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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

40th meeting
Strasbourg, 1-4 December 2020

REPORT

**ON THE SPOT EXPERT APPRAISAL OF THE
BEREZINSKY STATE BIOSPHERE RESERVE
(BELARUS)**

19-20 June 2019

*Document prepared
by Mrs Blanca Ramos (Spain)*

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1. INTRODUCTION

The Committee of Ministers of the Council of Europe, by means of its Resolution (95) 19, awarded the European Diploma for Protected Areas category "A" to the Berezinsky State Reserve at its meeting of 11th September 1995 at the 453rd meeting of the Minister's Deputies. The deadline established for its renewal was 11th September 2000. The Diploma has been further renewed in 2000, 2005 and 2010. The last renewal (Resolution CM/ResDip(2010)6), for a period of 10 years, has extended the award until 11th September 2020.

Having regard to the decision of the Group of Specialists on the European Diploma for Protected Areas at its meeting of 5th - 6th March 2019 to perform on-the-spot appraisal visits to areas subject to EDPA renewal in 2019, the undersigned was invited as independent expert to carry out the visit to Berezinsky State Reserve in Belarus on 27th May 2019. The objective stated was *"to assess whether the conditions of the site remain the same as when the Diploma was awarded and extended, or whether they have improved or deteriorated"*, following the provisions of the Terms of Reference stated in Appendix 3 of Resolution CM/ResDip(2008)1 on the revised regulations for the European Diploma for Protected Areas.

The visit took place from 19 to 20 June 2019. A Programme of the visit, enclosed as annex I to this report, was previously established.

As foreseen, Mr. Valery Ivkovich, Deputy Director for Research of Berezinsky Reserve, received the undersigned expert at the Minsk Airport on 18th June and, with the support of the driver Mr. Vasily Sovosteeonok, guided the appraisal visit during the whole duration. The first activity was the welcoming interview with the Director of the Reserve, Mr. Andrei Prokoshin in his office, who provided the necessary arrangements for a successful visit. Mrs. Tatiana Romanovich, chairing the Rural Executive Committee of the village Domzheritz, where the main administrative complex of the Reserve is located, also attended this meeting and there was a chance to talk about different issues, like tourism, economic impact of the Reserve on local people, promotion of the local communities, etc. Hereafter, a complete set of natural sites of the Reserve were visited in depth during this day and the day after (19th and 20th June).



2.

2. BRIEF DESCRIPTION OF THE BEREZINSKY NATIONAL BIOSPHERE RESERVE



The Berezinsky State Biosphere Reserve is a unique outstanding natural area placed on the Berezina river basin, tributary of the Dnieper River which flows to the Black Sea. During the last 10 years some changes have occurred in the boundaries and surface area. The core area (27.204 ha) and buffer zone (58.868,8 ha) has a joint surface area of 86.072,8 ha and it is placed on three administrative districts. The northern part of the Reserve is placed on Lepel and Dokshitzky districts (Vitevsk Region) and the southernmost part belongs to Borisov district, in the Minsk Region. The capital city Minsk is placed south-west to the Reserve at about 80 km in straight line.

The region was affected by the last glaciation (Würm), and therefore, the area has been greatly influenced by the glacial modelling. Some of its landforms has this origin, like moraine heights, lake-glacier plains and deep hollows. Above a deep layer of crystalline rocks and others from the Palaeozoic period, Holocene fluvio-glacial, moraine and alluvial deposits have been covering the site during the Quaternary period (including the successive glaciations) with clay, sand, gravel and boulders forming the current relief. Altitude ranges between 155 and 227 meters above sea level. The Reserve is located above the parallel 54. The current climate is temperate-humid continental type, with a total rainfall of 690 mm/year. The snow covers the area during 100-120 days per year and the average temperature is -7°C in January and $17,8^{\circ}\text{C}$ in July. Extreme temperatures are 33°C in summer and -36°C in winter.

