

Information Sheet on Ramsar Wetlands (RIS)

1. Date this sheet was completed/updated: March 10' 2002

2. Country, region: Republic of Belarus, Belarusian Lake District (Poozerie)

3. Name of wetland: Yelnia

4. Geographical coordinates: 55°35'N, 27°52'E in the center of the zakaznik

5. Elevation: 126 – 145 m above see level in the middle of the mire

6. Area: 23,200 ha

7. Overview

The site is one of the Belarus' largest complexes of bogs and transition mires with numerous lakes. The site is a combination of the watershed bog (19,984 ha) with adjacent moraine-lacustrine and glacio-lacustrine landscapes. Small-area mineral islands are covered by small-leafed and spruce forests. Numerous lakes scattered across the mire make the site very specific. Most of the mire is covered by low pine trees. However, large open mire tracts with numerous open water lake windows are also quite common. Vegetation of the mire is typical for extremely convex oligotrophic bogs. Ridge-and-puddle and ridge-lake complexes dominate. Tracts with flatter microrelief are dominated by pine-shrub-*Sphagnum* and shrub-*Sphagnum* communities. The site regularly supports about 20,000 waterbirds during seasonal migrations (*Anseriformes* – 9,000-12,000, *Gruiformes* – 2,500-3,000, *Charadriiformes* – 4,000-5,000).

8. Wetland Type: (please circle the applicable codes for wetland types as listed in Annex I of the Explanatory Note and Guidelines document)

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)

Please now rank these wetland types by listing them from the most to the least dominant: Xp, U, O, M, N, 9

9. Ramsar Criteria: (please circle the applicable criteria; see point 12 below)

1 2 3 4 **5** 6 7 8

Please specify the most significant criterion applicable to this site: 1, 5

10. Map of site included? yes

11. Name and address of the compiler of this form

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12. Justification of the criteria selected under point 9

The site is of international importance because it meets the following criteria:

Criterion 1

It is a particularly good representative example of close-to-natural bogs of Belarusian Lake District.

Criterion 3

Yelnia mire supports populations of plant and animal species important for maintaining the biological diversity of biogeographic region Northeastern Europe. Yelnia is a "hotspot" for conservation of biological diversity. It plays a key role in conservation of the most stable habitats of a number of stenotope species, which ecologically are closely linked to bogs (Black-throated Loon *Gavia arctica*, Willow Grouse *Lagopus lagopus*, Golden Plover *Pluvialis apricaria*, Whimbrel *Numenius phaeopus*, Jack Snipe *Lymnocyrtus minimus* and Greenshank *Tringa nebularia*). It is also important for a number of glacial flora and fauna relicts occurring in Belarus. The site is a refugium for numerous circum-polar and circum-boreal species which have apparently been occurring here since Valdai glaciation, as well as for a number of rare glacial relicts such as *Dicheirotichus cognatus*, *Bradycellus ruficollis*, *Dytiscus lapponicus*, *Hydroporus glabriusculus*.

Criterion 5

During seasonal migrations the site regularly supports 20,000 and more waterbirds. These are mostly Bean Goose *Anser fabalis* (6,000-10,000 during spring migration in April 1996 and 1999), White-fronted Goose *Anser albifrons* (4,000-7,000 during spring migration in April 1996 and 1999) and Crane *Grus grus* (2,000 – 2,500 individuals in August-September 1998, 1999)

Criterion 6

Crane *Grus grus* forms here its largest groups (2,000 – 2,500 individuals - 3,3-4,2% of biogeographic population) in the post-breeding season. The site holds up to 3,3% of the biogeographic population of Bean Goose *Anser fabalis rossicus* and 1% of the biogeographic population of White-fronted Goose *Anser albifrons*.

13. General location

The site is located in Miory and Sharkovshchina District, Vitebsk oblast, 175 km to the North of Minsk and 140 km to the West of Vitebsk. The boundaries of the site have been defined and described.

14. Physical features:

Geology and geomorphology

The territory of the Yelnia zakaznik is a combination of a watershed bog with adjoining moraine-lacustrine and glacio-lacustrine landscapes. The site is located in the lowest part of the Polotsk Low-land (with absolute

altitudes 130-135 m), which evolved from a large Disna glacial water reservoir. The surface of the Polotsk Lowland is flat, with numerous waterlogged and peaty tracts, relict lakes and wetland complexes. The largest wetland is Yelnia mire, which is connected to a shallow interfluvial depression (second Dvina river terrace). The soil of the depression is underlaid with lacustrine clays. The mire belongs to peatland bogs of Baltic type. The mire has an oval-close-to-rectangular shape. The surface of the mire is flat; its central part is rather convex and is about 5-7 m higher than the area surrounding the mire, which is typical for bogs of the East-European type. The mire is considered to comprise three distinguished parts, each having its own peak: part I is the Northern part of the wetland protruding some 6-7 m above the mineral edge of the mire; part II (the North-Eastern part) protrudes some 5-6 meters; part III (in the South) is located 4-5 m above mire edge.

