadow, we need our *green highways* – grassy strips, windbreaks, lowered wet zones and dirt roads.

The most important green highway in SPA *Ostrovné lúky* is *Dudváh* river – and it has been so for over 3,000 years. Thank Goodness there is no toll! *Dudváh* flows through the entire SPA *Ostrovné lúky* and it is safe to sail.

Dudváh, *Částa*, windbreaks, shrubs, grassy field edges and dirt roads are the green network of life in agrarian land. Nowadays, they connect new meadows and pastures. They provide wildlife with nesting and hiding opportunities, they are a source of food, and make migrations across the country possible. They are also important for plants. Rare herbs and plants can be found on the field edges. Only a short-sighted farmer, focused on quick profit, would plough their field all the way up to the concrete road.

Shrubs, baulks and dirt roads are an important part of agricultural landscape, and crucial to life of many species.

DID YOU KNOW...?

Honeybees are very important for both humans and nature. But do you know the real truth about pollinators? The most efficient pollinators are not the honeybees. Bumblebees, flies and different solitary bee species hold the first place. Honeybees can negatively impact numbers of large bee species, such as bumblebees, because they compete for food and can infect them with their diseases. Therefore, it is very important to create space for solitary bees, too – by building insect hotels, planting native herbs or just remove a little part of your lawn to expose bare earth, so the solitary bees can dig their nests in the ground.

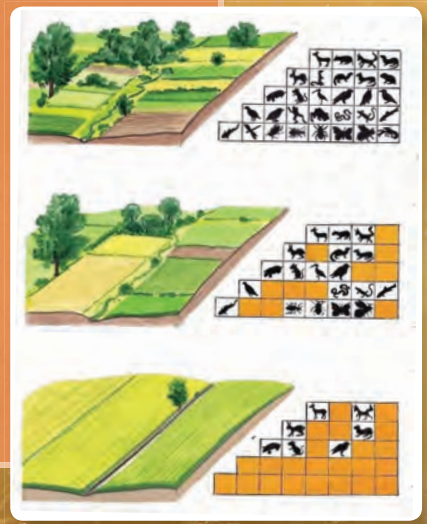
LANDSCAPE DIVERSITY *versus* SPECIES DIVERSITY

IDEAL LANDSCAPE

1. violet carpenter bee
2. uff-tailed bumblebee
3. bees
4. ammophila
5. old world swallowtail
6. peacock butterfly
7. odonata
8. grasshopper
9. osmoderma eremita
10. carabus cancellatus
11. seven-spot ladybird
12. pelobates fuscus
13. european tree frog
14. grass snake
15. grey partridge
16. ring-necked pheasant
17. tawny pipit
18. barn swallow
19. lesser grey shrike
20. red-footed falcon
21. barn owl
22. white-tailed eagle
23. common buzzard
24. white stork
25. tundra vole
26. common vole
27. hare
28. roe deer
29. least weasel
30. fox

INTENSIVE LANDSCAPE

1. asian ladybeetle
2. pieridae
3. common buzzard
4. common vole
5. hare
6. east weasel
7. roe deer
8. fox



MEADOWS AND PASTURES – A KEY TO SUCCESS

All inhabitants of the agricultural landscape love meadows and pastures. Turn your face to the wind and close your eyes. Take a deep breath and try to imagine the ancient Land of Meadows.
Imagine you opened your eyes in 1865. You would see a long white house on a slight hill, peeking through an orchard that has been all grazed down. There would be a cow, and chickens running around, and a little lake, just by the hedge. Pollard willows, cattails and reeds would reflect in the water, ducks and geese swimming on the surface, the shores grazed down and covered with yellow cinquefoils. Pollard willows would grow along *Dudváh* river and in meanders covered in endless reed fields. The grass along *Dudváh* would be eaten out, pastures in shades of pollard willows blooming, covered with kingcups, forget-me-nots and irises. The more elevated parts would be turned into cereal, potato, lucerne or corn fields. And as far as an eye can see, meadows and pastures in all shades of green, filled with unflagging bird songs. This is how the ancient Land of Meadows once was.
How come the meadows can regenerate so well? The reason is simple – a discreet plant, basis of mankind's diet, the grass.

DID YOU KNOW...?

In the past 35 years, 55% birds and 75% flying insects have disappeared from European fields and meadows. European scientists blame the EU's common agricultural policy, which encourages the farmers to intensify the production.

Grass is well adjusted to grazing – more than 70% of its biomass is underground, in the roots. Therefore, grass can easily regenerate, even if its leaves are grazed off.

Grass habitats and herbivores form a well-coordinated interconnected system. Dry grass inhibits the growth of young grass. Herbivores eat the dry grass, and the nutrients return back to earth in their dung. In the wild, hares and deers are the biggest consumers, while livestock — sheep, cows, horses — feast on pastures. On the other hand, meadows require a man to remove the accumulated biomass at least once a year. The grass is cut and removed. From a biodiversity perspective, the worst we can do is to mulch the area. The mulcher crushes all life – butterfly caterpillars, larvae, pupae, beetles, even small or young animals.

On the ground and underneath, the meadows are full of life. Aeration and grazing are crucial to the existence of grass habitats. Earthworms, moles and voles aerate the soil, as they build underground corridors. Ground beetles, tiger beetles, spiders and ants live on the soil surface. Butterflies feed on nectar, but as caterpillars, they need a specific plant to eat and metamorphose. Caterpillars of a beautiful butterfly – **the Old-World swallowtail *(Papilio machaon)*** – require umbellifer plants. The meadow also provides food for birds – insects and seeds. And you know what? We don't mind that the meadow grass is not equally green everywhere. On the contrary, an exposed soil surface with thin vegetation is important for many species: Pheasants or quails use the exposed soil to dust bath. Swallows would use the mud to build their nests, and solitary bees can dig the tunnels and lay their eggs in the earth.

