



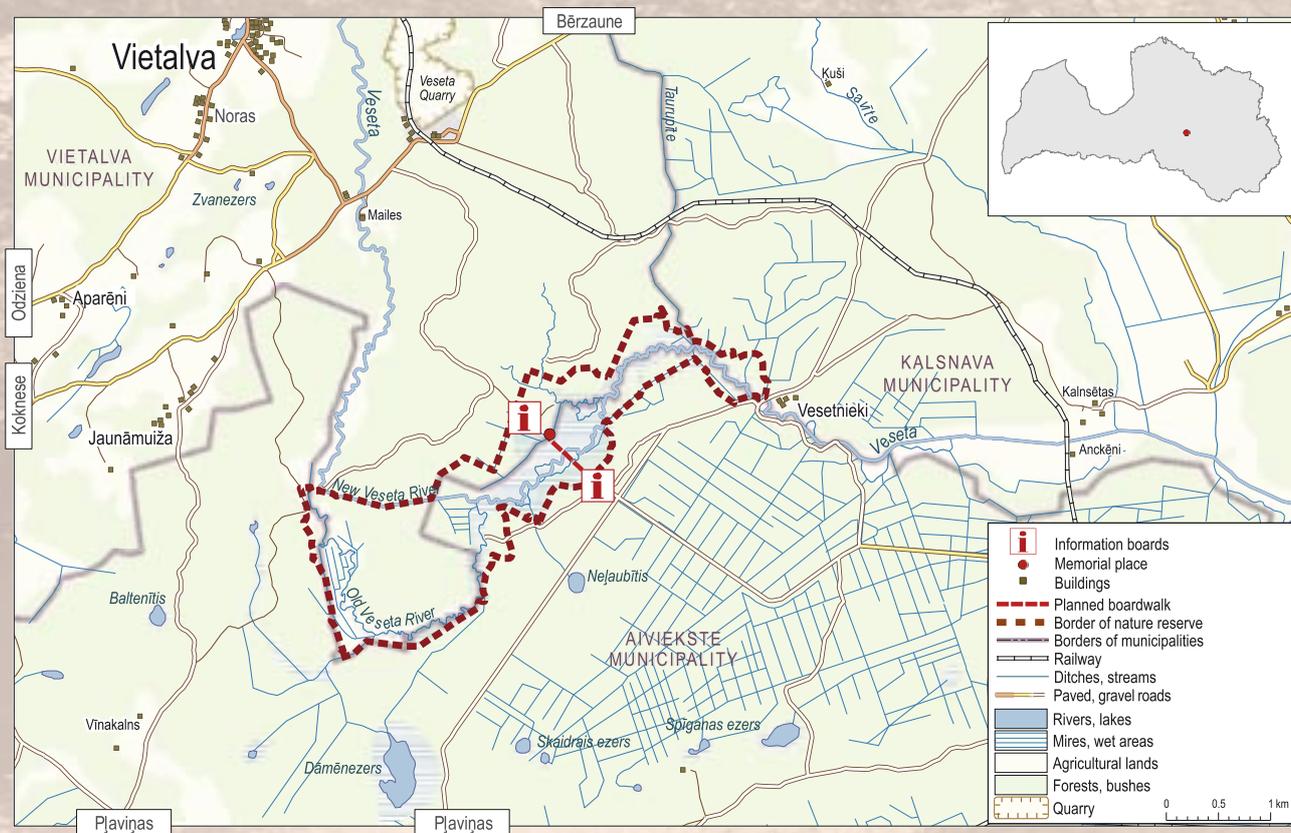
Especially  
protected  
nature  
area

# VESETA FLOODPLAIN MIRE

NATURE RESERVE



# VESETA FLOODPLAIN MIRE NATURE RESERVE



Author: B. Strazdiņa

**Location** Aiviekste and Vietalva Municipalities, in Aizkraukle District, Kalsnava Municipality, in Madona District

**Established** 1999

**Total area** 427 ha

**Status**



**Especially protected nature area in Latvia – nature reserve**

Nature reserve is a natural or changed by human activities area of land that includes especially protected plants, animals and habitats. The Veseta floodplain mire is one of 273 nature reserves of Latvia.