Almost all adjacent territories are located lower (in hypsometric terms) than the zakaznik itself. Absolute heights here are 135-140 m. Only in the hilly-moraine-lacustrine landscapes absolute altitudes reach 160-170 m above sea level. Relative heights fluctuate within the range of 20-25 m. Positive relief formations are represented by moraine hills, negative by formations include depressions containing the discharge of melted glacial and waterlogged pits.

About 90% of the peatland is area, which is suitable for peat extraction. The average depth of the peat layer is 3.7 m. The maximum depth is 8.3 m. The mire is fed primarily through atmospheric precipitation, to a lesser extent through discharge from surrounding areas. Poor mineral recharge has defined formation of bog peatlands. Transition and fen peatlands have formed only along the edge of the mire, supported by nutrients of discharge from the dry surrounding areas.

The circumstances described above have defined the following peatland distribution on the site: 93.5% are covered by bogs; 2% by mixed type peatlands; 2.5% by transition mires; 2% by fens. Overall peat resources amount to 636.6 million cubic meters. The peat distribution is as follows: *Fusum*-peat 36%; *Magellanicum*-peat – 31, transition swamp peat – 10, pine cotton grass peat – 7, *Scheuchzeria* bog peat – 6, cotton grass bog peat – 5, complex bog peat – 1 and transition woodland peat – 4%.

Hydrography and hydrology

The mire belongs to the Western Dvina hydrological district, the basin of the Western Dvina. The hydrographical network is represented by lakes and Elnianka, Berezha, Volota and other rivers, the overall area of which comprises 4.4 per cent of the zakaznik's territory. The mire is mainly fed by groundwater and precipitation. More than 15 rivers flow out of the mire, and not a single one flows into it. The mire encompasses more than 100 lakes, the biggest being Yelnia Lake, which is a shallow oligotrophic water reservoir with a total area of 5.4 sq. km (the lake's catchment area is 14.4 sq. km). The typical peaty catchment and recharge from wetlands defined the tundra character of the lake with the following specific features: low mineralization, acid environment, high color content, poor water transparency, formation of peaty sapropels, slow biota development. 82 lakes have area from 0.002 to 0.005 sq. km. Most of the lakes have area less than 1 ha. Most of the lakes are of residual type by pit origin, and their formation is connected to mire development. Most of the lakes are located in the central and south-western part of the zakaznik. Lakes form "chains" stretching from south-west to north-east. Pits of most lakes are stretched in the same direction. Water reservoirs have varying hypsometric location within the peatland. Absolute water level marks vary from 137.9 (Chiornoie lake) to 144.4 (Lopukhi lake). The hypsometric location of the lakes and their distribution define for the most part the specific characteristics of recharge and discharge. All lakes are distributed over the discharge area in between rivers Yelnianka, Berezha, and Volta. The level regime of the lake is stable. Inter-seasonal fluctuations seldom exceed 0.3-0.5 m. Groundwater input is the main type of recharge. The outflow component is dominated by evaporation and groundwater discharge.

A network of drainage canals and ditches together with river channel canalization have a very strong impact on the groundwater table in the peripheral part of the mire. Some time after drainage a zakaznik was established on the mire. However, the canals and ditches still have an impact. Drops in the groundwater table following drainage of the area through ditches, canals, and canalized rivers is one of the main causes of large annual fires. Canalized tributaries of the Disna (rivers Berezha, Rossokha, Sinitski, Yamenski, Yelnianka)

drain about 60% of the territory of the zakaznik. Out of this number some 40% are located in the basins of the Western Dvina tributaries, such as the Volta, and the Vianuzhki rivers. The main water course of the zakaznik, the Volta river flows out of the Beloie lake, further through the western part of the Polotsk Lowland, and into the Western Dvina.

Lakes of the site are rich in sapropel. The sapropel layer is 8.5 m in Lake Yelnia; it is 1.0 – 3.0 m in other lakes. Total sapropel resources are estimated to be 2.5 – 3.0 million tons. The sapropel layer is underlaid by sands, sometimes clays and peat. The hydrochemical regime, physical and chemical water indicators are typical for dystrophic lakes placed in the middle of large bogs. The water is characterized by low mineralization (50-80 mg per l), acid environment (high humic acid content) and low trophic content. Phytoplankton biomass is around 1 g/m.

Climate

The annual average temperature for the site is around +5⁰C. The average temperature for January is -7.2⁰C, for July: +17.5⁰C. On average 586 mm of precipitation fall per annum on site. Vegetation season lasts for 184 days. Western and north-western winds dominate.

