

# Ramsar Information Sheet

Published on 27 January 2021 Update version, previously published on : 1 January 2013

# **Belarus**Duleby Islands-Zaozerye



Designation date 7 September 2012 Site number 2138 Coordinates 53°47'18"N 29°29'47"E Area 30 772,00 ha

https://rsis.ramsar.org/ris/2138 Created by RSIS V.1.6 on - 27 January 2021

# Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

# 1 - Summary

#### Summary

The Ramsar site consists of two plots (Duleby Islands and Zaozerye) located close to each other, and pertaining to one peatland complex. They have a common genesis, identical structure of vegetation cover, floristic and faunistic complexes. These areas function as a single system performing important environmental functions.

The wetland is a mire complex with prevalence of boreal Sphagnum ridge-hollow bogs. They are located in the south-western distribution border of north-western boreal Sphagnum bogs. The Site's most abundant habitat types are ridge-hollow sphagnum bogs, oligo-mesotrofic cotton grass-sedge-sphagnum mires, pine swamp forests on transitional mires and bogs, and native deciduous forest on transitional mires and fens. A large forest plays a buffer role for the mire complex. This forest is characterized by the presence of quite large overgrown areas, rare in floristic composition, aesthetic, and soil properties. These forest and mire areas provide favorable conditions for the preservation of a number of rare and unique species of plants and animals. Plant communities present in the Site once were common, but nowadays rare and threatened.

The Ramsar site is situated on the watershed of Berezina and Drut' Rivers (Zaozerye part), and Drut' and Olsa Rivers (Duleby Islands). The bogs located on the watersheds play an important role in stabilizing the water regime in the area of their location. Accumulating atmospheric and underground waters, it slowly releases them along the water slope, which helps to maintain the groundwater level in the adjacent territories and preserve the water level in the rivers. Several rivers and streams originate in the area.

# 2 - Data & location

# 2.1 - Formal data

2.1.1 - Name and address of the compiler of this F	2.1.1 -	Name a	nd addres	ss of the	compiler	of this	RIS
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Responsible compiler

Institution/agency Institute of Experimental Botany of the National Academy of Science of Belarus

Postal address 220072, Minsk, Akademicheskaya st., 27

National Ramsar Administrative Authority

Institution/agency Institute of Experimental Botany of the National Academy of Science of Belarus

Postal address bronibroska@mail.ru

2.1.2 - Period of collection of data and information used to compile the RIS

From year 2012

To year 2020

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)

Unofficial name (optional)

Острова Дулебы — Заозерье

2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

220072, Minsk, Akademicheskaya st., 27

(Update) A Changes to Site boundary Yes O No 

(Update) B. Changes to Site area No change to area

(Update) For secretariat only. This update is an extension □

2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS?

# 2.2 - Site location

# 2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps 0

Boundaries description

The boundaries of the Ramsar site coincide with those of Republican hydrological reserves "Duleby Islands" and "Zaozerie". See additional material for further information.

# 2.2.2 - General location

a) In which large administrative region does the site lie?

Mogilev region

b) What is the nearest town or population centre?

Belynichi, Klichev

# 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries?

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party?

# 2.2.4 - Area of the Site

Official area, in hectares (ha): 30772

Area, in hectares (ha) as calculated from 30776.011 GIS boundaries

# 2.2.5 - Biogeography

# Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
EU biogeographic regionalization	Boreal

# Other biogeographic regionalisation scheme

The Pan European Map of Biogeographical Regions 2001(T-PVS 2001/89 Appendix V) www.eea.europa.eu/data-and-maps/data/biogeographical-regions-europe-2005/methodology-description-pdf - format/methodology-description-pdf-format/at\_download/file

# 3 - Why is the Site important?

# 3.1 - Ramsar Criteria and their justification

#### ☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

The wetland is the mire complex with prevalence of boreal Sphagnum ridge-hollow raised bogs. The site is at the south-western edge of the distribution range of north-westerneuropean boreal Sphagnum bogs. The site has a great hydrological importance:

- The bogs located on the watersheds play an important role in stabilizing the water regime in the area of their location. Accumulating atmospheric and underground waters, it slowly gives them along the water slope, which helps to maintain the groundwater level in the adjacent territories and preserve the water level in the rivers:

#### Hydrological services provided

- Several rivers and streams originate in the area;
- water accumulation function: during dry season stores water, and provides with it other water bodies;
- the site's bogs have high water protection and flow regulating value for tributaries of the middle stream of the Dnieper River;
- maintains the groundwater level in the region;
- plays an important role in maintaining of high water quality;
- participates in formation of underground hydrological systems, which supplies with water surface wetland complexes.
- Peat accumulation (the site includes the largest peat reserves in Belarus);
- Gas control (release of oxygen and carbon dioxide absorption);

#### Other ecosystem services provided

- local climate regulator:

- provision of food resources and raw materials: stocks of berries, medicinal and technical raw materials, hunting and commercial species. The peatland contains rich reserves of cranberry and bog whortleberry.

