

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

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Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

25th October 2010

3. Country:

Belarus

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Berezinsky Biosphere Reserve

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- ii) the boundary has been extended ; or
- iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced**

**** Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) ;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The wetland extends in meridional direction along the left bank (East) of the Berezina River for the distance of about 60 km. Maximum width of the territory in its central part in the line from West to East reaches 18 km. The floodplain of Berezina River and Golubitskaya Puscha which are adjacent to the Berezinsky Nature Reserve, will not be included in the boundaries of the Ramsar Site yet.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

54°38'09"N 28°30'01"E

9. General location:

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

The territory under consideration is located in the north of the country in the Belarusian Lakeland, on the territory of three administrative districts – Lepel and Dokshitsy districts of

Vitebsk region and Borisov district of Minsk region. Administrative-economic center is situated in the settlement Domzheritsy, Lepel district Vitebsk region. The nearest industrial centers the Minsk city, the towns Novopolotsk and Novolukoml' are at the distance of 60 – 120 km from the reserve's borders.

10. Elevation: (in metres: average and/or maximum & minimum)

154,9 – 226,6 m above the sea level

11. Area: (in hectares)

85 149 ha

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Ramsar site is located in the Upper-Berezina lowlands on the watershed of the Berezina and Essa rivers' basins that in turn refer to the basins of the Black and the Baltic seas. The Berezinsky Reserve is a unique complex of different types of forest, mires, big and small rivers and lakes. The prevalent landscape element of the Berezinsky is mires, the most valuable nature conservation and scientific object. Its values are connected with excellent richness and variety of hydrological conditions and mire phytocenosis. The reserve is a habitat of the number of threatened plant and animal species, it is one of the most important nesting and concentration sites of wetland birds in Belarus.

The characteristic of this wetland complex is high-level of preservation and presence of the largest undrained mires in Europe.

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1	•	2	•	3	•	4	•	5	•	6	•	7	•	8	•	9
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14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 1: The wetland is internationally important because it is a typical example of a complex of different types of mires preserved in the natural condition and typical for the Belarusian Poozerie Area. Mires have become rare in Belarus as a result of mass heavy drainage activities, and have practically disappeared in Central Europe. The complex of the undrained reserve's mires is one of the largest in Europe. Connected with Berezina, rivers and streams, lakes and former riverbeds to no small degree form the uniqueness of the reserve and play the role of an important landscape generating component of its territory.

The analysis of vegetation composition showed that the site is known to support the following Natura-2000 habitat types:

3150 – Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation.

3270 – Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation

- 7110 – Active raised bog
- 7140 – Transition mires and quaking bog
- 7150 – Depressions on peat substrates of the *Rhynchosporion*
- 7230 – Alkaline fens
- 6450 – Northern boreal alluvial meadows
- 9080 – Fennoscandian deciduous swamp woods
- 91E0 – Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*

Criterion 2: The wetland is of international importance because it supports a population of globally threatened species (VU) such as the Greater Spotted Eagle *Aquila clanga*. Such globally near-threatened European species as Corncrake *Crex crex*, Black-tailed Godwit *Limosa limosa*, Great Snipe *Galinago media* and European Roller *Coracias garullus* breed here. See also Appendix II to RIS.

The Berezinsky Biosphere Reserve provides life conditions for a considerable number of rare and protected species of animals and plants in Belarus and in the region. In particular, the site supports 111 species of animals listed in the National Red Data Book of Belarus which is 59,8 % of the general number of species listed in the Red Data Book, including 10 mammal species, 58 birds, 2 amphibians, 1 reptile, 2 fishes and 38 insect species. 74 species of plants listed in the National Red Data Book grow there. The European status of protection have e.g. 43 species of birds and 17 plant species (Annex II of EU Habitats Directive and Appendix I of Bern Convention). See also Appendix I to RIS, as well as points 21 and 22.

Criterion 3

The reserve's mires are quite specific and important natural habitat for biodiversity. They serve as habitat for a big number of plant species that form depending on soil richness and moisture, a unique variety of communities with a great number of ecotone variants. Zoological complexes of mire ecosystems are also notable for a high density and taxonomic richness. The most of animal and plant species that inhabit mires are rare or threatened, because can dwell only here, and transformation of mires inevitably leads to decrease of their number.

Criterion 4: The site is one of the most important nesting and concentration sites during migration of wetland birds in Belarus (important nesting species are provided in the Appendix II to the RIS).

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) **biogeographic region:**
Boreal

b) **biogeographic regionalisation scheme** (include reference citation):
Biogeographical regions, Europe 2005, European Environment Agency,
(<http://www.eea.europa.eu/data-and-maps/figures/biogeographical-regions-europe-2005-with-national-boundaries>)

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

The site is a considerable piece of land under occupancy of forests and mires which have been preserved in their natural condition among the transformed landscapes of the Southern Poozerie Area. It is of great importance for the biodiversity conservation in the northern part of Belarus. Owing to being positioned in the watershed this site accumulates moisture and helps to keep the water content of the Berezina River.