Soil cover

Deep slowly decomposing peat bog soils dominate on most of the site. They form on bog- or *Fuscum*-peat. The soils are fed through atmospheric precipitation. Groundwater is very close to the surface, sometimes even coming up through the ground. Soddy podzolized gleyish soils are less frequent. Soddy podzolized waterlogged soils are found in discharge depressions and pits.

15. Hydrological values

The Yelnia natural complex located on glacio-lacustrine clays includes a large peat bog and numerous lakes, and is therefore an important fresh-water retainer and groundwater discharge regulator in the Disna lowland. It has an important influence on the hydrological regime and microclimate of the region. Being an ecological accumulator, the site plays an important role as a biofilter for anthropogenic pollutants entering the site from adjacent areas. The lake, mires and dry-land slopes of local catchments are all hydrologically connected and function as a single system. This interdependence of physical and geographical processes defines the fact that anthropogenic interference into the mires, lake or adjacent dry lands would automatically lead to disruptions in the natural condition of the mire.

16. Ecological features

According to landscape zoning of the Republic of Belarus the site is located in the subtaiga (mixed forest) subzone of the Late District province of glacio-lacustrine, glacio-moraine, and hilly-moraine-lacustrine landscapes. The site is located in the South-Western part of the Polotsk District of flat-hilly and wavy glacio-lacustrine landscapes with pine- and birch-forests and wetlands. The area is absolutely dominated by non-segregated wetlands. The site is located within the boundaries of one landscape type, i.e. a flat landscape with outliers of the glacio-lacustrine lowland. Landscape formation is connected to existence of a lake here in the past on which subsequently peat started to accumulate. The relief of the site is flat with few small mineral islands in the form of outliers of the glacio-lacustrine lowlands covered with small-leaved derivative forests.

The site is located in the Disnenski district, the West-Dvina region of the northern subzone of oak-and-dark-coniferous subtaiga broad-leaved-spruce forests. The site is typical for the forest-and-wetland and wetland complexes of its biogeographical region. Forests cover mostly the peripheral parts of the zakaznik and fulfill

the water-conservation function. Mineral islands with sandy loams are also covered with forests. Forests cover 30.7% of the area. The area of infrastructure (roads, through-cuts) is very small, covering about 0.3% of the territory.

Middle-age and under-matured forest stands dominate on the site, covering about 68% of all forests stands of the site, which is higher than the average for the country. Ripe and over-matured forests cover 372.8 ha, which is 4.9% of the forested area of the zakaznik. 64 forest types of 10 various forest formations are found on the site altogether. Wetland pine-forests dominate by area.

Wetlands cover 15,861 ha of the site, which is 63.5%. The upper peat layers are characterized by low decomposition values (less than 20%) and are good water-retainers. Mosses and grasses form numerous tussocks: about 30% of the mire surface is covered by *Sphagnum* tussocks 0.2-0.5 m high. More than 20% of the mire area is covered by puddles some 50-200 m in diameter.

The surface of the Yelnia mire is characterized by high diversity of microlandscapes. Ridge-and-puddle, and ridge-puddle-lake complexes dominate. Flatter areas are covered by *Pinetum sphagnosum*, *Pinetum caricoso-sphagnosum*, *Pinetum ledoso-sphagnosum* and *P.-Betuletum eriophoriosum-sphagnosum*. Wetland vegetation of the site is typical for extremely convex oligotrophic bogs normally found in the Northern part of Belarus.

Pine- and birch-shrub-*Sphagnum* associations have a powerful *Sphagnum* layer. Shrub-and-*Sphagnum* associations are also quite widespread. There are almost no tree layers in these associations. Abundance of pine tree stumps with old fire traces implies pyrogenic origin of these associations. Ridge-and-puddle vegetation complexes are characterized by segregation of the micro-relief into ridges and puddles. Associations similar to pine-shrub-*Sphagnum* form on ridges with low water level. Ridge-hilly-puddle and lake-hilly-puddle complexes are very picturesque. These cover about 25% of the mire. These complexes have emerged under extreme waterlogging conditions which has turned puddles into lakes. Ridges are covered with species common for pine-shrub-*Sphagnum* phytocenoses. Associations dominated by 2-3 m tall *P.-Betuletum* and *Polytrichum stricta* forming a continuous carpet, sometimes with a mixture of *Sphagnum* mosses, stretch for substantial areas on flat and relatively dry territories along Yelnia Lake shores. These phytocenoses have pyrogenic origin, i.e. they have originated from frequent fires on the territory of the zakaznik. The fires were the consequence of spring burning of old vegetation by local people. This activity is prohibited by law but is used widely in Belarus allegedly to improve agricultural land productivity.