Other reasons

The Ramsar site is complex wetland system, where all types of mires are represented. The site's mire tracts are rare in their preservation state and size.

#### Criterion 2 : Rare species and threatened ecological communities

#### Criterion 3 : Biological diversity

The site ensures the existence of populations of plants and animals that are important for maintaining the biological diversity of raised bogs.

Justificatio

The flora of the wetland is represented by 705 species of higher vascular plant species: 6 species of lycopodium, 6 - horsetails, 12 - ferns, 3 - gymnosperms and 678 angiosperm. Within the wetland, there are 12 fish species, 37 species of mammals, birds - 151 species, amphibians – 9, and 4 species of reptiles.

# ☑ Criterion 4 : Support during critical life cycle stage or in adverse conditions

# 3.2 - Plant species whose presence relates to the international importance of the site

					IUCN			
Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	Red List	CITES Appendix I	Other status	Justification
Plantae							_	
TRACHEOPHYTA/ LILIOPSIDA	Allium ursinum		<b>2</b>				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Arnica montana		Ø		LC		National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Campanula latifolia		V				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Cardamine bulbifera		<b>✓</b>				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Corydalis cava	<b>2</b>	<b>2</b>				National Red Data Book of Belarus - Vulnerable	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Drosera intermedia	<b>2</b>	V				National Red Data Book of Belarus - Vulnerable	
TRACHEOPHYTA/ LILIOPSIDA	Festuca altissima		<b>v</b>				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ LILIOPSIDA	Hammarbya paludosa	<b>2</b>	Ø		LC		National Red Data Book of Belarus - Endangered	
TRACHEOPHYTA/ LYCOPODIOPSIDA	Huperzia selago		Ø				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ LYCOPODIOPSIDA	Lycopodiella inundata		Ø		LC		National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ LILIOPSIDA	Neottia ovata		Ø				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ LILIOPSIDA	Platanthera chlorantha		V				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Pulsatilla patens		<b>2</b>				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Salix myrtilloides		<b>v</b>				National Red data Book of Belarus - Near Threatened	
TRACHEOPHYTA/ MAGNOLIOPSIDA	Vaccinium microcarpum		Ø				National Red data Book of Belarus - Near Threatened	

The site ensures the existence of rare, endangered or threatened populations of 15 plant species.
The site ensures the existence of rate, engangered of infeatened doddiations of 15 diablispecies.
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3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Species qualifies under criterion	contr under o	ecies ibutes criterion	Pop. Size	Period of pop. Est.	occurrence	UCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
Others												
ARTHROPODA / INSECTA	Apatura iris	0000										
ARTHROPODA / INSECTA	muscorum	0000										
ARTHROPODA / INSECTA	Calopteryx splendens	0000						LC				
ARTHROPODA / INSECTA	Colias palaeno	0000										
CHORDATA/ MAMMALIA	Lutra lutra							NT	1			
CHORDATA/ MAMMALIA	Lynx lynx							LC			National Red Data Book - Endangered	
CHORDATA/ MAMMALIA	Meles meles							LC			National Red Data Book - Endangered	
ARTHROPODA / INSECTA	Oeneis jutta	0000										
ARTHROPODA / INSECTA	Papilio machaon	0000										
Birds												
CHORDATA/ AVES	Alcedo atthis							LC			National Red Data Book - Vulnerable	
CHORDATA/ AVES	Aquila pomarina				2	2015		LC			National Red Data Book - Vulnerable	1-2 breeding pairs
CHORDATA/ AVES	Asio flammeus							LC			National Red Data Book - Near Threatened	breeding is not regular
CHORDATA/ AVES	Athene noctua							LC			National Red Data Book - Vulnerable	the species uses the site as foraging area
CHORDATA/ AVES	Bubo bubo							LC			National Red Data Book - Endangered	breeding is not regular
CHORDATA/ AVES	Ciconia nigra							LC			National Red Data Book - Vulnerable	
CHORDATA/ AVES	Circaetus gallicus				12	2015		LC			National Red Data Book - Endangered	at least 6 breeding pairs
CHORDATA/ AVES	Circus cyaneus							LC			National Red Data Book - Vulnerable	breeding is not regular
CHORDATA/ AVES	Crex crex							LC			National Red Data Book - Vulnerable	the species is rare breeding species on the territory
	Dendrocopos leucotos							LC			National Red Data Book - Near Threatened	
CHORDATA/ AVES	Falco columbarius							LC			National Red Data Book - Wilnerable	during migration
CHORDATA/ AVES	Falco subbuteo							LC			National Red Data Book - Near Threatened	breeding
CHORDATA/ AVES	Falco vespertinus							NT		V	National Red Data Book - Critically Endangered	during migrations