River Berezina crosses the area forming a floodplain, particularly at its left bank, giving rise to a rich mosaic of different habitats, with countless ecotones and transitions, depending (among other factors) on the micro-topography and thus on the water dynamics. In deeper areas permanent water occupy the meandering river bed, abandoned meanders, lakes and ponds whereas in highest areas deciduous forests of oaks (*Quercus robur*), black alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), willow (*Salix fragilis*), etc., have reached a high degree of maturity. In the middle, large fens, bogs and mires of different types alternate across the landscape, sometimes with scots pine (*Pinus sylvestris*), birch (mostly *Betula pendula* and *B. pubescens*) and spruce (*Picea abies*). From the bio-geographical point of view, the area lies within the Boreonemoral Province of the Euro-Siberian Region.

The whole Reserve has been left aside from human intervention during the last 94 years, with the exception of the devastating 2nd World war in the forties and a period of 7 years in the fifties when the area was excluded from protection for political decisions. However, these periods were followed by intensive restoration of the damage caused. Since then, no forest exploitation nor farming, hunting or sport fishing are authorised, only minor extractions of natural products like berries, mushrooms, etc, are allowed. Dead trees are left on their places, as part of the natural process characterising mature forests.

Fauna species typical from the north European ecosystems of forest, mires and alluvial plain wetlands are very well represented in Berezinsky. Among the Vertebrates 237 bird species and 56 mammals have been listed (see section II.1). It is worth to mention that the recovery of the beaver (*Castor fiber*), that was nearly extinct in early XXth century has been possible thanks to the decision of declaring Berezinsky as a Hunting Reserve, when the history of this protected area started.

Berezinsky is managed as a strict Reserve (category I of IUCN) that may be one of the few European natural habitats of its kind not affected in a wider context by drainage, transformations, land use changes or exploitations. It is a remarkable natural space characterised by an important diversity, both in biological, structural and functional terms, subject to its conservation managing tradition during the XX century, oriented to maintain its original ecological features and endorsed by an active scientific production.