17. Noteworthy flora

66 moss species were found on the site. Such species as *Sphagnum molle* (included in the National Red Data Book of Belarus) as well as *Sph. riparium* and *Celypogeia sphagnicola* are also found here. About 50 lichen species occur in the Zakaznik, including *Calicium trabinellum*, *Coniocybe furfuracea* and *Chaenotheca chrysocephala*, which belong to quite rare plants.

Vascular plants are represented by 148 species.

Eleven species found here are rare protected plants included in the National Red Data Book of Belarus. These include the rare arctic-boreal species such as *Betula nana* and *Rubus hamaemorus*, as well as other rare species such as *Drosera intermedia*, *Dentaria bulbifera*, *Salix myrtilloides*, *Iris sibirica*, *Huperzia selago*, *Listera ovata*, *Corydalis intermedia*, *Gladiolus imbricatus*, *Orchis morio*, *Allium ursinum*. Mineral islands give shelter to such rare mushroom species as *Phallus impudicus*.

The mire is rich in *Oxycoccus palustris*.

Degree of syntrophization of the vegetation cover and flora is extremely low: anthropophytes are practically absent. This is to be attributed to weak anthropogenic impact on the nature of the zakaznik, as well as its relatively distant location from roads, industrial centers, cities and towns.

The drained areas where the groundwater level has dropped are characterized by drying out of the moss cover and replacement of hygrophytic species by mesophytic ones.

18. Noteworthy fauna

Invertebrates. The site is a refugium for numerous circum-polar and circum-boreal species which have apparently been occurring here since Valdai glaciation, as well as for a number of rare glacial relicts such as *Dicheirotrichus cognatus*, *Bradycellus ruficollis*, *Dytiscus lapponicus*, *Hydroporus glabriusculus*. The Carabus assemblage found along the shores of the lakes on the site comprises 18 species including a number of rare and unknown species: *Bembidion humerale* Sturm., *Pterostichus angustatus*., *Trichocellus cognatus*. *Carabus clathratus* L. and *C.cancelatus*, *Carabus nitens* listed in the National Red Data Book of Belarus are quite common on the site. The following species were recorded here for the first time in Belarus: *Bradycellus similis*, *Bradycellus ruficollis*, *Dicheirotrichus cognatus*, *Hydroporus morio*, *Laccophilus poecilus*, *Cantharis quadripunctata*.

Perch and pike are dominating fish species.

Terrestrial vertebrate fauna of the site includes 7 amphibian species, 5 reptile (*Vipera berus* is very abundant), 21 mammal species (which for the most part occur in the peripheral parts of the mire or visit the mire in search for food).

98 bird species are registered in the zakaznik, of which 61 breed here. 25 bird species are included in the National Red Data Book of the Republic of Belarus.

Yelnia is a good example of its biogeographic region. Such factors as large area and low degree of anthropogenic transformation provide for the outstanding character of Yelnia compared to other bogs of Northern Belarus in that it hosts the most complete bird species composition typical of *Sphagnum* bogs of the Baltic Region. All species typically found on *Sphagnum* bogs regularly breed on the territory of Yelnia (Black-throated Loon, Willow Grouse, Golden Plover, Jack Snipe, Whimbrel, Greenshank). Many of these bird species are found here in their southern-most breeding range. That is why conservation of the Yelnia complex is directly related to conservation of rare and stenotope species of the site, which are ecologically bound to bog mires.

Yelnia supports Belarus' largest stable populations of the following species: Merlin *Falco columbarius* (15-20 pairs), Willow Grouse (60-80 pairs), Golden Plover (35-50 pairs), Jack Snipe (2-5 pairs), Whimbrel (30-35 pairs), Greenshank (20-30 pairs).

A number of bird species regularly breeding in the zakaznik have European conservation value: Black-throated Loon (2-10 pairs), Golden Eagle *Aquila chrysaetos* (1 pair), Black Grouse *Tetrao tetrix* (150-180 pairs), Crane (50-60 pairs), Redshank *Tringa totanus* (50-90 pairs), Wood Sandpiper *Tringa glareola* (35-55 pairs), Common Gull *Larus canus* (15-30 pairs), Short-eared Owl *Asio flammeus* (40-50 pairs), Great Gray Shrike *Lanius excubitor* (15-25 pairs).

Scattered group colonies of *Charadriiformes* on vast open mire tracts and numerous nesting colonies of various *Laridae* species on mineral islands on small lakes attach a specific appearance to the biotic complexes of the site.