Phylum	Scientific name	Species qualifies under criterion	Species contributes under criterion	Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
CHORDATA/ AVES	Ficedula albicollis						LC			National Red Data Book - Near Threatened	breeding
CHORDATA/ AVES	Glaucidium passerinum			20	2015		LC			National Red Data Book - Near Threatened	5-10 breeding pairs
CHORDATA/ AVES	Grus grus						LC			National Red Data Book - Vulnerable	on breeding and migration
CHORDATA/ AVES	Lagopus lagopus	Ø000			2015		LC			National Red Data Book - Critically Endangered	the species was not observed within the territory during last 5 years. The potential breeding grounds are still present here.
CHORDATA/ AVES	Limosa limosa			12	2015		NT			National Red Data Book - Vulnerable	about 3-6 breeding pairs
CHORDATA/ AVES	Lymnocryptes minimus						LC			National Red Data Book - Vulnerable	during migration
CHORDATA/ AVES	Mergus merganser						LC			National Red Data Book - Vulnerable	breeding is not confirmed
CHORDATA/ AVES	Numenius arquata			10	21015		NT			National Red Data Book - Vulnerable	3-5 breeding pairs
CHORDATA/ AVES	Numenius phaeopus			6	2015		LC			National Red Data Book - Vulnerable	1-3 breeding pairs
CHORDATA/ AVES	Picoides tridactylus						LC			National Red Data Book - Near Threatened	
CHORDATA/ AVES	Pluvialis apricaria			70	2015		LC			National Red Data Book - Vulnerable	20-35 breeding pairs
CHORDATA/ AVES	Strix nebulosa						LC			National Red Data Book - Endangered	
CHORDATA/ AVES	Tringa nebularia						LC			National Red Data Book - Vulnerable	breeding

1	) Percentage of the total	biogeographic population at the site

There are 26 bird species and 2 mammals from the Red Data Book of Belarus.	

# 3.4 - Ecological communities whose presence relates to the international importance of the site

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
3160 Natural dystrophic lakes and ponds	<b>2</b>		Annex I of the Habitats Directive
7110* Active raised bogs	<b>2</b>		Annex I of the Habitats Directive, priority habitat
7140 Transition mires and quaking bogs	✓		Annex I of the Habitats Directive
9080* Fennoscandian deciduous swamp woods	<b>2</b>		Annex I of the Habitats Directive, priority habitat
91D0* Bog woodland	<b>2</b>		Annex I of the Habitats Directive, priority habitat
9010 * Western Taïga	<b>2</b>		Annex I of the Habitats Directive, priority habitat
7120 Degraded raised bogs still capable of natural regeneration	<b>2</b>		Annex I of the Habitats Directive
91F0 Riparian mixed forests of Quercus robur,Ulmus laevis, minor,Fraxinus excelsior,angustifolia, along the great rivers	<b>2</b>		Annex I of the Habitats Directive

# 4 - What is the Site like? (Ecological character description)

# 4.1 - Ecological character

The wetland is an example of oligotrophic bogs of the region that have a low degree of disturbance. Vegetation of the wetland is represented by the complex combinations of forest and mires (oligo- and mesotrophic). They are characterized by alternating of ridge-hollow (hollow-lake) complexes, forested areas with pine and mineral islands.

The core of the part Zaozerye includes large raised bogs Mokhovoe and Scheglovitovschina covering about 3600 ha. The depth of the peat layer can reach 6.2 m (the average one is 2.4 m). Transition mires are located in the periphery of the raised bogs. The total area of open mires is 1956 ha. The main species forming the site's forests is pine (82.8%). Of these, 70% are pine forests on mires. Birch forests occupy 13.2% of the total forest area.