Geomorphologically, the reserve is related to the area of Belarusian Ridge Upper-Berezina outwash and glacial lowland. The modern relief is formed generally in Quaternary by glaciers and their melt waters. Relative heights fluctuation of relief is more than 70 meters: the highest point is in the Krasnaya Luka Hole – 226,6 m, the lowest one – in the area of Lake Palik – 154,9 m. The most common are Holocene, limno- and fluvio-glacial sediments.

Considerably broken relief causes frequent changes and mixed character of soil cover. There are 5 genetic types of soil within the territory of the reserve in accordance with development degree of main soil formation process and texture of soil. Peat-boggy soils are the most widespread of all (57,7 %). Subject to the type of water nutrition and flowage they are divided in raised bog (3), transitive (2) and lowland (4) types. Sod-podzol soils are dated mainly to high ground features and develop on mellow or cohesive sands and sandy loams. Sod waterlogged soils occupy wide flat relief depression in the southern part of the reserve. Water-deposited are mainly spread in the flood land of Berezina river and its largest tributaries. The climate of the reserve is moderately continental, damp and is generated under the influence of wet and warm Atlantic air masses. Southern winds dominate on winter and spring, western – on summer and autumn. The average temperature of the coldest month of the year (January) is -7.3°C , the warmest month (July) is $+16.7^{\circ}\text{C}$, the average annual temperature is $+5,2^{\circ}\text{C}$. Relevant temperatures in general for Belarus are -6.7°C , $+17.8^{\circ}\text{C}$, $+5.8^{\circ}\text{C}$, respectively. The annual precipitation in the reserve's territory is 690 mm. This is slightly more than the total national level of 650 mm. The stable snow cover remains in the region for about 120 days, from the first decade of December to the beginning of April.

The reserve's territory is situated in the head waters of the Berezina River – the most important channel of the Central Belarus. It functions as water-regulation and water-protection river in the region, is a tributary of the largest and the most important river of the Black Sea basin – Dnepr. Connected with Berezina, rivers and streams, lakes and former riverbeds to no small degree form the uniqueness of the reserve and play the role of an important landscape generating component of its territory.

Catchment basin of Berezina from its head water, situated westward of the Dokshitsy town, to the outlet, situated lower of the Lake Palik, is 2760 km^2 , length of the river here is 142 km. The reserve occupies about a third part of this territory, length of the Berezina River within the reserve is about 100 km. Along the eastern part of the reserve lies a watershed between

the rivers Dnepr and Western Dvina, but less than 5 % of the reserve's territory belongs to the Western Dvina basin.

The reserve's river network is well developed and presented by 69 channels with length of 1 km and more. Their general extent is 315 km, but length of most of them doesn't exceed 5 km. Average density of the river's network is near-medium all over Belarus and is at amount of 0,41 km/km², the largest is at the south of the reserve. The highest tortuosity of stream channel has River Berezina – 1,98, at the most of other channels it doesn't exceed 1,0 – 1,2.

Berezina with its tributaries belongs to the flat type with domination of snow nutrition; summer and autumn precipitation play a sidetrack in it. Floodplain is developed all along the river, its average width is 2-3 km, plane surface is full of peat, everywhere former riverbeds are met, some of them have turned into floodplain lakes.

Seven big lakes with total area of 1683 ha add to the reserve's drainage network. The largest of them is Palik. Lakes Plavno and Manets serve as watershed barrier on the Berezina water system. The lakes' kettles are of remainder type, with round or slightly prolate from north to south shape, slopes and banks are low, almost completely wet. The lakes are shallow, and all except for Lake Palik are dystrophic, overgrown. Bottom of the lakes is flat, lined with coarse detrial high-organic sapropels (Natarov, 1996).

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The reserve's territory is situated in the head waters of the Berezina River – the most important channel of the Central Belarus. It functions as water-regulation and water-protection river in the region, is a tributary of the largest and the most important river of the Black Sea basin – Dnepr. Connected with Berezina, rivers and streams, lakes and former riverbeds to no small degree form the uniqueness of the reserve and play the role of an important landscape generating component of its territory. Forest, mire and meadow associations cover a part of the site. Owing to being positioned in the watershed this site accumulates moisture and helps to keep the water content of the Berezina River. Peatbogs (43 000 hectares) are the less transformed ecosystems and play the main role in hydrological regime of its territory. At spring period they accumulate a great amount of melt waters, by means of which they feed numerous rivers and lakes. For example, only due to the run-off the Domzheritskoe mire (11 000 hectares) water flow in Berezina is provided during specific months (Yurkevitch, Smolyak, 1975).