The site is characterized by sharp seasonal fluctuations in the bird species composition. The site almost loses its feeding and hosting function during autumn and winter. 80.3 % of bird species breeding on the site are birds of passage. These species leave the mire in autumn. Sedentary breeding bird species, which stay on the site all the year round, include only Willow Grouse and partially also Black Grouse. Other species are vagrants, i.e. they are traveling widely in autumn-winter and can be met on the site during this season only occasionally.

The mire is located on the main north-eastern migration route of water birds. During seasonal migrations Yelnia regularly supports about 20,000 individual water birds, including up to 9,000 – 12,000 individuals of *Anseriformes* and up to 2000-2500 individuals of Crane. One of the regular migrants occurring on the site is the globally threatened Lesser White-fronted Goose *Anser erythropus*.

19. Social and cultural values

The site is characterized by exclusively rich resources of berries (cranberries, cowberries, blue-berries) and medicinal plants (especially *Ledum palustre*). The area of sites with berry plantations constituting more than 20% of projective coverage is 8,696 ha. For this reason the site is used by local people and visitors from other regions for commercial and domestic berry and plant collection, as well as mushrooms. Some of the lakes of the site are used for amateur fishing.

Forest logging is carried out mainly in the peripheral parts of the mire (buffer zone). Because of difficult accessibility and specific landscape the site is almost not used for recreation.

The territory, though, has good potential for development of ecotourism and educational projects, which is supported by its rich flora and fauna, as well as picturesque landscape. The potential, however, is limited by the difficult accessibility of the site.

20. Land tenure/ownership

The site is owned by the state. It is managed by Disnenski Forestry. About 5% of the site's buffer zone is rented by collective farms.

21. Current land use

Disnenski forestry has the land-using authority over the site, as well as the land-use control function. Difficult accessibility and specific landscape of the mire (about 60% of forests are swampy and low-production) defined the limited utilization of the site by people. These factors explain why the site's nature is virtually untouched by economic activities all the year round. . Limited forestry activities are carried out only in the peripheral parts of the mire, as well as on mineral islands.

Collection of berries is the main type of land use. The inflow of visitors to the mire is substantial especially in the first half of September during cranberry collection season.

Amateur fishing is allowed at pre-specified times of the year. However, complicated accessibility prevents development of this type of land use. It mainly develops on larger peripheral lakes (Chiornoie, Yazhgina, Bolshoie, etc.).

Hunting is regulated by the state. Hunting for migrating geese was abolished in 2000 upon special studies which had shown that hunting at geese' overnight grounds of Yelnia lakes resulted in shortening of their stay at Yelnia during migration. Now hunting is only allowed on the outside the territory of the zakaznik.

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

Disturbances in the hydrological regime

Hydrological amelioration presents the main threat to the mire. Substantial changes in the hydrographic network of the site took place upon construction of peat extraction sites and drainage of adjacent areas for agricultural purposes.

In 1957 – 1959, i.e. before establishment of a zakaznik, a network of drainage canals and ditches was constructed in the North-Eastern part of the mire. It was constructed to facilitate peat extraction. Despite the fact that no peat extraction was subsequently carried out here, the drainage network was exerting a significant negative influence on the site. By now the canals and ditches have overgrown with vegetation, but they continue to impact the mire in a negative way. The situation can be improved only through construction of special dams. Canalization and regulation of rivers resulted in higher water discharge in spring and overall drop in the groundwater table in the peripheral parts of the mire. On such parts disappearance of water-loving flora and fauna species has been observed, including species that are typical only for bogs of this specific region (Black-throated Loon, Willow Grouse, Golden Plover, Jack Snipe, Whimbrel, Greenshank).

Fires

One of the managment techniques traditionally used to improve the productivity of hay-making tracts in Belarus was burning of old vegetation. Although law prohibits burning of vegetation in spring, they continue to be widely used by local people. Yelnia mire is no exception. With lowered groundwater table on the territory of the zakaznik even local burning of vegetation now results in fires occupying huge areas.

Up to 6 fires occur annually on the site since drainage of adjacent areas. In 1999 fires destroyed 800 ha of the site. Fires lead to drastic transformations of the wetland ecosystems, as well as in populations of breeding and migrating birds. Burning of vegetation on the mire results in enriched nutrient component, decreased acidity and water content of the upper peat layer. Restoration of the previously existing flora typical for bog mires, is a very slow process and comprises several subsequent demutation stages. Fresh burnt out area reveal a sharp decline in the projective coverage of shrubs and *Sphagnum* mosses. This in turn leads to destruction of habitats for a number of animals, mainly invertebrates. In short, fires result in destruction of typical mire habitats. Destruction of cranberries leads to declining feeding base for many birds.

