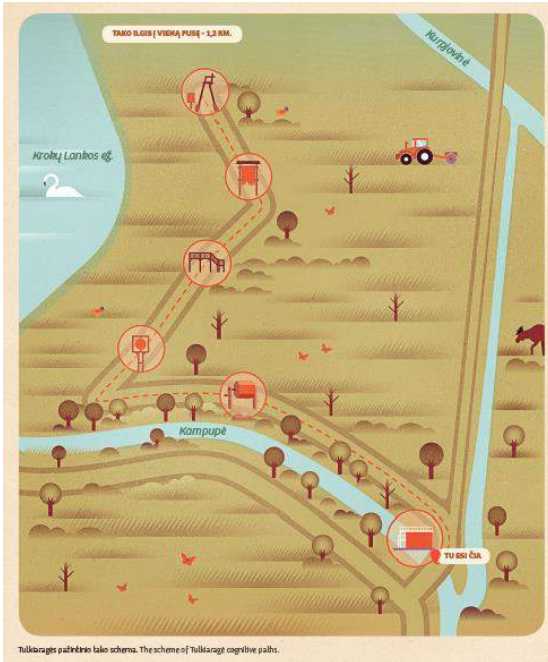


TULKIARAGĖ – A STORY CREATED BY NATURE AND FARMERS



Tulkiaragė is one of the youngest creations of nature in the Nemunas Delta. Would you believe that only a few centuries ago this place was covered by the shallow waters of the Curonian Lagoon? Today, it is a kingdom of lush flood-meadows and reed fields, created by both nature and mankind. Engineers who designed the complex system of polder dikes and canals, experts maintaining the polders and farmers working on them have become an important link in this ecosystem. Is this link still alive? Which role should today's people choose: active consumers, passive observers or equal partners with nature? Take a walk on this path and you will likely find not only answers but also your place in the ecosystem of Tulkiaragė.

AT THE PUMPING STATION

NATURE GRAPHICS



In front of you, there is a closed pumping station which was used to regulate the water level of the Tulkiaragė polder. It has been adapted for observation of the landscape and birds. From inside the building, which is covered with lush foliage, visitors can enjoy biological diversity characteristic to the Tulkiaragė meadows: the swaying reeds and flowering spikes of bulrush, the delicate pink flowers of ragged-robin and large numbers of migrating birds coming in autumn and spring. The aquatic warbler, a very rare and endangered bird, is depicted on the main wall. This singing bird can still be seen in the Nemunas Delta, one of a limited number of its habitats in Europe. Travellers coming by boat from Krokų Lanka and nature explorers walking down the path back to the pumping station are greeted by the figure of a farmer. If it was not for the farmer, flood-meadow birds would have no place to settle and we would be deprived of this splendid opportunity to enter the world of Tulkiaragė's meadows. Neglected meadows would eventually be overcome by water and dense reed fields, with an absolutely different bouquet of natural treasures settling there.

LIVING NATURE SCHOOL




On the southern and warmest wall of the renovated pumping station you can find a living nature school. Nesting boxes for birds and bat and bug houses are there. You can easily install this kind of wildlife "resort" in your yard. More information is available at www.meldine.lt/tulkiarage.



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WHO IS MORE IMPORTANT – NATURE OR HUMANS? MAYBE THEY ARE EQUAL?

Through the ages, humans realized their relationship to nature in different ways.

Nature – a holy temple	Nature – a workshop transformed by humans	Nature is a space of concord and cohabitation
		
<p><i>Mankind was cast by nature onto the bare ground.</i> Roman naturalist, natural philosopher and writer Pliny the Elder</p> <p><i>Our Great Thunder, unite us with the powers of the Great Oak and make us stronger.</i> Lithuanian folklore</p> <p><i>We cannot command nature except by obeying her.</i> Francis Bacon, English philosopher, scientist and writer</p>	<p><i>Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground.</i> The Bible; Genesis 1:28</p> <p><i>There are no bounds to fantasy, no limits to the penetration of reason, and none to the technical powers than conquer nature.</i> Russian mineralogist and promoter of science Alexander Fersman</p> <p><i>We cannot wait for favors from Nature. To take them from it – that is our task.</i> Ivan Michurin, Russian biologist, practitioner of selection and gardener-geneticist</p>	<p><i>Who would I be without trees, without grass, without birds.</i> Poet and playwright Justinas Marcinkevičius</p> <p><i>We are neither superior nor inferior to other beings.</i> Michel de Montaigne</p> <p><i>We exist inside nature.</i> Blogger Vldas Rutus</p>

With science and technology gaining a foothold, the first approach in many countries has actually died out and today we face a vast number of visions varying between two poles, i.e. ecocentrism and egocentrism. The egocentric approach gained strength in the 20th century, when the economies of scale (decrease of average production costs caused by growing production volumes) established themselves in Europe as the predominating principle and the central prerequisite of progress

Egocentrism (the case of anthropocentrism) is a human approach to life, when priority is given to humanity's own interests.

It manifests itself through all-out exploitation of the surroundings, disregarding protection of living and non-living nature.

Ecocentrism is a human approach to life, when there are no priorities; humans as well as all natural objects (soil, water, plant and animals) have equal value.