Meadows and pastures serve people, too. They are covered by vegetation all year round. Thanks to that, their surface does not get as warm as bare soil. Neither the soil under vegetation gets so warm, so the water evaporates from the soil slower. Earthworms, voles and moles create a favorable soil structure that can hold more water. If the green area is large enough, it can affect the microclimate – higher air humidity results in more pleasant temperatures and retains dust and pollen much better.

DID YOU KNOW...?

Today, only 5-20% of the Danubian alluvial forests are formed by native tree species. 80-95% of the area is now covered with monocultures of cultivated Euroamerican poplars. Cultivated poplars have thin and sparse branches where our native bird species — such as black storks and white-tailed eagles — cannot nest.

FORESTS AND FOREST-LIKE GROWTHS

There are no forests in SPA *Ostrovné lúky*. The overall forest cover of the area is only 0.67%. Neither are we forest birds – we belong to meadows and fields. Thickets are more than sufficient. In the past, forests spreaded mainly along rivers Danube and Malý Dunaj. Only a few trees – willows, poplars, ashes, and alders – have adapted to the omnipresent water, oxygen deficiency in the soil, and to the amounts of fresh nutrients. Other species are not able to survive in this environment. Softwood alluvial forest grows right along the river, hardwood alluvial forest species, such as oak, prefer drier spots. Sadly, there are no oaks anymore. Growing agriculture had a negative impact on alluvial forests in the Rye Island (SK: *Žitný ostrov*).

Besides the strip along the Danube, only a few forest patches remained. Natural alluvial forests have been preserved only in difficult-to-access areas – islands, wetlands or river banks. Mostly, they were replaced with poplar monocultures. The plantations of the cultivated poplars get cut at the age of 20–40 years, so species bound to old trees and dead wood have no chance to survive.

Prior to the great flood, this was a land of locust trees. By every dirt road, by every barren dry spot where a willow would not survive, there was a locust tree. Its hard wood was used to build houses, shelters, haylofts, or to make tools. Thickets were popular nesting spots for the rooks and my mate, the red-footed falcon. These two have an interesting way to share an address. Before the falcons return from Africa, young rooks have already left the nest. The falcons settle in the freed-up nests. Since there is not enough food for the rooks in the agrarian zones, they moved to towns, and there are no more nests for falcons left. Although a locust tree smells pretty, it excludes chemical substances that negatively affect the soil around.

SOIL IN DANGER

The plants could not exist without it. It is a very fragile system that requires many years to develop. Mollic fluvisols prevail in SPA *Ostrovné lúky*. These typical alluvial soils contain more humus, developed further away from the river beds and are the most fertile soils in Slovakia. Moreover, they have an interesting feature. Despite their good ability to retain water, if they dry out, they become concrete-like.

Humus is a very important soil component. It is actually the living part of the soil with many living organisms: bacteria, fungi, protozoa, mites, spiders, worms and insects. Only a living soil can provide space for life and sufficient nutrition to plants. Through regular ploughing and loosening, the soils get exposed and overheat. The soil fertility is reduced and the natural cycle destroyed. Starving soil organisms start to consume humus to survive. They eat up the humus, and soil destruction continues.

However, besides the production function, soil plays an extremely important role in mitigating the climate change. Living soil captures large amounts of carbon. Through regular cultivation, in 200 years we have reduced the amount of carbon accumulated in the soils by more than half. And where did all that carbon go? To the atmosphere, where it has been changing our climate.

Excessive use of chemicals, compaction and harsh cultivation are the factors that harm the soil the most. There will certainly be no earthworms in such soil.

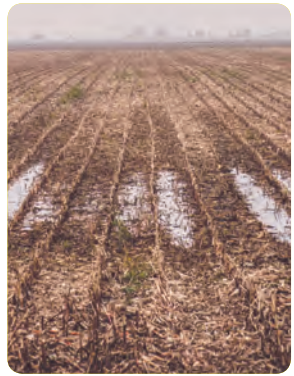
DID YOU KNOW...?

Researchers from the Iowa State University, in Ames, USA, have proven that the world's soil currently retains more carbon than the atmosphere and all plants and animals combined. According to them, there are 2,500 billion tons of carbon in the soils worldwide. There are "only" 800 billion tons in the atmosphere, and 560 billion tons in all plants and animals combined.

AGRICULTURE IN OSTROVNÉ LÚKY

In 2015, 94.6% of SPA *Ostrovné lúky* was arable land. From a large part, it was intensively farmed – fields running up to concrete roads with no marginal vegetation, dirt roads ploughed over to maximize the land area, treetops trimmed, old river arms and thickets ploughed over – all consequences of intensive short-sighted agriculture. While the average plot size in the SPA *Ostrovné lúky* in 1949 was 0.4 ha, currently it is 26.2 ha.

Every country is a reflection of those who farm it. Just like the wheat production, the landscape is a result of farmer's efforts. How do you feel when walking around?