**Included in European network of protected territories  
Natura 2000**

Natura 2000 is the European Union network of especially protected nature areas, where every member state participates with its system of protected nature areas. There are 336 Natura 2000 sites in Latvia; they cover 11.9 % of the territory of Latvia.

### Habitats

- forests (50 %)
- mires (38 %)
- meadows (10 %)
- freshwater habitats (2 %)

### The main nature values

- spring fens and transition mires
- Veseta River floodplain with old river beds
- swamp forests
- especially protected habitats – 8 in European importance and 3 in Latvia
- 60 especially protected plant and animal species



*Photo: M. Pakalne*  
Transition mire vegetation with colourful orchid species is one of the main values of the nature reserve.

### Negative influence

- overgrowing of transition mires and spring fens with shrubs and trees
- earlier forest drainage carried out in the project territory and outside
- overgrowing of floodplains by shrubs and tall vascular plant species
- blocking up of the old riverbed of the Veseta River



*Photo: V. Baroniņa*  
Veseta River

**Management plan** – developed by Latvian Fund for Nature for the time period 2005-2015. The main management activities are as follows – removing of shrubs and trees from the valuable mire habitats to prevent from overgrowing and grassland management by mowing. The management of transition mires and spring fens are carried out within the framework of EC financed LIFE Project „Implementation of Mire Habitat Management Plan for Latvia”.

## VESETA RIVER

The Veseta River is located in the centre of the nature reserve in Vidzeme plateau. It is 56 kilometres long, flows out of Kāla Lake and falls into the Aiviekste River close to its mouth with the Daugava River. Historically the Veseta River has been straightened in many places. The first activities were performed near the homestead “Silabrenči” within the territory of the nature reserve.



The rafting of lumber in the Veseta River and the barracks of forest labourers in “Vesetnieki” in the 30ties of the 20th century (“Meža dzīve”, 1937).

The lumber for rafting was transported to the remote Aiviekste River or the Daugava River. Thus, at the end of the 19<sup>th</sup> century, in order to straighten the river and avoid large curves, the route of rafting was cut shorter by digging a new riverbed about 2 kilometres long. The lumber-rafting was still continued until the 30-ties of the 20<sup>th</sup> century. Since the Veseta River in its riverhead has a large fall and a stony riverbed, in 1934 most of the stones were taken out, thus improving the possibilities of lumber-rafting.



*Photo: V. Baroniņa*

Water courses are found only in the new riverbeds. Nothing testifies about the hand work of people.

Floodplain meadows, called the **Vecupļavas**, have developed on the banks of the old river bed of the Veseta River. They were still mown during the middle of the previous century. Afterwards, they have not been managed for a long time, but nowadays the mowing has been started again in order to maintain their biological values. In places reeds cover large areas.

The **Ezišsala** Island has formed between the old and the new riverbeds of the Veseta River. Its area is about 160 hectares and it is mostly covered with forest.

The mire vegetation has developed on the both banks of the river. The process of paludification has become faster in the 19<sup>th</sup> century after river straightening. The hydrological regime of the mire is closely related to the hydrology of the Veseta River, because the river in the territory of the nature reserve below the new riverbed forms a diffused surface flow over the floodplain without a typical riverbed.



*Photo: B. Bambe*  
Oxbows have formed the curves of the Veseta old riverbed due to the blocking of the river. They resemble small, solitary lakes.



*Photo: V. Baronija*  
In places the Veseta River flows through the floodplain without a typical riverbed. One of the currents in black alder swamp forest.

## HABITATS

The nature reserve includes diverse wetland types near the Veseta River - mineral-rich springs and spring fens, transition mires, floodplain meadows and reed beds.

