

## Additional information

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### Physical features of the site

**Geomorphology.** The major part of the wetland is located within the Streshin glacial valleys, related to the geomorphologic region of pre-Polesie plains and lowlands. The site's northern boundary limits with Sozh glacier. The peripheral part of the alluvial lowlands of river Rechytsa is located in the extreme southeast of the territory. In the northern area, the site limits with the Central Berezina and Bobruisk glacial plains. In the South, the site limits with the territory of Ozarichy glacial lowlands and lakes.

In geostructural terms, the wetland belongs to the adjacent areas of river Pripyat. The crystalline basement is at a depth of 1,000 meters and it is covered by a stratum of chinks, chalk marl and sands, mostly from the Paleogene age.

**Origin.** The current geomorphological terrain was shaped 100 thousand years ago by Sozh glacier activity, which formed outwash deposits, composed of thick layers of sand. These deposits are clearly visible in the wetland, sloping to the south in gently undulating plains and flat lowlands with a dense network of gullies, carrying out melted glacier waters through valleys and thermokarst depressions. Variations in the relative heights usually do not exceed 4.5 m. In the river valleys, outwash deposits gradually merge with the ancient alluvial terraces and Poozerie glacial rocks.

**Hydrology and hydrography.** The site is located within the Berezina River system, tributary of the Dnieper River hydrological basin. The hydrographic network includes the main river Berezina and its left tributaries of first and second order river Ola and river Vydritysa, together with oxbow lakes located in the floodplain and marsh areas in the surrounding area.

*Berezina River* is the third largest affluent tributary of Dnieper River. The bed of the river is free-meandering and tortuous. Towards the mouth the tortuosity gradually increases (ratio - 1.09). The prevailing width is 80- 130 m, characterized by smooth bends and long straight stretches with lots of shoals, bays, articulation sleeves, oxbow lakes and floodplain lakes. The average depth is 2-2.5 m, maximum - 6.5 m. Flow speed is 0.5-0.8 m/s. The bed of the river is clean, just the river banks present vegetation overgrown. The bottom is flat and sandy. The banks have a different slope, from flat to steep, approximate height of 1- 2 meters. With the erosion of the river valley the slopes reach 15 meters in height. They are predominantly sandy and loamy, breakable and partially fixed by bushes.

*Ola River* originates in a small bog 0.8 km northeast of the village Ola in the Kirov district within the Mogilev region. River Ola flows into Berezina from the left bank, 81 km from its mouth. The length of the river is of 122 km. The floodplain is asymmetrical, double-sided, 0.5-0.6 km wide and in its lower parts reaches is 1-1.5 km. Surface is flat, hummocky, with some sand hills and ridges of 0.5-1 km of length and 3-8 m height, divided by oxbows, channels and drainage ditches. The floodplain is mostly covered by overgrown meadow or scattered bushes. A large area of the river is drained and cultivated. In the lower swamped floodplain almost everywhere is covered with dense bushes and forest. Soils are peaty. Floodplain is flooded to a depth of 0.5-1.5 m for a period of 2-3 weeks.

*River Vydritysa* is a distributary of River Ola and has a length of 19 km. It flows throughout the swamps and empties into the River Berezina. The floodplain at the sides has a width from 50 m to 300 m and is overgrown with bushes. The banks are low and marshy with a height about 15 cm. The bed is strongly meandering in width from 4 to 10 m and in some places up

to 40 meters. Along the shores there is vegetation overgrown of duckweed, sedges, cattails *angustifolia* and reed.

In the floodplain of the Berezina River there are more than 26 oxbow lakes with a total area of 0.7 km<sup>2</sup> located within the boundaries of the wetland.

On the territory of the wetland, there are 23 marsh areas (about 30% of the total area) with reserves of about 11 million tons of peat. Fens dominate in the depressions and floodplains.

Data	Place of sampling			
	Berezina river	Vydritsa river, the middle course	Vydritsa river, lower course	Ola river
mg per liter				
pH	7.68	7.60	7.56	7.80
HCO <sub>3</sub>	176.9	225.4	225.7	244.0
SO <sub>4</sub>	12.6	3.7	3.7	32.0
Cl <sup>-</sup>	12.5	13.2	9.2	20.1
Ca <sup>2+</sup>	48.5	64.1	64.1	72.9
Mg <sup>2+</sup>	9.7	9.7	9.7	16.1
K <sup>+</sup>	3.4	0.9	0.8	3.3
Na <sup>+</sup>	7.1	5.3	5.3	8.2
NH <sub>4</sub>	0.50	0.40	0.40	0.67
NO <sub>3</sub>	0.74	0.89	0.89	0.89
NO <sub>2</sub>	0.018	0.002	0.0	0.014
PO <sub>4</sub>	0.040	0.050	0.042	0.080
Fe	0.9	1.4	1.2	0.8
Si	3.0	0.4	0.6	3.0

