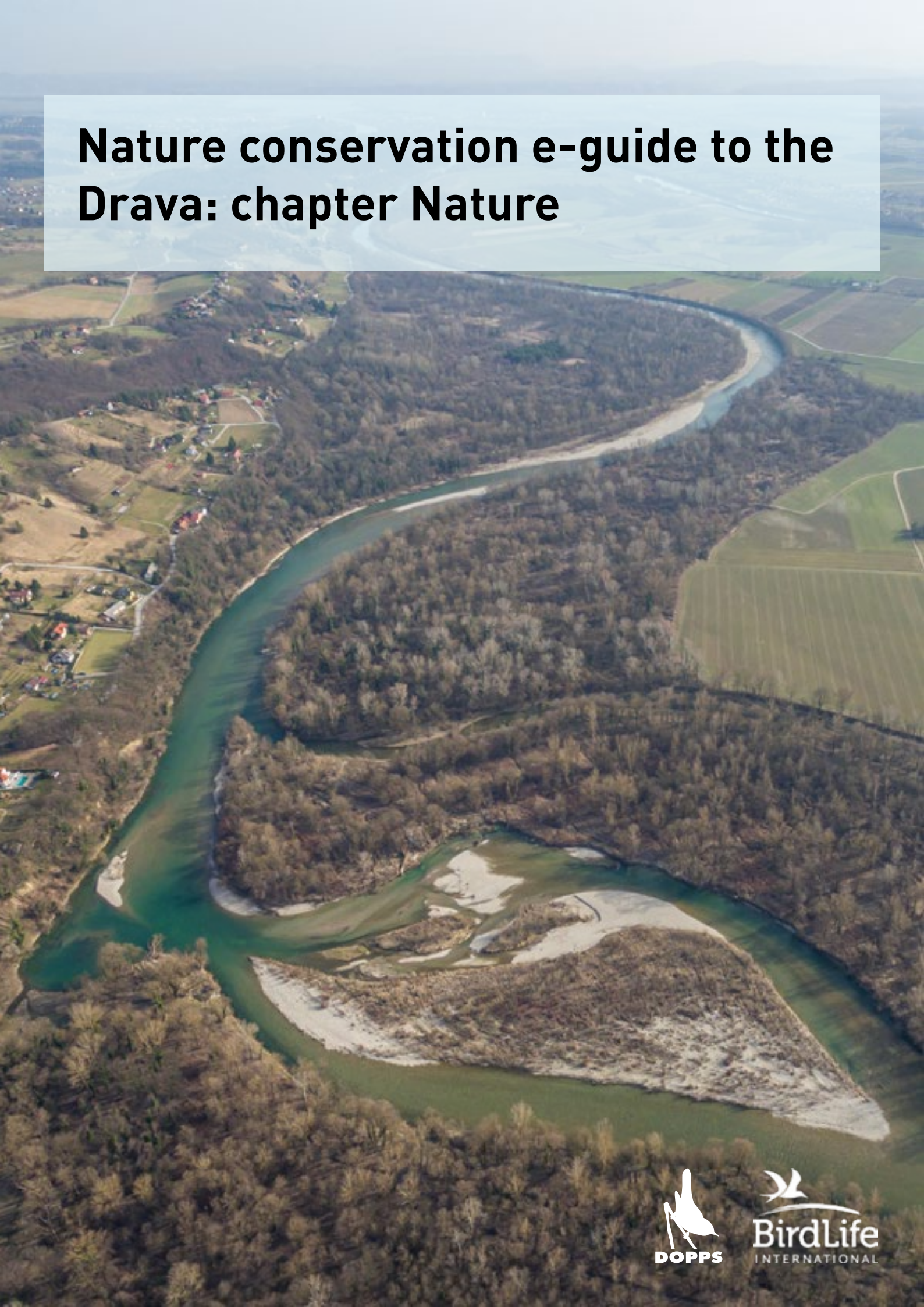
Nature conservation e-guide to the Drava: chapter Nature



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The Drava River – general information

The Drava River is Slovenia's most affluent river, fed from a vast river basin and Alpine glaciers in the High Tauern. After flowing for 275km, it passes into Slovenia at Libeliče where it has a catchment area roughly 12 000km^2 in size. Its river basin in Slovenia (the Drava region) encompasses the hilly and mountainous areas of the eastern Karawanks, Strojna, the Pohorje Massif, and Kozjak in the west, as well as the vast Dravska ravan Plain, the Slovene Hills (Slovenske gorice), and the Haloze Hills in the east, and thus accounts for 16 % of the Slovenian territory. This eastern-western division also marks a relatively clear boundary between two natural-geographical units in Slovenia: the Alpine and the Pannonian regions. It could be said that the Drava River connects the two regions, although they differ from each other significantly in many respects. This also holds true for the river's channel and the areas alongside the river's banks whose topography, arrangement of river terraces, floodplain surface, and other characteristics influence the development of riparian vegetation and the habitats of numerous animal and plant species.

The Alpine part of the Drava region is characterised by a varied relief of steep slopes and relatively high ridges interrupted by numerous ravines with affluent streams which have mountain torrent features. The hills in this region are a part of the Eastern (Central) Alps, which have a silicate bedrock that results in highly braided surface waters. The lowlands encompass the sediment-filled parts of the valleys. In the area between the Kozjak range (Kobansko) and the Pohorje Massif, the Drava River makes its way through the 50km-long Drava Valley, which ends when the region transitions into the Pannonian Plain at the western outskirts of Maribor. In the area of Trbonjska soteska (6 km) and Brezenska soteska (20 km) gorges, the Drava Valley is particularly narrow, so that the riverbanks transition into hilly slopes almost immediately. The slightly larger areas of flatland 2km wide and a few kilometres long are the Libeliško-Črneško polje Plain in the upper part, the Muško-Radeljsko polje Plain in the central, and the Ruško-Selniško polje Plain in the lower part of the Drava Valley.

At Maribor, the Drava River flows past the lowland parts of the Pannonian Drava region where it has created the vast Dravska ravan Plain by sediment deposition in the past. Now, the river has cut its current course into the sediment that it deposited at the plain at the end of the last ice age. The thickness of the gravel deposition at Maribor is at least 35m. The traces of the river's past dynamics are revealed by the river terraces, remnants of previous floodplains. At the Dravsko polje Plain, there are four river terraces on the right of the river, while two are located at the Ptuj Plain and the Središko polje Plain. The current floodplain of the Drava River ("loka") is limited by the riser of the river's youngest, lowest river terrace, which sometimes lies right next to the river's main channel (e.g. at Loka and Starše, Ormoška Dobrava), while at other times, it is found 1.5km away from it (e.g. at Dvorjane, Vurberk and Podbrežje). Here, the river's flow is a dynamic interaction between its main channel and backwaters and features river islands, gravel bars, and other phenomena typical of lowland rivers. At a few shorter stretches between Maribor and Ptuj, the Drava River flows close to the hilly area of the Slovenian Hills. At the stretch between its confluence with the Dravinja River and Zavrče, the river runs alongside the occasionally very steep edge of the Haloze Hills. The surface of the river's floodplain in the Slovenian part of the Pannonian Plain is approximately 50km^2. Due to the flatland along its banks, the percentage of surfaces flooded during exceptional (return period of Q50 and more) and more frequent floods (return period ranging from Q5 to Q10) is relatively small (a few %). With its predominantly gravelly substrate, the Dravska ravan Plain has few surface waters. Streams sourced exclu-

sively from groundwater are typical of the area and have springs at the riser of the Drava River's first river terrace. A few streams flow into the Drava River also from the hilly hinterland. The altitude of the lowland slowly decreases towards the East. It begins at 270m MSL at Maribor and drops to 175m MLS at Središče ob Dravi where the lowland is no longer a part of the Slovenian territory.

The Drava River has a nival regime, which is characterised by low discharge in winter and high discharge in the second half of spring and early summer. Thus, the river's lowest discharge is in January and February, while the highest discharge can be observed in May, June, and July due to the melting of snow and glaciers in the high-mountains. In recent times, a second period of high discharge has been observed in autumn due to the precipitation in October and November.

Countries:	Italy, Austria, Slovenia, Croatia, Hungary
Extreme points in SL:	W: Libeliče (46°37'58" N, 14°57'20.5" E), E: Središče ob Dravi (46°22'39" N, 16°16'9.7" E)
Length:	719km; of this, 130km on the territory of Slovenia (channel length 120km); the length of the Drava River between its two extreme points in SL is 143km
River basin:	40 087km^2, of this 3 259km^2 in Slovenia
Drainage basin:	the Black Sea drainage basin
Source:	Dobbiaco near the town of San Candido (South Tyrol, Italy)
Mouth:	2.5km NW of Aljmaš near Osijek (1382th river kilometre of the Danube)
Major cities:	Beljak / Villach (AT; 60 000 inhab.), Maribor (95 000 inhab.), Osijek (HR; 114 000 inhab.)
Navigability:	navigable in the lower 150km of its course from its mouth to the town of Barcs in Hungary
Main tributaries:	Krka / Gurk, Zilja / Gail (AT), Meža, Dravinja, Pesnica (SL), Mura, Bednja (HR)
River regime:	pluvio-glacial, with highest discharge in June (from melting snow in the Alps), second discharge peak in November (autumn rains in the Alpine hinterland), and lowest discharge in January and February
Average discharge:	541m^3/s; in Slovenia 297m^3/s, alternatively 326m^3/s on the Croatian border; in the areas of channel-type hydropower plants, the so-called "ecologically acceptable flow" is maintained, which is 20m^3/s in the summer and 10m^3/s in the winter at the Zlatoličje HPP and 10m^3/s in the summer and 5m^3/s in the winter at Formini and Čakovec HPPs
Highest discharges:	Dravograd HPP: 2 570m^3/s (05. 11. 2012) Markovci pri Ptuju: 3 300m^3/s – expert evaluation (06. 11. 2012) Borl: 2 595m^3/s – measured at the gauging station (05. 09. 1965) Labot / Lavamünd (AT): 5 000m^3/s – estimate (1851)
Hydropower plants:	23 (12 AT, 8 SL, 3 HR); in Slovenia: Dravograd HPP (1943) – 142GWh/annually, Vuzenica HPP (1953) – 247GWh/annually, Vuhred HPP (1956) – 297GWh/annually, Ožbalt HPP (1960) – 305GWh/annually, Fala HPP (1918) – 260GWh/annually, Mariborski otok HPP (1948) – 270GWh/annually, Zlatoličje HPP (1968) – 577GWh/annually, Formin HPP (1978) – 548GWh/annually
Height difference:	1 120m (1200–80m MSL), in Slovenia 165m (340–175m MSL)

The Drava River Today

In the Alpine part of the Drava region, the Drava River ran its natural, mostly unaltered course until the Second World War. In Maribor, this had still been the case until the 60s. Although the river's channel was first altered already in the middle of the 19th century (e.g. river regulation between Borl and Zavrč), major alterations across the entire floodplain of the Drava River began with the building of hydropower plants. The construction of the first hydropower plant, Fala HPP, began in 1913, while the entire chain of hydropower plants on the Slovenian territory was completed once the construction of the Formin HPP had been finished in 1978.

The current hydrologic conditions of the Drava River are strongly influenced by the running of the power plants, as the river has been entirely given to electricity production Slovenia. Its natural dynamics has thus fundamentally changed. At its Alpine stretch, the Drava River still featured a torrential course at the beginning of the 20th century, with a larger number of river rapids and sections of narrow, rocky flow path. Today, its course is obstructed by pier-type power plants, and its flow is significantly slowed down, while the requirement to meet the operational needs of power plants leads to marked daily water-level fluctuations at the reservoirs where large quantities of silt are being accumulated. Due to the building of HPPs, which caused the rising of the water level, parts of the landscape along the river were flooded. At the Pannonian stretch of the river's course, most of its water has been redirected to the channels of derivative hydropower plants so that, for most of the year, 20-times less water flows through the river's channel than prior to the operation of the HPPs. This is the so-called "ecologically acceptable release" (20 m^3/s downstream from the dam at Melje and 10 m^3/s downstream from the dam at Markovci during the period from 15. 3. to 15. 10. and half as much during the rest of the year). Only when the river's discharge surpasses the maximum flow rate of the hydro turbines (i.e. the total rated flow of 500m^3/s), the excess water is redirected back to the river channel. The sediment transport at the Drava River has been drastically reduced after the building of the hydropower plants. The river's load at the stretch between Markovci and Zavrče is today 400-times smaller than it had been before the HPPs were built. The consequences of these changes are the drastically reduced water levels in the river channel (for 1.6m on average), the narrowing and deepening of the channel and the resulting lowering of the groundwater levels, and the draining of the landscape along the river. After the construction of the Zlatoličje HPP, the groundwater level at the eastern part of the Dravsko polje Plain decreased for 2–3m, while it has dropped for as much as 9m next to the discharge channel. The Drava River's existing channel is on average only some 50m wide, while the river's gravel bars are mostly overgrown with woody vegetation. Because the river's flow regime has changed, the once abundant water network running through its floodplain forest has dried out. The above-mentioned changes, together with the deforestation of floodplain forests, land consolidation, and the draining of land, brought about a boom in intensive farming and urbanisation at the flood zone of the Drava River where this has not previously been possible. Completely new, large artificial water bodies have also been created, most notably the Ptujsko jezero Lake and the Lake Ormož Reservoir. Many traditional activities have forever vanished from this area.

Nature along the Drava River

Despite great changes caused by harmful human activity in the past decades, exceptional biodiversity is still typical of the Drava River area. Along the river's channel, especially in the Pannonian part of the Drava Valley at Maribor, the river creates a host of habitats, which exhibit a gradation of different factors (humidity, duration of floods, incline, discharge, vegetation density, etc.) and often give way to one another over a very small area. By its nature, the river is an ever-changing environment, a phenomenon to which many organisms, from flowers, insects, and fish to birds, had had to adapt. Because certain features of natural rivers and the size and cohesiveness of the area have been well preserved, the Drava River is home to some of the most important populations of plant and animal species in Slovenia. Following the vast changes from the past, certain man-made habitats also play an important role in the preservation of living nature. This is especially true of water bodies (e.g. shallow bays at the reservoirs on the Alpine stretch of the Drava River, the Ptujsko jezero Lake and the Lake Ormož Reservoir, and the former basins at the abandoned sugar factory at Ormož).

The proof of the great conservational importance of the Drava River lies, amongst other things, in the abundance of protected natural areas and natural features along the river, which are of state and local significance, as well as additional individual sites along the river's banks that are protected by other nature-conservational statutes on the Slovenian territory. Following the river as it flows through Slovenia, we thus encounter no less than 46 natural features of living nature on its banks and along its channel as well as in its immediate surroundings. These natural features include animals, plants, and ecosystems. In addition, 15 wider and narrower stretches downstream from Bresternica pri Mariboru have been designated as protected areas. Most of these areas are protected on the local level by municipal ordinance, including four landscape parks. The Ormož Basins Nature Reserve is a protected area of national importance.

ID No	Name of the protected area	PA type	Surface (ha)	Importance of the PA	Protected from
658	Mariborsko jezero Lake landscape park	landscape park	200	local	08.12.1992
781	Kamnica - Huzarski skok - a surface-geomorphological and hydrological natural monument	natural monument	1	local	06.10.1989
802	Mariborski otok Island - a surface-geomorphological and botanical natural monument	natural monument	8	local	06.10.1989
662	Meljski hrib Hill	nature reserve	6	local	08.12.1992
655	Drava landscape park	landscape park	2 175	local	08.12.1992
667	Drava - old channel, hydrological natural monument	natural monument	268	local	08.12.1992
671	Miklavž - springs and ponds - hydrological, zoological, and botanical natural monument	natural monument	19	local	08.12.1992
687	Dupleški log – forest, natural monument	natural monument	15	local	08.12.1992
660	Struga nature reserve	nature reserve	10	local	08.12.1992
661	Zlatoličje nature and forest reserve	nature reserve	49	local	08.12.1992
1132	Šturmovec landscape park	landscape park	215	local	10.08.1979
1137	Natural monument - natural forest stretching between the road Borl - Zavrč and the Drava River	natural monument		local	10.08.1979
1083	Lake Ormož Reservoir nature reserve	nature reserve	110	local	20.11.1992
4094	The Ormož Basins Nature Reserve	nature reserve	62	national	22.05.2017
4096	Središče ob Dravi landscape park	landscape park	438	local	18.04.2019

The Drava River area became internationally important when it was included in the Natura 2000 network of protected areas, a network designed to preserve the most valuable natural areas in the EU territory. The river's entire course in Slovenia was designated as a Natura 2000 site. Along its course and in its surroundings, we come across three protected areas, two SACs (SAC – Special Areas of Conservation) designated under the Habitats Directive and one SPA (SPA – Special Protection Areas) designated under the Birds Directive. SAC SI3000172 Upper Drava with tributaries (46.8km^2) includes the Drava River and certain hillsides with streams on the stretch between the Austrian-Slovenian state border and the Fala HPP, while SAC SI3000220 Drava (36.9km^2) includes parts of the Drava floodplain forest between Maribor and Središče ob Dravi. SPA SI5000011 Drava (100.4km^2) encompasses the entire river basin of the river's Alpine stretch downstream from Lovrenški most at the village Puščava. SAC Drava is almost entirely included in the SPA. The area of Upper Drava with tributaries became designated for eight animal species and two forest habitat types of European importance, while the SAC area at the river's Pannonian stretch was designated for 21 animal and one plant species as well eight habitat types. The SPA area was designated for 52 endangered and conservationally important bird species that occur there during the breeding, migration and/or wintering periods.

The years-long efforts to create a larger transboundary protected area at which sustainable management of a joint river ecosystem and promotion of the economic development of the region could take place came to fruition on 15. September 2021 when the world's first 5-country biosphere reserve was declared, stretching across Austria, Slovenia, Croatia, Hungary, and Serbia and encompassing 9 300km^2 of land along the 700km of the Mura, Drava and Danube river courses. Together with the Slovenian stretch of the Mura River, this largest European biosphere reserve also includes the lower Pannonian stretch of the Drava River downstream from Ormož at the Croatian border.