It is when ultimate significance is granted to entire natural systems.



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Let's get acquainted with representatives of those approaches - Ekas and Egas. You might have different approaches depending on the situation.



EKAS

I care about everything around me, where I live – people, environment, nature. All forms of life, like human beings, deserve respect and care.

EGAS

I am trying to secure a good life for myself and my family. Nature is intended to serve me.



THE ECOSYSTEM - EVERYTHING IS SO RELATED...

The flap of a butterfly's wings in the Amazon can cause a typhoon in Japan

A CHANGING ECOSYSTEM – SUCCESSION



The ecosystem is an interacting, interdependent and dynamic system of organic and inorganic components, tending toward stable equilibrium (climax). In Lithuania climate conditions determine that this stable state in most cases is mature forest. Survival of the ecosystem of a meadow or any other intermediate ecosystem with the complete diversity of its characteristic species requires disruptions, such as fires, storms, and migrating and grazing large herbivores. Farmers, when mowing the meadow or grazing livestock, were doing the job of the latter disruptions for several centuries. Thanks

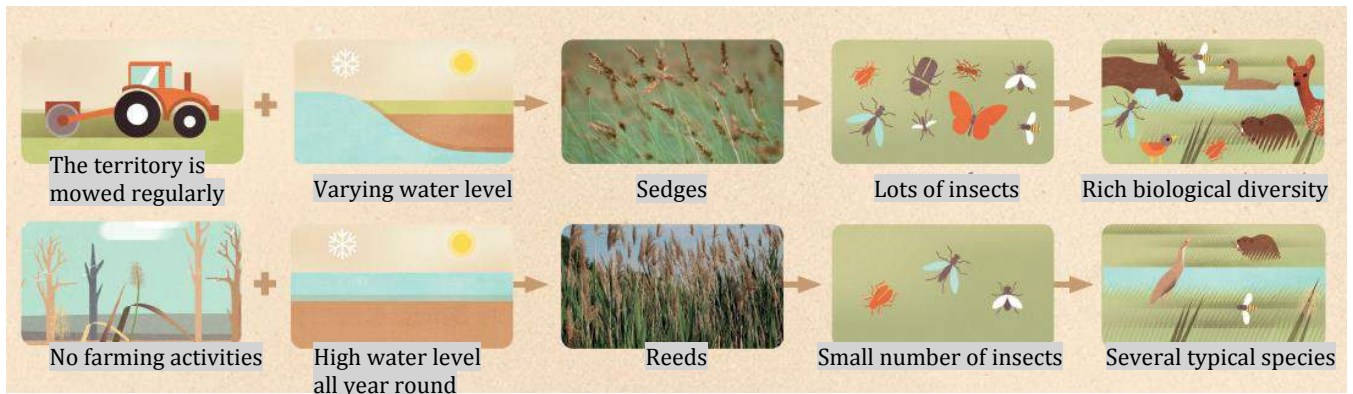
to farmers, we can enjoy far-stretching meadows in the open landscape.

The ecosystem is a part of the land surface or water space in which various plants, animals and microorganisms interact with the living environment (air, water, soil) forming a harmonious order with ongoing materials and energy metabolism.



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THE ECOSYSTEM OF TULKIARAGĖ



Water not only formed Tulkiaragė, but it has remained one of the major factors regulating its life until now. People living here have a very important task to perform – to control the water element which interferes with the farmer's usual way of life. Attempts were made to solve the problem by installing a complex system of dikes and canals, which helped to regulate the water level in the formed polder. This way an ecosystem rearranged by humans has become a granary of valuable forage.

But...modified natural systems require ongoing care. Once the pumping station of Tulkiaragė was shut down, the neglected polders started disintegrating: water is eroding the dikes, while areas no longer being mowed are taken over by dense reed fields. Reeds in constantly wet meadows have no competing rivals. The slow decay process of reeds results in the accumulation of a thick layer of fallen objects, which prevent the seeds of other plants from growing. Open meadow birds start gradually fleeing dense reed fields, as they lack food (diversity of invertebrates is decreasing) and find it difficult to move.

If we want **biological diversity in Tulkiaragė to thrive again**, reed fields and other neglected areas need mowing. We will learn more about this when taking a walk on the path. By the height of reeds and their density, areas that were and were not mowed are easy to identify.



The foundation of the **oldest farmstead** of Tulkiaragė (recorded on maps dating back to the 18th c.), which was demolished by Soviet land-reclaiming authorities in 1978 after its last occupiers left, can still be seen. While the farmstead was still occupied, life was in full swing there – the farm was flourishing and frequented by summer visitors. It is probably the same farmstead which in the 19th – early 20th centuries had the status

of a manor – a large farm. The first resident of Tulkiaragė called Tulkas probably lived in a similar place.