**Soils.** According to soil-geographical zoning, the area belongs to Luban-Svetlogorsk-Kalinkovichi subarea of sod-podzolic boggy sand, loam and peat soils of lowland type, which is part of the South-Eastern District of Polesie. Typical soils of the wetland are:

1. Sod-podzolic sandy soils underlain by loam (pH 5.2);
2. Sod-podzolic and sod-podzolic swamped sandy soils (pH 4.4);
3. Peat soils (pH from 3.1 to 6.5);
4. Sod-podzolic and sod-waterlogged sandy soil (pH 5.5);
5. Alluvial (floodplain) turf swamped and peat soils (pH from 5.5 to 7.5).

**Climate.** Long-term average annual temperature is  $+6.9 \pm 0.10$  °C, varying in different years from +4.9 (1940) to +8.70 °C (1989, 2008). The warmest month of the year is July (+18.60 °C). The coldest month is January (-5.40 °C).

The duration of the period with average daily temperatures of above 0°C is of 256 days. The growing season is of 207 days. Frost free period lasts 148 days. The last frost in the air can be noticed on the 2nd of May and

the first on 28th of September. The average air temperature in January ranges from 0.8 °C (1989) to -15.8 °C (1987). In July from +15.3°C (1979) to +22.7°C (2010). The average monthly temperature of the surface of the soil is to -7°C in winter and 22°C in July.

Long-term average annual amount of precipitation for the observation period is  $671 \pm 12$  mm, varying in different years from 422 (in 1963) to 969 mm (1998).

In the warm season (April-September) falls 410 mm of rain, in the cold season (October-March) - 260 mm. In the annual variations, the minimum precipitation is usually in February and March (average 36 mm), the maximum - in July (91 mm). Maximum daily rainfall (115 mm) observed in June 1991.

The average height of the snow cover in the winter is 15-20 cm, in some years up to 55 cm. The snow cover formed from 15 to 20 December, goes from 5 to 10 March. Average number of days with thaws (December- February) is 40-45 days.

Humid days (relative humidity  $\geq 80\%$ ) are 108 in the year, dry (relative humidity in one of the periods of observation  $\leq 30\%$ ) are 19 days.

In the territory of the wetland, general circulation of the atmosphere determines predominance of winds from the west. Average annual wind speed is 2.6 m/s, the maximum average wind speed from November to May (2.6-2.9 m/s, west to 3.2 m/s), the minimum - from June to October (2.2-2.5 m/s). During the twenty-four hours, the lowest speed is observed at night and the highest during the day, with the diurnal variation of wind speed well expressed in the summer months and low in winter.

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**Physical features of the catchment area:**

The area belongs to the Dnieper River hydrological basin and Berezina River system. The hydrographic network includes the river Berezina and its left tributaries of first and second order Ola and Vydritsa.

Berezina River belongs to the large lowland rivers. Thus, it's formed by three classical parts expressed in its floodplain: riverbed, center and terrace. The central floodplain has a complex surface, divided into smaller delineated areas where meadows of different high-altitude levels are growing. High meadows are typical of the delineated area of riverbed and of the segment-ridged central floodplain. The characteristic topography is their unifying element-levees and riverine mane, raised by 1.5-2.5 meters or more above the water edge, composed of layered sands. Formed on these undeveloped or poorly-developed sod podzolic soils, the land contains small amount of humus (1%). Soils do not have a clear differentiation into genetic horizons and the lower part of the morphological profile is typically gleyed. Due to an unfavorable water and nutrient regime, these soils are covered with scarce vegetation in comparison with other areas of the floodplain.

The central part of the flood plain is expressed in the wetland throughout river Berezina. Depending on the nature of the floods, the central floodplain soils may consist of granular or layered alluvial deposits. These deposits are more common in the flat part of the floodplain, they are mainly sod gleyey, sandy and loamy soil of granulometric composition formed on them.

In the depressions between the large manes of the central part of the floodplain and in the most remote part of the terrace waterlog occurs. This area is characterized by the deposition of alluvial material (loam and clay) and the formation of abundant humus (up to 10 - 12%) and peat soils rich in mineral nutrients. These elements are often formed in the terrace.

Homogeneous flat and very swampy floodplain tributaries of Berezina, Vydritsa and Ola, characterize the site. Their soil cover is composed primarily of alluvial peat-bog soils of different thickness, formed on different botanical composition peat.