The site is located on the watershed of the Drut' and Berezina Rivers. Besides mires, the hydrological network of the site includes the lake Zaozerie and rivers Dulebka, Malysh and Lipovka, receiving water from the mires.

The core of the other part of the Ramsar site - forest and mire complex Duleby Islands - is a single mire massif (Peatlands Dulebskoe and Velikoe). The depth of the peat layer can reach 6-7 m. Along the periphery and on islands among the mire there are waterlogged, swampy and dry forests are found, playing the role of a buffer zone for the mire. Sphagnum raised bogs, oligo-mesotrophic cottongrass-sedge-Sphagnum mires, pine forest on transition mires and raised bogs, indigenous deciduous waterlogged forests on transition and fen mires dominate the area. Forests cover 75.8% of the site's area, most of them are waterlogged. Pine forests are the most abundant (58.3% of forests). Birch forests comprise 25.1% of all forests, aspen – 6.4%, black alder – 5%. There are fragments of oak woods (1.6%). The site is located on the watershed of the Drut' and Olsa Rivers. There are residual lakes Podozerische and Druchanskoe among the mires. Several rivers and streams originate in the area (Dolzanka, Dulebka, Vshivka, Terebol, Rozhische, Vodonoska). The river banks are swampy, and the channels are overgrown with vegetation.

The bogs located on the watersheds play an important role in stabilizing the water regime in the area of their location. Accumulating atmospheric and underground waters, it slowly gives them along the water slope, which helps to maintain the groundwater level in the adjacent territories and preserve the water level in the rivers. Several rivers and streams originate in the area. Thus, the Ramsar site has high water protection and flow regulating value for tributaries of the middle stream of the Dnieper River.

The site supports 5 habitats of international importance according to the EEC Habitat Directive, 12 plant species and 35 animal species (reptiles – 1, amphibians- 1, 13 species of insects, 16 bird species and 4 mammals) from the Red Data Book of Belarus. The peatland contains rich reserves of cranberry and bog whortleberry.

# 4.2 - What wetland type(s) are in the site?

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M Permanent rivers/ streams/ creeks		0		
Fresh water > Flowing water >> N: Seasonal/ intermittent/ irregular rivers/ streams/ creeks		0		
Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools		0		
Fresh water > Marshes on inorganic soils >> Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils		3		
Fresh water > Marshes on peat soils >> U: Permanent Nonforested peatlands		1		Unique
Fresh water > Marshes on inorganic soils >> W: Shrub- dominated wetlands		0		
Fresh water > Marshes on inorganic soils >> Xf. Freshwater, tree-dominated wetlands		4		
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		2		Unique

# Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type
9: Canals and drainage channels or ditches			

# 4.3 - Biological components

# 4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/MAGNOLIOPSIDA	Aquilegia vulgaris	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Campanula persicifolia	rare plant species that need a preventive protection and conservation
TRACHEOPHYTALILIOPSIDA	Convallaria majalis	rare plant species that need a preventive protection and conservation
TRACHEOPHYTALILIOPSIDA	Dactylorhiza fuchsii	rare plant species that need a preventive protection and conservation
TRACHEOPHYTALILIOPSIDA	Dactylorhiza incarnata	rare plant species that need a preventive protection and conservation
TRACHEOPHYTALILIOPSIDA	Dactylorhiza maculata	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Dianthus superbus	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Digitalis grandiflora	rare plant species that need a preventive protection and conservation
TRACHEOPHYTA/LILIOPSIDA	Epipactis helleborine	rare plant species that need a preventive protection and conservation
TRACHEOPHYTA/LILIOPSIDA	Epipactis palustris	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Gentiana pneumonanthe	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Hepatica nobilis	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAPOLYPODIOPSIDA	Matteuccia struthiopteris	rare plant species that need a preventive protection and conservation
TRACHEOPHYTA/POLYPODIOPSIDA	Phegopteris connectilis	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Polemonium caeruleum	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Pulsatilla halleri rhodopaea	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Pulsatilla pratensis	rare plant species that need a preventive protection and conservation
TRACHEOPHYTAMAGNOLIOPSIDA	Thalictrum aquilegifolium	rare plant species that need a preventive protection and conservation

# Optional text box to provide further information

The flora of the wetland is represented by 705 species of higher vascular plant species: 6 species of lycopodium, 6 - horsetails, 12 - ferns, 3 - gymnosperms and 678 angiosperm. It is characterized by very low degree of synanthropisation.