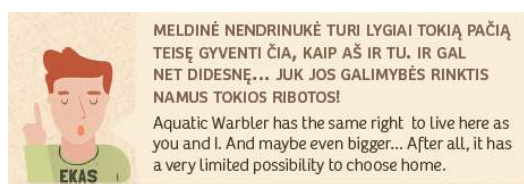
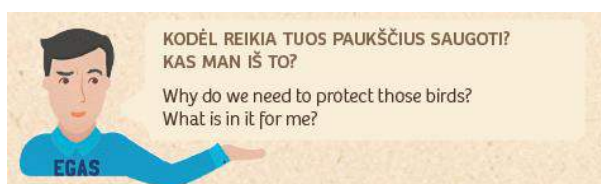
Kampupė is draining the central part of the polder, and when a strong wind is blowing from the west lets the water from Krokų Lankos flow to Tulkiaragė. Frequent fluctuations in the water level play an important role for the natural environment and represent a challenge to both farmers and birds. When the water level goes up,

birds' nests are drowned and farmers cannot mow.



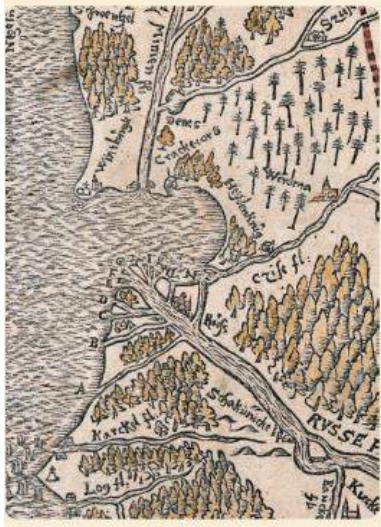

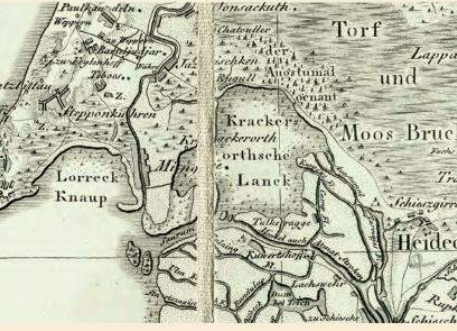
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1. If you take a close look, you can see the nest of a **sea eagle** between the trees. It is the largest bird of prey in Lithuania - the distance between his wings is up to 2.5 m (equal to the width of a trolleybus!). The sea eagle is an example of successful nature preservation. In the mid-20th c., this species was globally endangered, but after banning use of synthetic pesticides in agriculture and following implementation of other measures, the population has regenerated. We can enjoy their company in the Nemunas Delta.
2. The largest colonies of **great cormorant** roosting on the tops of black alders in Tulkiaragė doom the trees to die. Excrement of these birds is rich in phosphoric acid which completely destroys trees in a couple of years, turning them into deadwood (look around). But the cycle of life does not stop even then - deadwood attracts and provides habitats for insects and cavity-nesting birds. The unusual ghostly landscape of deadwood attracts artists, making Tulkiaragė an inspiring place for photographers. The cormorant is one of the most effective birds of prey known to scientists: if compared with penguins, the hunting techniques of cormorants are 10–15 times more effective, i.e. they catch many more fish during the same time span. But it is not a real rival to fishermen, as the cormorant catches only small fish (15-20 g).
3. The **aquatic warbler** is one of the rarest and most critically endangered species in Europe. This bird breeds in a very specific environment: broad and open sedge-covered wetlands and wet meadows. The great majority of such habitats in Europe were drained, resulting in a population decrease of 95% during the last century, and in 2013, birds of this species were breeding only in 4 countries in the world: Belarus, Ukraine, Poland and Lithuania. If farmers manage to restore open sedge-covered fields in Tulkiaragė, we can expect this rare bird to come back to the polder brought back to life!



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Tulkīaragė (former name – Tulkragė) is a piece of land formed from several islands in the Nemunas Delta between the Rivers Atmata and Aukštumala. It was not long ago when this land formation appeared, no more than 400 years ago, at the result of huge amount of silt deposited. Until then, it was the bay of Curonian Lagoon, with water coming from the Rivers Minija, Rūgalė, Šyša and Atmata. Tulkīaragė was continuously changing its contours during its formation. Changes in the territory can be seen from analysis of old maps.

		
<p>Fragment of Caspar Hennenberger map, 1656. From book, „Prussia-Karten“ (E. Jäger, 1542 - 1802). The bay of Curonian Lagoon is fed by the River Rusnė and its tributaries.</p>	<p>Fragment of Narūtavičius-Naronskis map, 1670. History Museum of Lithuania Minor.</p> <p>Which of the islands is Tulkīaragė – is hard to tell. However, soon haymaking was in full swing there, no more than three decades later, land researcher, owner of Macikai Manor Gotthard Graewen had vast areas of meadows in Tulkīaragė in his hands. In 1707, he sold the meadows to Vertainė innkeeper Jakob Karr. The name of Tulkīaragė was first mentioned in the sale deal.istorijos muziejuje.</p>	<p>Fragment of Schrotter map, 1796, where Tulkīaragė is marked. Map from the archives of Lithuanian Science Academy Library.</p>



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The name Tulkiaragė (German *Tulkeragge*, *Tulkeraggen*) was given by the translator, in the old German *tolk* or *tulkas* in a dialect, who probably lived in the cape (which is *ragas* in Lithuanian) of the island. When the land belonged to Prussia, translators used to help merchants from Mėmelis (the present Klaipėda) in buying timber from Lithuanians floating it on rafts from the Upper Nemunas.