Disturbance factor

The disturbance factor has also become a serious problem for breeding birds over the last several years. Higher disturbance was enabled by lower groundwater table making the mire more accessible to people in spring. Despite this, the mire is still inaccessible for broad public. However even the visits of few but regular fishermen and hunters, which became possible only in the recent years, result in destruction of nests and disturbance of a number of birds from the National Red Data Book such as Black-throated Loon, Willow Grouse, Golden Plover, Jack Snipe, Whimbrel, Greenshank.

Disrupted hydrology has had a very negative impact on migrating birds, especially geese. Normally geese stop here for 20-30 days during their migration. The birds stay on the mire only during the night. During the day they fly over large fields located close to the mire searching for food. Availability of overnight places with no disturbance is a critical factor for geese on migration. Large lakes of Yelnia have traditionally performed this function in the past. Before drainage these lakes were almost inaccessible for people in spring and geese were safe here during their migration stop-overs. Today, after the groundwater level dropped, the lakes have become more accessible for amateur fishermen and poachers. Even this small rise in the disturbance factor threatens the value of the site as a stop over place hosting large concentrations of migrating geese and cranes.

23. Conservation measures taken

The Council of Ministers' Decree № 342 dated 18 November 1968 prescribed establishment of Yelnia hydrological zakaznik (16,400 ha by area). Initially the Northern part of the valuable area was not included in the zakaznik, which hampered significantly any activity aimed at preservation of the hydrological regime,

conservation of unique bog-mire landscapes, flora, and fauna. Economic activities on the unprotected areas such as drainage and peat extraction would inevitably result in destruction of Yelnia as a single genetic complex. The Council of Ministers' Degree № 103 dated 1 April 1981 provided for extension of the zakaznik's boundaries to include the Northern part of the valuable area. It also envisaged establishment of a conservation zone around the mire that would include forested areas and small partly drained lands under lease to collective farms. The overall area of the site thus became 23,200 ha.

The following limitations on economic activities are established for the zakaznik: peat extraction, collection of moss, drainage or any other activities related to disruptions of the hydrological regime are prohibited. Limited forest felling is allowed. Hunting and fishing can be done in accordance with established norms and guidelines. Hunting is prohibited only for geese during migration. The Provision on National Hydrological Zakazniks approved by State Committee on Nature Conservation (decision № 11/3 dated 15 May 1969) includes a clause that reads: land-users performing activities in close proximity to hydrological zakazniks shall undertake all measures needed to prevent any direct or indirect impact on the hydrological regime of the site in question.

The Council of Ministers' Decision № 169 dated 26 May 1976 provides for establishment of buffer zones 7 km wide around hydrological zakazniks. Any drainage activities inside the buffer zones are ruled out. However, by the time when the Decision was issued hydrotechnical drainage has already been done on the areas adjacent to the site.

In 2000 hunting for migrating geese was prohibited on the territory of the zakaznik. Diminished disturbance of geese by hunters enabled the birds to stay longer on the lakes of Yelnia to accumulate fat needed for successful breeding.

24. Conservation measures proposed but not yet implemented

In 1992 the Expert Commission of the National Academy of Sciences of Belarus developed an expert assessment of modern condition of ecosystems on Yelnia National Hydrological Zakaznik. The recommendations contained in the assessment requested the Government to establish a zapovednik (strict reserve) on the territory of Yelnia.

Reorganization of the site into a zapovednik is envisaged in the Cabinet of Ministers' Decree № 132 dated 13 March 1995. The Decree was issued to approve the Scheme of Rational Location of Especially Protected Natural Areas of Belarus. The Decree prescribed a special technical, scientific, and economic background to be elaborated for establishment of a zapovednik..

In 1999 National Belarusian NGO Bird Conservation Belarus – a partner of BirdLife International - under the supervision of the Ministry of Natural Resources and Environmental Protection of Belarus and financial assistance from the Royal Society for the Protection of Birds has carried out a project called *Restoration of hydrological regime and prevention of fires in Hydrological Zakaznik "Yelnia", an IBS and potential Ramsar site*. The project resulted in concrete proposals for stabilization of the hydrological regime of the mire. In 2001-2002 the recommendations of the project will be implemented under financial support from Wetlands International and Ministry of Natural Resources and Environmental Protection of Belarus.

In 2001 OMPO supported investigations on the territory of Yelnia carried out to compile its description as a potential Ramsar site. Designation of Yelnia a Ramsar site will contribute to faster acquisition of a higher national protection status by the site, as well as to allocation of more international resources to resolve the problems existing on the site.

25. Current scientific research and facilities

Being a representative and close-to-natural site, the Yelnia natural complex is considered to be an excellent reference plot to study biodiversity of Northern Belarusian bogs. Peat deposits, water bodies, flora and fauna

of the site have been studied and described by the institutes of zoology, botany and ecology of the National Academy of Sciences of Belarus, as well as by Limnology Department of the Belarusian State University, experts of other institutes, and educational establishments. Regular research into the ornithological fauna of the site, populations of rare flora and fauna species has been carried out by Vitebsk State University over the last 20 years.