**About 1/3 of the area of the nature reserve cover especially protected habitats of Latvia and Europe.**

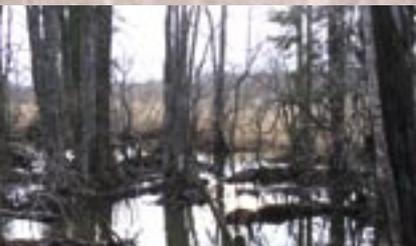


Photo: A. Indriksons

Alder swamp forests are characteristic in the vicinity of the river, always wet and difficult to pass.



Photo: A. Indriksons

Bog woodland occupies the largest part of the forests of the territory. Here, like in other habitats, hydrological monitoring is performed.

### Forests

Forests cover about a half of the territory of the nature reserve. In the surrounding of the Veseta River dominate wet forest types on peat – the age of some of the trees reaches 170 years. Dry forests are found in the Ezīšsala Island and in so called Partizāņu forest on the hillocks to the north from the river.

Underground waters have a high importance in the territory. About 76 % of the vegetation period run-off are formed up by underground waters and waters supplied by the near dry areas, 16 % are snow melting water reserves in the peat, but precipitation comprise only 8 %. Springs rich in minerals and spring mires are found in several underground water seepage areas. These habitats are characterized

by rare and especially protected moss species – *Geocalyx graveolens*, *Trichocolea tomentella* and *Anastrophyllum hellerianum*.

### Especially protected forest habitats of Europe and Latvia found in the nature reserve:

- Bog woodland (91D0\*)
- Fennoscandian deciduous swamp forests (9080; Nr. 1.18.)
- Western taiga (9010\*)

\* priority protected habitat

91D0 – code within Appendix I, Habitat Directive, Council of Europe No 1.18. – Regulations No 421 issued by the Cabinet of Ministers of Latvia



Photo: B. Bambe

Dry pine forests occur on the relief elevations, mostly to the north of the river.



Photo: V. Baroniņa  
Veseta River Floodplain Mire.

## Mires

The development of the Veseta River floodplain Mire was favoured by the events in the history of the river. With the digging of the new riverbed and diverting the current, the hydrological conditions of the old riverbed's banks changed – the process of paludification was intensified, this is witnessed by the analysis of the tree growth rings. Fen vegetation has developed about 100 m on both sides of the old riverbed, and in places transition mire – rich in species. In terms of biological diversity, especially flora, it is one of the most valuable parts of this nature reserve. The thickness of peat layer in places reaches 5 m.



Photo: V. Baroniņa  
In transition mire small mineral-rich springs occur.

Especially protected mire habitats of Europe and Latvia are found in the nature reserve:

- Transition mires and quaking bogs (code 7140)
- Fennoscandian mineral-rich springs and spring fens (code 7160; No 7.13)



Photo: M. Pakalne  
Common Cottongrass *Eriophorum polystachion* is a species characteristic for fen and transition mire vegetation.



Photo: B. Bambe  
Transition mire vegetation near the Veseta River with colourful orchids in June.

## Meadows

Meadows are found in the surrounding of the Veseta River. They are flooded periodically. Here dominate sedges and various vascular plant species, in places wide, continuous reed beds are present. Half a century ago there were hay fields with sheds, but the livestock was pastured in the forest. Shallow ditches, dug with shovels and found in the meadows, testify about previously performed drainage. Nowadays, due to lack of management in the meadows, they have overgrown



Photo: A. Petriņš

Floodplain of the Veseta River in spring.

with willows and aggressive vascular plant species – Common Reed *Phragmites australis*, Reed Canary-grass *Phalaroides arundinacea* and Cow Parsley *Anthriscus sylvestris*. Restoration of the meadow management will preserve the meadows as biologically valuable habitat for populations of rare plants and invertebrates, Corn Crake *Crex crex* and other bird species, and presumably it will promote the increase in number of Black Grouse *Tetrao tetrix*.