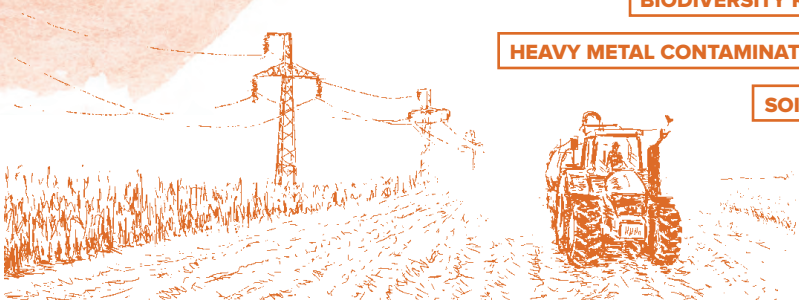
Corn is the primary crop. It accounts for up to 38% of the area. The farmers use heavy machinery that solidifies the soil and worsen its water retention capacity.

The agricultural landscape must be a place of life, of nature. I, a shrike, would prefer more trees, because I nest in treetops. Let me tell you, getting a house these days... And not only the house, what about food... I feed on insect – bush crickets, beetles, hornets, sometimes a mouse. Insects are rapidly disappearing from the country. It is affected by chemical spraying, and its habitats are being destroyed. Moreover, up to 80% of all plants depend on insect pollinators. The insect plays a key role in the nutrient cycle, the decomposition of organic material and represent a huge food source for many other animals. Typical bird of the Rye Island — the great bustard — have already disappeared from the country. The lack of insects, ploughed meadows and electric lines have forced them to leave. At least 10% of the agricultural land should be left for nature, in order to keep the country alive.

Field weeds are a great addition to field coenoses. Unfortunately, due to intensive agriculture, species such as corncockle or cornflower are pushed out and replaced by non-native plant species. Such an intruder is, for example, annual ragweed *(Ambrosia artemisiifolia)*, which is a strong allergen, too.

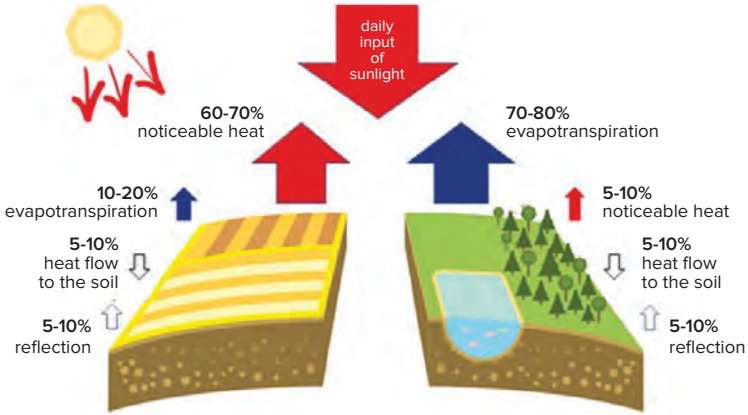
UNFAVOURABLE CONDITIONS – INTENSIVE AGRICULTURE

- SURFACE OVERHEATING AND DRYING
- CONTRIBUTION TO GREENHOUSE GAS EMISSION
- BIODIVERSITY REDUCTION
- REDUCTION OF HUMUS IN SOIL
- HEAVY METAL CONTAMINATION
- COMPACTION
- THREAT BY EROSION
- SOIL SOLIDATION
- WATER POLLUTION



IDEAL CONDITIONS – EXTENSIVE AGRICULTURE

- REDUCTION OF SURFACE OVERHEATING BY UP TO 15 DEGREES
- REDUCTION OF GREENHOUSE GASES SHARE
- CO_2 CAPTURE
- COOLING OF THE LANDSCAPE
- WATER RETENTION IN THE LANDSCAPE
- LIVE SOIL - HIGHER CONTENT OF HUMUS
- PROTECTION FROM EROSION
- BIODIVERSITY INCREASE



DID YOU KNOW...?