# 4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATAAVES	Aegolius funereus				
CHORDATA/MAMMALIA	Alces alces				
CHORDATAAVES	Bucephala clangula				
CHORDATA/MAMMALIA	Capreolus capreolus				
CHORDATA/MAMMALIA	Castor fiber				
CHORDATA/MAMMALIA	Cervus elaphus elaphus				
CHORDATA/MAMMALIA	Lepus europaeus				
CHORDATA/MAMMALIA	Lepus timidus				
CHORDATA/AVES	Lyrurus tetrix				
CHORDATA/MAMMALIA	Martes martes				
CHORDATA/AVES	Melanitta nigra				on migration
CHORDATA/MAMMALIA	Mustela erminea				
CHORDATA/MAMMALIA	Mustela putorius				
CHORDATA/MAMMALIA	Nyctereutes procyonoides				
CHORDATA/MAMMALIA	Ondatra zibethicus				
CHORDATA/MAMMALIA	Sus scrofa				
CHORDATA/AVES	Tetrao urogallus				
CHORDATA/AVES	Tetrastes bonasia				

Invasive alien animal species

Phylum Scientific name		Impacts	Changes at RIS update	
CHORDATA/MAM/MALIA	Neovison vison	- Please select a value -	No change	

#### Optional text box to provide further information

Fauna of the site includes 12 fish species, 37 species of mammals, 151 bird species (121 - breeding), 9 - amphibians, and 4 species of reptiles.

The high mosaic and productivity of the site's land, the presence of difficult for access wetlands suitable for sheltering animals and forested ridges among the marshes, led to the preservation here of a significant number of economically valuable hunting species of animals and birds. There is a high number of such native species of ungulates as moose, roe deer, and wild boar. A red deer was registered. For such an important resource species as moose, the territory of the site is especially valuable in the summer due to the presence of a rich forage base in the form of marsh plants.

# 4.4 - Physical components

#### 4.4.1 - Climate

Climatic region	Subregion
D.M. MALLET L	Dfb: Humid continental
D: Moist Mid-Latitude	(Humid with severe winter,
climate with cold winters	no dry season, warm
	summer)

The wetland area land belongs to the Berezinsky agroclimatic district of the Central agroclimatic region.

The average monthly temperature in January varies from -0.9°C (1975) to -14.1°C (1963). The average January temperature is -7°C, the average temperature of June ranges from +14. (1979) to +21 (1959). The average annual temperature is +5°C. Winter (December-March) is moderately cold with thaws. Frosts usually weak (-5, -12°C), sometimes reduce to -30°C. Cloudy weather prevails (20 cloudy days per month), sometimes with fogs. Snow cover (thickness - 30-45 cm) remains for 90-100 days. Snow melts by late March. The relative humidity is 86%. The weather is unstable in the spring (April-May). There are light morning/night frosts even in May. Precipitation falls usually in early April. Up to 5 days per month are foggy.

See additional material for further information.

4.4.2 -	Geomorp	hic	settino

a) Minimum elevation above sea level (in metres)	150	
a) Maximum elevation above sea level (in metres)	180	
		Entire river

basin

Upper part of river basin

Middle part of river basin 🗹

Lower part of river basin

More than one river basin

Not in river basin

Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The Ramsar site is situated on the watershed of the Berezina and Druť Rivers (Right tributaries of the Dnieper River, Black Sea basin). From the eastern part of the wetland water flows via Olsa river tributaries to river Berezina, from the western part – via Drut river tributaries to river Dnieper.

#### 4.4.3 - Soil

Mineral 🗹

(Update) Changes at RIS update No change Increase O Decrease O Unknown O

(Update) Changes at RIS update No change 

● Increase 

O Decrease 

O Unknown 

O

Are soil types subject to change as a result of changing hydrological Yes O No 

Yes O No conditions (e.g., increased salinity or acidification)?

#### Please provide further information on the soil (optional)

Soils of the wetland were formed on moraine, which in many places comes close to the surface and is involved in the process of soil formation. Loess loam, glaciofluvial sands and loamy sand lie on the moraine.

Edges of the wetland are characterized by soils of the normal moisture (automorphic). Upper horizon is represented by sandy soils. Sodpodzolic and sand-loamy soils are predominant among the excessively moistened semihydromorphic soils. Floodplain soils occupy a small part of the wetland.