Special area of conservation Upper Drava with Tributaries (SI3000172)

Species:

1337 Eurasian beaver (*Castor fiber*)
1159 Zingel (*Zingel zingel*)
1078* Jersey tiger (*Callimorpha quadripunctaria*)
1310 Common bent-wing bat (*Miniopterus schreibersii*)
1037 Green snaketail (*Ophiogomphus cecilia*)
4014 *Carabus variolosus*
1093* Stone crayfish (*Austropotamobius torrentium*)
1324 Greater mouse-eared bat (*Myotis myotis*)

Habitat types:

9110 *Luzulo-Fagetum* beech forests
9180* *Tilio-Acerion* forests of slopes, screes and ravines

Special Area of Conservation Drava (SI3000220)

Species:

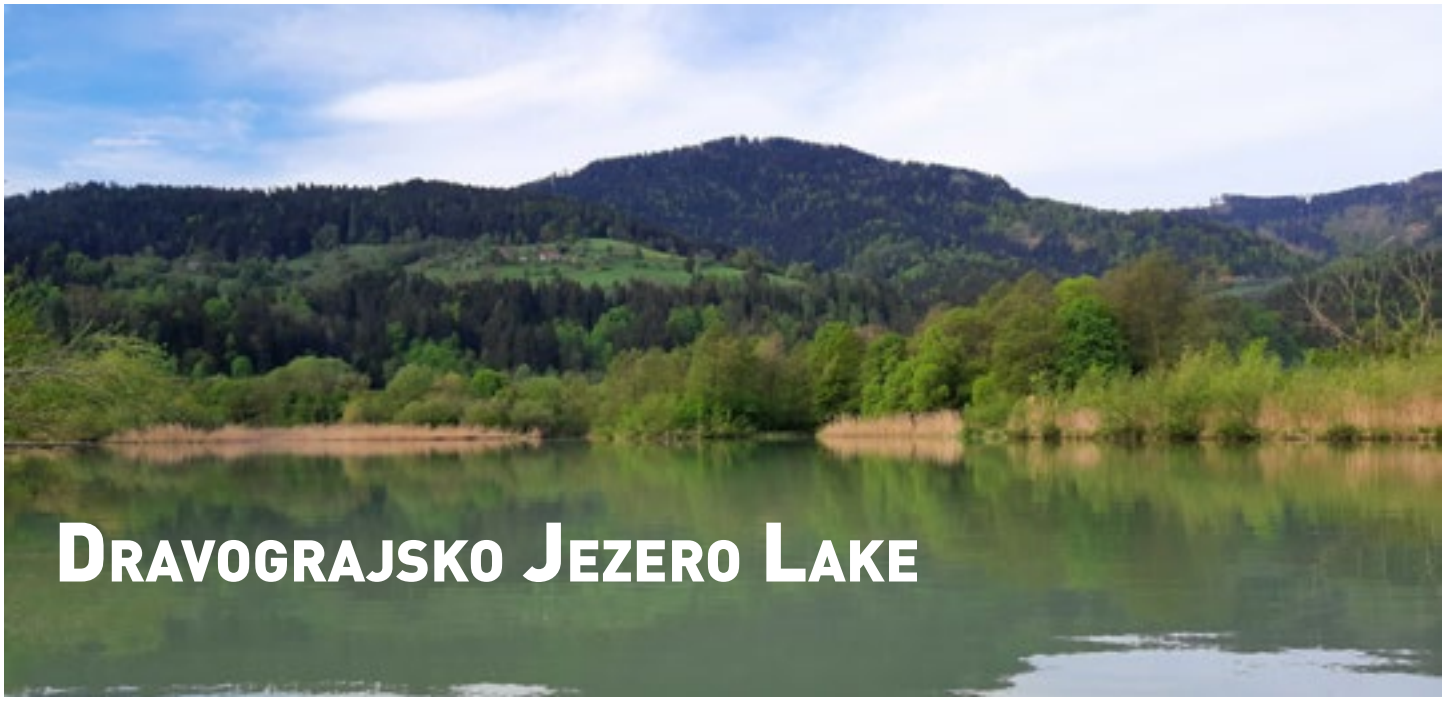
1124 White-finned Gudgeon (*Gobio albipinnatus*)
1337 Eurasian Beaver (*Castor fiber*)
1130 *Aspius aspius*
1078* Jersey Tiger (*Callimorpha quadripunctaria*)
2555 Balon's Ruffe (*Gymnocephalus baloni*)
1193 Yellow-bellied Toad (*Bombina variegata*)
1037 Green Snaketail (*Ophiogomphus cecilia*)
1163 European Bullhead (*Cottus gobio*)
4045 Ornate bluet (*Coenagrion ornatum*)
1220 European Pond Turtle (*Emys orbicularis*)
4014 *Carabus variolosus*
1149 Spined Loach (*Cobitis taenia*)
1134 European Bitterling (*Rhodeus sericeus amarus*)
1614 Creeping Marshwort (*Apium repens*)
1086 *Cucujus cinnaberinus*
1160 Streber (*Zingel streber*)
1321 Geoffroy's Bat (*Myotis emarginatus*)
2011 European Mudminnow (*Umbra krameri*)
1304 Greater Horseshoe bat (*Rhinolophus ferrumequinum*)
1167 Italian Crested Newt (*Triturus carnifex*)
1355 Eurasian Otter (*Lutra lutra*)
1122 Danubian Longbarbel Gudgeon (*Gobio uranoscopus*)

Habitat types:

91E0*	Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)
3150	Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* — type vegetation
3260	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
3270	Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation
6110*	Rupicolous calcareous or basophilic grasslands of the *Alysso-Sedion albi*
6210(*)	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
91F0	Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (Ulmenion minoris)

Special Protection Area Drava SI5000011

A395	Greater white-fronted goose (*Anser albifrons*)
A196	Whiskered tern (*Chlidonias hybridus*)
A075	White-tailed sea-eagle (*Haliaeetus albicilla*)
A321	Collared flycatcher (*Ficedula albicollis*)
A249	Sand martin (*Riparia riparia*)
A022	Common little bittern (*Ixobrychus minutus*)
A061	Tufted pochard (*Aythya fuligula*)
A197	Black tern (*Chlidonias niger*)
A030	Black stork (*Ciconia nigra*)
A236	Black woodpecker (*Dryocopus martius*)
A073	Black kite (*Milvus migrans*)
A176	Mediterranean gull (*Larus melanocephalus*)
A119	Spotted crake (*Porzana porzana*)
A051	Gadwall (*Mareca strepera*)
A060	White-eyed pochard (*Aythya nyroca*)
A125	Eurasian coot (*Fulica atra*)
A026	Little egret (*Egretta garzetta*)
A120	Little crake (*Porzana parva*)
A136	Little ringed plover (*Charadrius dubius*)
A177	Little gull (*Hydrocoloeus minutus*)
A168	Common sandpiper (*Actitis hypoleucos*)
A068	Smew (*Mergellus albellus*)
A053	Mallard (*Anas platyrhynchos*)
A084	Montagu's harrier (*Circus pygargus*)
A166	Wood sandpiper (*Tringa glareola*)
A118	Water rail (*Rallus aquaticus*)
A193	Common tern (*Sterna hirundo*)
A082	Hen harrier (*Circus cyaneus*)
A234	Grey-headed woodpecker (*Picus canus*)
A336	European penduline tit (*Remiz pendulinus*)
A131	Black-winged stilt (*Himantopus himantopus*)
A113	Common quail (*Coturnix coturnix*)
A142	Northern lapwing (*Vanellus vanellus*)
A393	Pygmy cormorant (*Microcarbo pygmeus*)
A001	Red-throated diver (*Gavia stellata*)
A162	Common redshank (*Tringa totanus*)
A179	Black-headed gull (*Chroicocephalus ridibundus*)
A055	Garganey (*Spatula querquedula*)
A081	Western marsh harrier (*Circus aeruginosus*)
A338	Red-backed shrike (*Lanius collurio*)
A459	Yellow-legged gull (*Larus michahellis*)
A316	Willow warbler (*Phylloscopus trochilus*)
A043	Greylag goose (*Anser anser*)
A182	Common gull (*Larus canus*)
A059	Common pochard (*Aythya ferina*)
A297	Common reed warbler (*Acrocephalus scirpaceus*)
A072	European honey buzzard (*Pernis apivorus*)
A151	Ruff (*Calidris pugnax*)
A292	Savi's warbler (*Locustella luscinioides*)
A027	Great Egret (*Ardea alba*)
A070	Goosander (*Mergus merganser*)
A229	Eurasian kingfisher (*Alcedo atthis*)
A067	Common goldeneye (*Bucephala clangula*)



Dravograjsko Jezero Lake

When the Drava River was dammed during the II. World War as the Dravograd HPP was built, the reservoir called the Dravograjsko jezero Lake was created from a former natural meander. With a significant rise of the water levels, 21ha of agricultural land on the right bank below the village of Črneče was submerged in the process. The river's slowed flow had caused the fine sediments to deposit on the inner parts of the meander. This deposition progressed to such an extent that it led to the flooding of the land and the development of extensive marshes in the 60s in the area of the Črneški zaliv Bay. Today, the 130ha area is a maze of overgrown islets, channels, and shallow parts of the lake where the water is 0.5–1.5m deep, while the river's main channel has now almost entirely shifted back to where the river used to flow in the past.

The most widespread marsh plant is the common reed *Phragmites australis*, which forms extensive stands – reedbeds. The marsh biotope complex is completed with communities of large sedge, tall grass, and woody plant species typical of softwood floodplain forests (white willow *Salix alba*, black alder *Alnus glutinosa*, ash *Fraxinus excelsior*), which are overgrowing parts of the Črneški zaliv Bay at an increasing pace. Among more than 160 recorded plant species, *Rumex aquaticus*, yellow iris *Iris pseudacorus*, sweet flag *Acorus calamus*, and northern water hemlock *Cicuta virosa* are of interest.

The area is known mostly for its birds as systematic research on the avifauna of the Dravograjsko jezero Lake and its surroundings was carried out already in the first half of the 80s. At the time, 152 species were identified, while others were recorded during later unsystematic observations. The lake takes on the greatest significance during the breeding period, although many species can also be observed on it during the migration and wintering periods.

The most important habitat for the breeding birds on the lake is the reedbeds, as the stands there form one of the largest continuous areas of such vegetation on the Slovenian stretch of the Drava River and in the country in general. The typical reedbeds breeder on the lake's banks and islets is the common reed-warbler *Acrocephalus scirpaceus*, a species that has adapted to live in this specific habitat. Slightly less abundant are the great reed-warbler *A. arundinaceus* and the sedge warbler *A. schoenobaenus*, which mostly populate the edges of the reedbeds and areas covered with large sedge. A former breeding bird is the Savi's warbler *Locustella luscinioides*, which now avoids the present denser reedbeds. Reedbeds consisting of early successional stages of willow are a breeding habitat for the reed bunting *Emberiza schoeniclus*, a rare but locally distributed bird species in Slovenia. Apart from providing breeding sites for the widespread mallard *Anas platyrhynchos*, the area of the Črneški zaliv Bay is also a breeding site for to the common coot *Fulica atra*, the common moorhen *Gallinula chloropus*, the great crested grebe *Podiceps cristatus*, and the little grebe *Tachybaptus ruficollis*, which breed here to a lesser extent. All the above-mentioned species are rare breeders on the Alpine stretch of the Drava River and only breed at one or two locations on the stretch. The occurrence of the common little bittern *Ixobrychus minutus* has not been confirmed recently despite plenty of suitable habitats for the species. Ornithological literature shows that a breeding pair of wild mute swans *Cygnus olor* was first recorded at the Dravograjsko jezero Lake outside the known area of establishment for the species in 1981. A single pair still breeds at the lake to the present day. A newcomer to the area is the goosander *Mergus merganser*. The breeding of this species, which typically inhabits the Alpine stretches of rivers, was first confirmed with the sighting of a female with ducklings in 2018, while in 2021, at least two pairs were breeding at the location. Apart from these species, the forest stands, scrubs, and the lake's edges are inhabited by numerous passerine birds with their most illustrious but particularly shy representative being the Eurasian golden oriole *Oriolus oriolus*.

Although the shallow parts of the Črneški zaliv Bay often freeze over during winter, the list of the wintering bird species is quite extensive. Together with the ones mentioned above, the great cormorant *Phalacrocorax carbo*, the grey heron *Ardea cinerea*, the Eurasian teal *Anas crecca*, and the yellow-legged gull *Larus michahellis* can regularly be seen on the lake,

while one can also occasionally spot the tufted pochard *Aythya fuligula*, the common pochard *A. ferina*, and the common goldeneye *Bucephala clangula* there. The dense reedbeds are the winter habitat for the mysterious water rail *Rallus aquaticus*, which usually hides out of sight and only announces its presence with its distinctive sound. Especially the numbers of the mallard and the common coot regularly rise to a few tens of individuals, while more than 100 waterbirds in total can be observed during some winters. In late autumn and winter, the intriguing hen harrier *Circus cyaneus* and great grey shrike *Lanius excubitor* can be spotted on the lake and in its surroundings.

The Dravograjsko jezero Lake is a stopover site for different waterbird species. In spring, this is where the garganey *Spatula querquedula*, the black-crowned night heron *Nycticorax nycticorax*, the little egret *Egretta garzetta*, and the common sandpiper *Actitis hypoleucos* often stop over, but some species uncharacteristic for this part of Slovenia have also been recorded.

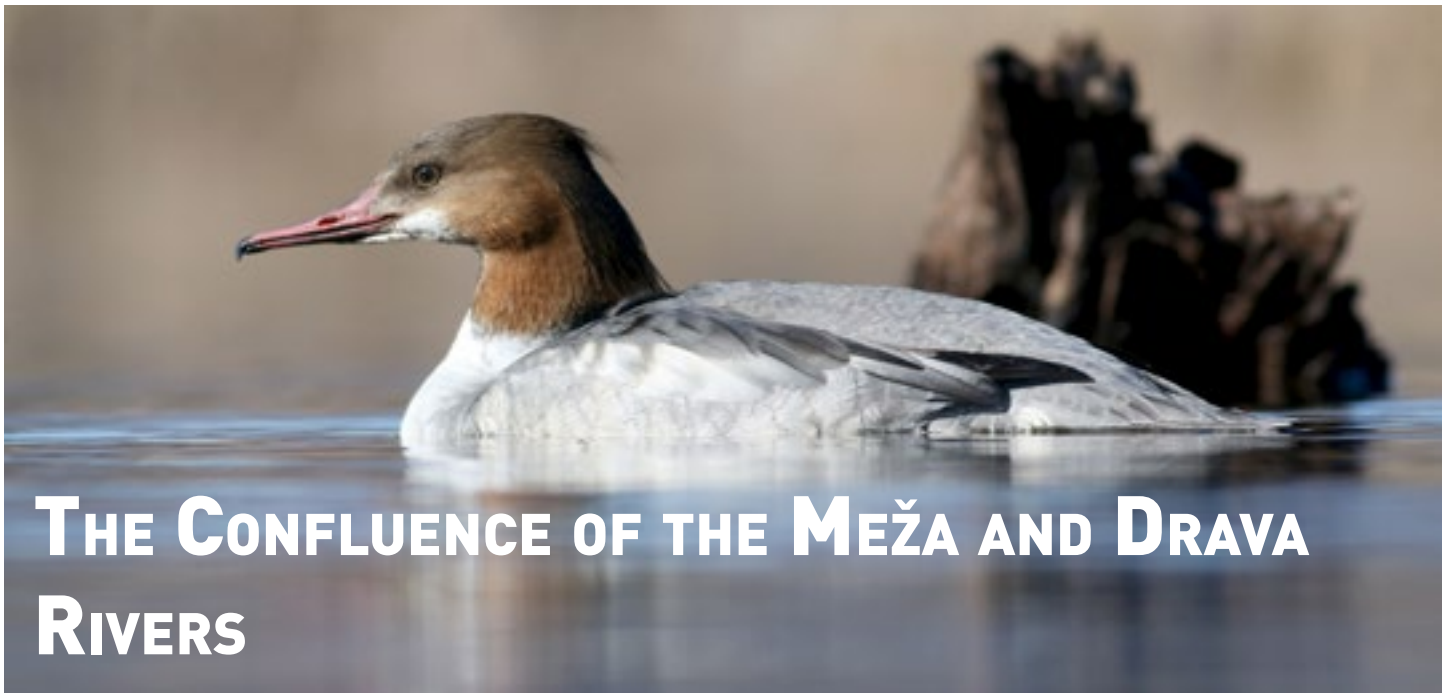
Probably the most notorious inhabitant of the Dravograjsko jezero Lake is the Eurasian beaver *Castor fiber*, which populated the area after the year 2000. Traces of its presence – mainly gnawed tree trunks and branches – can be observed on both banks. The lake is one of the first areas in Slovenia to which the species has returned naturally after it was exterminated in the middle of the 18th century by hunting. In addition, the area is an important spawning ground for several species of fish and amphibians.

Visiting the area

You can appreciate the Dravograjsko jezero Lake from both banks of the Drava River: on the left bank, you can take the "Ribniška pot" Trail (The) past the Dom koroških ribičev v Dravogradu (the Koroška Fishermen's Centre at Dravograd), while the right bank alongside the Črneški zaliv Bay will take you down a reinforced road (there is a car park before the village of Črneče) to the observatory with a great view over the bay area and the reedbeds. There is an educational trail called "Bobrčkova pot" (the Beaver's Trail) with seven points of interest where you will be able to read all about the animals and plants in the area.

Reedbeds

Reedbeds consist of the common reed *Phragmites australis* either in the form of pure stands (natural monocultures) or in combination with other marsh plant species (e.g. cattails *Typha sp*, sparganiums *Sparganium sp*, and clubrushes *Schoenoplectus sp.*). Reedbeds usually grow in shallow, flooded, silty areas of still or slow running water bodies that are not exposed to swift currents or waves. The common reed spreads by rhizomes with shoots growing from the rhizome and reaching up to 2m in height. These shoots can remain dry for many seasons and give the reedbeds their characteristic structure. Reedbeds are a highly productive but structure-wise a rather homogenous and simple habitat. Throughout the seasons, they provide shelter for many bird species and other animals. There are not many highly specialised bird species that breed exclusively in reedbeds (under 10 species in Europe) as reedbeds are a highly specific habitat. The adaptations of such species include camouflage coloration with predominantly light brown tones or striped plumage patterns, anatomical characteristics of legs, patterns of movement along vertical structures, and nest building that involves attaching the nest to the stalks. For some species of birds, reedbeds are an important source of food; certain species feed on young shoots, leaves or small fruit of the common reed, while others seek out insects and spiders amongst the stalks. Reedbeds on the Alpine stretch of the Drava River, especially between Dravograjsko jezero Lake and Vuhred HPP and between Selnica ob Dravi and the Mariborsko jezero Lake, are exceedingly extensive and are one of the largest in Slovenia. Together with different successional stages of willow and other structures, these reedbeds form rare and conservationally very important river habitats. On the Pannonian stretch of the Drava River, reedbeds are absent from the river's main channel due to the shingle riverbed and fast flow, and they can only be found in man-made water bodies (reservoirs, the Ormož Basins) and in certain backwaters and oxbow lakes to a lesser extent.