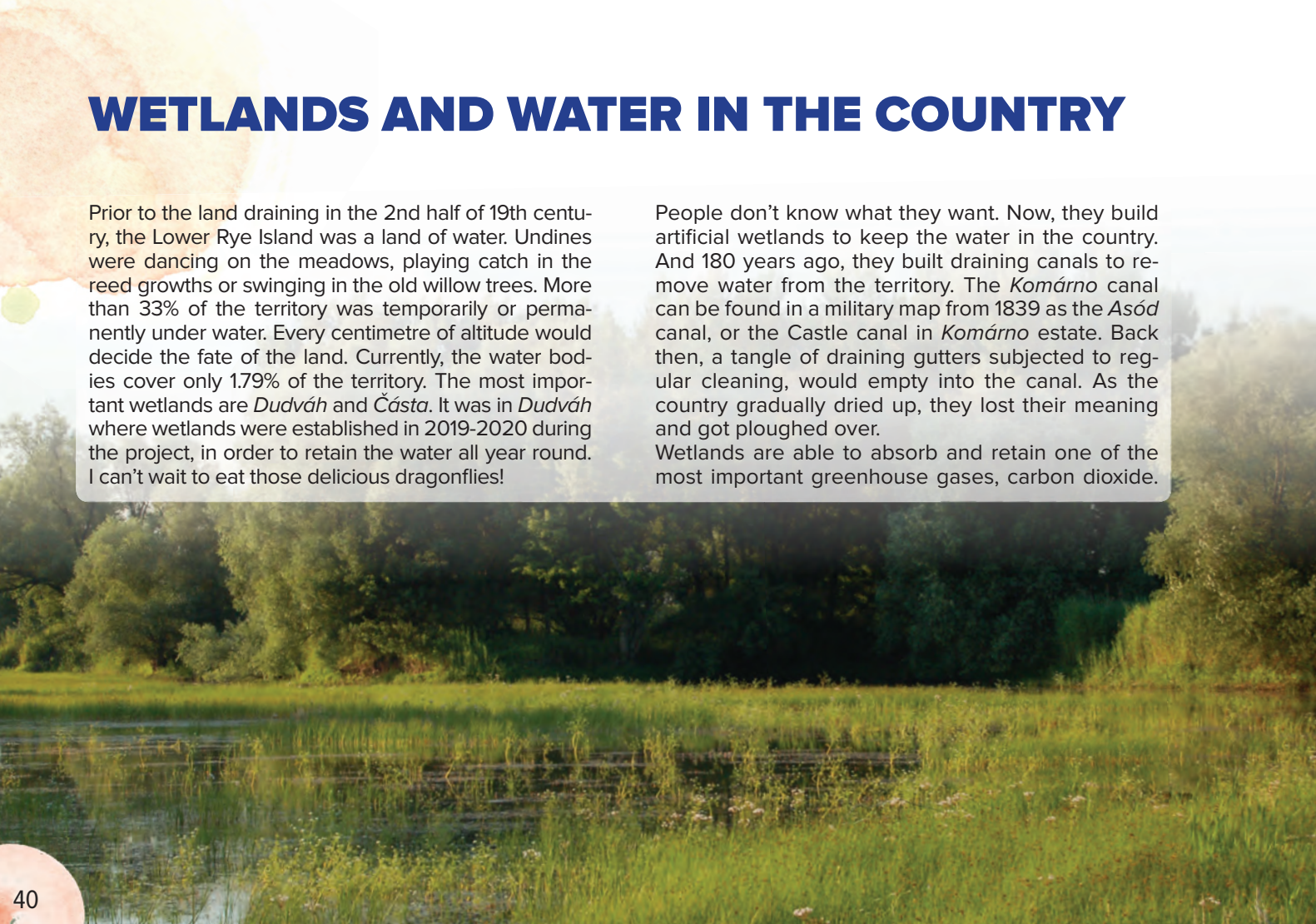
The average size of a monoculture field in Slovakia is 12 ha, while the EU average is 3.9 ha. The worst situation is in Nitra and Trnava regions, where the average area is over 18 ha. Biodiversity of crops of SPA Ostrovné lúky is not great, either. In 2017, only two crops combined took up to 70% of the fields – corn and wheat.

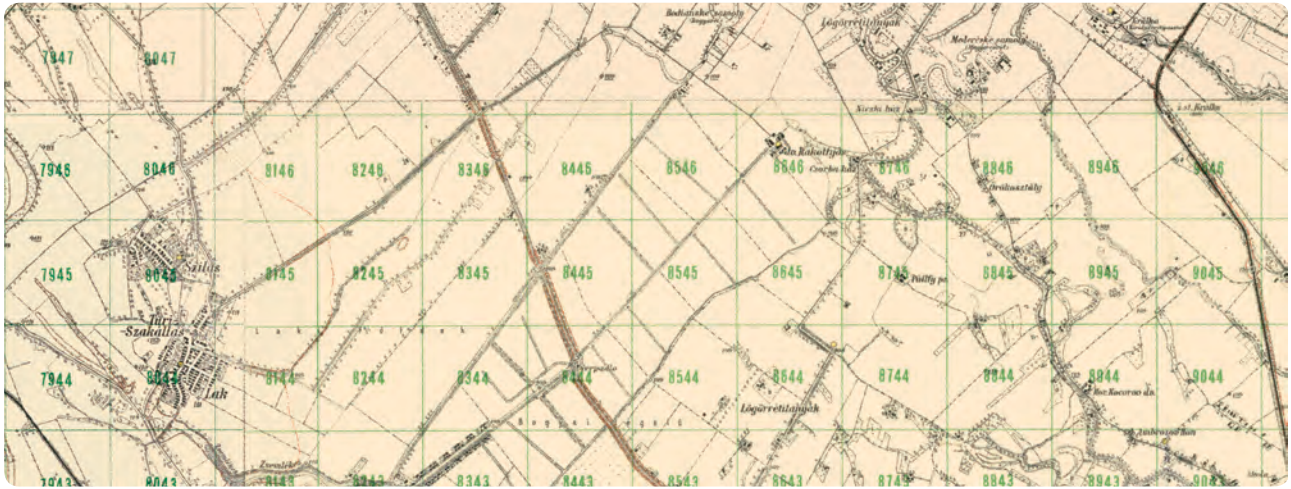
WETLANDS AND WATER IN THE COUNTRY

Prior to the land draining in the 2nd half of 19th century, the Lower Rye Island was a land of water. Undines were dancing on the meadows, playing catch in the reed growths or swinging in the old willow trees. More than 33% of the territory was temporarily or permanently under water. Every centimetre of altitude would decide the fate of the land. Currently, the water bodies cover only 1.79% of the territory. The most important wetlands are *Dudváh* and *Částa*. It was in *Dudváh* where wetlands were established in 2019-2020 during the project, in order to retain the water all year round. I can't wait to eat those delicious dragonflies!

People don't know what they want. Now, they build artificial wetlands to keep the water in the country. And 180 years ago, they built draining canals to remove water from the territory. The *Komárno* canal can be found in a military map from 1839 as the *Asód* canal, or the Castle canal in *Komárno* estate. Back then, a tangle of draining gutters subjected to regular cleaning, would empty into the canal. As the country gradually dried up, they lost their meaning and got ploughed over.