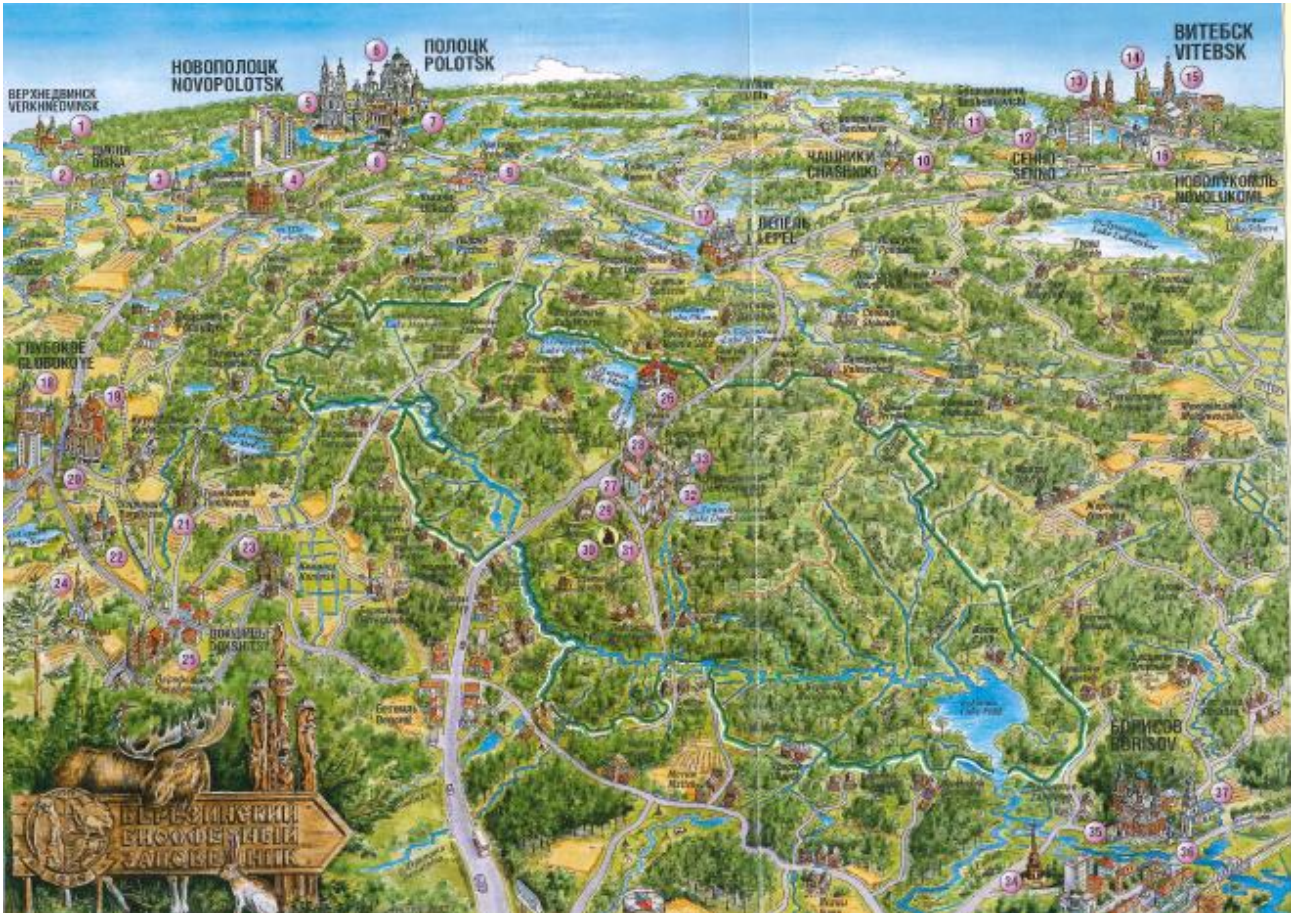


Illustration from the leaflet "Welcome to Berezinsky Biosphere Reserve"

3. EUROPEAN INTEREST OF THE SITE

The European Diploma was awarded as a recognition of the exceptional characteristics of this natural area, of the uniqueness and richness of its pristine ecosystems and for the adequate management practices, which goes back (with fluctuations) to the origin of the Reserve in 1925. In particular the great variety of hydrological and soil conditions, giving rise to the great diversity of the vegetation and the associated fauna benefiting from innumerable ecological transitions and boundaries, were highlighted:

- Diversity and pristine condition of interspersed habitats, protected since the declaration of the Reserve in 1925: mosaic of pine, alder, birch and oak forests, vegetation typical of marsh and bog wetlands and areas subject to flooding
- Presence of numerous species: half of the plant species known in Belarus, 70 types of forests, 780 vascular plants, 216 species of mosses and 198 of lichens inventoried. Vertebrate fauna with 317 species and approximately 1.800 insects among the invertebrate fauna were listed at the time of the Diploma award (1995). At present these lists are continuously increasing.
- Feeding and resting grounds for migratory vertebrate species, namely birds
- Long tradition of scientific research: atlas of vertebrates, vegetation map scale 1:25.000, numerous monographs and atlas of distribution for plant and vertebrate species, scientific publications, etc.

3.1 Fauna

A complete list of vertebrate fauna was provided during the appraisal visit. Up to now a total of 34 fish species, 11 amphibians, 6 reptiles, 240 birds (219 when the Diploma was awarded) and 56 mammal species (6 more than in 1995) have been recorded in Berezinsky Reserve.

- **Mammals:** The 56 species of mammals inventoried include, among others, brown bear (*Ursus arctos*), wolf (*Canis lupus*), beaver (*Castor fiber*), otter (*Lutra lutra*), Eurasian lynx (*Lynx lynx*), elk (*Alces alces*) and the reintroduced European bison (*Bison bonasus*) and small mammals like northern birch mouse (*Sicista betulina*) or forest dormouse (*Dryomys nitedula*). In early XXth century, beavers had practically disappeared from most of its former distribution area, for hunting pressure because of the value of their furs. In 1925, the authorities created a hunting Reserve in Berezinsky and totally banned not only the hunting of beavers, but also any other kind of game species. Forest exploitation and all kind of human use (farming, urban, berries, mushrooms, etc.) were also interrupted since then. For that reason, beaver is a particularly important species in Berezinsky Reserve, where at present it is very common.