The hydrological role (water retention and release) of the peatbogs is significant also to the territories adjoining the reserve, preventing the creation of deep erosion channels of outflowing waters.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

Xf, Tp, Xp, U, W, Ts, M, N, O, P, 4, 9

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The wetland features the following habitats: coniferous and broad-leaved forests, floodplain, transition mires and raised bogs, meadows, floodplain black alder and birch forests, scrub and different water reservoirs. From the point of botany and geography the reserve is located in a sub-zone of dark coniferous and oak forests, south boreal coniferous forests.

Forests occupy 86,5 % of the territory and determine peculiarities of vegetation of the reserve. Formation-typological structure of the forests is represented by four main genetic groups of forest formations: boreal coniferous (56,2 %), broad-leaved (0,9 %), deciduous wet (33,4 %) and deciduous secondary (9,5 %) forests.

In the total area of forests (68 600 hectares), pine phytocenosis dominates (46,3 %), formation of which is connected with mire ecosystems and soils of automorphic humidification regime at the watersheds of the Berezina River and its tributaries. Monodominant pine forests, with a specific proportion of 14,3 % are edaphically associated with sandy soils and allocated in dune and bumpy, and to a less extent in plain landscape. Mixed spruce and pine forests are confined to sod-podzol soils of final-moraine ridge and rises. They are notable for a higher efficiency of growing stock and floristic wealth of understory vegetation.

The most presented in the reserve are wet pine forests (24,6 % forest-covered territory). They grow on all types of mires, covering vast areas in central and northern parts of the reserve. Stunted low bush and bog moss pine forest dominate on the soils with the thickness of a peat layer of more than 2 meters.

Spruce forests occupy the territory of about 7 000 hectares. They do not cover large areas and are located mostly along the Berezina River flood-lands and the skirts of lowland fens. They are composed of three edaphically associated sub-formations: taiga, nemoral and wetland. Typical taiga dark-coniferous forests are presented by monodominant spruce forests with thick moss and dwarf shrub. Nemoral spruce forests are characterized by admixture of broad-leaved species and normally grow on mineral islands among black alder swamps in the south of the reserve. Wet spruce forests are notable for the mixed composition of tree species.

Admixture of black alder, white birch and pine is common for them. Wet spruce forests are located in a short edaphic range that limits their phytocenotic diversity.

Broad-leaved forests are located in the near-floodland part of the southern landscape area of the reserve and are presented by oak and ash forests. Oak forests with the area of 300 hectares are related to the northern area variant of spruce-oak forests. Their tree layer is notable for the compound structure and high crown density. Ground cover, young trees and underbrush are characterized by a great diversity and abundance of species. Ash forests are concentrated at the swamped right bank of the Berezina River near Lake Palik. They form compound by structure and layering co-dominant spruce, black alder and ash formation on humus-gley soils. Participation of maple, lime-tree, elm, small-leaved species in ash phytocenosis is insignificant, most often they form second sub-layer.

Among other formations that determine the image of vegetation of the Berezinsky reserve, a significant proportion of deciduous wet forests should be noted: white birch – 16,8 % and black alder – 16,4 %. Black alder forests cover the largest areas in the flat southern part of the reserve, where drainage characteristics of dense network of small streams and River Berezina are strongly pronounced. Depending on edaphic conditions and watering level, natural admixture of black alder layer is presented by white birch, spruce, and at ecotones adjusted to mineral islands – oak, ash, and maple. A natural process of black alder regeneration is typical for these forests. The main places occupied by white birch forests are skirts of vast peat moss bogs and also swampy terraces near the flood plains of the Berezina River. On transition mires a permanent admixture to birch is pine, at swamps – spruce and black alder admixture is common.

Deciduous secondary forests are not as widespread as swampy ones. At their structure dominate common birch forests (7,6 % of area under forest), aspen and grey alder account for about 2,0 %. Appearance of these forests is mainly caused by anthropogenic influence. As a rule they have appeared on the plots of felled forest, old croplands of the former farms, as a result of overgrowing of dry meadows. Small-leaved forests are characterized by a number of serial communities, where dynamical multivariant vegetation successions take place in accordance with conditions of places of growing.

The reserve's distinguishing feature is the dominance on its territory of mire and swamp ecosystems, with the area of 50 700 hectares. The mostly presented are wet forests (54,4 %), transition mires account for 35,3 %, bogs – 10,3 %.

Types of mires and peat that is deposited in them are distinguished by the character of water-mineral nutrition and by ecological phytocenosis features (structure of present vegetation cover and occurrence of plant remains in peat). In spring bogs are covered with water remaining at a high level for the whole summer. Considerable watering and stagnant character of moistening cause specificity of vegetation cover. That's why a small number of species grow here: *Pinus sylvestris* L., *Eriophorum vaginatum* L., *Andromeda polifolia* L., *Oxycoccus palustris* Pers., *Oxycoccus microcarpus* Turcz. ex Rupr., *Ledum palustris* L., *Vaccinium uliginosum* L., *Chamaedaphne calyculata* L. The main phytocenosis background makes peat mosses. Pine – cotton grass – dwarf shrubs – peat moss vegetation communities dominate.