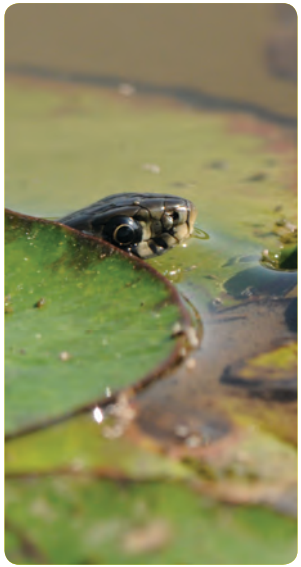
Wetlands are able to absorb and retain one of the most important greenhouse gases, carbon dioxide.

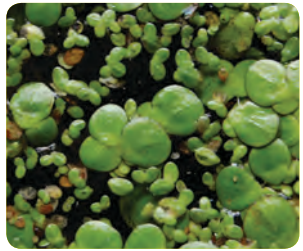




The draining gutters system shown on a 1934 military map

Restored wetlands can capture up to 25% of emissions from agriculture production.
Wetlands refill the groundwater reserves and clean the water. They can accumulate large amounts of rainwater (they function as a sponge). Wetlands evaporate huge amounts of water, which cools down the climate.
The new wetlands have had a huge impact on food offer. Immediately, many animals find their way to the wetland – dragonflies, water beetles, frogs and other creatures cannot survive without water. Insect plays a dominant role in wetlands. They have adapted to the water in different ways. Instead of lungs, they have tracheas. To be able to breath underwater, they developed many intricate mechanisms – hairs, protuberances, or prickles. Wetlands are also important water holes for insects, birds and mammals.





Yet another water element that almost disappeared – shadoofs, watering holes for livestock. Together with my mate, the falcon, we liked to sit and chat on a shadoof. The lifts would serve for animals, but were also a source of water for the local people. As a reminder of the good old times, few replicas of counterpoise lifts were installed in SPA *Ostrovné lúky*. They are good to sit on, too.

DID YOU KNOW...?

The counterpoise lifts would often serve as means of communication to the people of Hortobágyi and, perhaps, the entire Lower Rye Island. The position of the lift arm would have certain meaning. For example – an arm up and the bucket hanging in the air; the meaning: Big problems or a misfortune (damage to property, death). When people from the surrounding pastures saw it, they rushed to help immediately.

SOLITUDE IN ENDLESS FLATLAND – THE TAŇAS

Plenitude of wildlife, birds and fish in endless wetlands allured the man to the Land of Meadows. At first, he only came for a few days to check the nets and traps. Gradually, he started putting out his cattle to the meadows and built temporary shelters – *szállás*. Later on, he added an oven, sheep folds (called an *akol,* a *hodály*), a well, and a garden. As the population in the settlements grew, it was easier and cheaper to build a house in the meadows. And that's how the unique network of the Rye Island farmsteads called *taňas*, was founded. By end of the 19th century, about 1,000 *taňas* spread across 30 km^2 area in the Lower Rye Island. Our quest game route passes by such a *taňa*. Next to each *taňa*, a small farm with orchards and gardens would form. Each *taňa* had a pasture with a grazing herd. The country was interconnected by a network of dirt roads, meanders (called *vizes ér*) and water streams. *Taňas* were often very far away from each other, so the farmer had to walk hundreds of meters

to get help. Regardless of the distance, the closest *taňa* was still the neighbour, and people would help each other.

There are still a few *taňas* in *Ostrovné lúky*, they used to belong to the *Kosztolányi* family. One of the original *taňas* is located in the EEC Dropie. The house survived the great flood of 1965 thanks to common sense and a proper waterproof construction. The 1.3 m high firebrick base is surrounded by a pile of clay. That's why it looks like it is standing "on a hill". The firebrick walls continue up to 1.5 m, the rest is made of unfired bricks. Unfired bricks were much cheaper – people would just make them themselves using a suitable clay. Thanks to the firebrick walls, the house could survive the great flood, with water reaching up to window sills. The owners were rich, as we can judge by the sables, and some ornamental architectural elements, such as decorative bricks just below the moulding, an elevated facade with high windows and ornamental details on gutters and on the roof.

Many bird species are bound to farmyards. Storks, barn owls, little owls and the most famous ones – swallows and house martins. Swallows and house martins built their nests from clay, glued to walls and ceilings of buildings. Swallows prefer to nest inside, creating a shallow bowl-like nest, house martins usually nest under mouldings, their nests are close with just a small entrance opening. They both are very helpful as they consume huge amounts of flying insects. In our house, there is a swallow colony. In a good year, they raise over 50 young ones.

DID YOU KNOW...?

In the past, the most common building material in the region was the unfired brick, so-called váľok. Unfired brick is a great humidity regulator – it keeps the inside warm in the winter, and cool in the summer. The clay is strong and durable enough. Properly built and maintained clay constructions are now more than 100 years old.


2017

Taňa as a biotope

FRUIT TREES – TAŇA'S TRUSTED COMPANIONS

The old fruit varieties, now quite rare, were once cultivated in orchards. In 1897, plum trees were the most common, followed by apples and pear trees. Mulberry and apricot trees, as well as walnut and sour cherry trees, were often present, too. The least common tree species were cherry, peach, chestnut and almonds. Fruit trees were a supplementary livelihood source for each farmer. The areas nearby the water streams were ideal for plum and apple orchards. The fruit and fruit products were important commercial articles known far and wide. There is even a saying – When Christopher Columbus discovered America, there was a guy from *Kolárovo* welcoming him with a bottle of plum spirit. In the past, people would cultivate fruit trees from seeds or by budding. The demand for fruit growers experienced in budding was rather high. Once the Lower Rye Island was drained, the land area of arable land widened, and the farmers didn't have to depend on fruit orchards anymore. Old varieties became scarce and were replaced by more recent ones.