Timber floating through Tulkiaragė changed once King Wilhelm Canal (late 19th Century) was opened. Thanks to the new water-route, Mėmelis seaport could be reached without crossing windy Curonian Lagoon (Nemunas – Minija – Wilhelm Canal – Klaipėda).



Fertile flood-meadows had been attracting cattle growers for years. Lush grass in Tulkiaragė supplied valuable feed, but regular floods made farming very challenging there. Eventually, a peculiar lifestyle of local people formed which was closely linked with the cycles of nature.

PIEVININKAI TOOK AFTER THE TULKIARAGĖ:

1. Farmsteads and gardens were located on small hills, which turned into islets during the floods.
2. Outbuildings had elevated attics – *ertikliai* – where hay stayed dry from flood waters.
3. In summer, hay was floated by large boats from the shores of the rivers and branches.
4. In dryer places, hay was transported by *brukas* (stone-paved road). *Brukas* came to rescue even during the largest floods. The evidence for that is still present. When travelling by road towards Šilutė, you can see the remnants of *brukas*, which once water level rises provides stability to the road. From wetter lands, hay could be collected in winter only, when the meadows were covered with ice.
5. In extremely wet places, peatbogs, special clogs were put on horses to make them walk easier - have a look at them.
6. For walking in reed fields, people used to fasten boards on their feet – try them on.



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Later, efforts were made to control the water by draining the meadows: digging canals and building dykes. In early 20th Century, a summer polder was constructed in Tulkiaragė, which brought huge changes to the local ecosystem.

Polder is a drained and cultured low-land, protected by dykes against continuous or regular floods.

1. Summer polder dykes protect meadows and pasturelands against flooding in summer-autumn months. Height: 0.5–1.0 m.
2. Winter polder dykes protect settlements and farming lands from flooding during extreme floods. Height: max 2 m.

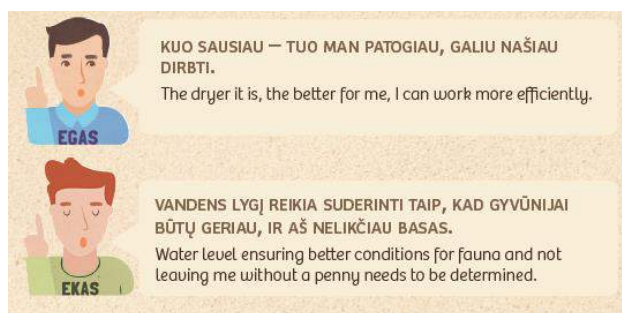
Descendant of the last Tulkiaragė inhabitants Gražina Treigienė remembers: *It was German discipline. Meadows were evenly mowed as a glass, ditches were clean, dykes were keenly protected and maintained. In spring, when water level would go down, any holes in the dykes would be filled in, my granddad would cut bushes down, we children would rake twigs and branches, and later mow. Commissions used to come for inspection, imposing substantial fines for negligence. Dykes were sparkling clean – one could walk in Sunday shoes on the them!*

In those days, nature used to pay back with interest to people for their work – the land there was giving bountiful harvest, polder was full of life.



Wedding at the farmstead of Bytautai (the last inhabitants of Tulkiaragė). 1969, Life in Tulkiaragė was in full swing. There was no shortage of guests and feasts. Visitors at hospitable landlords' farmstead were amazed by abundant harvest and goodies supplied by nature.

Over 60 years of operation of the pumping station, it underwent reconstruction twice. In 1993, the decision was made not to repair it anymore.



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VEGETATION OF WET MEADOWS IS THE WEALTH OF NATURE AND MANKIND.

Nemunas floods bring abundance of nutrients to the polder meadows, determining extremely high yield of the flood-meadows/ Local communities' life always strongly depended on lush grass. Before the spread of railway, increase in the number of cars (i.e. the mid-20th Century), hay was a product of strategic importance equivalent to oil resources. Grass was primarily and mainly used as feed, of course, but other applications also exist.

REED CANARY GRASS

Valuable fodder grass producing over 60 canter/ha hay in suitable lands. This amount of hay can feed a cow for one year and a half.



Reed canary grass and common reed are used to clean water and soils contaminated with oil products, domestic pollutants. It is a new, cheap, effective and promising technology - phytotreatment (phytoremediation).

COMMON REED

It is a cosmopolitan plant growing almost all over the Earth (excluding arctic areas and rainforests only).

- It can grow in up to 2 m deep water.
- Young plants are favoured by cattle;
- Pressed plant stalks are used in production of building materials (e.g. slabs);
- Stalks are suitable for thatching roofs, basket weaving,
- paper making;
- Rootstocks are rich in starch. During famine, dried rootstocks were ground into flour, then mixed with wheat flour and used to make bread.



MEADOWSWEET

'Ancestor' of aspirin. Raw material is produced from flowers and green parts during flowering season.

- Brew reduces fever and inflammations;
- Stimulates sweating and urine production;
- Relieves joint pains;
- Stops coagulation (used to prevent heart diseases (heart attack));
- Has antiseptic properties (strong brew is used to wash non-healing wounds);
- Reduces unpleasant odours.
- Excellent thermal insulation material.