See additional material for further information

# 4.4.4 - Water regime

# Water nermanence

riator porritariorito							
Presence?	Changes at RIS update						
Usually permanent water							
present							

# Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from surface water		No change
Water inputs from precipitation	<b>V</b>	No change

# Water destination

Valor document							
Presence?	Changes at RIS update						
To downstream catchment	No change						
Feeds groundwater	No change						

#### Stability of water regime

Presence?	Changes at RIS update
Water levels largely stable	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

The wetland belongs to the hydrological basin of the Dnieper river, Drut and Berezina river systems. The wetland is located between two rivers - Berezina and Drut. Hydrological network of the site "Zaozerye" includes raised bogs Mokhovoye and Scheglovitschina, Lake Zaozerye, rivers Dulebka, Malysh and Lipovka. Hydrological network of the site "Duleby Islands" includes: peatlands Dulebskoe and Velikoe; lakes - Podozerische, Stoyachee and several small nameless lakes; rivers - Dolzhanka, Dulebka, Vshivka, Terebol, Rozhische, Sushanka, Vederka and Vodonoska. Water sources for lakes, rivers and streams are peat sediment water.

					me

Significant accretion or deposition of sediments occurs on the site	1
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(Update) Changes at RIS update No change 

● Increase 

O Decrease 

O Unknown 

O

Sediment regime unknown

# 4.4.6 - Water pH

Acid (pH<5.5) **☑** 

(Update) Changes at RIS update No change 

● Increase 

O Decrease 

O Unknown 

O

Unknown

Please provide further information on pH (optional):

Hydrochemical conditions of lakes are determined by water supply and their location in raised bogs.

#### 4.4.7 - Water salinity

Fresh (<0.5 g/l)

(Update) Changes at RIS update No change Increase O Decrease O Unknown O

Unknown

# Please provide further information on salinity (optional):

Water salinity is very low (15.2 mg/l). Hydrocarbons in water are absent. Iron content is significant due to the specific water supply of the lake. Concentration of ammonia nitrogen is high - 1.13 mg/l, as well as sulphates content (9 mg/l). Chromaticity is 45 degrees, transparency - 2.5 m. In general, lake Zaozerye belongs to the dystrophic type of lakes.

# 4.4.8 - Dissolved or suspended nutrients in water

Dystrophic 🗹

(Update) Changes at RIS update No change 

● Increase 

O Decrease 

O Unknown 

O

Unknown 🗆

Please provide further information on dissolved or suspended nutrients (optional):

Water salinity is very low (15.2 mg/l). Hydrocarbons in water are absent. Iron content is significant due to the specific water supply of the lake. Concentration of ammonia nitrogen is high - 1.13 mg/l, as well as sulphates content (9 mg/l). Chromaticity is 45 degrees, transparency - 2.5 m. In general, lake Zaozerye belongs to the dystrophic type of lakes.

# 4.4.9 - $\mbox{\it Features}$ of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological

characteristics in the area surrounding the Ramsar Site differ from the i) broadly similar O ii) significantly different o

Surrounding area has greater urbanisation or development 🗹

Surrounding area has higher human population density 🗹

Surrounding area has more intensive agricultural use 🗹

Surrounding area has significantly different land cover or habitat types  $\Box$ 

# 4.5 - Ecosystem services

#### 4.5.1 - Ecosystem services/benefits

# **Provisioning Services**

Ecosystem service	Examples	Importance/Extent/Significance	
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Medium	
Wetland non-food products	Timber	Medium	

#### Regulating Services

English and a section	Eles	
Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	Medium
Maintenance of hydrological regimes	Storage and delivery of water as part of water supply systems for agriculture and industry	Medium
Pollution control and detoxification	Water purification/waste treatment or dilution	Medium
Hazard reduction	Flood control, flood storage	Medium

#### **Cultural Services**

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Recreational hunting and fishing	Medium
Recreation and tourism	Picnics, outings, touring	Low
Scientific and educational	Long-term monitoring site	Medium
Scientific and educational	Major scientific study site	Medium

# Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Nutrient cycling	Carbon storage/sequestration	High

# Other ecosystem service(s) not included above:

The wetland is part of the natural hydrological network of Dnieper river and has the great importance for the surrounding areas:

- Stores water during the dry season, providing it to other water bodies (rivers Drut and Berezina of Dnieper basin);
- Maintains the groundwater level;
- Participates in the formation of underground hydrological systems, which supply with water the surface wetland complexes;
- Plays an important role in maintaining the high water quality in the region.

See additional material for further information

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site?