The great flood of 1965 significantly changed the face of Lower Rye Island. Water took away not only the houses, but also orchards and gardens. When the population returned to the devastated Land of Meadows, they would build new houses, improve the farms, and replant the orchards and gardens. Often, they would use modern, low-trunk varieties with higher production, but more demanding when it comes to care. To pass all interesting old fruit tastes

and shapes to next generations, it is necessary to preserve the old fruit tree varieties. On the International Day of Trees 2017, together with 542 volunteers and 75 different entities, we planted 951 trees, hitting the Slovak envirorecord in tree planting in an open land. Moreover, it was important to restore dirt roads and wetlands. Old fruit tree varieties were planted along the dirt roads to complement the ancient atmosphere.
In 2019, families planted their very own Family oaks in *Ostrovné lúky*. In EEC Dropie, we created the Golden Garden of Tastes with more than 50 fruit tree species.

DID YOU KNOW...?

In the past, the conditions were more challenging for fruit trees, too. Despite that, they did well and the fruit orchards prospered. They were planted on elongated artificial mounds, so-called bakhát. The trees were not sitting directly in the water, but their roots could reach it, as well as access nutrients brought in by the floods. Water would flow between the mounds through a system of gutters. This way, the flood water would spread across a larger area, and bring nutrients to the orchards.

THE GREAT FLOOD OF 1965

People on the „island“ have always lived with water. Water would give and take away. The largest Danube flood was most probably in 1516, in Bratislava. A water level mark on a pillar of the *Vydrica* Gate (SK: *Vydrická bráno*) is the oldest preserved flood mark on the Slovak territory. Although the floods had always been shaping the Rye Island, people had no idea the great flood of 1965 would radically change the Land of Meadows forever.

Already in early June 1965, the Danube level was very high (7.4 m), due to prolonged rain and melting of snow. Rain and consequences of the flood in 1954 had negative effects on the stability of the dams, which eventually did not last and ruptured. On June 17, a dyke between the villages of *Číčov* and *Kľúčovec* broke open. Danube was slightly above 900 cm. Every second, 1,000 m3 of water was pouring through the rupture. Water flooded everything,

the houses were collapsing one after the other. Danube flooded 46 municipalities on the Rye Island, and the towns of *Komárno*, *Dunajská Streda* and *Kolárovo*. 70% of the population (53,693 people) were evacuated from the *taňas* and other settlements. Often, they had to temporarily move very far away from their homes.

Great part of pastures, meadows, livestock and wildlife fell victim to the water, and most *taňas* disappeared. Although the fight with the water took „only“ a month, the consequences of the flood could not be rectified for several years, or even decades after the disaster. The water swallowed the meadows and pastures, as well as *taňas* and old stories of the land. Life in the country changed forever.

DID YOU KNOW...?

The Danube flood in 1965 caused material damages worth more than three billion Czechoslovak crowns, approximately one hundred million euros. Water flooded 94,000 ha of land. More than 50,000 residents and 100,000 heads of cattle were evacuated from flooded municipalities and settlements. 3,910 houses were destroyed, another 6,180 damaged, and all water sources of the Rye Island were contaminated. About 1.1 billion m^3 of water poured out into the fields, villages and settlements. 13,000 lorry loads of stones, almost 200,000 sand bags, more than 1,500 road panels and nine towboats loaded with stone were used just to seal off the rupture in *Číčov*.

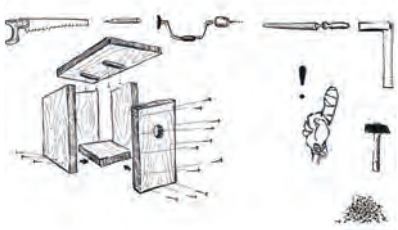
THE ISLANDS OF LIFE

Nowadays, even once very common species are disappearing from *Ostrovné lúky*. There are multiple reasons – lack of suitable food, changed or completely destroyed habitats, excessive use of chemicals, unsuitable land management, and the like. You can help create a habitat for wildlife that struggles to find the original one. You can choose to build an insect hotel made of natural and recycled materials. The hotels are quite popular amongst the solitary bees, sand wasps, ladybirds or lacewings. You can use old boards, pallets, roofing tiles, cans, straw, dry leaves, cornhusk, reed, perforated bricks, or soft wood with holes drilled in, where the sand wasps can lay eggs. Such a fancy hotel just calls

DID YOU KNOW...?

Sand wasps live a solitary life. They can dig their nests in the ground. However, they will gladly use the chambers and walkways of an insect hotel. They don't usually hunt large prey, they are fine with aphids and spiders. Their larvae need the prey to stay alive, so the adult wasp would just paralyze it and place it into the nest for later.

for a beautiful meadow to provide food to all its insect inhabitants. If you put your insect hotel in a sunny distant corner of your garden, you can plant a small blooming meadow right next to it – e.g. with field poppies, cornflowers, bluegrass, daisies, and different grass species. Just remove the turf from the ground around the hotel, aerate (loosen) the soil and spread a mixture of meadow plants and herbs seeds. With regular watering, they will quickly reveal their beauty. Butterfly caterpillars, and other insects will appreciate a little wild corner with unmowed nettle and some umbellifers. Just like people, birds and insects need to drink. To help them, you can create a watering hole – place a container (e.g. an old pot, a bowl) on an elevated place. Soon enough, pigeons, sparrows, thrushes, starlings, greenfinches, redstarts and other birds will come to drink and bathe. You can boost the biodiversity in your surroundings by creating other types of islands of life – bug houses, bird nesting boxes or bat boxes. You can easily create different islands of life following the procedures from EEC Dropie's Facebook Photo album called The Islands of Life (*Ostrovy života*) or on the website www.broz.sk/ostrovne-luky/ under the The Secret Life of Pests (*Tajomstvá hávede*).