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COMMON COMFREY

Majority of active substances are concentrated in the roots of the plant. They are dug in autumn or early spring.

Applications:

- to treat broken bones;
- to treat wounds, abrasions, sprains, varicose veins;
- Use with caution! Comfrey
- contains poisonous alkaloids, which can stay in the body and damage liver.



BROWN SEDGE

It is considered as 'poor' grass by people, as it is not suitable for cattle feeding – horses only eat it. Fluctuations in water level in brown sedge vegetation create excellent conditions for meadow birds. In the past, sedges were used to make footwear.



BEAVER – engineer of ecosystems. By making dams in small rivers, creating wetlands, beaver changes the flora of the site.

Beavers are gourmets, when they have enough food, they eat their favourite species of trees: aspen, willow, oak tree. Thus changing the forest next to their habitat. Different species of trees start predominating the area, open spaces become covered with bushes, young trees, followed by different animal species settling.

WHY DO BEAVERS BUILD DAMS?

Water is common, safe living environment for them. In their created canals they move freely and thus increase their feeding territory. If farmers destroy their dams, beavers rebuild them very quickly.

DO YOU KNOW?

1. Why do beavers need something to chew on all the time?
2. How long can beavers hold their breath?
3. Which country was the main supplier of beaver furs in the 16th Century's Europe?
4. How widespread are beavers in Lithuania?
5. What do beaver and expensive French perfume have in common?

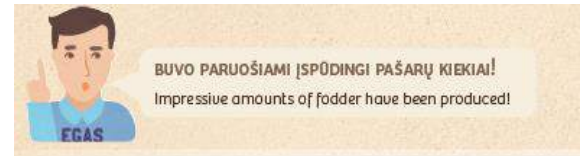
1. Their teeth are continuously growing. They need to sharpen them. Otherwise, they would grow so big, that beaver could not close its mouth.
2. 15 minutes.
3. Lithuania.
4. They are found in great majority of water bodies. In early 20th Century, beavers were almost extinct, but their population was restored later.
5. Specific secretion of beaver, called castoreum, is used in perfume production. It gives long-lasting smell.



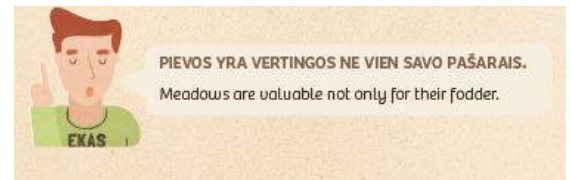
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In pursuit of soviet plans, agriculture underwent rapid intensification. Famous Russian biologist Ivan Michurin's slogan 'We must not wait for favours from Nature; our task is to wrest them from her' was followed. Over 85% of riverbeds in Lithuania were turned into canals, the goal of levelling all our hills down to the ground was pursued. Tulkiaragė was employed in its full capacity: 2 grass powder machines were in operation 24/7.

Meadows were drained, fertilised, mowed 3–4 times per season, mixed fodder grass seeds were sown. Flora was stunted, diversity of species decreased (before land reclamation, there were about 280 species of grass plants growing in the lower Nemunas meadows).



When Tulkiaragė pumping station got broken in 1993, the decision was made to leave the territory in the hands of nature. Unfortunately, Tulkiaragė ecosystem was already so strongly changed and completely misbalanced by mankind (1. erection of dykes, second, 2. water pollution) that it found it very difficult to survive on its own. Grass powder production was ceased, pastures were no longer fertilised, grazed or mowed. Change in the draining regime was followed by naturalisation of grasslands. Non-mowed pastures were taken over by reed fields, bushes, were covered by accumulating layer of dead vegetation. The territory gradually became unsuitable for great majority of typical meadow bird species.



Reeds are very well adapted to survive long-lasting floods and frequent fluctuations in water level, since air easily reaches rootstock through their hollow stalks, where it is accumulated.

Reeds are also very good at reproduction through roots. Only a tiny bit of root is needed for a new plant to grow. Once reeds start to flourish, they grow over other plants and become the predominant species.



NEW TULKIARAGĖ: LOOKING FOR A NATURE

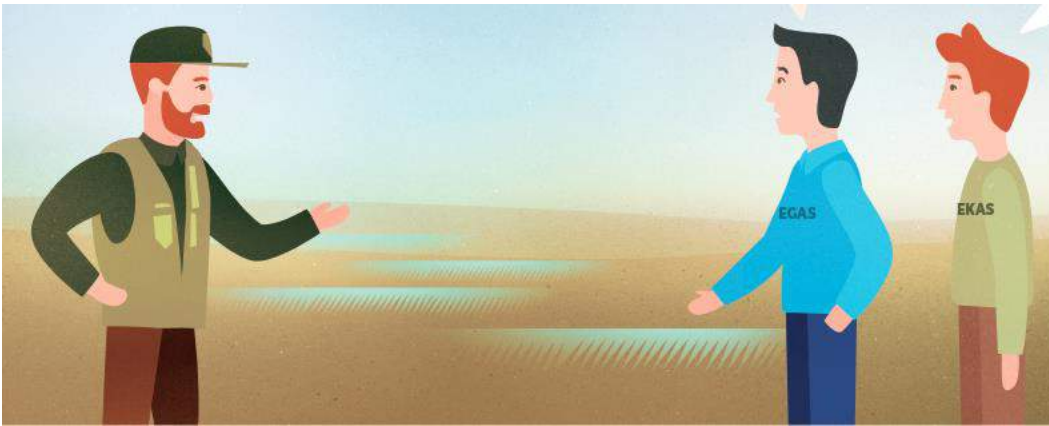
In 2011, an environmentalist entered the kingdom of reed-covered meadows in Tulkiaragė.