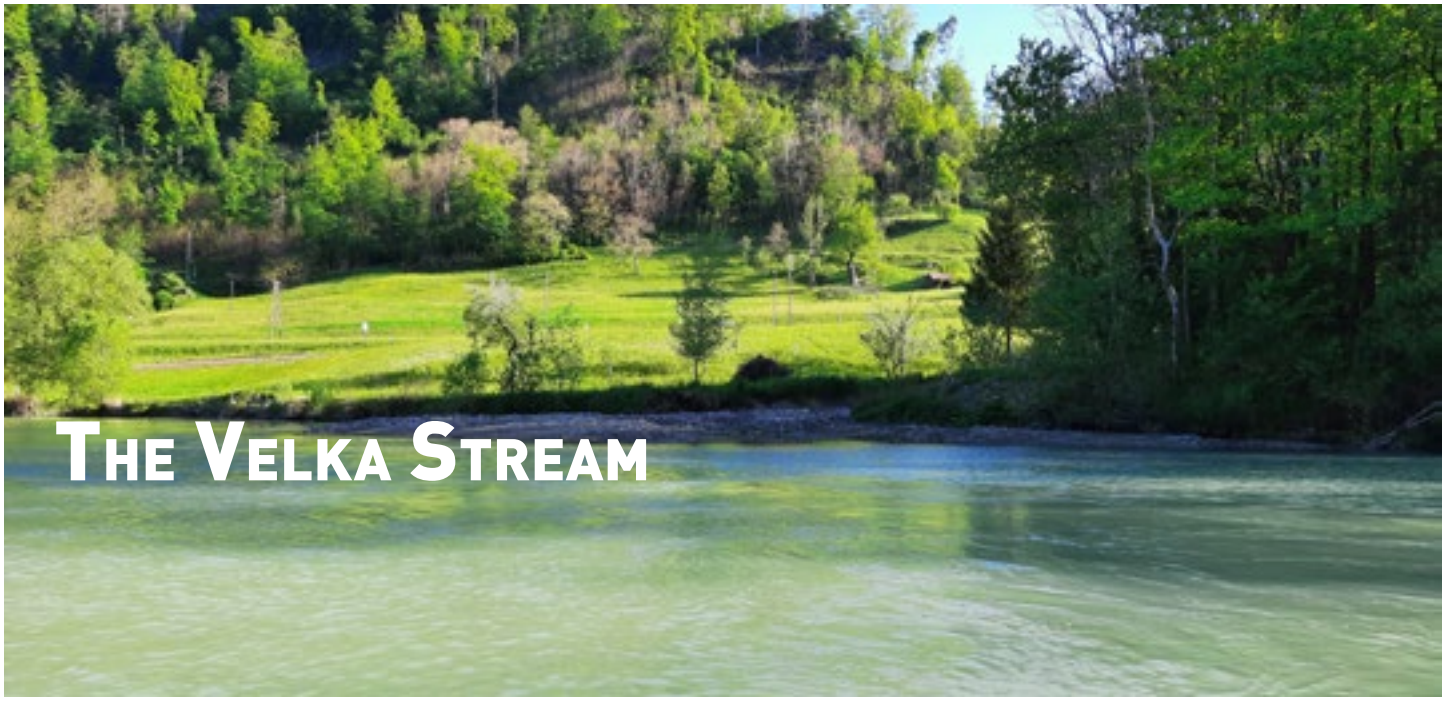


The Confluence of the Meža and Drava Rivers

The Meža River is the most important tributary of the Drava River in the entire Alpine part of the Drava region. Less than 1.5km upstream from the confluence, the Mislinja River, which is the second important river in this geographical area, flows into the Drava River. Both rivers drain the water from 780km^2 of the river basin and have mountain torrent features – during the abundant autumn rains, their discharge can increase for more than 100 times. Thus, although their average annual discharge amounts to no more than 8 or 7m^3/s, the highest recorded discharge for the Meža River at Otiški vrh was 371m^3/s and the highest discharge for the Mislinja River, 230m^3/s. Despite extensive regulation in the past, both rivers still cause floods, especially at the floodplains along their channels. The area at the confluence of the Drava and Meža rivers is also completely changed today. The high embankments fence the rivers in, and their banks are almost entirely built-up, so that few of their natural morphological characteristics have been preserved. One such characteristic is the debris cone of alluvial gravel deposited by the Meža River at its mouth, which is most visible when the discharge of the Drava River is low. To the south and in the direction of the level ground on which the settlement of Dobrova was built, a steep, 40m-high, and forested riser belonging to the Drava River's Pleistocene river terrace protrudes from the flatland. It is exactly here that the relative height of the Drava River's river terraces in Slovenia is the greatest. Turning to the west, we can admire the Dravograd pier-type HPP damn. It is the first of such barriers that have fundamentally altered the river's appearance and that many organisms find impossible to cross. The alluvial gravel island at the mouth of the Meža River is a stopover site for the goosander *Margus merganser*, while other waterbird species that are less frequently seen in these parts of the Drava River also stop here. Along the lower stretch of the Meža River, the common kingfisher *Alcedo atthis* can be spotted regularly.

Visiting the area

You can observe the confluence from the right bank, that is, from the road below the Dravograd police station, which you reach by turning off the main road and continuing in the direction of Ravne na Koroškem or Slovenj Gradec. It is also possible to get a view from "Ribiška pot" (the Fisherman's Trail) running along the opposite bank of the Drava River.



The Velka Stream

In the Alpine part of the Drava region, many streams with springs high up in the slopes of the Pohorje Massif and the Kozjak range flow into the Drava River. For the most part, these streams run through narrow and steep gullies where the incline of the hard-to-access terrain sometimes reaches 40°. The Velka stream is a great example of such a tributary of the Drava River with most of its natural course preserved. As the stream enters into the Drava Valley, it passes the village after which it was named. Its confluence with the Drava River, however, is surrounded by a forest. Unlike other similar confluences in the Drava Valley, it has not been built-up at all and can be appreciated in its natural state. The confluence features an extensive debris cone of alluvial gravel.

Typical breeding birds of the swift-flowing, clear Drava tributaries abundant in insects and other non-vertebrates in all stages of their life cycles are the white-throated dipper Cinclus cinclus and the grey wagtail *Motacilla cinerea*. They prefer to make their nests above water in rocky walls, roots, and bridges. During the non-breeding period, the two species can be spotted along the Drava River, especially at the mouths of the streams. Observations indicate that the wooded valley of the Velka stream is the breeding site of the goosander, which otherwise feeds on the Drava River. A similar habitat is also preferred by the stone crayfish *Austropotamobius torrentium*, another species typical of the streams in the Alpine part of the Drava region. The natural mouths of the streams are important spawning grounds for several fish species.

Visiting the area

The stream's mouth is located along the Maribor–Dravograd main road, at the former restaurant Murnhof (parking options are limited). You can reach the mouth by taking a walk along the left bank of the stream.

Ribičje and the Surrounding Area

Ribičje and its surroundings lie in the western part of the Mučko polje Plain, which is the first somewhat larger widening of the otherwise considerably narrow Drava Valley. It is named after the village of Ribičje that used to stand on the left bank of the Drava River but was emptied or torn down after the Second World War, while the area was submerged after the Vuzenica HPP was built. Today, this section of the Drava River is of conservational note mostly due to the extensive reedbeds, which form more than 10m wide stretches along both banks. The most striking phenomenon here is a 3ha-large island nearly half a kilometre long and separated from the left bank by a 30m-wide, shallow channel. The island is completely overgrown with reedbeds and stands of white willow *Salix alba*, which form a unique river habitat. The array of wetland habitats on the right bank is completed by the mouth of the Dravški potok stream, which is overgrown with reedbeds, and the Trbojsko jezero Lake, which is separated from the Drava River with a dam upon which a railroad has been laid. The entire central part of the Mučko polje Plain is covered with the predominately coniferous Dobrava forest, which consist mostly of the European spruce *Picea abies* and the Baltic pine *Pinus sylvestris* and is cut through diagonally by a prominent river terrace.

The most common breeding bird of the reedbeds is the common reed-warbler, which reaches high breeding density along the above-mentioned stretch. In optimal stands, a singing male of the species can be found on every ten metres of the riparian reedbeds. In the high trees of the riparian part of the island breeds a smaller colony of grey herons *Ardea cinerea*, the only one on the Alpine stretch of the Drava River in Slovenia. The area is a part of the homerange of a breeding pair of black storks *Ciconia nigra*, which find important sources of food at the wetlands on this stretch of the river. The shallower edges of the banks with plenty of juvenile fish and lush riparian vegetation are the foraging areas of the common kingfish-

er *Alcedo atthis*. Amongst the more interesting species recorded in the riparian zone is the endangered European turtle dove *Streptopelia turtur*. In the surrounding Dobrava forest breeds the willow tit *Poecile montana* otherwise more common in the hilly and mountainous parts of Slovenia (above 600m MSL).

Together with the regular wintering species of waterbirds, the common goldeneye *Bucephala clangula* has been observed here multiple times during the winter, although this duck species is less common on the Alpine stretch of the Drava River. In the majority of years, Ribičje and its surroundings feature the largest known communal sleeping roost of the great cormorant (up to 240 individuals) in the Alpine part of the Drava region.

Among other representatives of the fauna, the internationally protected species of dragonfly, the green snaketail *Ophiogomphus cecilia*, deserves to be mentioned. The largest population of this species lives on the Drava River between Dravograd and Maribor, presumably as the parts of the river with slow flow and fine sediment are especially important for the development of the larvae. Here, the green snaketail shares its habitat with the much more common and related common clubtail *Gomphus vulgatissimus*, which is a distinctly spring species.

Visiting the area

There is no easy way to access the area, as there are no maintained paths along the river banks. The island and the riparian reedbeds in the channel can be observed from the left bank where a few fishing spots have been created. These spots can be reached by taking the macadam road from the western edge of the Muta industrial district (exit Industrijska cona Muta Vhod 2 on the Maribor–Dravograd main road). The road ends at the hamlet built in the area of the former Ribičje village.

Drava at Zg. Vižingi

Below the Drava River's prominent river terrace on the western edge of the Radeljsko polje Plain, a unique river landscape has been created at the mouth of the Radeljski potok stream. The area is reminiscent of the Ribiči area, but the surface covered by the conservationally most important habitats is even larger here. The river island with reedbeds and white willow stands can be found on the left of the main channel and has a surface area of nearly 7ha, which makes it the biggest island in the Alpine part of the Drava region and one of the biggest river islands in Slovenia in general. A similar habitat also occurs almost everywhere throughout the wide bay at the stream's mouth, which stretches more than 100m into the land. Next to it is the commercial pond Reš with man-made banks, which have no riparian vegetation and are of little conservational importance. The marsh biotope complex on the right side is complemented by a reedbed that is a few hundred metres long and can be found in the area of the mouth of the Šentviški potok stream. Between the pond and the village of Dobrava where the riser of the river terrace extends right along the Drava River's present main channel, a striking overhanging rock face called "Vranja peč" (the Raven's Rock) greets the eye.

Here, the common reed-warbler, a typical redbeeds species on the Alpine stretch of the Drava River, reaches the highest breeding density in the north-eastern Slovenia. Less abundant are the great reed-warbler and the sedge warbler, which share the habitat with the common reed-warbler at certain sites. It is also interesting to observe the immediate surroundings of the area. Among the breeding birds untypical for this part of the country, certain indicator species of the traditional farmland habitat have been recorded here, such as the common hoopoe *Upupa epops*, the western yellow wagtail *Motacilla flava*, and the common redstart *Phoenicurus phoenicurus*. The rock walls of the isolated karst along the northern outskirts of the town of Radlje ob Dravi are the habitat of the Eurasian eagle owl *Bubo bubo*.

The shallow parts of the Drava River around the island are an important spawning ground for many fish species. Among these, we find the notable zingle *Zingle zingle*, a nocturnal species of large rivers, which is a qualifying species of the Natura 2000 sites.

Visiting the area

You can access the area by taking the road from Radlje ob Dravi or from Zg. Vižinge and stopping at the Reš pond or the Radlje Water Park (car park). Viewing the reedbeds south of the pond at the mouth of the Radeljski potok stream and visiting the vantage point atop Vranja peč are possible by taking the waterside educational trail Dobrava or the recreational paths Radlje ("Trim steza Radlje") that will take you along the Drava River. A limited view of the island can be had from the observation tower at the fenced-in area of the water park, while there are no maintained paths along the river bank opposite the island.

The Tilkova Mlaka Bay and the Surrounding Area

The Tilkova mlaka Bay at the mouth of the Suhi potok stream in Sp. Vižingi is the most prominent widening of the Drava River channel in the Alpine part of the Drava region after the Dravograjsko jezero Lake. Here, the Drava River is almost 400m wide. In the direction of the main channel, the shallow bay, rich in submerged plant growth, is partly enclosed by the 1ha peninsula, which is covered in reed and willow stands, and an artificial island, which was made from deposited silt that was removed from the pools of the hydropower plants in 2021. There is also a somewhat smaller island with an overgrowing reedbed located at the extensive shallows on the opposite side (the right bank). Approximately 1km downstream on the right side of a gentle meander above the Vuhred HPP developed one of the largest reedbeds in the Alpine part of the Drava River. It has the surface area of 2.5ha. The above-mentioned structures together with the mouths of numerous streams form a cluster of precious river habitats in this small section of the Drava River.

The extensive reedbeds growing in the shallow waters enable certain bird species to breed in them regularly, which makes this area the second important site of the species that can otherwise only be found at the Dravograjsko jezero Lake in the upper part of the Drava River. Such are the waterbird species the common coot and the great crested grebe, as well as the common reed bunting, which is a reedbeds breeder. The latter has only been recorded in marsh plant and willow stands on both peninsulas. Apart from these three, the reedbeds are the home of other previously-mentioned species of this habitat type, including the most abundant common reed-warbler. Mute swans regularly roam this area, which is the species' long-standing breeding site, and at least two pairs breed here. The shallow bays and the overgrown banks are the foraging area of the common kingfisher, a rare breeding bird on the Alpine stretch of the Drava River. At the riparian willow forest, the locally distributed garden warbler *Sylvia borin* has been recorded, making the site the only area where the species occurs in the Drava Valley. In the colder months, representatives of the wintering species that are less common on this stretch of the Drava River, such as the smew *Mergellus albellus*, can occasionally be spotted amongst the regulars.

In the area of the present day Vuhreško jezero Lake, 40 fish species have been recorded of which 31 still populate the lake today. In the entire area, especially in the overgrowing reedbeds, many traces of the Eurasian beaver can be spotted.

Visiting the area

The best view of the Tilkova mlaka Bay is from the local road, which connects the two separate parts of the Sp. Vižinga village right above the village's northern outskirts (exit Sp. Vižinga can be found on the left side of the main road from the direction of Maribor). The other above-described locations cannot easily be accessed from land, as there are no maintained paths leading to them, and enclosed farmland sometimes prevents us from reaching them from the hinterlands.

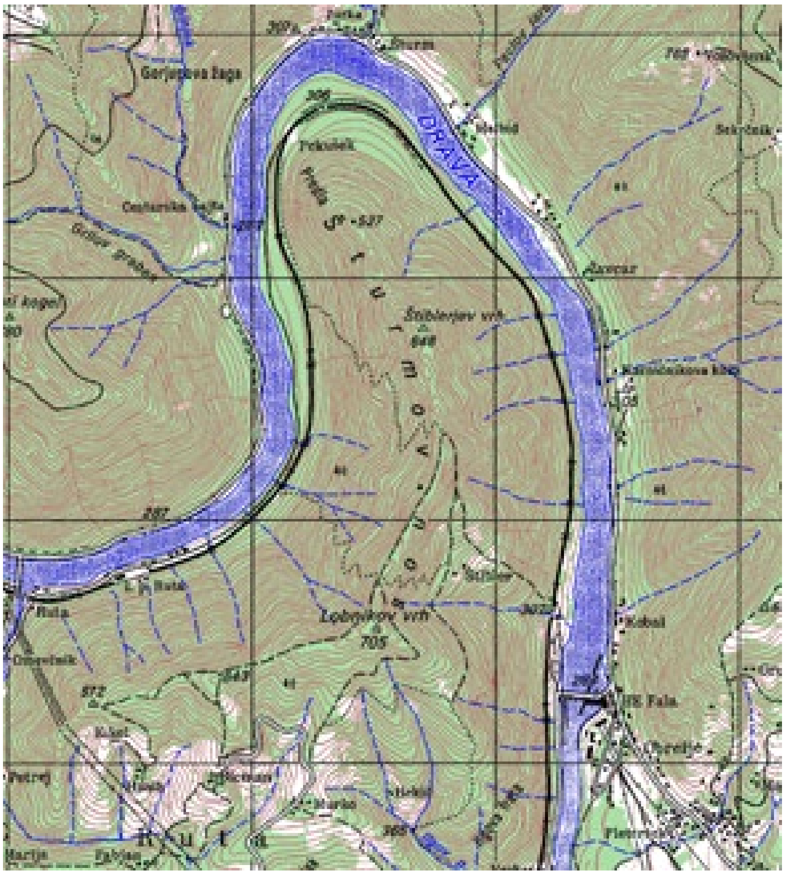
Šturmov Nos

The most prominent meander of the Drava River, which can be discerned from the maps at a glance, winds around "Šturmov nos", a mighty side spur of the Pohorje Massif between the Lobnikov vrh (705m MSL) and Štiblerjev vrh (648m MSL) hills. The meander, trapped between the steep slopes of the Kozjak range on the north and the Pohorje Massif on the south, extends for more than 6km from the Lovrenški most Bridge to the Fala HPP. Along the entire stretch, the wooded slopes of the spur descend steeply towards the Drava River, and the difference in altitude between the river and the spur's crest sometimes exceeds 400m. A part of the eastern slope (with the surface area of around 50ha) has been declared a forest reserve, and no land management has been performed on it for some time. Even in the past, the difficult-to-access area made using the forest nearly impossible. The area of the reserve is covered by the characteristic Luzulo-Fagetum beech forests the ecosystem of which has been relatively well preserved. This has led to the designation of certain slopes in the Drava Valley as Natura 2000 sites.