Swamps are characterized by high water flowage and significant watering at spring season. Such kind of hydrological regime causes a great variety of species of plants. From forest

forming species here grow *Alnus glutinosa* (L.) Gaertn., *Betula pubescens* L., *Picea abies* (L.) Karst., less often Pine. In ground cover mire motley grass and sedges are abundant, peat mosses as a rule are absent or rarely present on microrises. The most typical representatives of are *Carex elongata* L., *Carex acuta* L., *Carex vesicaria* L., *Iris pseudacoris* L., *Phragmites australis* (Cav.) Trin ex Steud., *Equisetum fluviatile* L., *Calla palustris* L. Grass swamps are running, mainly flood-plain, are presented by forestless sedge, sedge-reed communities with less flowage are characterized by black alder with herbs, black alder with sedge, white birch with herbs, willow with reed and herbs associations.

Transition mires are characterized by medium moisture; flowage can vary from very weak to significant. Thus the structure of vegetation cover varies greatly, pine and white birch with sedge and peat moss communities dominate. In vegetation formation take part eutrophic as well as mesotrophic and oligotrophic species of helophytes. The most typical for transition mires are *Menyanthes trifoliata* L., *Comarum palustre* L., *Carex lasiocarpa* Ehrh., *Carex rostrata* Stokes, and also bushes: *Salix cinerea* L., *Betula humilis* Schrank.

The reserve's mires are also characterized by a significant variety of peat-beds, in formation of which take part 36 types of peat. Peat-beds as a result of consecutive peat stratification keep in themselves chronological consecution of vegetation cover development of the past epochs. The remains, pollen and plant spores, well-preserved in peat carry such information. By their structure it is possible to restore vegetation dynamics quite exactly, and therefore climate changes in this region for the last thousands of years, that define the unique importance of mires for studying of the past and working out science-based forecasts.

Peat bogs of the reserve are characterized by unique richness and diversity of hydrological conditions, peat-beds, and mire biocenosis. They don't suffer from direct anthropogenic influence, that define their multifunctional value at regional level. Against the background of anthropogenic transformation of adjacent territories, the knowledge of correlations of separate ecosystem components of natural mires will serve for a basis for the working out of methods for their preservation and sustainable use for keeping them untouched.

Within the reserve the main areas of meadows are situated in flood-land of the Berezina River, along its tributaries and around lakes. According to data of I.D. Yurkevich et al. (1979, 1981), three natural meadow vegetation complexes are singled out: the Berezina River flood-land, the Serguch River flood-land and out-of-flood-land grass marshes. Total area of these wetlands is 8800 hectares, the main part of which (78 %) is located in flood-land of the Berezina River. In flood-land of the Serguch River they occupy only 12 %. The grass marshes, situated out of flood river lands have proportion of at least 10 %.

Meadow flora accounts for 330 species of higher plants and lichens, which are related to 203 genera and 76 families. In flora structure dominate the groups of rhizome, short-long-rhizome and creeping-rooted species, from life forms – hemicryptophytes. They are mainly meadow, forest, mire, early summer flowering and summer flowering species of plants. The basis of ecological structure form mesotrophic mesophytes. In agricultural and botanical structure of flora dominate motley grass, few cereals and sedges, about 3 % of podded plants. Though in formation of meadow phytocenosis structure a determining role is played by cereals and sedges. Species from groups of podded plants play accompanying role.

Syntaxon system of herbaceous vegetation consists of 12 classes, 17 orders, 27 unions and 59 associations. In herbaceous vegetation structure of the Berezinsky biosphere reserve the

leading place takes marsh (mesohygrophilous) communities (class *Phragmitetea*). Farther less presented oxylo- and hygromesophilous (class *Molinio-Juncetea*), psychro- and eumesophilous (class *Arrhenatheretea*) and acidophilous (class *Scheuchzerio-Caricetea*) grass communities. Freshwater communities (class *Potamogetonetea*) are presented by 11 subassociations.

There are notable differences in territorial distribution of grass communities too, first of all connected with hydrological regime of the Berezina River and intensity (or lack) of alluvial process. Thus, if in the head water all the ecological range of vegetation takes place – from near terrace fenny to xerothermic on high near bed hills and rough communities on sandy dunes, on the middle section of flood-land lower Lipsk village, where hillness smoothes over in lowering of the territory's surface, grasses of wet and marsh meadows predominate, and lower the Kal'niksky bridge almost completely prevail majorcereal (*Phragmites australis* (Cav.) Trin. ex Steud., *Phalaroides arundinacea* (L.) Rauschert, *Glyceria maxima* (C. Hartm.) Holmb.) and majorsedge (*Carex acuta* L., *C. omskiana* Meinsh., *C. riparia* Curt and others) marsh communities.