## Especially protected meadow habitats of European importance found in the nature reserve:

- Northern Boreal alluvial meadows (code 6450)
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (code 6430)



Photo: B. Bamber

Veseta floodplain meadows in winter with one of many beaver dams.



Photo: V. Baroniņa  
Meadowsweet *Filipendula ulmaria*.

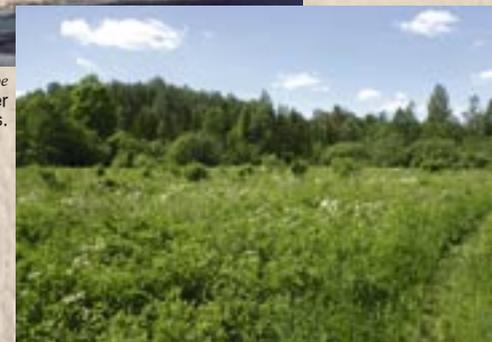


Photo: V. Baroniņa

Vecupplavas Meadows – overgrown in many places, but the meadow management has been started.



Photo: B. Bambe

The old river beds characterise the vegetation of eutrophic lakes – Yellow Water-lily *Nuphar lutea* and Water-soldier *Stratiotes aloides* dominate there.

## Freshwaters

Freshwater habitats in the nature reserve include the Veseta River with its old riverbeds, as well as separate brooks and ditches. The river has a twofold character: the new riverbed is shallow, sandy and stony with sandy banks. Due to the current, the natural meanders have developed, as well as water courses. Such habitat is very suitable for salmon-type fish, and trout really dwell there. In these sections River Mussel *Unio crassus* shells were found.

In the old riverbed (6 km) the speed of the current is small or almost standing. The natural Veseta riverbed has been blocked up, the old riverbeds have developed here with the characteristic eutrophic wetland vegetation.

## Especially protected freshwater habitats in Europe and Latvia found in the nature reserve:

- Water courses of plain to montane levels with the *Ranunculon fluitantis* and *Callitricho-Batrachion* vegetation (code 3260, No 5.18.)
- Old riverbeds (No 4.20.)



Photo: V. Baronija

In the new riverbed some water courses occur with the characteristic Water-crowfoot *Batrachium* spp. and Pondweed *Potamogeton* spp. growths.

The small territory of the nature reserve is very rich in plant species – 325 vascular plant and 112 bryophyte species were found there. The research was started there in the middle of the 20th century in the ecological stationary Vesetnieki, also hydrological measurements were taken there.



Photo: V. Baroniņa

One of the largest populations in Latvia with Marsh Saxifrage *Saxifraga hirculus* is found in Veseta Floodplain Mire.

From the point of flora in the Veseta River floodplain the most interesting are the transition mires with Marsh Saxifrage *Saxifraga hirculus* found there. It is a specially protected plant species not only in Latvia but also in Europe. The small, simple, yellow flower blooms in August when summer turns into autumn. This is species, which in contrast to the representatives of its dry habitat species needs wet growths conditions. Due to soil drainage it has become rare nowadays.

In the Veseta floodplain meadows various tall-sedge species dominate – Slender Tufted-sedge *C. acuta*, Tufted-sedge *C. elata* and Lesser Pond-sedge *C. acutiformis*, among them a rarity in Latvia – *C. atherodes*.



Photo: V. Baroniņa

Bogbean *Menyanthes trifoliata* together with various sedge species grows very well in the spring mire area.



Photo: M. Pakalne

Dioecious Sedge *Carex dioica* – a tiny and hardly noticeable plant, characteristic for transition mire vegetation.

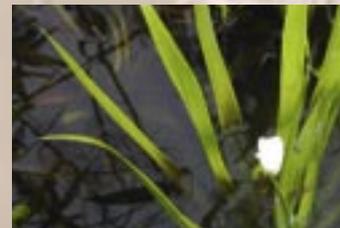


Photo: B. Bambe

The leaves of Water-soldier *Stratiotes aloides* form a large funnelled rosette with a white flower in the middle.