In the area of Šturmov nos, including at the meadows and other types of land use near the isolated farms, 45 bird species have been surveyed. More detailed surveys would undoubtedly add a further few species to the list. The common bird species that reach the highest breeding density here are those typical of forests that grow on mountains of medium height: the European robin *Erithacus rubecula*, the coal tit *Periparus ater*, the northern wren *Troglodytes troglodytes*, the common firecrest *Regullus ignicapilla*, and other species. The breeding birds of greater interest include the collared flycatcher *Ficedulla albicollis*, which is quite abundant in beech stands with dead trees and here reaches the westernmost points of its distribution along the Drava River in Slovenia. Two species of birds of prey, the European honey buzzard *Pernis apivorus* and the Eurasian eagle owl, which have been recorded in the area of Šturmov nos, are likewise rare on the Alpine stretch of the Drava River and merely locally distributed. The broader region is part of the homerange of the rare black stork. In the past, an active nest of the species was located in the slopes above Fala. Conservationally important breeding birds of the traditional farmland habitat at the Ruta village are the European turtle dove, the common redstart, and the red-backed shrike *Lanius collurio*. The breeding birds of the meander's larger tributaries (e.g. the Šturmov potok Stream) are the white-throated dipper and the grey wagtail.

Visiting the area

The easiest way to access the area is by taking the 4.5km long, marked circular educational trail Ruta, which begins at the farmstead Matec (farmstead Murko on the maps). It is possible to park the car approximately ten metres away from the farmstead where the educational trail begins and leads you into the woods. At vantage points, a beautiful view of the Drava River and the Fala HPP offers itself in the depths below. The most interesting and panoramic site is the part of the spur that leads to the Štiblerjev vrh Hill. There, the educational trail makes a sharp turn to the right, while an unmarked footpath leads on (the footpath requires some caution in the exposed parts). It is also possible to make a steep and demanding ascent to the crest of the hill by taking the unmarked path from the railway station Ruta.


DRAVA
Štiblerjev vrh
648
Lobnikov vrh
705
HE Fala

Maribor Lake

The Mariborsko jezero Lake was created when the Drava River was dammed as part of the Mariborski otok HPP construction west of Maribor between the town of Bresternica and the village of Kamnica. Technically speaking, the area encompasses the entire nearly 15km long reservoir between the power plant's building on the outskirts of Maribor and the Fala HPP. The protected area of the Mariborsko jezero Lake landscape park and the natural feature bearing the same name include two stretches on the territory of the municipality of Maribor or the entire stretch downstream from the picturesque conglomerate rock wall Falska peč (the Fala Rock) at Fala. The area of Mariborsko jezero Lake begins at the Ruško-Selniško polje Plain where the Drava Valley widens a little for the last time before giving way to the lowland part of the Slovenian Drava region. The lake has similar general characteristics than the other dammed areas on the Alpine stretch of the Drava River; due to the considerable depth of the current channel, the accumulation occurs at the river's former channel. The damming submerged the lower parts of certain tributaries' canyons, turning them into narrow bays that extend far into the hinterlands. The often steep banks have remained relatively unpopulated despite the numerous settlements on the narrow plain along the river. In the majority of cases, the banks are surrounded by a belt of riparian forest with white willow, European black alder, and ash fragments, while vast forests – called "Dobrave" (the Groves) – grow in some hinterland areas. The largest amongst them (2.2km2) covers a sizeable part of the plain along the meander between Fala and Selnica ob Dravi. Just like on the upper stretches of the Drava River, extensive reedbeds have formed at the shallow bays or the banks with slow river flow. The most beautiful formations can be found at the meander near Ruše (right river bank), at two locations near Sp. Sleme (left river bank), at the mouth of the Bistrica stream near Bistrica ob Dravi (right river bank), and at Jelovec (left river bank) and Laznica (right river bank) near the mouth of the Brestrniški potok stream. At the mouth of the Brestrniški potok stream, the reservoir becomes somewhat wider and remains more than 200m wide for the entire stretch, which ends at the hydropower plant downstream. Near Bresternica, two artificial islands have been built from the silt collected at the reservoir.

The Mariborsko jezero Lake, especially its lower part, has been recognised as a waterbirds wintering site of national importance already in the 80s. When the populations peaked in the first half of the 90s, up to 2 000 individuals have stayed here during the winter. Even today the number of birds on the lake between November and March occasionally reaches a hundred or so individuals. Together, systematic surveys and chance observations reveal that 60 waterbird species have been recorded at the lake throughout the year. In winter, the most abundant species are the mallard, the common pochard, the tufted pochard, the common coot, the black-headed gull, the great cormorant, and the mute swan. Lesser in number but wintering here regularly are also the little grebe, the common goldeneye, and the goosander, while the occasional winter guests include the common teal and the Eurasian wigeon *Mareca penelope*. The cormorant and the goosander have had their communal sleeping roosts here in the past years, which are the only ones in the Maribor area of the Drava River. Apart from these two species, many waterbirds uncharacteristic for this part of the Drava River have been observed at the lake, some of them occurring rarely throughout the entire Slovenia. Such are the long-tailed duck *Clangula hyemalis*, the common eider *Somateria mollissima*, the common loon *Gavia immer*, the horned grebe *Podiceps auritus*, the black-legged kittiwake *Rissa tridactyla*, and others.

The shallow waters along the reedbeds and the bays are the feeding habitat of the common kingfisher, a rare breeding bird in this area. Other waterbird species also use the habitat and appear here during the non-breeding season, e.g. the little egret *Egretta garzetta*, the grey heron, the common sandpiper, and different species of ducks and gulls. The reedbeds are the breeding site of the common reed-warbler and the common moorhen. Several pairs of mute swans also breed at the lake.

Visiting the area

To observe the lake downstream from the mouth of the Brestrniški potok stream, it is best to take the footpath that leads you past Veslaški klub Dravskih elektrarn Maribor (the Drava HPP Rowing Club at Maribor) and the boathouse Sidro Brestrnica (car park at both locations). From there on, you can continue on the road in the direction of "K čolnarni" (To The Boat House). On the right side, you can reach the Drava River easily by going to the Drava Centre Estate or visiting the Aunt Frida's chocolate coffee shop next to the Aunt Frida Chocolate Manufactory in Limnuš (car park). Upstream, there are no maintained paths leading to the most interesting parts of the lake; you will have to seek out cart tracks or forest tracks to access the lake in that area.

The Maribor Island

The Maribor Island is a natural river island that has formed as a result of the fluvial processes at the Drava River along the river's final narrowing at which it flows from the Alpine region into the Pannonian Plain. The island was created by powerful rapids in the area of diagonally laid strata of hard Miocene marl. Here, the river had been depositing large quantities of rocky material, which led to the formation of the characteristic drop-shaped sedimentary geomorphological form. Through additional deposition, the form consolidated, which allowed silt to deposit and later on brought about the creation of fertile soil and the growth of diverse flora. The Maribor Island is one of the rare permanent river islands that has been preserved in Slovenia and the only one that is not a typical gravel bar but consists of compact rock instead. The location of the former rapids is now the site of the Mariborski otok HPP, which has changed the natural river processes greatly. To prevent the unwanted erosion of the island, a special concrete pier with a breakwater has been built on its western side. Just below the power plant, on the left side and at the mouth of the Kamniški potok stream, rises a steep step named the "Huzarski skok" (the Hussar Step). This step is the only known place in Slovenia where rare marine deposits of marl can be found. The island was protected as a natural site already in 1951, while it was designated as a natural monument in 1992.

The great diversity of plant species on the island is exceptional for this part of Slovenia. Amongst the more significant species are the so called "Illyrian" species typical of thermophilic basophilic beech forests of the Illyrian Provinces. On the island, these forests appear outside of their limited areal and were preserved in the northern and western parts of the island. The unique undergrowth on the island consists of different early spring blooming forest geophytes, such as the dog's-tooth-violet *Erythronium dens-canis*, the drooping bittercress *Cardamine enneaphyllos*, the liverworth *Hepatica nobilis*, the balm-leaved archangel *Lamium orvala*, and the three-leaved anemone *Anemone trifolia*. It is also interesting to note

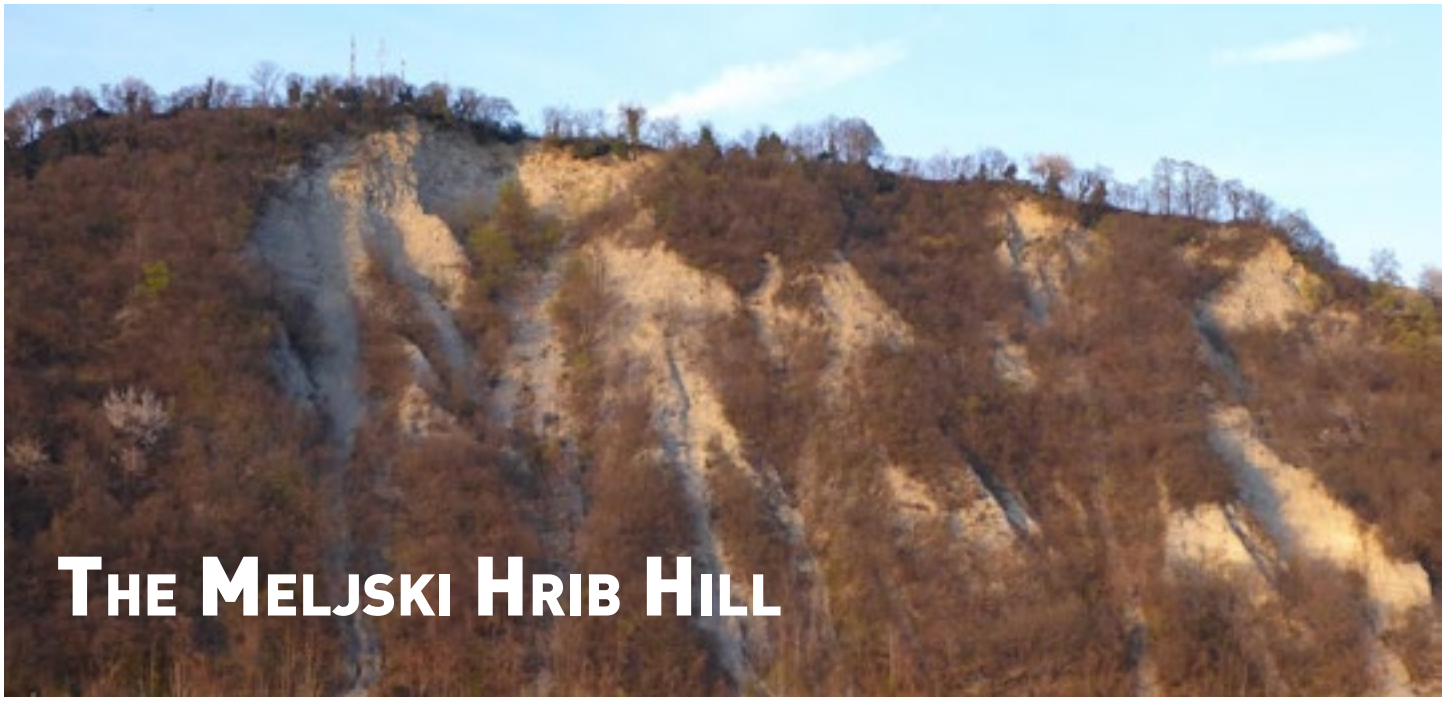
the occurrence of *Hacquetia epipactis*, as its locality this far to the northwest is indeed a rare phenomenon. The abundant horsetail *Equisetum hyemale* forms dense stands in the forest undergrowth.

For birds, too, the most important habitat here is the beech forests with numerous old trees and large quantities of dead wood. During the breeding season, as much as six species of the family Picidae have been surveyed in this part of the island. Apart from the very common and widespread great spotted woodpecker *Dendrocopos major*, the members of the family here also include the middle and the lesser spotted woodpecker (*D. medius* and *D. minor* respectively), as well as the black woodpecker *Dryocopus martius*, the European green woodpecker *Picus viridis*, and the grey-headed woodpecker *P. canus*. There are not many places in Slovenia where the above-listed species would cohabit in such a small area. Of considerable interest is also the collared flycatcher, which occupies hollows in sun-exposed dead trees and dry branches in the area. At the Drava River along the Maribor Island, several waterbird species occur regularly, including the goosander, a possible breeding species of this area.

Among other species that merit our mention is the dice snake *Natrix tessellata*, a nonvenomous snake typical of clear running waters rich in riparian vegetation. A large population of this snake species can be found here. In the last years, the beaver has also been present in the area, and we can spot the signs of its presence (gnawed and felled trees) predominantly along the breakwater.

Visiting the area

The island is connected to the left bank of the Drava River (car park) by a pedestrian bridge. You can reach the bridge by taking the footpath past the Koblarjev zaliv Bay or the road (exit Otok from the Koroška road at Kamnica). A circular nature trail leads you around the island and features thematic points where you can get information on specific features and important parts of the island. The best view of the Huzarski skok Step is from the norther edge of the breakwater.



The Meljski Hrib Hill

The Mlejski hrib Hill (398m MSL) is a striking hill on the NE outskirts of Maribor. It attracts attention mostly with its steep SW slope, which is a cliff made of Miocene marl descending steeply towards the Drava River on the stretch between the dam at Melje and the Malečniški most Bridge. The relative height of the cliff's steepest rocky parts, which are partly overgrown with thermophilic shrubs, exceeds 100m. The other slopes of the Meljski hrib Hill are very much alike the ones found at the surrounding hills. The cliff was formed in the process of lateral river erosion at the point where the Drava River, flowing west, collides with the hills of Mariborske gorice (a part of the western Slovenian Hills) at the end of the Drava Valley and creates a prominent meander while turning southeast. From here on, the river flows towards Ptuj mostly parallel with the edge of the hills. The cliff at the Mlejski hrib Hill is an exceptional geomorphological form in the Slovenian landscape and the only one of its kind in the entire area of the Drava River.

The steep slopes of the Meljski hrib Hill are composed of certain characteristic types of rock faces that can only exceptionally be found along the Drava River, if at all. The peregrine falcon *Falco peregrinus* regularly roams the steep cliffs. The species has been discovered here already at the beginning of this century and today breeds in the surrounding area. Since 2015, the area has been the only regularly occupied breeding site of the Eurasian eagle owl *Bubo bubo* in the Maribor area. In the 90s, an atypical autumn-winter breeding of the common raven *Corvus corax* was recorded here, although the species is a regular breeder in the steepest parts of the cliff. The scrubs on the more gently sloping side of the hills above the motorway are the breeding site of the rare barred warbler *Sylvia nisoria*, which has a locally high breeding density here.

The southern slopes of the hills along the northern outskirts of Maribor, including the Meljski hrib Hill, are drenched in sunlight and serve as a habitat for multiple species of reptiles. Among the most abundant species with a strong local presence are the largest representative of wall lizards in Slovenia, the European green lizard *Lacerta viridis* and the horned viper *Vipera ammodytes*.

Visiting the area

The cliff of the Meljski hrib Hill is best observed from the Malečniški most Bridge or from the right bank of the Zlatoličje HPP supply channel in the vicinity of the Melje dam. The hydropower plant can be reached from the Nabrežna ulica Street in the Maribor residential quarter Podbrežje (when the asphalt road ends, continue on the cart track). Directly below the Meljski hrib Hill runs a regional road with a bicycle track, but a gallery obstructs the view of the central part of the cliff here.

The Drava River at Rošnja

Few stretches of the Drava River channel between Maribor and Ptuj showcase such well-preserved features and processes of natural lowland rivers as the nearly 700m-long stretch at Rošnja. The unconsolidated left river bank that bends into a gentle meander at the river's main channel is undergoing the process of lateral erosion. The natural dynamics allows the channel to widen towards the north, which is why this part of the river is twice as wide as its straight, consolidated sections. On the right of the main channel, the opposite process is taking place – large-scale deposition of driftwood and sediment, especially gravel. This has resulted in the formation of two gravel bars the shape and surface of which changes throughout the years, most noticeably during the more pronounced overflow of water. The bars' combined surface area size is more than 3ha, which makes them one of the largest gravel bars in the upper part of the Pannonian Drava region. The speed of the water flow and the river's depth in the area of the gravel bars differ greatly. In the main channel on the left bank, the river is deep and flows fast, while a shallow bay with slow-flowing or stagnating water has formed on the right side. The small area between the two banks thus features a unique and diverse mosaic of river habitats.

This is the site where the majority of key indicator bird species of lowland rivers breed: the common kingfisher (1 pair), the little ringed plover (2–4 pairs), and the common sandpiper (1–2 pairs). In most years, the common kingfisher has been breeding in the eroded river bank on the left side, while the other two species have been breeding on the gravel bars, especially on the bar upstream, which is not connected to the right bank. The more intriguing breeding birds of the immediate surroundings include the European honey buzzard, the European turtle dove, and the red-backed shrike, while another breeder of the gravel bars and banks on the Drava River is the white wagtail *Motacilla alba*. Cormorants and several species of heron regularly occur here all year around. During migration, the great sandpiper *Tringa ochropus* and the common greenshank *T. nebularia* stop over at the shallow waters, while other, less typical waterbird species do so as well.

The Drava River's shallow gravelly parts with rapids are an important spring-time spawning ground for the common nase *Chondrostoma nasus*, a fish species typical of moderate to fast flowing larger rivers in Europe. This section is also one of the more important spawning grounds of the species on the stretch between Maribor and Ptuj where adult fish gather in large schools. The deeper parts of the channel are inhabited by the rare and lesser-known Balon's ruffe *Gymnocephalus baloni*, while the rapids with the gravel riverbed are the habitat of the Danubian longbarbel gudgeon *Romanogobio uranoscopus*.