Head waters of the Berezina River and its tributaries, particularly the Chernitsa River valley, are characterized by the wide-spread of fen and wet meadow communities. The most interesting here are the unique and quite rare for Belarus and Europe communities of *Eriophoretum polystachii*.

At the left-bank flood-plain closest to the river (nearbed) of the Berezina River on the section from Kal'nik village to Brody village, island growth of calciphile sedgebank communities - *Caricetum ripariae*, typical for the Pripyat Polesie area. *Carex riparia* quite often plays dominant role in frequently flooded low banks and hills, and also co-dominate with *Phalaroides arundinacea* or *Carex acuta*.

On the reserve's territory The Serguch River is one of the biggest left-bank tributaries that have meadow flood-land, immature and completely peated. Plain relief points at the absence of altitude levels. Change of vegetation cover occurs mainly in grade profile that is connected with the Serguch Canal activity. Northward of Kvetcha village, where drainage influence of normally functioning river has an impact, in conditions of excessive moistening on badly aired sod-peaty-gley, peat-bog acid soils acidophilous marsh grass communities are being formed (*Caricetum fuscae*, *Caricetum diandrae*, *Caricetum lasiocarpae*, *Juncetum filiformis*). Lower the Serguch Canal, in conditions of stagnant moistening and absence of alluvial processes, low sedge grasses are intensively supplanted by high sedge marsh communities of *Caricetum omskiana*, *Caricetum acutae*, *Phragmitetum communis*. Quite often all the flood-land from river-bed to forest is filled with the communities of *Caricetum lasiocarpae*. High moisture and weak flowage of the Serguch River flood-land caused formation of the unique communities with domination of *Carex elata* All. They are circumscribed here for the first time and located at the northern border of their natural habitat area. Also typical for the Poozerie area, but uncommon for Belarus grass communities of *Eriophoretum vaginati* can be met here. Their southern boundary goes over the Berezinsky reserve. Along the river banks, on the plot with less flowage and increasing moisture the association communities of *Typhetum latifoliae* and *Typhetum angustifoliae*, typical for artificial water bodies, were circumscribed for the first time (Stepanovich and others, 2003).

For grass marshes situated outside river valleys and are not under the influence of river waters, the most typical are associations of slender sedge, and along the banks of the lakes

Plavno, Manets and southward – reed and connivent sedge associations. In the falls of microrelief the associations of wood bulrush and sweetflags are pointwise present. The most interesting are uncommon for Belarus and Europe acidophilous associations of *Caricetum fuscae caricetosum echinatae*. Here also grows the rare *Pedicularis sylvatica*, included in the National Red Data Book. Species composition of marshes situated outside river valleys is represented by 89 species related to 33 families, 48 genera. They are mainly long- and shortrhizome, marsh and meadow, perennial species, of early summer and summer period of blossoming, eutrophic, mesoeutrophic hygrophytes and mesohygrophytes.

Bush vegetation can be met generally at the Berezina River flood-land and its large tributaries and is presented by separate clumps. Totally it covers less than 1 % of the wetland territory. Different species of willows dominate: *Salix triandra*, *Salix cinerea*, *Salix aurita*, *Salix rosmarinifolia*.

The wetland's rivers and lakes (about 2 % of the area) are shallow and highly overgrown with water and coastal vegetation. The character of water vegetation first of all is determined by the circumstance that most of the water bodies are related to shallow, high-eutrophic. Appropriate conditions favour the intensive development of water-coastal vegetation. It's particularly developed in the lakes Plavno and Manets, that are transitive to dystrophic and where partly flooded areas were formed.

The main formations of water bodies' vegetation are wetland, stationary with floating leaves and emophytes.

The dominants of wetland vegetation at the reserve are *Acorus calamus*, *Glyceria aquatic*, *Equisetum fluviatile*, *Sagittaria sagittifolia*, *Sparganium erectum*, etc. Aero-aquatic vegetation occupies shallow waters and coastal zones of water bodies. Dominant species are *Phragmites australis*, *Scolochloa festucacea*, *Scirpus lacustris* and others. In the formation of stationary with floating leaves vegetation participate *Nymphaea candida*, *Nuphar luteum*, *Polygonum amphibium*. Here and there these species form large beds. The formation of emophytes generally includes *Ceratophyllum demersum*, *Stratiotes aloides*, *Potamogeton natans*, *P. perfoliatus*, *Myriophyllum spicatum*, etc.