A CHANCE FOR THE COUNTRY

Thanks to the LIFE – *Ostrovné lúky* project and the support of the Ministry of Environment of the SR, the Land of Meadows got a new chance. A chance for life, a chance to retain live-giving water, as well as greenhouse gases. A chance to provide home to insects, food and nesting opportunities for birds, a place for life for many plants and animals that would otherwise not survive in a monoculture. And a place for people, where they gladly take their children to gently stroke a horse and learn something new.

The story of the Land of Meadows must end well. I, the lesser grey shrike, can serve as a good example myself. At the start of the project in 2014, there were only four nesting couples in here – me, my younger brother and two cousins. The all-time low. In the first years after the meadows were restored, other cousins and friends moved in. At the end, there were eight nesting couples. And finally, a hoopoe nested here, too. I believe that many others will discover this lovely place on their way back from the south.

100 ha of arable land in the SPA *Ostrovné lúky* was turned into grasslands. The subsequent grazing will ensure the formation of low grasslands that we love, because there is enough food for us.

Elevated bird perches were installed along the pastures and fields. Nesting platforms and half-open nesting boxes were placed into the treetops. Dirt roads, wetland coenoses and blooming strips were restored.

A 17 km long network of biocorridors was restored. The biocorridors provide refuge and food for the animals and serve as migratory routes. Moreover, they mitigate the consequences of extreme weather, as they help reduce water and wind erosion on the surrounding fields.

500 old willows were pollarded, and 500 new ones were planted. Inside the old willow trunks, hollows filled with touchwood abound with life. A hol-

low in a tree may become a bird nest, a bat refuge or a home to other deadwood dependent animals – many of them being very rare.
60 wetlands were restored in the area. Most of them in the original along the rivers *Dudváh*, *Částa* and in the terrain depressions nearby. Wetlands play many important roles. They are home to plenty of insects, fish, amphibians and birds. In summer months, they cool down the local climate by slowly evaporating the accumulated water. They are also able to retain large amounts of CO_2.
In the EEC SEA Dropie, you can learn the story of the land and observe the new meadows and wetlands from two lookout towers. And hunt for a treasure in the Land of the Meadows.
The story of the Land of Meadows does not end, because the people who care for the land, stay. People, who reserve a place for nature in their gardens, by leaving the edges grassy. Those who pollard that old willow tree by the hedge, and get intrigued by the idea of seeing the grazing herds on the banks of *Dudváh* again. Every little deed counts – creating a small space for nature by building an insect hotel, planting a tree.

For more information on the project,
please see **www.broz.sk/ostrovne-luky**.

DID YOU KNOW...?

Every country is a reflection of those who live there. A solution to environmental problems is within our reach. It is you and your everyday decisions. Join us and help us save the ancient Land of Meadows.

RESOURCES:

Angyal, B.: Kisalföldi tanyák. Gúta és vonzáskörzetének településnéprajza. Šamorín: Fórum inštitút pre výskum menšín, 2012.
Béresová, K., Bíro, L., Sklenárová, M., Vojtuš, L.: Tajomstvá hávede, SAŽP, 2016.
Bratislavské regionálne ochranárske združenie: Dunajské luhy – Divočina na Dunaji a projekt na záchranu lužných lesov.
Fehérváry, M.: Gúta hagyományos gazdálkodása a XX. század első felében, Népismereti Konyvtár, Cseszlovákiai Magyar Néprajzi Társaság, Komárom 1992.
Fényes, E.: Komárom vármegye, 1848.
Jurík, Ľ., Húska, D.: VODA AKO LIMITUJÚCI FAKTOR PRE PRODUKCIU BIOMASY PRE ENERGETICKÉ ÚČELY, Water as a limiting factor for a Biomass Production for Energetic Purposes.
Poláková, M. (ARDEN), Šmeringaiová, M.: Tradičné, staré odrody ovocných stromov, ARDEN záhrady, 2019.
SCHMIDT, Egon: Madárlexikon, Anno Kiadó, Budapest, 2000.
Stano, P., Šteiner, A. (Karpatský rozvojový inštitút), Hudeková, Z. (Mestská časť Bratislava –Karlova Ves), Lupač, M., Třebický, V., Novák, J. (CI2, o. p. s.), Šimkovicová, Ľ., Šimkovic, V. (Inštitút pre pasívne domy), Hálková, S. (Bratislavské regionálne ochranárske združenie): KATALÓG VYBRANÝCH ADAPTAČNO-MITIGAČNÝCH OPATRENÍ PRE URBANIZOVANÉ ÚZEMIE, 2020.
Slobodník, R., Chavko, J., Lešová, A., Guziová, Z., Maderič, B.: PROGRAM ZÁCHRANY sokola červenonohého (Falco vespertinus L., 1766) na roky 2018-2022, Štátna ochrana prírody SR Banská Bystrica, Ochrana dravcov na Slovensku, Banská Bystrica, 2017.
Havranová, I., Vongrej, V., Miňová, S., Kušík, T., Halková, S.: PROGRAM ZÁCHRANY korytnačky močiarnej (Emys orbicularis L., 1758) na roky 2017-2021 (aktualizácia programu záchrany BUREŠOVÁ A KOL. 2001), Štátna ochrana prírody SR Banská Bystrica, 2017.