Visiting the area

To get the best view of this part of the Drava River, go to the right bank and take the forest track that runs along it and is a part of the Drava Cycling Route (marked with red). The bank is mostly covered with a forest, but you will be awarded with an unobstructed view of the river at several points along the track. It is possible to access the bank from all the nearby villages and towns (Loka, Rošnja, Starše).

Zumrova jama

At this section, which is a few kilometres long and stretches between Duplek and Vurberk, the Drava River moves somewhat away from the Slovenian Hills and then turns straight towards the East meeting with hills again at Krčevina. Here, the river runs below a mighty Pleistocene river terrace where it turns ninety degrees south. At this location, two larger backwaters join with the main channel, which increases the diversity of the riverine network in the area. The river banks along the entire section are mostly unconsolidated, which allows for natural river dynamics resulting in local changes to the river's course. These changes are quite pronounced in the middle section, at the site of the larger gravel bar. In 15 years, the river channel has here widened for more than 50m towards the south, and the river has created a unique braided stream with several smaller gravel bars at various successional stages. During the Drava River's regular discharge, the before-mentioned backwaters lose their connection with the river's main channel upstream (they are connected with the river at the downstream section only) and become a special type of hinterland riverine water bodies, i.e. cut-offs. The backwater Struga on the left side is the longest backwater of the Drava River in the Pannonian part of the Drava region in which water is constantly present. The area between the main channel and the larger backwater on the right is one of the wildest areas on the Drava River in Slovenia as it is difficult to access, especially in summer, when it becomes almost inaccessible. A large part of the floodplain forest complex and the backwater on the right bank are designated as the Zlatoličje nature and forest reserve.

The are of Zumrova jama features the greatest density of breeding pairs of the little ringed plover (2–6 pairs) and the common sandpiper (1–3 pairs) on the upper Pannonian stretch of the Drava River in Slovenia. In the majority of years, two pairs of the common kingfisher also breed here. Such small distances (around 500m) between two simultaneously active nesting burrows occur only at the best preserved stretches of larger lowland rivers. Both backwaters are the feeding area of the black stork, which breeds in the near surroundings. The right backwater is the breeding site of the little grebe, while the breeding of the tufted duck and the common coot has not been confirmed here in the last years. The forests in this area are the most suitable habitat on the entire Slovenian stretch of the Drava River for the middle spotted woodpecker, collared flycatcher, the Eurasian penduline tit, and other species typical of floodplain forests. The shallow parts of the main channel are the feeding areas of the common tern *Sterna hirundo* from the Ptujsko jezero Lake colony. During migration, this area is a stopover site for numerous other bird species confined to river habitats, e.g. the osprey *Pandion haliaetus*, which visits the area regularly.

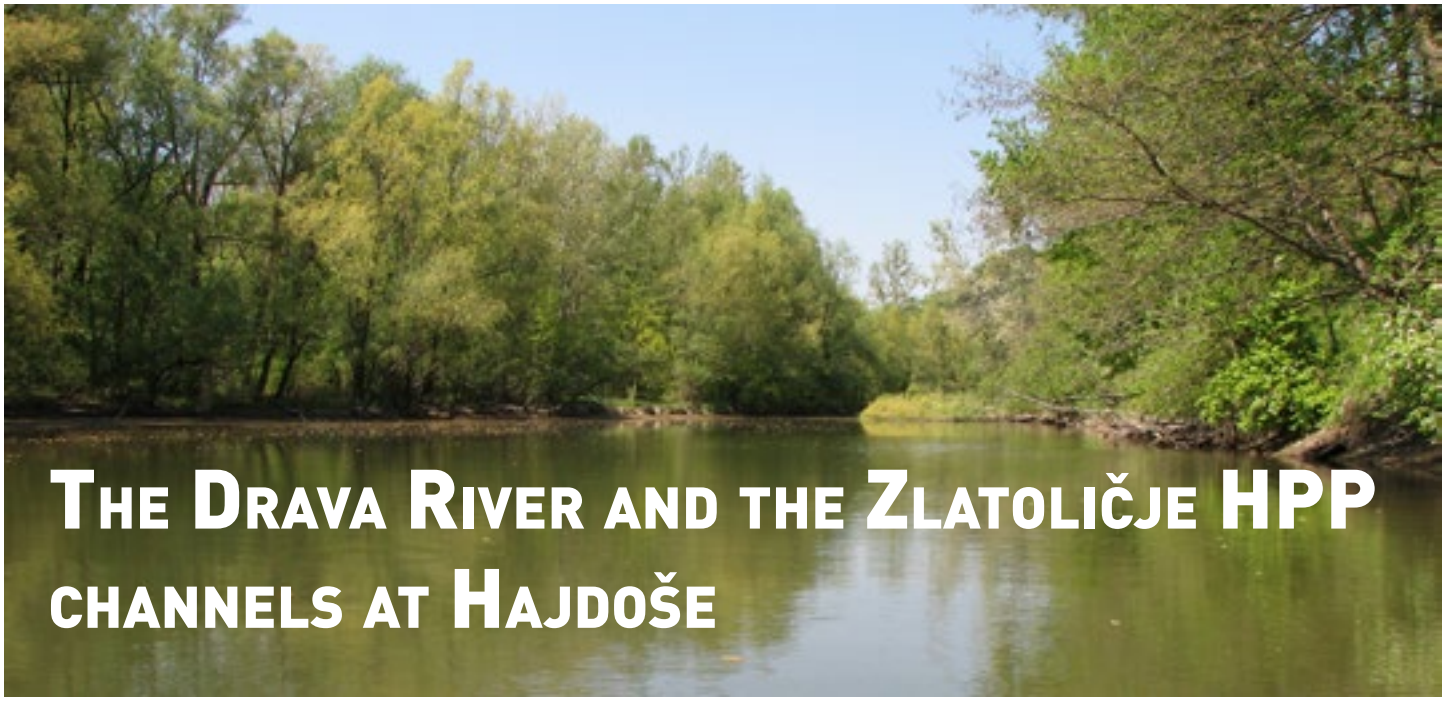
Backwaters-cut-offs are especially important for certain internationally protected fish species. Of special importance are the European bitterling *Rhodeus amarus* and the Balkan loach *Cobitis elongatoides*, which prefer fine sediments that deposit in cut-offs due to stagnating water, and the asp *Aspius aspius* the smaller individuals of which can only survive in this specific habitat.

Visiting the area

The area of Zumrova jama can be reached by taking a cart track, which branches off the local asphalt road in the lowland part of the village Krčevina pri Vurebergu (left side of the Drava River) near the house numbered 188. The forest road is well-maintained at the beginning, but usually becomes muddy and difficult to access by car as it runs the final few metres along the left bank of the Drava River. It is thus better to visit the area on foot (around 1.2km of walking distance in total). A shorter stretch of the before-mentioned asphalt road runs parallel to the well preserved part of the Struga backwater. The downstream end of the right backwater can be accessed from the village of Zlatoličje (right bank of the Drava River) by taking the farm track past a soccer field. After 1.2km, the track enters a forest and continues for roughly another 800m, leading you through the nature and forest reserve until you reach the edge of the backwater where the track ends.

Gravel bar

A gravel bar is a point or mid-channel structure of sediment that has been deposited by the river. During the river's usual discharge, it protrudes slightly above the water level of the river. It is composed of pebbles that have different sizes and are composed of different materials. In time, these pebbles capture sand, silt, and woody remains of plants carried downstream by the river. A point gravel bar is usually formed on the inside bend of a meander (concave) where the slower water flow causes the material to deposit. Such gravel bars can often be found on the shallowest, slowest-flowing stretches of rivers, next to steep river banks on the outer bends of the meanders, which are exposed to strong lateral erosion by the faster-flowing water. Morphologically speaking, gravel bars are highly heterogeneous and dynamic habitats. In rivers with preserved natural dynamics, high water events often restructure gravel bars completely or even carry them away, whereby the bars can then reform on a completely new location downstream. Newly formed gravel bars are bare, while a succession sequence of first pioneering herbs and then scrubs and trees is to follow. A significant high-water event or human activity can completely bare the surface of a gravel bar or lower its height, whereby the process of primary succession can begin again. This succession lasts until the next high-water or similar event when the process repeats itself once more. The formation and changing of the gravel bars at the Pannonian stretch of the Drava River have been quite limited due to the suppressed dynamics of the river. The existing gravel bars are mostly remnants of higher parts of the former riverbed, which have become dry after the discharge of the river was reduced due to the operation of derivative hydropower plants. Gravel bars are very diverse living spaces often featuring endangered habitat types inhabited by rare or endangered animal and plant species. The adaptations of specialised bird species to the life on gravel bars involve camouflage coloration of the young and adult individuals and the brood.

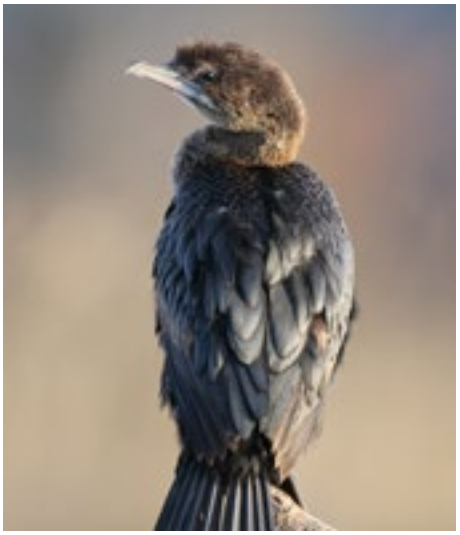


The Drava River and the Zlatoličje HPP channels at Hajdoše

Before the Drava River joins with the discharge channel of the Zlatoličje HPP at Ptujsko jezero Lake near Terme Ptuj, both run parallel to each other for slightly more than 1.5km and are divided by a peninsula only some ten metres wide. Both banks of the peninsula are mostly consolidated and, all in all, present us with few natural features. The exceptions are the few artificial structures on the right side of the upper part of the stretch (towards the discharge channel). The most important formations at the Drava River's channel in this section are the two large, deeper cut-offs (backwaters cut off from the main channel in the upper end), which are a few hundred kilometres long. One can be found on the left side of the river before Vičava, a settlement in Ptuj, while the other is located on the right side, on the border between the remnants of a floodplain forest and the farmland at Hajdoše. The water flow in this section of the river is slow and influenced by the daily fluctuations of the water level at the Ptujsko jezero Lake, while the discharge in the discharge channel depends on the running of the hydropower plant.

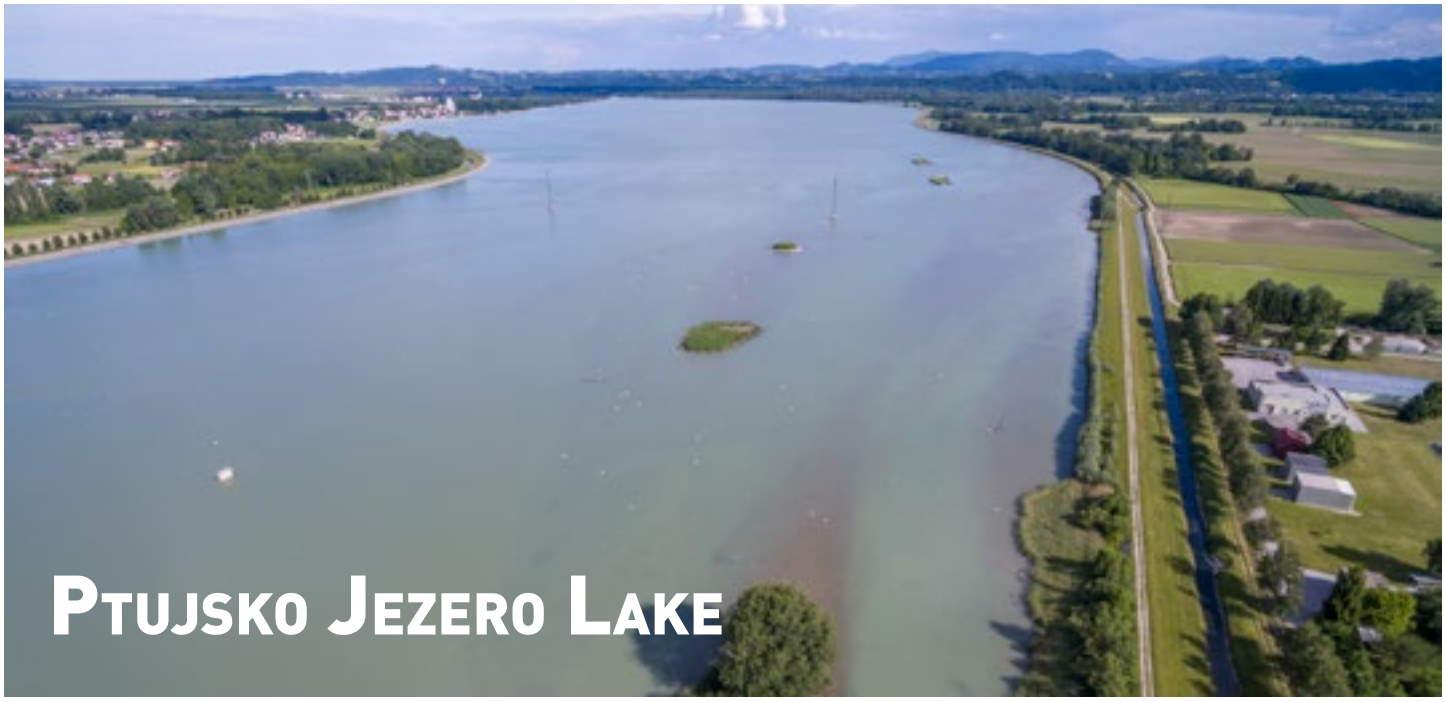
The breeding birds in this area mostly include the common waterbird species the more interesting one being the common kingfisher, which regularly feeds at both cut-offs. The number of waterbirds noticeably increases in the colder part of the year when more than hundred individuals of different species can be seen in the area. The most abundant are the pygmy cormorant Microcarbo pygmeus, the common coot, the little grebe, the mallard, the Eurasian teal, The Eurasian wigeon, the common goldeneye, and the goosander. Occasionally, the smew, the great crested grebe, and different species of gulls also occur here, and we can spot the green sandpiper and the common snipe on the muddy edges and on gravel bars as well. The tall trees on the river's left bank are the occasional sleeping roosts for the cormorants and the great egret *Ardea alba*.

The most conservationally important breeding bird of the area is the collared sand martin *Riparia riparia*, an indicator species of natural lowland rivers, which nests exclusively in the artificial sandy wall along the channel (around 350 pairs in most years). In the entire area of the Drava River, only 1–2 colonies have been breeding lately. Occasionally, black headed gulls *Larus ridibundus* and common terns from the Ptujsko jezero Lake colonies feed here in greater numbers.



Visiting the area

A cart track runs along the peninsula, and you can access it across the soccer field on the left side of the channel at Hajdoše. From the middle of the embankment, you can see both the Drava River and the discharge channels. The downstream end of the cut-off can be viewed from a fishing spot along the farm track at the left side of the peninsula. Along the cut-off and the remnant of the floodplain forest runs a circular nature trail called Berl (starting point at the SE edge of the forest complex, which you can access on a macadam road branching off the asphalt road at the before-mentioned soccer field).



Ptujsko Jezero Lake

As the natural channel of the Drava River has been drastically changed in the past, certain man-made water bodies now play an important role in conserving the biodiversity in this area. The size, special characteristics, and location on the edge of the Pannonian Basin make the Ptujsko jezero Lake an area of central importance on the Slovenian part of the Drava River, especially for the waterbirds. Its construction was completed in 1978 when it became a reservoir for the channel-type hydropower plant Formin. It measures 4.5km^2, which makes it the largest permanent lake in Slovenia. Upstream, the Ptujsko jezero Lake begins with the confluence of the discharge and the river channels at Ptuj and ends with the dam at Markovci where a small quantity of water flows into the Drava River through the spillway, while the majority is redirected to the supply channel of the hydropower plant. The first widening of the lake occurs at the Puch Bridge ("Puhov most"), but the greatest widening is in the area of the Zabovci settlement. The lake is 6.5km long and 1.3km wide at its widest section. Downstream and in the area of the river's former main channel, the lake's depth surpasses 5m (it is 12m deep at the dam), while it is mostly less than 3m deep in other areas. Of great importance for different waterbird species are the shallow waters in the middle of the lake and along its left and right embankments where intense aquatic plant growth is taking place (potamogeton, pondweed Elodea canadensis, etc.). The shallow parts along the embankments enable the growth of marsh plants, which draws new breeding birds to inhabit the area.

During migration and the wintering period between October and March, more than 10 000 water birds occur on the Ptujsko jezero Lake, while their numbers occasionally reach up to 20 000 individuals. Nowhere in Slovenia is it possible to see so many waterbirds at one location. In total, 132 waterbird species have been recorded here. In the last few years, the most abundant species have been the black headed gull (up to 19 000 individuals in one day), the yellow-legged gull Larus michahellis (up to 7 500 individuals), the mallard (up to 4 500 individuals), the common coot (up to 11 000 individuals), and the tufted duck (up to 3 700 individuals). During the colder months, 30–70% of all waterbirds of the lowland part of the Drava River gather here. In addition, an important part of the bird population composed of different species (ducks, cormorants, herons, gulls) gathers at the communal sleeping roosts in the evening hours, having come here from the entire Pannonian part of the Drava region in Slovenia.

The Ptujsko jezero Lake is of great national and international importance for the breeding of three colony species of waterbirds. It is the most important or the only breeding site in Slovenia for the black headed gull (780–1000 pairs), the Mediterranean gull Larus melanocephalus (12–50 pairs), and the common tern (120–220 pairs). This is the only breeding site in Slovenia for both species of gulls, while the common tern also breeds in three other colonies at the Slovenian coast and on the Lower Sava River. It is mostly the islands along the right side of the lake that are of key importance for the species' breeding. In recent years, the common tern and the Mediterranean gull have only been breeding at both gravel islands, while the breeding pairs of the black headed gull have mostly dispersed through the majority of structures without woody vegetation. Other waterbird species that breed at the islands in greater numbers include the tufted duck (20–40 pairs) for which the Ptujsko jezero Lake is also one of the major breeding sites in Slovenia.