Photo: B. Bambe  
*Carex atherodes* – rare sedge species, together with other sedges can be found in the Veseta floodplain meadow and mire vegetation.



The diversity of orchid species in the nature reserve is surprising – at least 10 species of this family are found there. The development of the orchids from a tiny seed till the gorgeous blossom lasts many years, therefore almost all wild orchid species of Latvia are under state protection.

**Lesser Butterfly-orchid**  
*Platanthera bifolia*



Photo: M. Pakalne

**Fragrant Orchid**  
*Gymnadenia conopsea*



Photo: M. Pakalne

**Corallroot Orchid**  
*Corallorhiza trifida*

Photo: B. Bambe

**Marsh Helleborine**  
*Epipactis palustris*



Photo: V. Baroniņa

**Common Spotted-orchid**  
*Dactylorhiza fuchsii*

Photo: B. Bambe



**Eastern Marsh-orchid**  
*Dactylorhiza russowii*

Photo: M. Pakalne



**Spotted-orchid**  
*Dactylorhiza maculata*

Photo: B. Bambe



*Photo: M. Pakalne*  
The white, downy heads of Cotton Deergrass *Trichophorum alpinum* is an integral part of the transition mire vegetation.

Transition and spring mire vegetation in the Veseta River floodplain is a unique habitat for rare and especially protected bryophyte species. Also hummocks with Sphagnum species occur there as well where insectivorous plants, like Round-leaved Sundew *Drosera rotundifolia* grows.



*Photo: M. Pakalne*  
*Paludella squarrosa* - protected bryophyte species characteristic for spring mires.



*Photo: B. Bambe*  
*Trichocolea tomentella* most often occurs in moist and shaded habitats.



*Photo: M. Pakalne*  
*Sphagnum warnstorffii* – one of the most common bryophyte species of the transition mire vegetation.



*Photo: B. Bambe*  
*Hamatocaulis vernicosus* – an especially protected bryophyte species both in Latvia and in Europe.

The fauna of the meadow insects is especially rich in the nature reserve. The humid meadow habitats are suitable for various aquatic insects, but in the open meadows more diverse is the fauna of butterflies. Rare species of butterfly – Large Copper *Lycaena dispar* is found in the places rich in plant species. In reality, the representatives of this species are more orange than blue, only males have a little bit more of the blue shade.



Photo: V. Spunģis  
Black-veined White *Aporia crataegi* – characteristic species in the Veseta broad-leaved forests, it feeds also in the meadows.



Photo: G. Akmentīns  
Large Copper *Lycaena dispar* – especially protected species both in Latvia and Europe.



Photo: M. Kalniņš  
Green Snaketail *Ophiogompha cecilia* – protected species both in Latvia and Europe can be found near the Veseta River.

The diversity of dragonfly species increases in the vicinity of river. The number in the territory of the reserve is average is 16 species, among them dominate Beautiful Demoiselle *Calopteryx virgo*. The habitat is very suitable also for Green Snaketail *Ophiogompha*



Photo: V. Spunģis  
There are only some habitats of Longhorn Beetle *Prionus coriarius* in Latvia – one of them is in the Veseta forests.