# 4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland	
ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland	
iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples	
iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland	

<no data available>

# 4.6 - Ecological processes

<no data available>

# 5 - How is the Site managed? (Conservation and management)

# 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
Provincial/region/state government	<b>&gt;</b>	✓
National/Federal government	<b>2</b>	<b>V</b>

#### Provide further information on the land tenure / ownership regime (optional):

within the Ramsar site:

The Octiabr, Osovets, Kirov and Druchany forest areas of the state forestry institution "Belynichi Forestry"; Kolobchany, Dolgovo, Usakino forest areas of the SFI "Klichev Forestry".

in the surrounding area:

State lands are leased by agricultural enterprises, forestres.

# 5.1.2 - Management authority

Protection of the reserve was entrusted to the Klichev District Executive Committee and Belynichi District Executive Committee. Please list the local office / offices of any General supervision and control over the state, protection and use of the territory of the reserve is agency or organization responsible for entrusted to the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus managing the site: and it's local agencies: Klichev and Belynichi Inspections of Nature Resources and Environmental Protection. Provide the name and/or title of the person Markov Ivan Ivanovich - director of the Klichev Inspections of Nature Resources and Environmental or people with responsibility for the wetland: Protection Sovetskaya 1a, Klichev, Mogiliov Region, 213910, Belarus Postal address

E-mail address: priroda@mogilev.by

# 5.2 - Ecological character threats and responses (Management)

#### 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Transportation and service corridors

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Roads and railroads	Medium impact	Medium impact	✓	No change	<b>₽</b>	No change

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Hunting and collecting terrestrial animals	Medium impact	Medium impact	<b>/</b>	No change	✓	No change
Logging and wood harvesting	Low impact	Low impact	<b>V</b>	No change	✓	No change

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Recreational and tourism activities	Low impact	Medium impact	<b>2</b>	No change	<b>2</b>	No change
(Para)military activities	High impact	High impact	✓	No change		No change

Natural System modifications							
	Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
	Fire and fire	Medium impact	High impact	<b></b> ✓	No change	<b>₽</b>	No change

FOIIUIIOII						
Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Unspecified	Medium impact	Medium impact	✓	No change	✓	No change
Air-borne pollutants	Low impact	Low impact	<b>√</b>	No change	<b>√</b>	No change

#### Please describe any other threats (optional):

#### within the Ramsar site:

The site is a former aviation training ground. A large number of unexploded ammunition remained on the territory of the bombing fields (3000 ha), which makes any economical use of this territory impossible. The surface of the bombing fields is covered with numerous funnels up to 10-15 m in diameter and 2-3 m deep. The territory is in the initial stages of postanthropogenic succession and is usually overgrown with shrubs.

The Minsk-Mogilev highway crosses the northern part of the Mokhovoe raised bog, which caused a disruption of the natural outflow of water from the bog and an increase in its level in the area adjacent to the highway from the south. A small section of the Mokhovoe bog adjacent to the highway from the north was cut off from the main bog massif and is experiencing a moisture deficit.

Fires in the swamp massif are one of the most significant threats to the functioning of natural complexes. The main causes of fires: a mass visit to the territory during the collection of berries and mushrooms; deliberate settings fire.

Recreational loads on protected areas are hunting, collection of mushrooms and berries. In this regard, a long-term path network of winter roads, entrances to the swamp, and standing places were formed. Berries are harvested using handheld combines, often on an commercial scale; the terms for harvesting berries are violated.

Logging. The negative factor is local. Forests destined for cutting are located on the periphery or on the mineral islands of the wetland.

Poaching. Leads to a decrease in the number of economically valuable plant and animal species.

Pollution and eutrophication. Polluting and eutrophying substances come to the wetland by scattered flows of different types (soil, groundwater, plane washout, etc.) in the northern and southern parts of the wetland (highway Minsk- Mogilev and railway line run along the northern and southern boundaries of the wetland).

Radioactive contamination. The territory of the wetland is partially contaminated by Caesium -137, contamination density is 1 - 15 Cu/km2. Radioactive contamination in the form of increased background radiation is present in the wetland as a result of the transfer of radioactive elements after the accident at the Chernobyl nuclear power plant in 1986.

in the surrounding area:

All negative factors listed for the wetland also occur on the adjacent territory.

# 5.2.2 - Legal conservation status

# National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Hydrological Reserve of Republican Importance	Duleby Islands		whole
Hydrological Reserve of Republican Importance	Zaozerye		whole

# 5.2.3 - IUCN protected areas categories (2008)

la Strict Nature Reserve L
lb Wilderness Area: protected area managed mainly for wilderness protection
Il National Park: protected area managed mainly for ecosystem protection and recreation
III Natural Monument: protected area managed mainly for conservation of specific natural features
IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
VI Managed Resource Protected Area: protected area managed mainly C

#### 5.2.4 - Key conservation measures

Legal protection

3 F	
Measures	Status
Legal protection	Implemented

#### **Human Activities**

Measures	Status
Regulation/management of recreational activities	Proposed

#### Other

Conservation measures proposed but not yet implemented:

The national programme of tourism development in Belarus, the territory listed the wetland as perspective tourist zone. The programme for ecotourism development on the wetland is elaborating.