Lengthwise, the entire out-facing part of the high-water embankment at Ptujsko jezero Lake consists of extensive semi-dry meadows. The most beautiful meadows can be found on the right (south) side where different species of meadow orchids can be spotted in the midst of diverse floristic composition of grasses and herbs. The most abundant amongst them are the three-toothed orchid *Orchis tridentata* and the pyramidal orchid *Anacamptis piramidalis* with several thousand specimens, while a smaller number of the rare early spider orchids (*Ophrys sphegodes*) also grows here.

Ptujsko jezero Lake: Puch Bridge–Ranca

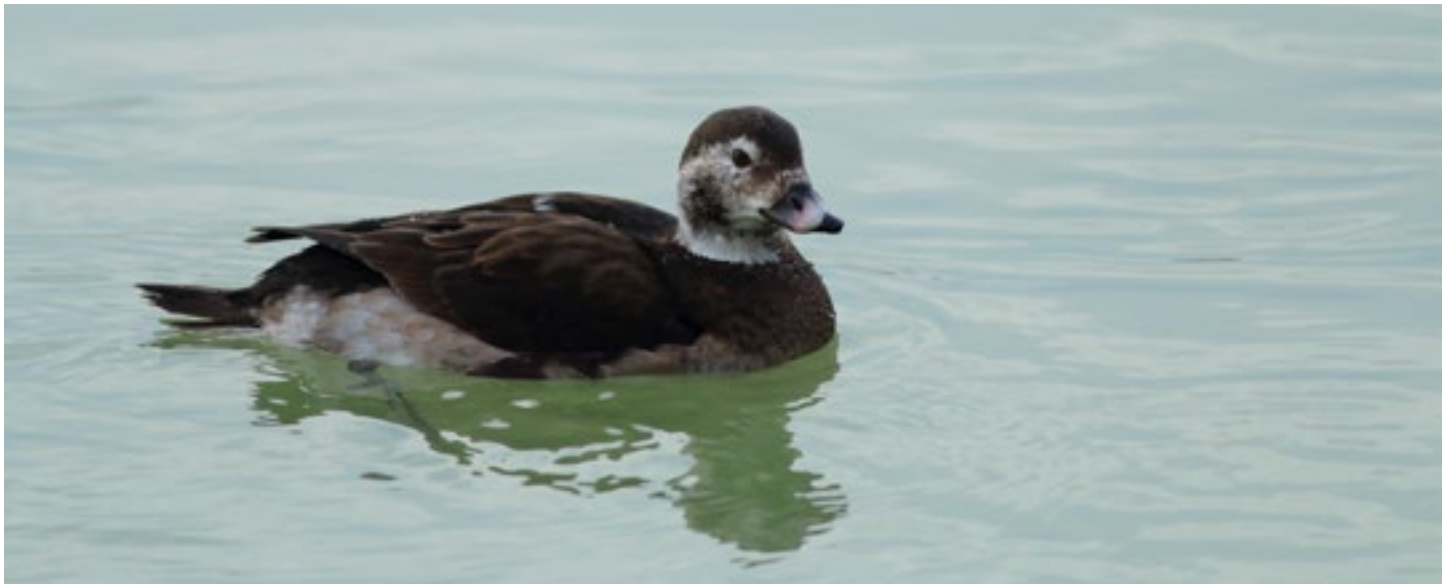
At the first widening of the lake, between the Puch Bridge and the Ranca dock and left from the long row of wooden piles, lies a vast area of shallow water, which is of high importance for several waterbird species. In the colder months, these shallow waters are the feeding site for numerous Eurasian teals, gadwalls *Mareca strepera*, northern shovelers *Spatula clypeata*, and northern pintails *Anas acuta*, among others. The wide belt of marsh vegetation along the embankment allows for the breeding of the common little bittern *Ixobrychus minutus* (1–2 pairs), the great reed-warbler, and the common moorhen. The piles and the washed-up tree trunks are used by different species of gulls for resting and sleeping. The yellow-legged gull, most abundant in this area in the late summer and autumn months, is joined in winter by the Caspian gull *L. cachinnans* and the common gull *L. canus*, while the numbers of the black headed gull are high all year around. Occasionally, rarer species can be found among them, such as the European herring gull *L. argentatus* and the lesser black-backed gull *L. fuscus*. In the area of the previous river channel, significant numbers of common goldeneyes *Bucephala clangula* (50–200 individuals, regularly) occur there in winter, while the area occasionally attracts as much as 700 individuals during the cold winter conditions. At the lake's opposite embankment, the so-called Veliki otok Island (the Great Island) is located, which is a roosting area for the entire population of the pygmy cormorants on the Slovenian stretch of the River Drava (peak December–February, 900–1 800 individuals) and the most important roosting area for the little egret *Egretta garzetta* at the Drava River in general (20–130 individuals).

Ptujsko jezero Lake: Birding Platform

The platform is located on the right side, along the lake's shallow section, where four islands with no woody vegetation can be found. It stands right next to the Gravel island 1. In the colder months, various species of ducks and other birds can be observed here. Apart from the before-mentioned species, both gravel islands are a common resting site for larger numbers of the Eurasian wigeon (up to 150 individuals), while tufted ducks, common pochards, and goosanders rest in the bay on the right side mostly in the evening. At the mudflats that occasionally appear near the banks left and right of the platform and on the islands, shorebirds stop regularly during migration. The most common shorebirds include the ruff *Calidris pugnax*, the wood sandpiper, the common sandpiper, and the common greenshank, while the black-winged stilt *Himantopus himantopus* is less common. During the spring migration, the platform allows us to observe flocks of black terns *Chlidonias niger* and little gulls *Hydrocoloeus minutus*, which usually feed by picking up small organisms from the water surface. Certain species that rarely occur at the Drava River area or in Slovenia in general have been recorded in this part of the lake. Apart from the colony breeders, numerous female tufted ducks with chicks stay in this area in the summer months (end of June–end of August).

Ptujsko jezero Lake: Markovci

From the embankment at Markovci (left or right side), we can view the widest part of the Ptujsko jezero Lake. Immediately before the dam, the lake is at its deepest, which is preferred by certain waterbird species that seek food by diving intensely. Apart from the usual species, we can also spot the rarer winter or transitory visitors in this area. Almost every year, small numbers of the red-throated loon *Gavia stellata*, the black-throated loon *G. arctica*, the horned grebe *Podiceps auritus*, the red-necked grebe *P. grisegena*, the greater scaup *Aythya marila*, the velvet scoter *Melanitta fusca*, the long-tailed duck *Clangula hyemalis*, and other species from the northern parts of Europe can be spotted here.



Visiting the area

The Ptujsko jezero Lake is surrounded by a high-water embankment upon which diverse paths have been constructed, so that the lake can be accessed from various locations (bridges over the side channel) from all the following surrounding villages and towns: Ptuj (left side: from Žnidaričevo obrežje or the Ranca dock at Budina; right side: from the road in the direction from Ob Dravi to Kager or Semenarna – car park), Spahulja (1 bridge), Zabovci (3 bridges), and Markovci (1 bridge on the left and the dam). On the remaining, mostly unsettled, part of the lake's right side are two access points in the area of Šturmovci and another one at the birding platform (take the exit Čistilna naprava at the roundabout before the Puch Bridge from the direction of the motorway, then turn right). A path is laid on top of the embankment, which allows us to encircle the lake either by foot or on bike – the circular path starts and ends at the pedestrians' and cyclists' bridge (official name of the bridge: Most za peščce in kolesarje na Ptuju) and is 12km long.

Orchid-rich grasslands of Central Europe

This is the Slovenian name for the priority habitat of European importance bearing the code 6210* in Annex I of the Habitats directive. It includes dry and semi-dry semi-natural grasslands of Central Europe, which are dominated by the erect brome species. In the continental areas of Slovenia, these grasslands occur mostly on calcareous substrates but also on flysch and sandy acidic substrates in some parts. They usually grow on sunny southern areas, from lowlands up to the lower mountain zone. They are mostly extensive grasslands or meadows of the traditional farmland, located in the hills, and may or may not be moderately fertilised. The vegetation does not tolerate high humidity and water stagnation and needs shallow and well-permeable soils. High biodiversity is characteristic of this type of grasslands. Typical plant species include the erect brome *Bromus erectus*, the furrowed fescue *Festuca rupicola*, the quaking-grass *Briza media*, the aristate yellow rattle *Rhinanthus glacialis*, the hoary plantain *Plantago media*, the mountain clover *Trifolium montanum*, the meadow sage *Salvia pratensis*, and many wild-growing orchid species, such as the three-toothed orchid *Orchis tridentata*, the military orchid *O. militaris*, and the pyramidal orchid *Anacamptis pyramidalis*, as well as the bee orchid *Ophrys apifera* and the late spider orchid *O. holosericea*. This habitat type was one of the most common grasslands types in Slovenia. However, with the intensification of agriculture in the 20th century, it began to disappear rapidly. Today, it is threatened not only by intensive agricultural practices (fertilisation, repeated mowing, and conversion into fields) but also by the abandonment of agricultural land and the subsequent overgrowing. In the area of the Drava River, larger enclosed surfaces of such grasslands can be found at Šturmovci, at the embankments of hydropower plant channels, and at the high-water embankment of the Ptujsko jezero Lake. Elsewhere, only smaller patches of it are growing or have been preserved.

Šturmovci (also Šturmovec) is the largest continuous sustainably-managed remnant of the riparian landscape at the Drava River in Slovenia and has once been the largest river island in the country. It is limited by the river's main channel in the north (nowadays Ptujsko jezero Lake) and east and by the river's old backwaters (Stari rokav or the Old Channel) in the west and the Dravinja River in the south. These water bodies form the central part of the Šturmovci area, while the protected area of the landscape park also includes all the areas up to the Hajdinska studenčnica Stream in the east. The typical activities at Šturmovci were the traditional grazing and moving, which created the present-day landscape – a mosaic of floodplain forests and grasslands as well as backwaters, oxbows, and streams. In this small area, individual trees or smaller stands of white poplars Populus alba exchange with mowed grasslands, which have been created at the site of the former floodplain forest. Unfortunately, in recent years, intensive agriculture is intruding in the central parts of the area.

The most prominent ornithological phenomenon at Šturmovci is the breeding pair of the white-tailed sea-eagle Haliaeetus albicilla. From 2009 onwards, territorial and display behaviour in the early phase of breeding has been recorded in the northern parts of this area, while the species has mostly been feeding at the Drava River channel. The mosaic landscape of the central part is a breeding habitat for the mysterious European honey buzzard *Pernis apivorus*. On the entire Pannonian stretch of the Drava River in Slovenia, numerous bird species typical of the Drava floodplain forests have their largest breeding densities precisely at Šturmovci. Among the qualifying species of the Natura 2000 sites, the collared flycatcher (40–70 pairs) and the red-backed shrike *Lanius collurio* (20–60 pairs) are the most abundant and relatively widespread species in this suitable habitat. The first breeds in the forests but has a greater breeding density in mature stands, which are here chiefly composed of old cottonwood and willow trees. Although the numbers of the red-backed shrike at Šturmovci have dropped several times since the 90s onwards, the area remains of central importance for the species on the Slovenian part of the Drava River. The red-backed shrike breeds in open areas with grasslands, scrubs, and belts of low trees, while it also hunts on the edges of the open forest. Stands predominantly composed of softwood tree species, especially the richly structured willow stands that appear along the water bodies, are the habitat of the Eurasian penduline tit *Remiz pendulinus* and the willow warbler *Phylloscopus trochilus*, which are locally distributed breeders in Slovenia centred in the NE of the country. Of the other, more interesting species, the yellowhammer, the European turtle dove, the Eurasian golden oriole, and the Eurasian wryneck *Jynx torquilla* are quite common. The once rather abundant tree pipit *Anthus trivialis* and river warbler *Locustella fluviatilis* have in the last few years almost disappeared from Šturmovci and from the rest of the Drava River area. The bird species that breeds in water bodies rich in riparian vegetation is the tufted duck. The breeding pairs of this species mostly inhabit the upper part of the Drava River's old backwaters, the Hajdinska studenčnica Stream and the backwater on the right side below the dam at Markovci. The latter backwater is one of the confirmed breeding sites of the gadwall *Mareca strepera* at the Drava River and one of the three breeding sites in the entire Slovenia. The whole area of Šturmovci is also a part of the homerange of a black stork pair.

Šturmovci: The Old Drava Channel

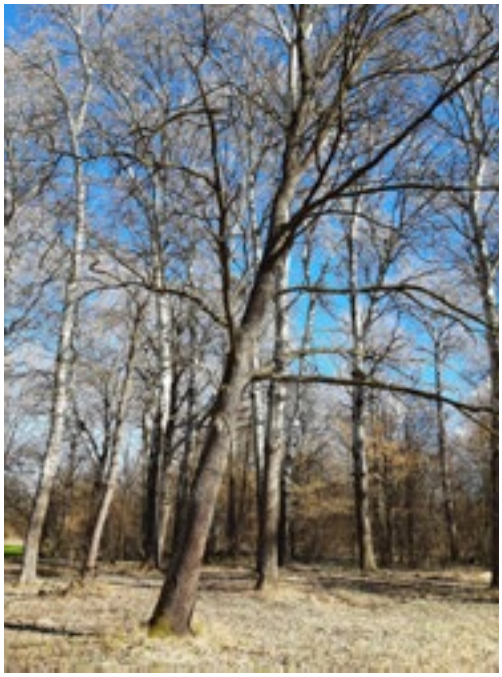
The Old Channel is the right-most backwaters of the Drava River and the site where the river's main channel was documented in the 16th century. Today, this 2.5km long backwaters starts at the base of the Ptujsko jezero Lake western embankment. From there, the more or less uninterrupted water body meanders south until it joins with the Dravinja River at Dravinjska podkev. The lower part of this standing water body is quite wide, deep, and overgrown with the common reed. Different submerged aquatic plants grow in it. Among them, the horned pondweed *Zannichellia palustris* deserves special mention, as the backwaters is its only recently confirmed locality in this part of Slovenia. Certain interesting new species of the order Odonata have been discovered on the backwaters, including the ornate bluet *Coenagrion ornatum*, which is an endangered species in Europe.

Šturmovci: Hajdinska Studenčnica Stream

The Hajdinska studenčnica Stream (named "Struga" on some maps) is the best example of a stream that springs up under the riser of the Drava River's last river terrace and is fed exclusively by groundwater. This slows down the stream's water flow and makes it clear and cold, so that it stands apart from other streams with torrential features. The spring of the Hajdinska studenčnica Stream is located below the settlement of Hajdoše from which the stream runs along the river terrace past the village of Skorba. It then flows through Ptuj (the urban settlement Breg) and along the right side of the Ptujsko jezero Lake until it reaches the area of Šturmovci where it enters an artificial channel and flows first into the Dravinska podkev (the Dravinja Horseshoe) and finally into the Dravinja River. The stream's banks are mostly overgrown with rich riparian marsh and wetland plants (with the watercress *Nasturtium officinale* particularly abundant in summer). Conservationally, the most important breeding birds are the tufted duck and the common kingfisher. In winter, different waterbird species occur along the stream's course with the water rail standing out in terms of abundance.

Šturmovci: Dravinjska Podkev

The remnants of a meander at which the Dravinja River used to run until the very 80s are one of the wildest parts of the protected area today. The whole interior and the east side of the meander is covered by a floodplain forest consisting of old cottonwood and willow trees, which together with lush undergrowth create an almost impenetrable barrier of intertwined vegetation in some areas. This is the dwelling place of the Eurasian beaver the signs of which can be observed along the entire meander. The middle spotted woodpecker *Dendrocopos medius* and the lesser spotted woodpecker *D. minor* breed in the forest stands here.

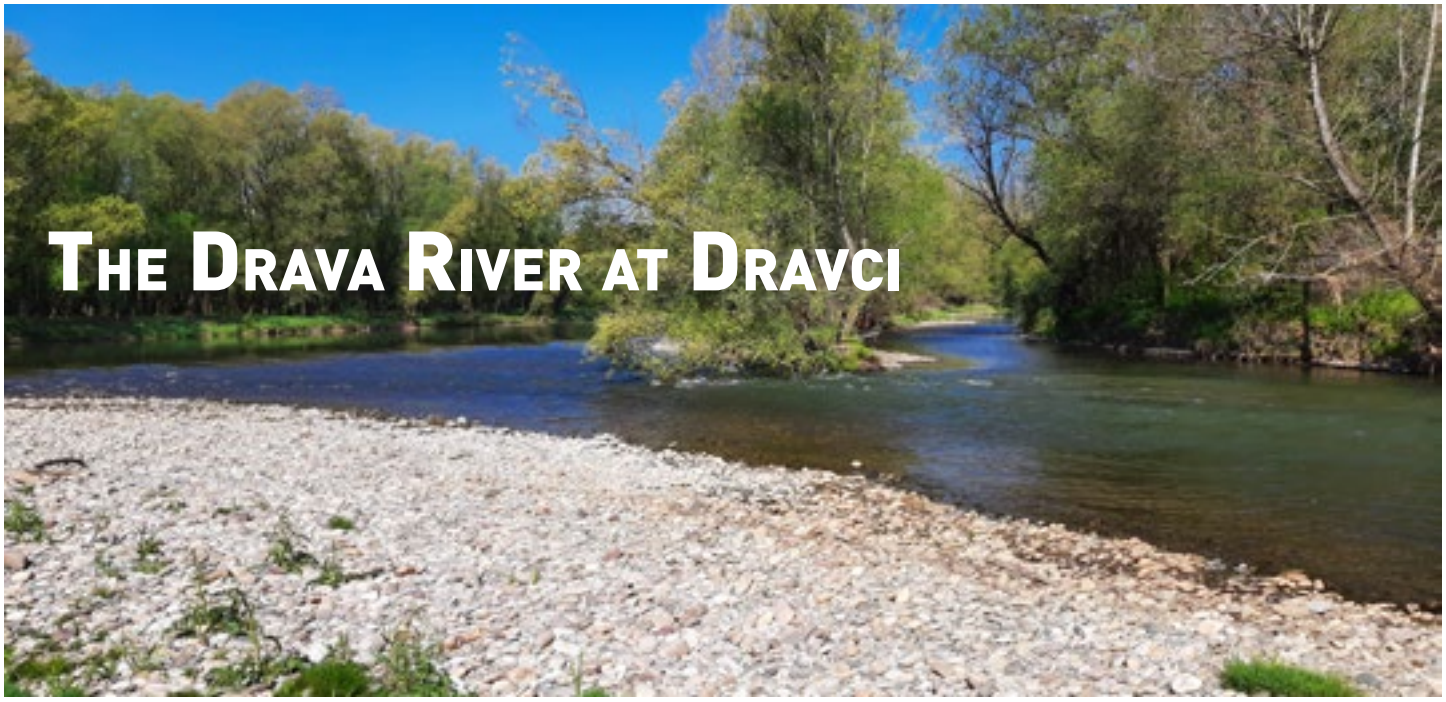


Šturmovci: The Dravinja River

Two kilometres before its confluence with the Drava River, the natural course of the Dravinja River has been completely preserved, which allows for the formation of steep eroded banks and small gravel bars. In comparison to the Drava River, the increased discharge and the consequent changes in the river channel are much more frequent on the Dravinja River due to its torrential features. One to three pairs of the common kingfisher and the common sandpiper breed on this stretch of the river, and they are occasionally joined by the little ringed plover.