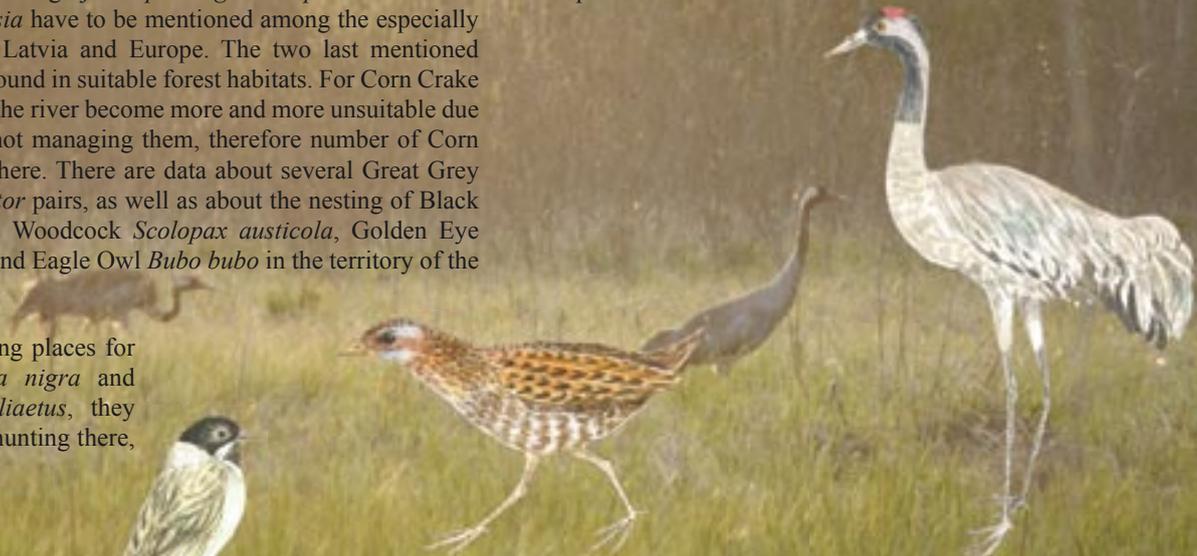
*cecilia*, some specimens have been found near the river.

The forests of the nature reserve are mostly wet, the diversity of the species depends on the presence of several elements – decaying and dry wood. In the old dry forests two very rare insect species are found – Lucanid Beetle *Ceruchus chrisomelinus* and Longhorn Beetle *Prionus coriarius*.

The territory of the nature reserve is rather small to be especially important for bird species. In total 70 bird species can be found there. Reed Bunting *Emberiza schoeniclus*, Sedge Warbler *Acrocephalus schoenobaenus* and Feldschwirl *Locustella naevia* are typical species in the surrounding of the old riverbeds and reed beds. Honey-buzzard *Pernis apivorus*, Common Crane *Grus grus*, Corn Crake *Crex crex*, Spotted Crake *Porzana porzana*, Marsh Harrier *Circus aeruginosus*, European Nightjar *Caprimulgus europaeus* and Hazel Grouse *Bonasa bonasia* have to be mentioned among the especially protected species of Latvia and Europe. The two last mentioned species can often be found in suitable forest habitats. For Corn Crake the meadows around the river become more and more unsuitable due to overgrowing and not managing them, therefore number of Corn Crake is decreasing there. There are data about several Great Grey Shrike *Lanius excubitor* pairs, as well as about the nesting of Black Grouse *Tetrao tetrix*, Woodcock *Scolopax austicola*, Golden Eye *Bucephala clangula* and Eagle Owl *Bubo bubo* in the territory of the nature reserve.

There are good feeding places for Black Stork *Ciconia nigra* and Osprey *Pandion haliaetus*, they were observed to be hunting there, however not nesting.

The territory rich in wet habitats is very suitable for amphibians, however the diversity of herpetofauna is small. Common Frog *Rana temporaria* can be found unevenly spread in the reserve, mostly near the swiftest sections of the Veseta River and near the brooks. Pool Frog *Rana lessonae* and Common Toad *Bufo bufo* are more rare. Viviparous Lizard *Zootoca vivipara* and Sand Lizard *Lacerta agilis*, Viper *Vipera berus* occur as well, the habitats are very suitable for new species.



Author: R. Kazāka  
Reed Bunting *Emberiza schoeniclus*  
is a typical species for river floodplain  
meadows and reed beds.