Totally wetland vegetation includes 23,7 % flora species of the reserve, but only 6,4 % of them fall to share of true water plants. Among them dominate *Elodea canadensis*, *Hydrocharis morsus-ranae*, *Lemna minor*, *L. trisulca*, *Potamogeton perfoliatus*, *P. natans*, *Nymphaea candida*, etc. *Caulinia minor*, *Potamogeton rutilus*, *P. filiformis* are rarely present.

The main part of water-coastal plants is dated to nearbed parts of the rivers, and also to coastal zone of lakes, ponds and former riverbeds. Among them the most widespread are *Acorus calamus*, *Caltha palustris*, *Carex acuta*, *C. rostrata*, *C. vesicaria*, *Camarum palustre*, *Glyceria fluitans*, etc. Such wetland species as *Blismus compressus*, *Gratiola officinalis*, *Ranunculus reptans* are rarely found (Ignatenko, 1996).

Agricultural lands (generally ploughed lands) account for about 2 % of the total wetland area and are mainly adjacent to human settlements.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

The reserve's territory is quite well studied in relation to flora. There are more than 2000 species of plants and fungi registered at the reserve, among vascular plants – 812, mosses – 216, mushrooms – 463, algae – 317, lichens – 238. 44 species of vascular plants, 3 – moss, 6 – lichen species are listed in the Red Data Book of Belarus. The plenty of rare species of plants emphasis not only the uniqueness of the reserve's vegetation complexes, but also confirm a high level of their naturalness.

Pine forests dominate among forest formations in the quantity of rare species. Here grow *Cephalanthera rubra* L., *Epipactis atrorubens* (Hoffm.) Schult., *Gymnadenia conopsea* (L.) R. Br., *Dracocephalum ruyschiana* L., *Linnaea borealis* L., *Lilium martagon* L.

The growth of the range of rare species of plants is connected with the reserve's marsh ecosystems. The most important of them are *Betula nana* L., *Corallorhiza trifida* Chatel., *Listera cordata* (L.) R. Br., *Salix myrtilloides* L., *Hammarbya paludosa* (L.) Kuntze., *Saxifraga hirculus* L., etc.

In spruce forests *Cypripedium calceolus* L., *Botrychium virginianum* (L.) Sw., *Huperzia selago* Bernh. are found. In broad-leaved forests it was found the only place of growth in Belarus of the unique fern - *Cystopteris sudetica* A. Br. et Milde.

In meadow associations *Gladiolus imbricatus* L., *Iris sibirica* L., *Coeloglossum viridae* (L.) C. Hartm. were noted.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

As a result of the territory being heavily waterlogged, the animal world of the wetland is specific in many ways. A combination of low cultivation, a spacious flood-land of the Berezina River, different types of mires, numerous rivers, channels and oxbow lakes coupled with coniferous and deciduous wet forests provide favorable living conditions for many animals.

The species listed in the National Red Data Book of Belarus are of the most European interest. First of all – Brown Bear (*Ursus arctos* L.) - BII, HII, HIV, Bison (*Bison bonasus* L.) - BIII, HII, HIV, Lynx (*Lynx lynx* L.) - BIII, HII, HIV, Badger (*Meles meles* L.) - BIII.

As for the ungulates, Elk (*Alces alces* L.), Wild boar (*Sus scrofa* L.), Red Deer (*Cervus elaphus* L.) and Roe Deer (*Capreolus capreolus* L.) are common within the boundaries of the site.

Mammal predators include Raccoon Dog *Nyctereutes procyonoide*, Red Fox *Vulpes vulpes*, Polecat *Mustela putorius* (BIII), there is relatively a lot of American Mink *Mustela vison* along the river banks. With regard to species protected in Europe, Otter *Lutra lutra* (BII, HII, HIV) is found regularly and 2-3 families of Wolf *Canis lupus* (BII, HII, HIV) are found permanently within the site. The wetland's rivers, countless oxbows and channels are populated with European Beaver *Castor fiber* (BIII).

Within the reserve's territory are registered 230 bird species, related to 18 orders, in amount of 75,4 % from the total number of Belarusian birds of 305 species (Nikiforov, 1997). 58 species that inhabit the reserve are in the National Red Data Book in amount of 80,5 % from

the total number of species listed in the National Red Data Book. Among them 41 species are nesting, 13 species are birds of passage and 4 species are occasional visitors.