Visiting the area

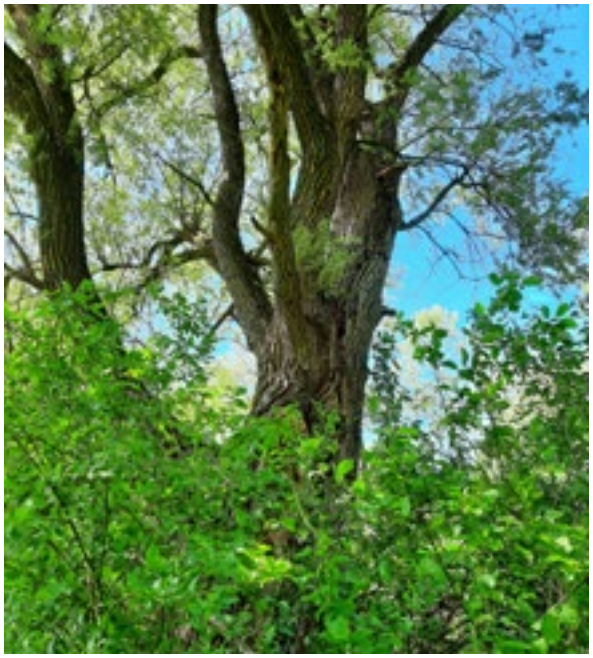
Taking the local road between Markovci and Videm pri Ptuju will lead you through Šturmovci. This road gives you access to Šturmovci from both sides of the Drava River, and it is the starting point for visiting the area. At the point where the macadam road turns towards the central part of the area, an information board can be found marking the beginning of the nature trail. From here, you can take a 500m walk to the site of the most characteristic Šturmovci landscape, which features meadows and numerous gigantic white poplars. You can then continue your visit on the cart track along the lower part of the Drava River's old backwaters. Similar areas can also be found east of the village of Sp. Šturmovci and below the dam of the Ptujsko jezero Lake (two farm tracks that fork left and right at the sharp turn of the local road north from the village) as well as in certain places along the Hajdinska studenčnica Stream (accessible by the cart track at the bridge that leads you northwards or southwards along the stream).



The Drava River at Dravci

Downstream from the confluence with the Dravinja River, the Drava River turns east and follows the steep slopes of the Haloze Hills until it reaches the Slovenian-Croatian border. On a smaller alluvial level ground below the edge of the hills where the picturesque Psičina Stream flows into the Drava River, a preserved area of an almost intact floodplain forest can be found. The forest stand is a few hectares large and composed of willow and poplar trees. Along the forest stand and in the area of the former backwater, the mouth of the Psičina Stream is located. The mouth is deep at the beginning and filled with stagnating water. However, downstream from where it brushes against the foot of the hills, it is shallow, intermittent, and sometimes dries up in summer. The banks of the Drava River at this stretch have not been regulated at all, which allows for extensive lateral river erosion on the outer side of the prominent left meander. The river's main channel runs along the left side of the riverbed, while to its right, an expansive and structured gravel bar is situated, which has been an island for most years.

The floodplain forest is inhabited by the middle spotted woodpecker, the grey-headed woodpecker *Picus canus*, the collared flycatcher, the spotted flycatcher, the Eurasian penduline tit, the Eurasian golden oriole, the hawfinch *Coccothraustes coccothraustes*, and other species typical of lowland forests. The mouth of the Psičina Stream is the breeding site of the grey wagtail, a relatively rare breeder on the Pannonian stretch of the Drava River. Along the stream's lower course, the common kingfisher feeds regularly. On its muddy edges, footprints of the Eurasian otter *Lutra lutra* can often be spotted. The beaver gives away its presence through the gnawed branches and tree trunks, while it also occasionally builds a dam on the lower stretch of the Psičina Stream. The gravel bar is the breeding site of the little ringed plover (1–2 para), the common sandpiper (1 par), and the white wagtail *Motacilla alba*. The streber *Zingel streber*, a very rare ray-finned fish species in the Slovenian part of the Drava River, has recently only been discovered in this section of the river.



Visiting the area

The area can only be easily accessed by the cart track that turns off the local road between the settlements Dravci and Gradišče. You can follow the cart track along a field next to the Psičina Stream or next to the forest until you reach an information board. At this point, you can cross the stream to continue with your visit (the stream is usually shallow and can easily be crossed with rubber boots). From here on, only 150–200m separate you from the Drava River's bank, which can be reached by either walking along the Psičina Stream or by taking the cart track through the forest. Approximately 1–1.5km east, a local road running through the settlement of Gradišče takes you along the very edge of the Haloze ridge the slopes of which descend steeply towards the Drava River more than 100m below. Certain areas on the ridge are excellent vantage points, which will give you a view of the former Drava River floodplain and the river's present-day channel that runs below us. The natural state of the river landscape and the width of the river channel have not changed since they have been captured on a photograph before the creation of Ptujsko jezero Lake or the construction of the Formin HPP.

The River Drava below the Borl castle.

At this mostly straight section of the Drava River, below a mighty rocky elevation supporting the medieval castle Borl, a gravel bar that is among the largest and most important areas for the indicator species of lowland rivers in the whole Drava region stretches out before us. The gravel bar, which is more than 2ha large, can be found in the area where the river channel has been consolidated with old riverbank protection and has the shape of an elongated island. Its shape and size have been changing slightly over the years, which is the result of fresh river deposits from the upstream sections of the Drava River and the occasional maintenance works that are performed at it to increase the water flow in the channel. Due to the above-mentioned reasons, the gravel bar at the Borl castle is only sparsely covered with vegetation most of the time. The bare gravel surface predominates, with small patches of pioneer vegetation and individual willow trees scattered on it. Another feature of the gravel bar is also the considerable height of its middle section, which rises above the usual water level of the river.

On the opposite side of the gravel bar, at the river's left side grows a dense complex of a well-preserved floodplain forest, which is the largest such forest (> 100ha) on the Drava River in Slovenia. The most beautiful part of the forest, which rests on the inner curve of the river's meander, is composed of extensive stands of old white willow mixed with poplar trees and is a natural feature of national importance. The rest of the complex mostly consists of riparian mixed forest of oak, ash, and elm, which is a habitat type of European importance.

Each year, 5–9 pairs of the little ringed plover and 1–3 pairs of the common sandpiper breed at the gravel bar below Borl. These are the largest recorded breeding densities for the two species in Slovenia. Another abundant gravel bar breeder is also the white wagtail. In general, this stretch of the Drava River is rich in bird species that are dependent on water habitats. Throughout the different seasons, the goosander and the pygmy cormorant (in winter) and the common kingfisher and the common tern (in spring and summer) feed here regularly. The grey heron, the great egret, and the little egret, as well as the green sandpiper and the wood sandpiper search for their food on the gravel bar. Occasionally, the gravel bar is a resting site for the black stork. With luck, we can catch glimpses of the white-tailed sea-eagle, which reigns in the skies above the river and is dethroned by the European honey buzzard during the summer months. The riparian willow stand is a breeding habitat of the Eurasian wryneck, the lesser spotted woodpecker, and the Eurasian penduline tit.

Visiting the area

You can get the most beautiful view of the gravel bar from the bridge across the Drava River, which lies on the main road Spuhlja–Zavrč and is suspended over the gravel bar's upper end. The bridge has a sidewalk and is easiest to ascend from the car park at the restaurant Herman on the right bank of the Drava River. You can visit the forest on the river's left side on foot by taking one of the cart tracks at the southern end (relative to the bridge at Borl) of the Muretinci settlement.

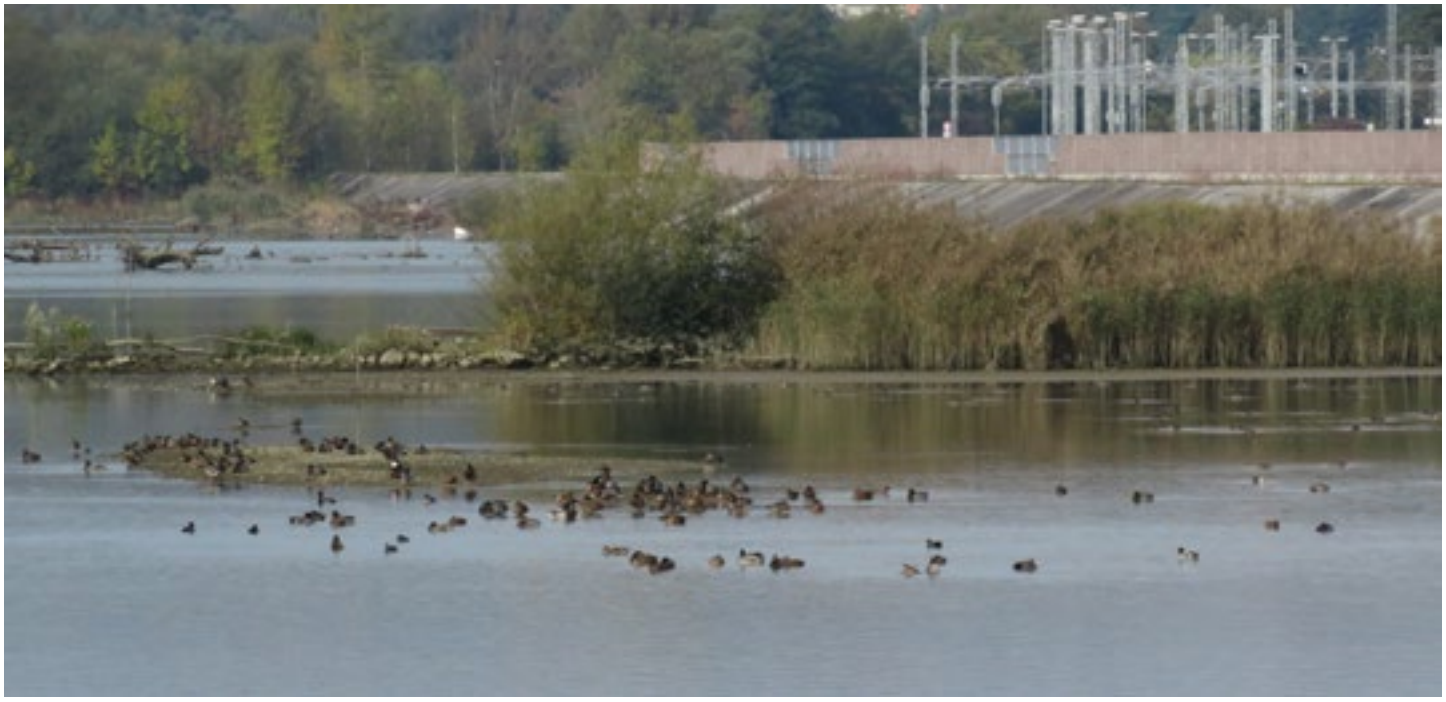
The Lake Ormož Reservoir

The Lake Ormož Reservoir is situated on the floodplain of the Drava River at the foot of the river terrace upon which the city of Ormož was built. The reservoir was made in 1975 at the present-day Slovenian-Croatian border, upstream from the Varaždin HPP, so that a little less than half of it (most of its left side) lies in Slovenia, while the rest can be found in Croatia. The reservoir begins at the confluence of the Drava River and the channel at the Ormož hamlet of Lent and ends 5km downstream with a dam on the Croatian territory. At first, the reservoir follows the old river channel but then begins to widen considerably below the riser of the river terrace in the area of the former Sugar Factory in Ormož. It attains its maximum width when it becomes over 1km wide. The reservoir's entire expanded section is regularly shaped, without any prominent bays, and surrounded by a high-water embankment. The vast expanses of the reservoir (approximately half of it) are very shallow due to the thick deposits of silt (at normal water levels, the reservoir is < 1m deep, even less in some places). The largest shallows at the reservoir are located in Croatia, while the most distinct areas of shallow water on the Slovenian side can be found at the hamlet of Amerika. These areas also feature smaller riparian reedbeds that have developed there. A characteristic of the Lake Ormož Reservoir is the large quantity of washed-up tree trunks and branches, as their removal does not occur in an organised fashion. The Slovenian part of the reservoir downstream from the bridge at the international border crossing at Ormož has been a nature reserve since 1992.

Apart from Ptujsko jezero Lake, the Lake Ormož Reservoir is a central location for numerous wintering and migratory waterbird species in this area of the Slovenian part of the Drava River. The reservoir plays its most crucial role in winter, especially in the period between the beginning of December and the end of February, when more than a thousand waterbirds (5 000–6 000 in the last few years, regularly) roam the area, which is almost equal to the number of birds found at the Ptujsko jezero Lake. Sometimes the total number of birds even surpasses 10 000. In the last years, the most abundant species have been the common coot (up to 5 800 individuals in one day), the mallard (up to 3 000 individuals), the tufted duck (up to 2 200 individuals), the Eurasian teal (up to 1 200 individuals), and the common goldeneye (up to 1 000 individuals), together with the occasionally occurring common pochard (up to 1 700 individuals). Different species of gulls also occur at the reservoir (up to 4 800 black headed gulls and up to 2 600 common gulls at the sleeping roost), as does the greater white-fronted goose *Anser albifrons* (up to 1 700 individuals). Regular group roosting of greater numbers of geese, once a famous sight on the reservoir, has not been observed here for several years. The Lake Ormož Reservoir is the most important site for the smew Mergellus albellus in Slovenia (40–80 individuals). Almost every winter, winged guests that are less common in Slovenia come to visit the reservoir.

In the summer months, the largest wedge of non-breeding mute swans can be seen at the reservoir during the moulting period. This is the only site in Slovenia where their numbers regularly rise up to hundred individuals and more, sometimes exceeding 1 000. Due to the vast expanses of shallow water, the reservoir is an important stopover site for various waders and ducks during the spring and autumn migrations. The most numerous representatives of the former are the ruff, the wood sandpiper, the spotted redshank *Tringa erythropus*, the common sandpiper, and the common ringed plover *Charadrius hiaticula*, while the most abundant species of the latter group are the Eurasian wigeon, the gadwall, the garganey, and the northern shoveler *Spatula clypeata*. Apart from the grey heron and the great egret, another fairly abundant species on the reservoir, especially in the summer months, is the little egret. In the evenings, the washed-up tree trunks turn into resting sites for the night herons *Nycticorax nycticorax*. Particularly during the spring migration (April–June), all three species of marsh terns appear on the reservoir (the black tern *Chlidonias niger*, the white-winged tern *C. leucopterus*, and the whiskered tern *C. hybrida*), occasionally also in greater numbers. In comparison to Ptujsko jezero Lake, the number of species breeding on the reservoir is much smaller, as the asphalt banks are mostly bare and no belt of marsh vegetation can be found along them.

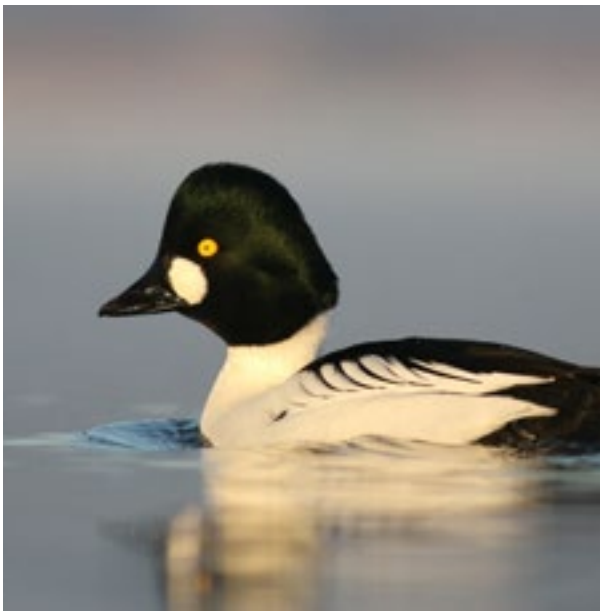
Just like at the Ptujsko jezero Lake, semi-dry meadows grow on the land-facing part of the high-water embankment of the Ormož Lake Reservoir, but the orchids at the reservoir's meadows are far less numerous. Here, the plant species of greater interest is the purple mullein *Verbascum phoeniceum*, while the large copper *Lycaena dispar*, a butterfly species of European importance, has also been recorded.



Lake Ormož Reservoir: The Confluence at Lenta (Ormož)

At the beginning of the reservoir, in an area no more than a few hundred metres long, as much as five bodies of running water join to form a single course of the Drava River. These are the Drava River channel, now running along the Slovenian-Croatian border once again after staying exclusively on the Croatian territory for 9km, the discharge channel of the Formin HPP, the Pesnica River, the Sejanca Stream (this stream flows into the Pesnica River 300m upstream from the joint confluence with the Drava River), and the Lešnica Stream. The sources of all the Drava River's tributaries lie in the Slovene Hills. The final stretches of these tributaries are mostly natural and feature numerous meanders. Because of this, the last few kilometres of the Pesnica River and the Sejanca Stream have been protected as natural features of national importance. This protection is even more warranted as 60km of the Pesnica River are heavily regulated with the river flowing in entirely artificial channels in some places. The sections before Ormož and south of Trgovišče (approximately 3km upstream) are thus the last remaining natural stretches of the river, which once boasted a vast continuous flood zone along its entire course. The confluence of the Pesnica River and the Sejanca Stream is a narrow, deep bay, separated from the Formin HPP channel by a belt of floodplain forest. In the forest, shallows and banks with reedbeds intertwine in manifold ways to create diverse water and wetland habitats.