ILLUSTRATIONS:

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PHOTOS:

archív Molnár Endre, Angyal Béla, Bátky Zsigmond, Bíro Ladislav, Brossmannová Adriana, Delvaux Dylan, Filagová Žofia, Fodor Péter, Fűri Gábor, Harvančík Stanislav, Hauck David, Jánoš Marek, Košťál Jaroslav, Lengyel Jozef, Nehera Otakar, Riflik Zsolt, Siklienka Radimír, Svetlík Ján, Sigmund Jakub, Szabóová Lilla, Vajliková Katarína, Zámečník Ivan

LINKS:

https://fns.uniba.sk/studium/uchadzaci-o-studium/preco-studovat-prave-u-nas/
The Deserted Fields (SK: Na poliach pusto) About the harmful effects of large monocultures and possible solutions, the Institute for Environmental Policy (IEP), May 2020https://www.minzp.sk/files/iep/2020_5_na_poliach_pusto.pdf
http://falcoproject.eu/en/content/ubul-returned-danube-delta-after-he-had-covered-33000-kilometre-long-journey
Landfills by the hedge, Martin Gális, February 2020, https://www.minzp.sk/files/iep/2020_1_skladky_za_humnom.pdf
https://euractiv.sk/section/ekonomika-a-euro/news/vedci-kritizuju-unijnu-agropolitiku-vysledkom-clenstva-v-eu-by-nemali-byt-tiche-luky-a-polia/
https://dennikn.sk/blog/1080986/dotacie-agromafia-a-ekologicky-armagedon-v-polnohospodarstve-ako-to-vsetko-spolu-suvisi/
https://broz.sk/wp-content/uploads/2018/02/Ozivujeme_krajinu_dunajskych_luhov.pdf
https://mino55.blog.pravda.sk/2019/05/18/pramen-rieky-dudvah/
https://zurnal.pravda.sk/reportaz/clanok/582628-ako-zachranit-klimu-vodu-potraviny-neorat-polia/?fbclid=IwAR3DsKGvw8IpKh_hw_x0HM2Y599sOQyh-7GZCzmn-J6Zw428tM-8SoDlYPFM
https://www.facebook.com/starologer.hu/posts/2314012498879873/
https://www.svp.sk/sk/uvodna-stranka/povodne/historicke-povodne/
https://www.facebook.com/SEV-Dropie-406951929536104/photos/?tab=album&ref=page_internal
https://www.vtedy.sk/1965-povoden-dunaj
https://www.teraz.sk/slovensko/vyrocie-pred-50-rokmi-pretrhol-dunaj-hra/140466-clanok.html

ABOUT THE PROJECT

The Conservation of birds in the SPA Ostrovné lúky project was financed by LIFE+ Nature & Biodiversity programme. You can find all important information on the project, as well as interesting outputs at www.broz.sk/ostrovne-luky.

Who did it all?

the Regional Association for Nature Conservation and Sustainable Development – BROZ
www.broz.sk

Main Project Partner

BROZ, a nature conservation association, has been carrying out practical conservation measures in Natura 2000 areas for over 20 years They restore wetlands and river branches, alluvial forests, meadows and pastures, mostly in Danubeland region. Moreover, they aim to promote traditional, nature-based processes in agriculture – grazing, reed cutting, and willow trees pollarding.

Some of the rescuers of the country in SPA Ostrovné lúky are:
Adriana Brossmannová • Žofia Filagová • Tomáš Kušík • Pavol Surovec • Daniela Žišková

the Environmental Education Centre of the Slovak Environmental Agency Dropie
www.dropie.sazp.sk

Project Partner

Slovak Environmental Agency (SEA, Slovenská agentúra životného prostredia) is an expert organization under the Ministry of Environment of the SR, handling the agenda of nature and landscape conservation, observing the principles of sustainability.
SEA is a founder of EEC Dropie, located on Rye Island, in the municipality of Zemianska Olča and Čalovec, right in the middle of the SPA Ostrovné lúky. EEC Dropie was established to save the great bustard, and nowadays, it serves as an environmental education centre for general public. It presents the Lower Rye Island region by using environmental education in practice and promotes active volunteering.

Project LIFE – Ostrovné lúky was implemented in collaboration with Gabriela Augustiničová • Ladislav Bíro • Kristína Hegyiová • Dáška Kubačková • Ján Majer • Norbert Paluska • Lilla Szabóová • Katka Vajliková

OSTROVNÉ LÚKY

WRI – Water Research Institute
www.vuvh.sk

Project Partner

Water Research Institute is a state-funded institution, established in 1951 and managed by the Ministry of Environment of the SR. It conducts a comprehensive water-related research, implementations of EU water directives and strategies, and deals with a number of scientific and technical projects.

The wetlands in SPA Ostrovné lúky were restored by:
Ján Bušovský alias Džony • Katarína Holubová • Katarína Mravcová

The Faculty of Natural Sciences of Comenius University
www.uniba.sk

Funded in 1940, a home to cutting-edge science, successful foreign projects and laboratory equipment worth millions of euros, the faculty is the essence of high-quality university education. The quality of the Faculty of Natural Sciences of Comenius University is comparable not only on the European, but also on a global scale.

Wildlife of the SPA Ostrovné lúky was monitored by:
Michal Klobučník • Katarína Krajčovičová • Matúš Kúdeľa • Mária Melišková • Martin Plešivčák • Ján Svetlík

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