The primary value of the wetland is that it supports habitats and offers breeding grounds for forest and wetland bird species. When viewed from this perspective, the site is also an Important Bird Area of international importance. A number of rare bird species are found within the site: Corncrake *Crex crex*, Great Snipe *Galinago media*, Greater Spotted Eagle *Aquila clanga*, Lesser Spotted Eagle *Aquila pomarina*, Bittern *Botaurus stellaris*, Eagle Owl *Bubo bubo*, etc. In addition, this area is known to support the following species listed in the National Red Data Book of Belarus, 2004 – Gray Goose *Anser anser*, Bittern *Botaurus stellaris*, Little Bittern *Ixobrychus minutus*, Lesser Spotted Eagle *Aquila pomarina*, Greater Spotted Eagle *Aquila clanga*, White-tailed Eagle *Haliaeetus albicilla*, Hen Harrier *Circus cyaneus*, Black Stork *Ciconia nigra*, Crane *Grus grus*, Great Snipe *Galinago media*, Great White Heron *Egretta alba*, Eagle Owl *Bubo bubo*, Corncrake *Crex crex*, Ruff *Philomachus pugnax*, Black-tailed Godwit *Limosa limosa*, Small Gull *Larus minutus*, Green Woodpecker *Picus viridis*, Kingfisher *Alcedo atthis*, Great grey owl *Strix nebulosa*.

The herpetofauna is quite rich. One can find *Rana esculenta*, *Rana ridibunda*, *Rana arvalis* (BII, HIV), *Bufo bufo*, *B. viridis* (BII, HIV), *B. calamita* (BII, HIV), *Pelobates fuscus* (BII, HIV). Reptiles of the site include *Lacerta vivipara*, *Natrix natrix* and *Emys orbicularis* (BII, HII, HIV).

There are 33 species in the composition of ichthyofauna of Berezina, Serguch and seven lakes. Apart from common river species (Pike *Esox lucius*, Roach *Rutilus rutilus*, Rudd *Scardinius erythrophthalmus*, Bleak *Alburnus alburnus*, Silver Bream *Blicca bjoerkna*, River Perch *Perca fluviatilis*, Id *Leuciscus idus*, Ruff *Gymnocephalus cernuus*) the site also supports several rare species needing protection under the relevant international conventions. Pursuant to the Bern Convention (Appendix III), the following species are liable to protection: *Chondrostoma nasus*, *Rhodeus sericeus*, *Cobitis taenia* (HII), *Siluris glanis*, *Neogobius fluviatilis*, *Abramis ballerus*.

It is noteworthy that high and long floods create favorable conditions for spawning of the majority of fish in the wetland.

BII – species listed in the Appendix II of Bern Convention;

BIII – species listed in the Appendix III of Bern Convention

HII – species listed in the Annex II of EU Habitats Directive

HIV – species listed in the Annex IV of EU Habitats Directive

23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

There is a small amount of residential localities with a total number of population up to 700 people on the territory of the wetland. The most important historical sites of the reserve are the Berezina water system; ancient burial places of Slavs; monuments of the World War II. Burial mounds - ancient burial places of Slavs – are taken under protection as a heritage of archeology.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide 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) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where 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:

24. Land tenure/ownership:

a) within the Ramsar site:

The land of the site is the property of the state

b) in the surrounding area:

State-owned land leased to state collective farms and forest economic enterprises.

25. Current land (including water) use:

a) within the Ramsar site:

According to the current environmental legislation the reserve's territory is completely excluded from economic usage. To provide the reserve's functioning and activity of the people living on its territory, special areas are identified where one can take away dead standing trees and dead fallen wood, pick mushrooms and berries, graze cattle and mow grass. The area of these plots is 16,5 % of the whole reserve's territory.

b) in the surroundings/catchment:

The basic type of economy practiced in areas adjacent to the wetland (mostly drained land) is agriculture, i.e. growing perennial herbs, cultivated and grain crops, and cattle grazing.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

a) within the Ramsar site:

The main factors (past, present or potential) adversely affecting the site's ecological character are a disturbance of hydrological regime, periodic fires, open mires overgrowth with scrub, unregulated picking mushrooms and berries.

A disturbance of hydrological regime leads to the transformation of natural mire ecosystems, intensifies scrub overgrowth and leads to a loss of protected animal and plant species.

Drought seasons fires inflict substantial damage upon the site. As a consequence, the species diversity, both animals and plants, tends to decline.

A reduction in the size of areas used for haymaking and cattle grazing leads to overgrowth of open meadows and mires with scrub and reed. Rare plant associations are squeezed out by scrub and reedbeds, the biological diversity of meadows and hayfield productivity decrease.

Unregulated picking mushrooms and berries plays a certain negative role leading to the disturbance and undermining of animals' nutritive base that causes the decrease of their density.

b) in the surrounding area:

Considerable part of the area adjacent to the wetland has been drained to different extent.

Unsustainable agricultural use of floodplain and drained land, including plowing, over-grazing lead to degradation of floodplain communities, drifting of organic fertilizers into rivers and their subsequent pollution and siltation.

An additional threat within the wetland originates from all kinds of hunting in its core area, and also final harvest clear cuts.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

The site is a Biosphere Reserve: National status – Natural Area of Strict Protection “Berezinsky Biosphere Zapovednik”. International status – Biosphere Reserve (MaB)
The boundaries of Ramsar site, IBA (Important Bird Area “Berezinsky Reserve”) and IPA (Important Plant Area) coincide with the borders of the Berezinsky Reserve (except its transition area).