Environmentalist: 'Once, a farmer in Tulkiaragė had a company of lots of currently extinct bird species in the meadows. Once the habitats are restored and the land is passed into the hands of a farmer, these meadows can regain their status of home for rare bird species.'

He went for a chat with local farmers.



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Environmentalist: 'I need your help. Tulkiaragė meadows need to be restored.'

EKAS: What do we need to do?

Environmentalist: First of all, bushes need to be removed and reed fields need to be cleared.

EGAS: But it's proper brushwood there! Reeds are much taller than people!.. What do we get from that?

Environmentalist: You will be able to farm in those meadows again, while meadow bird species will have their lost homes restored.

EGAS: But it's so wet over there – it's hard to access it.

EKAS: We can mow with a tractor, by putting dual wheels on it. This way, we will not only be able to enter the meadows but will also compact the turf!

Egas: But dykes are cracked there - machines will fall down.

Ekas: Yes, it won't be a piece of cake, but diligent mowing can bring the desired outcome.

Egas: Hmm... Very complicated...

Ekas: But it's worth trying. When do we have to mow?

Environmentalist: Until these meadows are prevailed by reeds, they need mowing twice a year: first time from 1 July, when reeds have their panicles ready, and most of reed bird species already hatched their chicks, second time when reeds have grown tall again, in the end of a season.

Ekas: And when reeds are removed?

Environmentalist: Reeds will be replaced with sedges and other meadow grass species, attracting bird species that like open spaces. Large sedge areas are expected to be inhabited by endangered aquatic warblers again. In the areas that are hard to reach and therefore reeds will survive, species of these grasslands will sustain their habitats. Then, mowing will take place later, once birds will hatch their chicks. Aquatic warblers have a very long breeding season, therefore no mowing until 15 of August is recommended for the places inhabited by this species.



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Egas: But that's very late - no animal will eat that kind of grass. What will we do with that grass? Mowing for nothing?

Ekas: We can make pellets of that grass and use it as biofuel for heating or as litter for livestock.

Environmentalist: Until protected species have their habitats in the meadow, the state pays special compensations for environmentally-friendly farming.

Egas: I don't know, it sounds too complicated to me...

Ekas: Probably complicated, but just think - we will not lose anything while the nature will recover! And if tourists come to watch lots of birds, they would use all kinds of services, offering us and other townfolks a splendid opportunity to make some money. Isn't it worth trying?

The end of the story can be learnt by examining the surrounding vast pastures. Have a close look at grass species growing here, with a marker mark the current stage of development of Tulkiaragė meadow.



All bird species are important and deserve our protection, but some of them need extra help. Aquatic warbler facing the real danger of extinction is one of such species.

This bird has very high demands for its habitats - it hatches only in wide and open wet sedge beds and flood-meadows. This species is like a small litmus paper showing the condition of specific habitats that were nearly completely destroyed during the 20th Century in Europe.

If one day, at the sunset, you will hear a song by an aquatic warbler - hooray, the rarest songbird in Europe has returned to Tulkiaragė meadows. If you are not that lucky, don't get upset - you can discover other bird species that have returned to the restored meadows.

KROKŪ LANKA – AN IMPORTANT LIVING PLACE FOR BIRDS

In front of you – the only lake of lagoon (sea) origin in Lithuania which appeared following separation of a section of the Curonian Lagoon by Nemunas deposits. During spring floods, waters of the River Nemunas flow into the lake bringing huge amounts of silt along. Silt deposits, while the lake is rapidly shallowing and yielding to grass vegetation. Lush water vegetation is a perfect habitat for groups of fish and birds feeding on them. Krokų Lanka, despite its shallowness (the average depth of the lake is 1.9 m), is the largest lake in the Nemunas delta occupying 787 ha area.

This platform is erected at the polder foot. It marks the meeting point of water and flood-meadow ecosystems. Therefore, it offers the chance of seeing the greater variety of birds than ever before, including water and meadow birds. Human economic activities play crucial role for survival of the latter. The right timing, intensity and technologies of mowing help broods to survive. If using fertilisers and pesticides here, they would improve hay yield but would leave birds with shortage of food and they would get poisoned. Majority of meadow birds flee from farming-abandoned meadows. This location and its history prove the significant role played by a farmer, which determines diversity and richness of surrounding natural environment.



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Reeds growing right next to the water mark the boundary of Krokų Lanka botanical – zoological reserve (protected fauna and flora). Let their life flow in their usual rhythm – do not disturb them by loud making noises or dabbling in the reserve waters.

IN THE SURROUNDING MEADOWS

Montagu's harrier (*Circus pygargus*)

Bird with long narrow wings. Wingspan reaches 96–116 cm. The Montagu's harrier has a particularly graceful flight, with powerful and elegant wingbeats which give an impression of buoyancy and ease.