#### 5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes O No (9)

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning Yes O No 

processes with another Contracting Party?

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

There are no observational points and ecological trails on the wetland. The tourist use of the territory is largely limited by the radioactive contamination and by the fact that a military training ground was located here earlier and there may be unexploded ordnance in the territory.

#### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

#### 5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water regime monitoring	Implemented
Plant community	Implemented

Case studies of landscape and biological diversity in the reserve were carried out to prepare the scientific justification for the specially protected territories establishment. Flora and fauna of the wetland were studied in details, the systematic list of major groups of vertebrates was also prepared; rare and endangered species were identified, and the current condition of the wetland was assessed in 1996 (site "Duleby Islands") and 2002 (site "Zaozerye"). These works were carried out by various specialists of the Belarusian State University, Scientific and Practical Center for Bioresources of the National Academy of Sciences, and of the Institute of Experimental Botany of the National Academy of Sciences.

In the framework of international project "Belarus Wetlands" the system of complex monitoring of the wetland ecosystems condition and dynamics was created in 2008 (Institute of Experimental Botany of the National Academy of Sciences). A system of stationary observation points (11 in total) for vegetation and hydrology monitoring was placed here.

The large-scaled map of vegetation of the wetland will be created by scientists of the Institute of Experimental Botany of the National Academy of Sciences.

Forestry management, grading of hunting areas, counts of hunting and rare species are periodically carried out on this territory. The obtained data have the great scientific importance (Scientific and Practical Center for Bioresources of the National Academy of Sciences, RUE "Belgosohota", RUE "Belgosles").

# 6 - Additional material

# 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

- 1. The Red Data Book of Belarus. Animals: rare and threatened species of wild animals / Ministry of Nature Resources and Environmental Protection of the Republic of Belarus; National Academy of Sciences of Belarus, Ch. Editorial Board I.M. Kachanovsky. 4th edition. Minsk: Belarussion Encyclopedia named after Petrus Brouka, 2015. 317.
- 2. The Red Data Book of Belarus. Plants: rare and threatened species of wild plants / Ministry of Nature Resources and Environmental Protection of the Republic of Belarus; National Academy of Sciences of Belarus, Ch. Editorial Board I.M. Kachanovsky. M.E.Nikiforov, V.I.Parfionov [and others]. 4th edition. Minsk: Belarussion Encyclopedia named after Petrus Brouka, 2015. 448.
- 3. Treasures of Belarusian Nature: Areas of international importance for biodiversity conservation / A.V. Kozulin [and others]. 2nd ed. Mn.: Belarus, 2005. 215.
- 4. "Assessment of the current status and conservation of natural systems of national reserves "Glubokoe- Cherbomyslo", "Bolshoe Ostrovito", "Zaozerye", "Krivoe", "Richie", "Sosno" and "Svityazyansky" created in 1968-1979, and develop coordinated proposals on their detention regime "// Report on the research work Minsk, 2002, 34 p.
- 5. Scientific Justification for the Designation of the State Hydrological Reserve "Duleby Islands" on the Territory of the Klichev and Belynichi Districts of the Mogilev Region (Drutsky Military Ground) / Scientific Leader M.E. Nikiforov Minsk, 1996.
- Management Plan for the wetland "Duleby Islands". Report on the Scientific Research Work. / Ministry of Nature Resources and Environmental Protection of the Republic of Belarus; National Academy of Sciences of Belarus, T.V. Volkova, A.I. Chaikovsky. - Minsk, 2016.

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

vi. other published literature

<1 file(s) uploaded>

# 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



The site's mires hold rich reserves of cranberry ( Grummo D., 30-07-2008 )



Pine forest on the peatland (



Pine forest on the peatland (



The appearance of the site's peatlands ( Grummo D., 30-07-2008 )



There are lakes among the mires. ( *Grummo D., 02-08-2008* )



The appearance of the site's open peatlands ( Grummo D.,

# 6.1.4 - Designation letter and related data

#### Designation letter

<1 file(s) uploaded>

Date of Designation 2012-09-07