Key ornithological Bird Areas of “The Berezina River Floodplain” and the national “Forest and mire complex Golubitskaya Pushcha” value are situated next to the reserve. Jointly they form one of the largest floodplain forest, meadow and mire complexes in Europe, play the role of a big biodiversity reserve of wetland plant and animal species. They are also one of the major interstate ecological corridors of the common European nature conservation network currently under development.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

The officially approved management plan exists and is being implemented.

d) Describe any other current management practices:

Conservation measures are taken pursuant to the Protected nature territories law.

Natural complexes protection is the most important activity of the reserve and includes: the conservation of the territory and its biodiversity, ploughing, reparation of roads, making billboard notices, equipping resting places, cleaning littered forest stands, revelation of reservation conditions breach. Along with individual forest protection and inspection rounds and patrol raids, are made.

Constant protection development, providing personnel with modern equipment and training in legislation, as well as social privileges for the personnel make positive results in keeping the territory away from fires, poaching, unauthorized cuttings and other violations of protection regime.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

For the further preservation of the reserve's natural complexes and their biodiversity, the complex plan for the reserve management needs to be completed.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The reserve's scientific surveys consist of leading the permanent year-round researches, aimed at studying natural complexes and natural process dynamic for rating and forecasting the state of ecosystems, features of fauna and flora, scientific basis development for nature protection and biodiversity preserving. Scientific research is carried in two directions: monitoring of processes and natural phenomena at the reserve (Nature chronicle) and fundamental investigation of the structure and dynamic of natural forest, meadow, lake and river complexes, birds and mammals fauna research. Scientific department also carries out joint investigations with the scientists of the Belarusian state university, with a number of institutes of the Academy of Sciences, with national and foreign specialists. Based on the results of scientific research, practical guidelines are worked out and introduced, and scientific papers and monographs are published. The reserve's research staff takes active part in scientific conferences.

Coordination of the reserve's scientific activity is led by the Scientific and Technical Council, members of which are the leading specialists of the reserve, and also of scientific-research institutes of the Academy of Sciences as well as of Ministries.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Ecological education is among the priority aspects of the reserve's activity. The unique nature conditions have an exclusive educational interest. Year-round at the visitors' disposal are Ecological education center, Natural history museum, ecological paths, and open-air cages with wild animals. Educational work is also organized on the basis of the station of complex background monitoring and the secondary school, where the school forestry and ecological lyceum, natural history study groups under the direction of the research workers are

organized. The reserve offers daylong excursions into the nature for the visitors of different age, organizes youth eco-camps and practical training for the students specializing in biology, scientific training and specialists advanced training in studying of species and conservation of natural ecosystems biodiversity. Nature-information educational objects are perfectly illustrated and are represented by the system of ecological paths, routes, profiles and scientific permanent establishments. Every year the reserve publishes different ecological-information materials – booklets, books, folders, postcards, and it also affords an opportunity for making original ecological movies. In prospect the Berezinsky biosphere reserve could be an international ecological education center due to the advantageous situation in Europe, the quality of the environment and level of nature knowledge, developed infrastructure, available professional community and conditions for visitors' reception.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The main directions of tourism activity of the reserve are recreation and ecological tourism. Every year on the basis of Natural history museum, ecological path and open-air cages attract more than 25 000 tourists and sightseers of Belarus and foreign countries. Hotels, restaurants, sauna, comfortable guest-houses, located in the neighborhood of picturesque lakes are at tourists disposal. At tourists' service in summertime are bicycles and boats, in winter – skis for tourist routes along exotic places, and also routes by foot and by car are organized for tourists to get acquainted with historical sights of the reserve – the Berezina water system; the Berezina River crossing of Napoleon; ancient burial places of Slavs; monuments of the World War II. Visiting local villages for acquaintance with everyday life of natives, traditional Belarusian cuisine, work of craftsmen, participation in cultural traditions and ceremonies are organized. Since 1994 ecological tourism based on nature observing, studying of flora and fauna in small groups is practiced in the reserve. Ten-day ecological tours guarantee the watching in natural habitat of 120-150 mammal and bird species and about 300-400 species of plants.

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Protected nature complexes and nature management
Presidential Affairs Management Department of the Republic of Belarus
Address: 220016, Minsk, K. Marks Str., 38.

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

The main structure governing the compliance of established regime on the territory of the site is State Nature Protection Institution "Berezinsky Biosphere Reserve", with the staff of 356 people.

Address of State Nature Protection Institution "Berezinsky Biosphere Reserve": 211188, Tsentralnaya Str., 3, Domzheritsy, Lepel district, Vitebsk region, Belarus.

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34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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