During breeding period, when female is looking after chicks, male is in charge of food. After catching the prey, male passes it right in the air: drops it down for the female to catch it. The diet consists mainly of small rodents, small birds, and large insects.

Intense farming has adverse effect on these birds: pesticides are poisoning their bodies, agricultural development results in shortage of food and breeding sites.

Not often but you can still see this bird here. Usually, you can spot it flying low above the meadows.

Common snipe (*Gallinago gallinago*)

Common long-peaked wader. Slightly bigger than song thrush in size. The Common snipe flies with wings flapping frequently, during courtship males fly high in circles and then take shallow dives, producing 'bleating' of a goat. This unusual sound resembling of the bleating of a goat is not produced by its voice – the bird produces this sound by vibrating its tail feathers. Usually, it will be this sound that will help you to spot the bird. The sound is lashing disyllabic 'tickit tickit tickit'. The usual habitats of the Common snipe are wet meadows or other wetlands. They feed on insects and earthworms. Once wetlands are drained, neglected and become covered by bushes, this impressive bird deserts them. But until now it is a common inhabitant in our country.



Great snipe (*Gallinago media*)

The Great snipe is a 'cousin' of the Common snipe, only slightly larger but much bulkier. It is hard to spot it unless it suddenly flies up if scared away. Late spring is the season of their courtship leks, which start with sunset and last until small hours. They make unusual sound which resembles clattering marbles. During the lek, individual 'clattering of marbles' eventually turns into rhythmic and subtle noise with males are competing and trying to prove their superiority and to charm females by standing erect with chest puffed.



Researches showed that during migration the Great snipe can fly the distance of 6,760 km without stopping at the average speed of 97 km/h. There is no other living creature in the world that can travel such big distance in that small amount of time!



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The Great snipe has very high demands for its habitat. They feed mainly (up to 90%) on earthworms, which makes fertile pastures their favourite feeding site. For the Great snipe to be able to reach them, open topsoil is needed, i.e. soil compacted by grazing livestock. Which means that the Great snipe can be expected in the places where cattle graze freely, therefore we can firmly call this species as farmers' mates. Pasture relief is also important – elevations are needed, where the birds could hold their courtship tournaments, while drier places are suitable for hatching.

Because of mass draining of wetlands in the 20th Century, followed by farmers deserting some of the wetlands, this bird with special demands for its habitat became very rare and endangered species not only in Lithuania but in other European countries, as well. Quiet but enchanting sound produced by the Great snipe can still be heard in Tulkiaragė polder.

Common crane (*Grus grus*)

It is the tallest bird in Lithuania. The Common crane is much larger than the Stork or Blue heron, with which it is sometimes confused because of both species being of blue-greyish colour. It is hard to confuse it with the Blue heron when flying. The Common crane is flying with its neck stretched out (same as the White stork), while the Blue heron has its neck bended. In Tulkiaragė, you should look for this bird in meadows, near the reeds, where they like walking in search of food – grass vegetation, seeds, insects, clams, worms, amphibians or rodents.

The Common crane makes its nest on the ground and is extremely cautious and timid during hatching. Disturbance of common cranes during hatching can cause death to egg-brooding.

In the past, it was a very rare species found mainly in Dzūkija (south of Lithuania). But relatively not long time ago, their population started growing rapidly and though this species is still in the Red Book, it has become quite common. It goes without saying, that farmers by using less chemicals on the fields have contributed to this success.



Sedge warbler (*Acrocephalus schoenobaenus*)

It looks very similar to the Aquatic warbler, thus easily confused with it. But the Sedge warbler is slightly darker, its whitish crown stripe is less distinctive. The song produced by the Sedge warbler, despite having some similarities to its endangered 'cousin', is much more complicated and richer.

It is a common and frequent bird of wet meadows, shores of



water bodies. They feed on insects and maggots.

Aquatic warbler (*Acrocephalus paludicola*)

The Aquatic warbler is at real risk of extinction, therefore it has been given the status of internationally threatened species. Currently, it breeds only in four countries in the world (Belarus, Poland, Ukraine and Lithuania). In the past it was found in Tulkiaragė polder, but once it was deserted, sedge meadows were taken over by reed fields, the habitat



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was no longer suitable for this species. Following restoration of the habitat and return to environmentally-friendly farming, this species is expected to be seen here again.

The Aquatic warbler is very demanding regarding its habitat. It lives only in areas covered with certain types of sedges spreading over a vast area with a great variety of various insects and their maggots on offer. The Aquatic warbler hatches twice during summer. In order to stop their extinction, both breeds must survive. For this reason mowing in the meadows serving as a habitat for this species is delayed until mid-August.

The main distinctive feature of the Aquatic Warbler is prominent whitish supercilium and crown stripe. From other warblers, it differs also by its simpler song which sounds best late in the evening, after all the other wetland birds go quiet.

For more information about the Aquatic warbler, visit www.meldine.lt

Northern lapwing (*Vanellus vanellus*)

Common bird and decoration of open arable land. Its known call 'pee-wit' is often mentioned in the Lithuanian folklore as the herald of spring, while because of their multi-coloured eggs, there is a comparison 'motley as lapwing egg' in the Lithuanian language.