Author: R. Kazāka  
Several Spotted Crake *Porzana porzana*  
pairs nesting in the fen area.

Author: R. Kazāka  
Nesting Cranes *Grus grus* are observed in the territory.

Photo: A. Indriķsons  
Common Crane *Grus grus* in the Veseta floodplain meadows.

The various habitats of the nature reserve are suitable for roe deer *Capreolus capreolus*, elk *Alces alces*, red deer *Cervus elaphus* and wild boar *Sus scrofa*, and all of them can be met there frequently. These species usually make their dens and hiding areas in the forest, but daily dwell in the open areas – also in the floodplain of the Veseta River where they feed with the bushes growing in the meadows. Occasionally wolves *Canis lupus* pass through the territory, also lynx *Lynx lynx* is observed there. The beaver *Castor fiber* likes the banks of Veseta River and its old riverbeds, it has at least 7 dwellings in the territory of the reserve. By gnawing off the trees and bushes, the beaver prevents the unmanaged meadows from overgrowing.

Photo: V. Pilāts

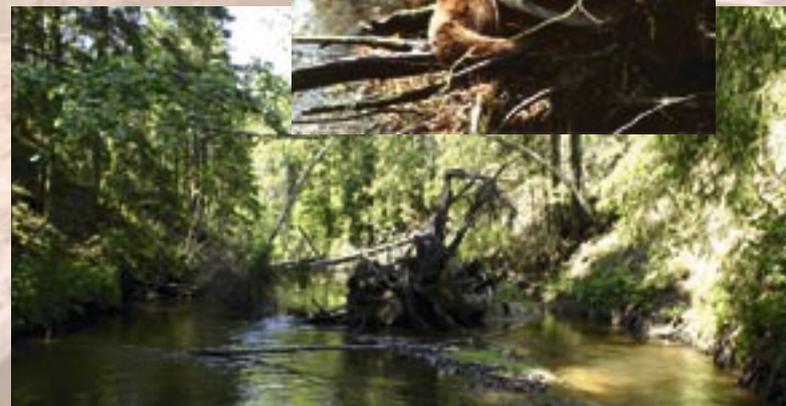


Photo: V. Baroniņa

The most suitable habitats for the holes of otter *Lutra lutra* are the banks of small rivers and brooks.

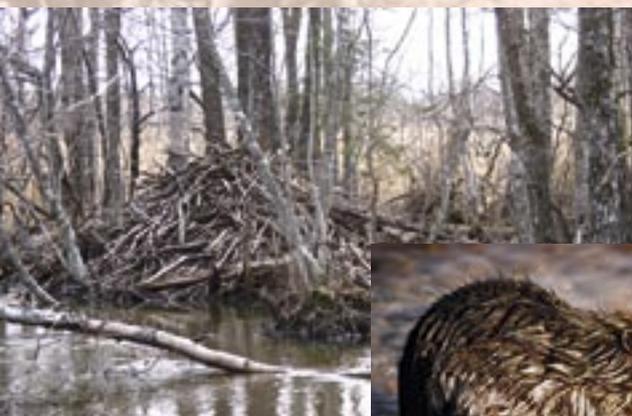


Photo: A. Indriksons

The beavers *Castor fiber* have built at least 7 dwellings in the nearness of the Veseta old riverbed.



Photo: A. Klepers

The beaver flooded areas have formed suitable habitats for rare species of invertebrates. The beaver itself is an essential resource of feeding stuff for the wolf. The swiftest sections of the Veseta River are suitable for otter *Lutra lutra*, it is an especially protected species both in Latvia and Europe. Four species of bats are observed above the river – all bat species in Latvia are protected.

## HISTORY

In the surroundings of Vietalva active hostilities were going on during World War II, and the events concerning the war after its termination also occurred there. A memorial site of the national partisans is situated in the nature reserve. In the years after the war so called Pārūpa group acted there, led by Rihards Pārups. The names of the persons killed due to the betrayal in 1946 are written on the white cross opposite to the entrance of the dugout.