Study of the site became especially critical upon completion of drainage activities on adjacent areas, when the negative consequences of those campaigns became obvious. In 1992 the Expert Commission of the National Academy of Sciences of Belarus, comprising experts hydrogeology, hydrology, wetlands, amelioration techniques, soils, botany and zoology, carried out a set of field investigations and desk studies. A basis for development of an expert assessment of modern condition of ecosystems on Yelnia National Hydrological Zakaznik was established. The recommendations of the assessment requested the Government to establish a zapovednik (strict reserve) on the territory of Yelnia, with introduction of a separate management unit. In 1999 Bird Conservation Belarus established a working group of experts representing various areas of research to study the transformation of the mire ecosystems on Yelnia upon drainage and develop a project for stabilization of the groundwater table on the site.

In 2001 – 2002 a number of projects on study and description of Yelnia as a Ramsar site were implemented with financial support of OMPO (France), e.g. *Preparation of description of Yelnia as potential Ramsar site; Census of bird species on Yelnia.*

26. Current conservation education

Despite the high values of the site's landscapes, flora and fauna, there is a lack of scientific and popular materials on Yelnia. Only short mainly news-type messages in press are sometimes published. Lately Yelnia and its problems has become a regular subject of materials published in a regular magazine of Bird Conservation Belarus called *Birds and Us*.

27. Current recreation and tourism

No organized tourism and recreation exists on the site. No special camps, sanitariums, hotels or other catering facilities are located in the area. Amateur fishing is poorly developed which is attributed to complicated accessibility of the site. The site has a potential for development of regulated ecological tourism and organized recreation that would not damage the surrounding nature.

28. Jurisdiction

a) territorial jurisdiction: Miory and Sharkovshchina district executive committees

b) functional jurisdiction:

Vitebsk Oblast Committee of Natural Resources and Environmental Protection, Ul. Pravdy 26A, 210010 Vitebsk, Belarus

Ministry of Natural Resources and Environmental Protection of the Republic of Belarus, Ul. Kollektorknaia 10, 220048 Minsk, Belarus

29. Management authority

The main structure securing the established nature-conservation regime on the territory of the site is Disnenski Forestry. Miory and Sharkovshchina district inspections of nature resources and environmental protection, staffed with 4 and 3 persons accordingly, carry out the controlling functions.

Address of Miory district inspection: Dzerzhinskogo street, 17, Miory, 211930, Belarus

Address of Sharkovshchina district inspection: Komsomolskaya, 15, Scharkovshchina 211910, Belarus

30. Bibliographical references:

General issues:

Belenki S.G., Kurzo B.V. Age of peat deposits at bog mires of Belarus and origins of bordering layers. // News of the Academy of Sciences of BSSR. Biological series. – 1988, №2. – pages 27-31.

Belarusian Lake District: analysis of ecological and drainage situation. Chief-edited by Anoshko V.S. et al., Minsk, 1992. – 156 pages

Golod D.S. et al., Mires in the basin of the Western Dvina river, their use and conservation connected to their amelioration // Anthropogenic changes, conservation of mire vegetation and adjacent areas, Minsk 1981.- pages 182-187.

Climate of Belarus. Chief-edited by V.F. Loginov, Minsk, 1996. 234 pages

T.I. Kukharchik. Bog mires of Belarus, Minsk, 1993, – 136 pages

Landscapes of Belarus. Edited by G.I. Martsinkevich, N.K.Klitsunova, Minsk, 1989, – 239 pages

A.P. Pidoplichko, Peat deposits of Belarussia, Minsk, 1961. – 192 pages

Rational nature use in the Belarusian Lake District, Edited by Anoshko V.S. et al., Minsk 1993, 202 pages

Encyclopedia of Belarusian Nature, Vol. 2. – Minsk 1983. – page 266.

O.F. Yakushko, Belarusian Lake District. History and modern condition of lakes in the North of Belarus. Minsk, 1971.- 336 pages

Flora and Fauna:

Biryukov V., Kozlov V.P., Kuzmenko V.Y. Role of Elnya raised bog (Vitebsk region, Belorussia) as natural reservation of waterfowl and wetland birds. – The Ring. Vol. 15, No 1-2, 1993. - P. 348-350.

Biriukov V.P., Blazhevich R.U., Vynaiev G.V. et al. Protected plants and animals of BSSR: An Overview. Minsk, 1982. – 51 pages.

Ivanovski V.V., Kuzmenko V.Y., Changes in the ornithological fauna of the Belarusian Lake District bogs over the last 10-15 years // Reports of the Baltic Commission on Migrating Birds. – Tartu, 1989, № 20. – pages 31-35.