The Northern lapwing makes nests on the ground, where being motley eggs are well-disguised from predators.

Hatched breed are of chick type – only a couple of hours after hatching later can be seen darting around in the grass.

The Northern lapwing is easy to spot walking in the field or flying above it. It has wings of peculiar shape - widening towards the end of the wing. Once spotted, it is easy to distinguish its silhouette from other birds.

In Tulkiajė, this bird is a symbol of restoring valuable meadows, gradually taking the land back from the wide-stretching wet reed fields.



Western yellow wagtail (*Motacilla flava*)

Elegant, slender bird, male bird is bright yellow. Grey head with a white eyebrow. It is a typical species of wet meadows or even marshes, but can be found regular meadows, as well. This bird is a quite usual farmer's companion. The Western yellow wagtail used to keep company for haymakers, now it is more difficult to spot a bird from the tractor cabin. The Western yellow wagtail nests on the ground, likes meadows full of flowers. As this species feeds on insects attending blossoming plants. But it does not avoid wet meadows covered with sedge plantations either, where it cohabits friendly with the Aquatic warbler. The Western yellow wagtail hates its 'relatives', therefore it fearsomely protects its nesting territory from any wagtails approaching.



ALONG THE LAKE

Eurasian bittern (*Butor stellaris*)

It is a large bird with the wingspan from 100 up to 130 cm. Very



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well-disguised in its habitat making very hard to stop this species. During mating (in spring), after sunset, males reveal their location by producing very specific sound which resembles blowing into an empty bottle. It can be heard at the distance of up to 2 kilometres. The habitat of the Eurasian bittern is reed fields. Try to "chat" with the Eurasian bittern by blowing into the bottle mounted to the stand. If no bottle can be seen, inform us by sending us an email: info@bef.lt.

IN KROKŲ LANKA

White-fronted goose (*Anser albifrons*)



Greylag goose (*Anser anser*)



During migration, biggest flocks of geese, especially of White-fronted geese, are found in the Nemunas delta. One flock can consist of up to several thousand birds. Perimeter of the flock is always protected by geese 'guards' whose task is to warn about any danger. While other birds are resting or feeding, the guards are watching the surroundings intensely. Guards often become the easiest prey for predators. During migration, geese need mowed meadows for feeding. They could not find food in tall grass. In spring, after resting and feeding themselves at the Nemunas delta, geese travel deeper into the continent. They reach even the Novaya Zemlya in far north. Some geese stay to breed in the Nemunas delta.

Bean and White-fronted geese are hunted birds, but their hunting is allowed during autumn migration only, when birds are travelling to their wintering habitats.

Mute swan (*Cygnus olor*)



Whooper swan (*Cygnus cygnus*)



Mute Swan is a widely-known bird, which bends its neck into letter 'S' shape. This swan is easy to recognise for its red beak. Because of their short legs, birds of this species walk clumsily, but they are great swimmers. These swans have one interesting feature – they like drying and warming their legs. They do that by taking their legs out of water, and then tucking their legs between their belly feathers. In the 20th Century, this species was almost extinct, but through the efforts of Prof. Tadas Ivanauskas, they



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were preserved in Lake Žuvintas, from which their population spread and now they can be found all over the country. It is the largest bird in Lithuania (males can weigh up to 15 kg).

The Whooper swan is a cautious bird less brave than the Mute swan. It can be recognised by its straight neck and yellow spots on the sides of its beak. It used to be a rare fowl, but its population has been growing occupying the areas up to the north. The Whooper swan is a common tundra bird. The bird produces melodious sound resembling of a trumpet.

During hatching, Whooper swans and Mute swans can be rarely found in the same water body. The Whooper swans being much more aggressive oust their Mute cousins.

Swans usually choose locations less frequented by people, remote places, where they make nests, which they loudly protect against enemies.

Swans feed on grass water vegetation.

White-tailed eagle (*Haliaeetus albicilla*)

The best place to spot this grand bird is at the Nemunas delta, as their population here is the most numerous in Lithuania. Tulkiaragė is also their habitat, they have been breeding in the nest on the tree here for many years by now. That's why you can see it hovering above Kroku lanka or Tulkiaragė meadows and looking for prey.

The White-tailed eagle feeds mainly on fish – its coarse warty soles are adapted for holding slippery fish. The bird does not lose an opportunity to catch a water bird either. Therefore, when the eagle is gliding in the sky, you can see other birds getting worried and anxious, producing warning sounds, some bolder birds gather into flocks and try to scare the eagle away. Adult male is easy to recognise by its white tail and yellow beak. This species is much bigger than many other Lithuanian birds of prey.

In the past, this eagle was extremely rare in Lithuania. It could have been caused by very intensive use of fertilisers and pesticides in agriculture. Feeding on other animals, the eagle consumes also the poisons contained in them, which determine decreasing hatching rate. Artificial nests mounted on the trees by the environmentalists' efforts, thus ensuring peace for the birds and reduced use of chemicals in agriculture resulted in significantly increasing population of the White-tailed eagle. They even stay for winter at the Nemunas delta.



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