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**Ecosystem services****Current scientific research and facilities**

Case studies of landscape and biological diversity in the reserve have been carried out in the preparation of the scientific substantiation of the protected area "Vydritsa."

In 1998, detailed studies of the flora and fauna were conducted by experts from the Scientific and Practical Center of Bioresources of NAS and the V.F.Kuprevich Institute of Experimental Botany of NASB. Systematic lists of the major groups of vertebrates were prepared, rare and vulnerable species were identified and an assessment of the status of the wetland was produced.

**Social and cultural values*****Historical and cultural significance.***

The wetland is located in a remote and swampy terrain. Settlements within the wetland are absent.

***The socio-economic potential.******The current land use.***

On the agricultural land within the wetland all traditional agricultural activities are permitted. In the forests, picking berries and mushrooms is allowed. Given the high density of game ungulate species, hunting is allowed and regulated by law. On the territory of the wetland recreational fishing is allowed.

#### *Population and settlement system.*

On the territory of the wetland, settlements are absent, but in the south-west of the territory there are arranged dacha plots. In the immediate vicinity of the wetland area the following villages can be found: Dobrovolscha, Zamen-Rynya, Plesovichi, Korotkovichi, Antonovka, Iskra, Dednoe, Selnoe, Chirkovichi, Zdudichi, Sudovitsa.

#### *Industrial production.*

The territory is not a source of raw materials. In areas immediately adjacent to the wetland in the short term, constructions of new industrial facilities are not planned.

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#### *Engineering and transport infrastructure.*

The railway Zhlobin-Svetlogorsk and the road Vasilevichi-Zhlobin crosses the territory of the wetland.

#### *Recreational resources.*

The most accessible natural systems to the neighborhood residents have a high resistance to recreational activities as they are waterlogged. Forests in Korotkovichi are more suitable for recreation and they are well-connected, but they are contaminated with radionucleides.

Limited recreational capacity (sum of the products of allowable loads on the natural systems on the area of these complexes) forest of green space and the river meadows receive about 20,000 people per year, or about 7 people per hectare. For park forest, these values are respectively 2000 people and 8.5 people respectively. However, given the natural characteristics of the territory and seasonal recreation (summer holidays, picking berries and mushrooms), the load is unlikely to exceed 50% of the specified value.

#### *Agricultural production.*

Agricultural uses are very reduced (only 7%) as well as plowed agricultural land (11%). The contamination of the territory as the result of the Chernobyl accident dramatically worsened the environmental conditions of the land and its management. Thus, about the 10% of agricultural lands of Zhlobin area included in the wetland are contaminated with radionuclides and have been removed from economic circulation.

#### *Forestry.*

State Forestry Enterprise "Svetlogorsk Forestry" (Iskra forestry) and "Zhlobin Forestry" (Dvorischany, Korotkovichi forestry) carry out forest management activities within the boundaries of the wetland.

### **Current recreation and tourism**

The environmental agency of Vydritsa manages the tourism and recreational activities within the reserve. There are organized routes and nature trails, environmental tours for amateurs and professionals and a parking space is also available.

The State program (2008-2014) for the development of the national protected areas system (reference 32.6.3) is organizing touristic routes to improve the recreational potential of the wetland.

The State environmental agency is actively engaged in the organization (on the equipped areas) of corporate events, cross-country skiing, ice fishing and hiking activities.

Information about the organization of tourism in the reserve can be found at <http://www.svetlogorsk.by>.

The Sanatorium "Silver Springs" (Svetlogorsk District) is located near the wetland and is very popular. The wetland is used for informal wellness recreation and tourism, fishing, recreational hunting, picking berries and mushrooms. The maximum recreational burden falls on the summer.

### **Current land (including water) use**

In Zhlobin district:

- APC "Kitin" - 1163 ha
- APC "Dvorischansky" - 1458 ha
- PUE "Agro-Korotkovichi" - 1856 ha
- MAUE "Progress" -182 ha
- MAUE "Mormal" -250 ha
- Dvorischany forestry, 60 hectares;
- Korotkovichi Forestry - 2820 ha.

In Svetlogorsk district:

- MAUE "Zolak-Agro" -932 ha
- MAUE "Berezina" - 248 ha
- OJSC "STSKK" - 408 ha
- Iskra forestry -8179 ha.

The main types of land use: Forestry

- logging;
  - reforestation;
  - secondary forest (collection of berries, mushrooms, medicinal and industrial raw materials);
- Recreation
- hunting;
  - fishing.