Kuzmenko V.Y., Kozlov V.P., Dorofeev A.M. Ecological and geographic features of ornithological fauna of the Belarusian Late District bogs // Zoology Newsletter, 1985, №3. – pages 63-69.

Kuzmenko V.Y., Ivanovski V.V. Ornitho-faunistic criteria for identification of bogs in need of protection in Belarus // Newsletter of Vitebsk State University, 1998, № 1 (7). – pages 79 – 85.

Ornithological fauna of the wetlands of Belarusian Lake District and its dynamics following drainage campaigns (archives of Vitebsk State University). –1980. 163 pages

Sushko G.G. Seasonal dynamics of Coleoptera, Carabidae on Yelnia // Newsletter of the National Academy of Sciences. – 2001, №1. C. 139-141.

Sushko G.G., Solodovnikov I.A. Water Coleoptera of the Yelina hydrological zakaznik // Newsletter of Vitebsk State University, 2000, № 3 (17). – pages 92-96.

Yurkevich I.D., Golod D.S., Aderikho V.S., Vegetation of Belarus: its mapping, conservation, and use. – Minsk, 1979. – 248 pages

National Red Data Book of Belarus. – Minsk, 1993. – 560 pages

Annex I.

Table 1. Expert estimate of numbers of regularly breeding and rare bird species on Yelnia bog

Species	National Red Data Book Category	Bern Convention	Type of occurrence	Estimated numbers, pairs (min-max)*	% of the overall Belarusian population of the species
<i>Gavia arctica</i>	I	II	B	2-10	13.3
<i>Anas crecca</i>			B	45-60	0.8

<i>Anas platyrhynchos</i>			B	300-350	0.4
<i>Aythya fuligula</i>			B	5-20	0.3
<i>Bucephala clangula</i>	III		(B)		
<i>Circaetus gallicus</i>	I	II	B	2-3	0.4
<i>Circus cyaneus</i>		II	(B)		
<i>Aquila chrysaetos</i>	I	II	B	1	2.5
<i>Falco columbarius</i>	III		B	15-20	5
<i>Falco subbuteo</i>	III		(B)		
<i>Lagopus lagopus</i>	I		R	60-80	54.5
<i>Tetrao tetrix</i>		III	R	150-180	1
<i>Tetrao urogallus</i>			R	5-15	0.2
<i>Grus grus</i>	II	II	B	50-60	6
<i>Grus grus</i>	II	II	P	2000-2500 birds	
<i>Pluvialis apricaria</i>	III	III	B	35-50	32
<i>Phylomachus pugnax</i>		III	(B)		
<i>Lymnocyptes minimus</i>	IV	III	B	2-5	40
<i>Gallinago gallinago</i>			B	30-60	0.04
<i>Limosa limosa</i>		III	B	15-45	0.25
<i>Numenius phaeopus</i>	III	III	B	30-35	30
<i>Numenius arquata</i>	II	III	B	35-50	3.7
<i>Tringa totanus</i>		III	B	50-90	0.1
<i>Tringa nebularia</i>	III		B	20-30	10
<i>Tringa glareola</i>		II	B	35-55	1.4
<i>Larus ridibundus</i>			(B)		
<i>Larus canus</i>		III	B	15-30	3
<i>Larus argentatus</i>	III		B	45-50	9.5
<i>Sterna hirundo</i>			(B)		
<i>Asio otus</i>			(B)		
<i>Asio flammeus</i>	II	II	B	5-10	1
<i>Alauda arvensis</i>		III	B	700-1200	0.03
<i>Anthus trivialis</i>			B	3500-4000	0.4
<i>Anthus pratensis</i>		II	B	1200-2000	0.7
<i>Motacilla flava</i>			B	600-850	0.1
<i>Motacilla alba</i>			B	350-500	0.04
<i>Luscinia svecica</i>	III		B	10-60	0.2
<i>Saxicola rubetra</i>		II	B	450-600	0.1
<i>Turdus pilaris</i>		III	(B)		
<i>Turdus philomelos</i>		III	(B)		
<i>Acrocephalus scoenobaenus</i>		II	(B)		
<i>Phylloscopus collybita</i>			(B)		
<i>Phylloscopus trochilus</i>			B	200-400	0.02
<i>Lanius excubitor</i>	III		B	15-25	2.5

Abbreviations:

B – regular breeding species;

(B) - irregular breeding species;

R – breeding resident;

N – non-breeding visitor;

P – passage visitor.

* - Belarus population data based on: *Nikiforov M.E., Kozulin A.V., Grichik V.V., Tishechkin A.K.* Birds of Belarus on the Threshold of the XXI century. – Minsk., 1997. – 188 pages