*Photo: V. Baroniņa*

The white cross opposite to the entrance of the dugout with the names of the national partisans killed.



*Photo: B. Bambe*

The entrance of the partisan dugout.



*Photo: V. Baroniņa*

Reconstructed dugout where partisans lived.

Vesetnieki Ecological Stationary, managed by Latvian State Forest Research Institute “Silava”, is situated not far from the mire. It was established by Latvian forestry researcher Kaspars Bušs (1919-1988). There is a memorial sign in the honour of the great scientist near the former building of the stationary.



Kaspars Bušs, the founder of Vesetnieki Ecological Stationary.



The Ecological Stationary in the 90-ties of the 20th century.

Ecological Stationary since 1963. They characterize the hydrological regime of the Veseta River floodplain.

The studies of forest ecology and vegetation succession have been carried out in Vesetnieki



There are more than 70 groundwater wells, interrupted by various habitats (mires, various forest types, grasslands, reed beds ) 700 m of the total length. The changes in the groundwater level are shown in the diagram (p. 18). The analysis of the hydrological measurements helps to forecast the dynamics of the ecosystems of the reserve and to explain the causes of the changes.

*Photo: A. Indriksons*  
Groundwater monitoring wells.

## HYDROLOGICAL MEASUREMENTS

The smallest fluctuations of the groundwater level are observed in the transition mire vegetation. The average level is 8.3 cm below the surface of the mire. The ecosystem of the mire maintains a stable water level throughout the year. It is likely due to the great accumulation of water in the peat, evaporation and the location of the mire higher than the rest of the floodplain.

In spring and winter the level of groundwater never exceeds the surface of the mire. The highest groundwater level fluctuations are

in the open area in the middle of valley overgrown with reeds. The highest level of water has been observed in winter when during the period without the snow in January it reached in average 32 cm over the soil surface. It has been 51 cm below the soil surface during the dry summer period. Thus the range of fluctuations reaches more than 80 cm. On the whole, the fluctuation of groundwater level occurs within the limits of 60 cm in different seasons and habitats.



Changes of the groundwater level in different seasons and different habitats (A. Indriksons).

The Veseta floodplain meadows have not been managed for a long period of time. At present their mowing has been started again. Gradual cutting of the trees and bushes is initiated in the transition mire within the framework of the LIFE – Nature project. Simultaneously, monitoring of the vegetation is performed in order to evaluate how the management activities affect mire vegetation and rare plant species.



*Photo: B. Bambe*

Mire has overgrown by shrubs and reeds; therefore the gradual cutting was carried out.



*Photo: M. Pakalne*

## In the territory of the nature reserve, please, take into consideration:

- Do not pick plants! It takes many years for the gorgeous mire orchids to blossom from the small seeds!
- Do not step off the trail – the transition mire and spring fen vegetation are very sensitive habitats, do not trample them!
- Do not make a fire!
- Take care of the beaver dwellings – the beavers are the best regulators of the hydrological conditions in the nature!



*Photo: B. Bambe*

### **Territory is managed by:**

- Vietalva Municipality Council – “Pagastmāja”, Vietalva Municipality, LV-5109
- Aiviekste Municipality Council – Kriškalni, 1. maija street 10-7, Aiviekste Municipality, LV-5120
- Kalsnava Municipality Council – Pārupes Street 2, Jaunkalsnava, LV- 4860

### **The forest territories are managed by:**

- Forest Research Station
- State Joint-Stock Company “Latvia’s State Forests”
- 2 private landowners

### **Nature protection is controlled by:**

- Madona Regional Environmental Board – Blaumaņa street 7, Madona, LV-4801

### **Information:**

Latvian Fund for Nature

Raiņa blvd. 31-6, Rīga, LV-1050, [www.lnf.lv](http://www.lnf.lv)

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*Foto: B. Bambe*



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