The mouths of the Drava River tributaries are breeding sites for the common kingfisher and the grey wagtail. At the confluence of the Drava River with other water bodies, the goosander, the common goldeneye, the pygmy cormorant, the great egret, and other waterbird species can be seen in the colder months of the year. The bay at the Pesnica River and the Sejanca Stream confluence is where the Eurasian teal often feeds in greater numbers. In all of the tributaries, signs of the beaver's activity can be spotted.



Visiting the area

In Slovenia, an asphalt or macadam road runs along the entire widened part of the reservoir (take the left exit at the eastern bypass of Ormož, the road is located immediately after the railroad crossing in the direction of the border crossing point). You can easily ascend the embankment of the reservoir by one of the three accesses (the steps or the ramp). The confluence area at Lenta can be reached on a road towards the Ormož city centre (Novakova cesta). On the main road in the direction of Ptuj–Središče ob Dravi, take the first exit for Ormož and, after driving for 700m, turn right on the cart track. At this point, only a few 100m separates you from the Drava River. Take great care when crossing the railway and walking along it!

The Ormož Basins

In the western part of the Središko polje Plain, a floodplain in the lower end of the Slovenian Pannonian Drava region, the Ormož Basins Nature Reserve is located right next to the Ormož Lake Reservoir. The reserve's central part (35ha) is composed of six former wastewater basins of the Sugar Factory in Ormož (TSO). These basins became a nationally and internationally important waterbirds area already in the years 1980–2006 when the industrial complex was still operational. Apart from the basins, the nature reserve with its total size of 62ha also includes areas, which were once used for depositing materials along the basins but have today been turned into grasslands. The rest of the reservoir comprises a floodplain forest complex and a few smaller surrounding forest stands as well as other types of agricultural land. The Ormož Basins were transformed into the present-day sustainable wetland after the factory's shutdown and the building of a new water supply system in the years 2012–2017. From 2010 onwards, the area has been managed by DOPPS – BirdLife Slovenia.

The Ormož Basins are one of the most important habitats for certain rare and endangered animal species in Slovenia. During migration, they are an important stopover site for many waterbirds. In the area of the reserve, 230 bird species have been recorded so far, while as much as 270 have been recorded in the wider area (69% of all recorded species in Slovenia). Other species that rouse curiosity at the basins include the European pond turtle Emys orbicularis, the only native freshwater turtle in Slovenia. The water bodies of the reserve are inhabited by the otter and the beaver all year around.

The great diversity of the living world at the basins is mostly due to different habitats intertwining with each other over a small area and the planned conservation management of the reserve, which aims to ensure optimal conditions for the target species. The management of the reserve involves several types of activities, but it is first and foremost intended for maintaining a favourable state of the habitats and the populations of the target bird species. To achieve this goal, a tailored management regime with certain measures is being carried out in the area in accordance with the management and operational plan of the Ormož Basins Nature Reserve. The reserve is divided into management units depending on the desired habitats and management regimes whereby each unit has a particular habitat type with a specific management regime. One of the most important regular tasks in the warmer parts of the year are the purposeful grazing of water buffaloes and water level management in the basins. The grazing helps maintain the grasslands, mudflats, and shallow water areas with little vegetation, which are vital particularly for certain migratory species. Water level regulation, on the other hand, ensures suitable stable levels of water height during the breeding season and helps maintain the desired structure and arrangement of aquatic and riparian habitats at the basins.

Bains 1–4

The first four basins are flooded all year around; the water depth in the basins' middle section is around 1m with up to 2m in certain deeper parts, while the water is shallower at the basins' boundaries and the surrounding structures where it is 10–50cm deep. Particularly the latter depth enables the growth of extensive marsh plant stands, which cover roughly a half of the basins' surfaces (total surface size: 10ha). The most common stands are the reedbeds, while bulrush stands and other types of vegetation are also present to a smaller extent. The diversity of habitats is enhanced by the presence of several smaller and two larger islands without woody vegetation. In the warmer part of the year, planned maintenance of the water level is carried out in these four basins to keep fluctuation at a minimum. The grazing at the basins, except at the embankments, does not occur.

The conservationally most important breeding birds at the reedbeds basins are the endangered white-eyed pochard (up to 8 pairs), gadwall (1–2 pairs), common little bittern (5–7 pairs), water rail (5–6 pairs), little crake *Zapornia parva* (1–2 pairs), and the western marsh harrier *Circus aeruginosus*. In Slovenia, the latter species regularly breeds at the Ormož Basins only. The extensive reedbeds enable the breeding of nationally important bird populations narrowly confined to this specific habitat: the great reed-warbler (20–30 pairs), the common reed-warbler (4–8 pairs), and the Savi's warbler (3–6 pairs). The basins are where the breeding of the bearded reedling *Panurus biarmicus* was first confirmed in Slovenia in 2017. At least for now, it appears that the species does not breed in the area each year but it occurs regularly in the colder part of the year. The populations of most of the before-mentioned breeding birds are on the rise, as reedbeds are being developed further. The most abundant common waterbird species during the breeding period are the common coot, the little grebe, the mute swan, and the common moorhen. The expected breeding birds of larger dense reedbeds at the reserve are the Eurasian bittern *Botaurus stellaris* and the purple heron *Ardea purpurea*. Non-breeding species that occur at the reserve for most of the year even in greater numbers include the pygmy cormorant. The overgrown parts of the basins are used by many passerine species during wintering or migration. The most abundant passerines on the reserve are the common reed bunting and the Eurasian penduline tit, which are typical reedbeds species, while the bluethroat *Luscinia svecica* is less common. Other passerines that can be seen here include the dunnock *Prunella modularis*, the European robin *Erithacus rubecula*, and the Eurasian blue tit *Cyanistes caeruleus*. From early spring to late autumn, large flocks of the common starling *Sturnus vulgaris* roost in the reedbeds.

The European pond turtle is an exceptionally timid species and quite difficult to spot. It can most easily be observed when sunbathing on exposed spots, like fallen tree trunks, driftwood, and little islands in the basins.

Basins 5–6

Basin 5 is very shallow (< 30cm in depth) with gentle transitions between different depths and a string of mudflats and smaller, lower, and mostly bare islands. With the exception of the part of the basin that is overgrown with a dense stand of large sedge (0.8ha), water buffaloes graze on the rest of it in order to keep it almost free of low and herbaceous vegetation. Basin 6 is a grassland used for grazing and mowing and features a few shallow depressions that are occasionally (purposefully) flooded.

The flooded and the muddy areas are a stopover site for flocks of different species of waders during migration (the majority occur here in the periods March–May and July–September). The most abundant amongst them are the wood sandpiper (up to 220 individuals), the ruff (up to 130 individuals), the common snipe *Gallinago gallinago* (up to 80 individuals), and the northern lapwing *Vanellus vanellus* (up to 110 individuals). Smaller in number but occurring regularly are the green sandpiper, the spotted redshank, the common redshank *Tringa totanus*, the dunlin *Calidris alpina*, the little ringed plover, the black-winged stilt *Himantopus himantopus*, and the common curlew *Numenius arquata*, while certain rare species of the Slovenian territory have also been recorded. The shallow parts of the basin and occasionally also the flooded depressions are used by different species of herons and ducks. The majority of the latter are species that feed by pecking food from the water surface or mudflats or by partially submerging themselves or inclining in the shallow water. The grey heron (up to 75 individuals), the great egret (up to 160 individuals), and the little egret (up to 130 individuals) are usually most abundant in the summer months, although the latter two species occur at the reserve all year around. In the last few years and especially in spring, the squacco heron *Ardeola ralloides* and the Eurasian spoonbill *Platalea leucorodia* have also been occurring regularly in smaller numbers. In the summer months, the cattle egret *Bubulcus ibis* has also been observed, always appearing in close vicinity of the grazing animals. The most abundant duck species at the reserve are the mallard (up to 465 individuals), the Eurasian teal (up to 380 individuals), the garganey (up to 140 individuals), the gadwall (up to 130 individuals), the northern shoveler (up to 70 individuals), and the northern pintail *Anas acuta* (up to 60 individuals). The Eurasian teal tops the mallard in numbers for the majority of the year, although the mallard is the most common duck species in Slovenia. Other bird species that are most abundant here during migration include the western yellow wagtail *Motacilla flava*, the white wagtail, and the water pipit *Anthus spinoletta*.

Forests, Scrubs and the Boundary Areas of Basins

The former saturation basin and certain basin boundaries are covered in scrubs with individual trees, which are the breeding site of the red-backed shrike. The floodplain forest complex and other smaller forest fragments at the reserve area are inhabited by a bird assemblage typical for this habitat type and including all the conservationally important species. The habitat is the breeding site of the middle spotted woodpecker, the collared flycatcher, the Eurasian penduline tit, the grey-headed woodpecker, and other indicator species of lowland floodplain forests. The common species that reach the highest densities here are the Eurasian blackcap *Sylvia atricapilla*, the common chaffinch *Fringilla coelebs*, the common starling *Sturnus vulgaris*, the great tit *Parus major*, and the common blackbird *Turdus merula*. The forests in the Ormož Basins area are the site of one of the most important population nuclei of the *Cucujus cinnaberinus*, an endangered European beetle species and a qualifying species of the Lower Drava River Natura 2000 site.

Visiting the area

The entrance to the reserve is at the beginning of the macadamised access road near the settlement of Pušenci pri Ormožu. Taking the main road Ptuj-Ormož-Središče ob Dravi and passing the roundabout Ormož (centre)-Ljutomer, continue for 300m before turning south (or right from the direction of Ptuj) and taking the eastern Ormož bypass. Stay on the bypass for around 1.5km and, after crossing the railway, turn left immediately. Drive along the left embankment of the Lake Ormož Reservoir for 1.5km (ignoring the left turn for the hamlet Amerika a few metres ahead of the crossroads), until you reach the reserve's access road right behind the edge of a larger forest. Turning left, continue for a mere 50m before reaching the entrance point of the reserve.

Along the south edge of the basins, between the entrance point and the east edge of the reserve, runs a 1km long marked and fortified educational trail with four observation points (return via the same route). It is possible to go around the basins by continuing on an unfortified trail that runs along the outer edge of the enclosed part of the reserve. Two shorter unfortified trails (200m) can also be found in the area of the two forest fragments. The visitors may see the park on foot. This applies especially to the unfortified trails and the garden with the pen, while it is allowed to ride a bike along the fortified educational trail. There is a smaller car park for cars and buses at the entrance point and also a bicycle shed at the reserve's garden.

The Ormož Basins Nature Reserve is open to the public during the official opening hours. The entry is free of charge for individuals. For groups of more than ten persons and for all educational institutions group visits (kindergartens, schools, universities, etc. regardless of the number of visitors) guidance is compulsory. The guidance for groups is arranged by prior appointment and booking of the date. It is payable and conducted by the reserve's manager.

Središče ob Dravi Landscape Park

For the last few kilometres before it leaves the Slovenian territory for good, the Drava River runs along the southern edge of the Središko polje Plain in a completely unregulated channel with prominent meanders. Here, at the easternmost edge of the lowland part of the Pannonian Drava region, the features of lowland rivers are most pronounced at the river's course. Although this stretch of the river on the Slovenian territory is just 5km long, it is the site of the most primordial Drava floodplain forests in Slovenia. With some natural processes preserved, it still feature changes in the river's course, gravel bars, and other riverine morphological phenomena especially during floods, despite the fact that the hydrological conditions on the river are completely dependent on the operational regime of the Varaždin HPP as it releases water into the river channel at the gates of the Lake Ormož Reservoir. South of the settlement of Grabe, the river channel separates into two parts and forms a 1.5km long and 500m wide island, which has the surface area of 55ha and is the biggest river island in Slovenia. The island and the inner parts of the meanders are areas of dense floodplain forest stands with predominantly softwood species of trees, particularly the riparian white willow. The Drava floodplain forest described above is included in the first protection zone of the landscape park, which protects the most precious habitat types and habitats of endangered species and is constantly entirely flooded.

The Drava River channel in the Središče area is a breeding site for all the most important indicator species of natural lowland rivers: the little ringed plover, the common sandpiper, the common kingfisher, and the collared sand martin. Here, the common sandpiper reaches its highest known breeding densities in the Slovenian part of the Drava River (2 pairs/km of the river course). At the sections where longer stretches of the river bank have been exposed to strong lateral erosion, the common kingfisher and the collared sand martin have been breeding for most years. This is also where one of the rare collared sand martin colonies (up to 250 pairs) on the Slovenian part of the Drava River is located. The wider area of the landscape park is the homerange of two pairs of the black stork. Their two simultaneously occupied known nests have here been found some 4km apart, which is one of the greatest breeding densities for this species in Slovenia. The black stork otherwise most often feeds in backwaters, shallow parts of the channel, and on islands, which are abundant in this area. In 2019, the first breeding of the goosander has been recorded in this part of the Drava River. Until that year, the species has only been known to breed in the upper and middle parts of the river in Slovenia. The typical lowland floodplain forest species, the Eurasian penduline tit, is relatively common here and can be found in the riverine stands. Its breeding population in Slovenia has been noticeably declining since the 90s.

The river channel and its immediate surroundings are inhabited by a strong beaver population, which was first recorded here already in the 90s when the presence of the species in most parts of the Drava's river basin at that time had not been discovered. Numerous signs of its presence, including the dens, can be seen on the Drava River in the area of Središče almost at every step. Of the 43 recorded fish species so far the European mudminnow *Umbra krameria* deserves particular mention. In Slovenia, the species has been recorded at a few sites along the lower part of the Mura River, while Središče ob Dravi is the only site in the Slovenian part of the Drava River where the fish has been found. The Drava River channel here also boasts a few botanical curiosities. Unfortunately, two rare woody gravel bar species have become extinct or are on the verge of disappearance, although they were once distributed along the entire Pannonian stretch of the Drava River in Slovenia. The last area where the German tamarisk *Myricaria germanica* used to grow has been entirely covered by a forest, while there is still some hope for the seaberry *Hippophae rhamnoides*, which has had three known stands in this part of the Drava River before. Rare plant species recorded along the Drava River at Središče are the triangular club-rush *Schoenoplectus triqueter* and the flowering rush *Butomus umbellatus*.

Apart from the before-mentioned river and riverine habitats, agricultural land (secondary protection area) in the narrower flood zone of the river south from the railway is also included in the park. Fields are the predominant type of land use here and are particularly valuable because they feature numerous hedgerows, scrubs, and smaller islands of forest.

Especially the western part of the protected area where units of land use feature diverse sown cultures offers us a fine example of the traditional mosaic agricultural landscape. Hedgerows with a diverse composition of shrubs that consist of species such as the blackthorn *Prunus spinosa*, the common hawthorn *Crataegus monogyna*, the common dogwood *Cornus sanguinea*, the European spindle *Euonymus europaeus*, the guelder rose *Viburnum opulus*, and others form an optimal breeding and feeding habitat for numerous endangered birds of the agricultural landscape.

In 2018, during the first quantitative census of the agricultural landscape birds at the Središko polje Plain, 62 breeding birds have been recorded. The most abundant species were the Eurasian blackcap *Sylvia atricapilla*, the Eurasian tree sparrow *Passer montanus*, the common chaffinch *Fringilla coelebs*, the great tit *Parus major*, and the common starling *Sturnus vulgaris*. The following species of conservational importance should in particular be mentioned, either as their conservation status in Europe and/or in Slovenia has been poor or as a significant proportion of national population is concentrated in this area. These species are: the common nightingale *Luscinia megarhynchos*, the crested lark *Galerida cristata*, the western yellow wagtail *Motacilla flava*, the red-backed shrike, the European turtle dove, and the northern lapwing. As many as 15 recorded species of conservational importance in the area of the Središko polje Plain are classified as indicator species of the agricultural land. In winter, we can mostly observe different species of birds of prey in the area, including the hen harrier *Circus cyaneus*. The hedgerows and individual trees or bushes in the midst of open space offer us glimpses of the great grey shrike *Lanius excubitor*, which spends most of the colder parts of the year in Slovenia. Possibly the greatest natural curiosity of the area is the Eurasian hamster *Cricetus cricetus*, the only representative of the steppe mammals in Slovenia. This area is the only site in Slovenia inhabited by the species and it was discovered here in the dry soil of the mosaic fields. The likelihood of seeing the hamster is admittedly slim, as it is a nocturnal rodent, but we can come across the tunnels typical of the species.

Visiting the area

There are several roads and farm tracks leading to the landscape park, all branching off the main road Ptuj-Središče ob Dravi to the south at Grabe and Središče ob Dravi. It is best to start the visit at the church Sv. Duh in Grabe (car park) where the nature education trail of the municipality of Središče ob Dravi begins next to the parish building. At first, the trail runs along a local asphalt road and then continues on a well-surfaced macadam road behind the last house in the settlement on the right, leading us to the floodplain forest on the banks of the Drava River. The trail is marked with nine information boards mostly presenting content about nature. At the end of the trail, it is possible to continue on the path by staying on the right side. This will take you through the forest until you reach the river bank after 200m or so. The second option is to take the left path along the river and then follow a forest track until you reach a spot that offers a beautiful view of the confluence of both Drava River's channels at the downstream end of the island and the extensive gravel bars. To see the most picturesque farmland, turn right immediately after crossing the bridge over the Trnava Stream (from the direction of Ormož) where you will be able to begin appreciating the mosaic landscape south of the railway.

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The publisher: Društvo za opazovanje in proučevanje ptic Slovenije

Texts: Luka Božič

Photos: Tilen Basle, Vanesa Bezlaj, Dejan Bordjan, Luka Božič, Tomaž Mihelič, Jure Novak, Alen Ploj, Davorin Tome, Marko Zabavnik.

Cover Photo: Tilen Basle

Published: August 2022

Managing authority responsible for the implementation of EAFRD aid: Ministry of Agriculture, Forestry and Food