- **Birds:** 240 species of birds have been recorded so far. Berezinsky is an important site for birds of different habitat types. Birds linked to wetlands are very well represented, with most duck and geese species of the European fauna, a great variety of groups, like swans (*Cygnus olor*, *C. columbianus* and *C. cygnus*), scoters and mergansers (*Melanitta*, *Mergus*), loons (*Gavia stellata* and *G. arctica*), ardeidae (*Botaurus stellaris*, *Egretta alba*, etc.), and many shorebirds (*Charadrius*, *Numenius*, *Calidris*, *Tringa*, *Gallinago*, *Chlydonias*, etc.) along with several species of gulls.

The community of diurnal raptors is of great interest, with interesting species like osprey (*Pandion haliaetus*), white-tailed sea eagle (*Haliaeetus albicilla*), Greater- and lesser- spotted eagles (*Aquila clanga* and *Aquila pomarina*), along with other raptor species more common in the European context.

Berezinsky has also a very complete set of nocturnal raptors (Strigiformes), with snowy owl (*Bubo scandiacus*), hawk owl (*Surnia ulula*), pygmy owl (*Glaucidium passerinum*), Ural owl (*Strix uralensis*), great grey owl (*Strix nebulosa*), Tengmalm owl (*Aegolius funereus*), and others more common in the European context.

It is also worth to mention the importance of a diverse community of Tetraonids, occupying the rich diversity of available habitats: capercaillie (*Tetrao urogallus*), black grouse (*Tetrao tetrix*), hazel grouse (*Tetrastes (=Bonasa) bonasia*) and willow ptarmigan (*Lagopus lagopus*).

Other interesting species are the black stork (*Ciconia nigra*), spotted nutcracker (*Nucifraga caryocactes*), corn crane (*Crex crex*), great snipe (*Gallinago media*), common crane (*Grus grus*) and many other species of Annex II of the Bern Convention which live regularly in this area.

- **Other vertebrate fauna:** up to now, a total of 34 freshwater fish species have been listed, including the sturgeon (*Acipenser ruthenus*), classified as Vulnerable by IUCN. As far as amphibians are concerned, a total of 11 species have been recorded up to now, as well as 6 species of reptiles.
- **Among the invertebrates,** approximately 1.800 insect species have been listed, and new ones are being discovered continuously.

3.2 Flora

The vegetation at Berezinsky Reserve is of an enormous importance. The area has been maintained in pristine natural conditions without human intervention during nearly 100 years and the contiguous area has also been under strict control by the authorities. Surrounding the core area and the buffer zone (with a total of 86.073 hectares), a transition zone of 1-2 km all around the Reserve and a strip of 5 km beyond the Reserve, of hydrological protection where land or water transformation or abstraction are forbidden, have been established. All over Europe most peatlands have disappeared by drainage for agricultural purposes, urbanisation, industry, etc. and therefore sites like Berezinsky with their intact bogs, mires and with its natural hydrological regime practically untouched, are a true exception. For that reason, along with a judicious management, this Reserve hosts such variety of habitat types and of species of flora and the associated fauna.

More than 2000 species of plants have been listed: 823 vascular (63 listed in the Belarus Red Data Book), 216 mosses, 464 mushrooms, 317 algae and 261 lichens. Besides the great heterogeneity of habitat types some noteworthy flora species can be mentioned. These data provide a clear idea of the exceptional ecological quality of the Reserve and of its high level of conservation:

- Among the pine forests: *Cephalanthera rubra*, *Epipactis atrorubens*, *Gymnadenia conopsea*, *Dracocephalum ruyschiana*, *Linnaea borealis* or *Lilium martagon*.
- In marsh ecosystems: *Betula nana*, *Corallophyza trifida*, *Listera cordata*, *Salix myrtilloides*, *Hammarbia paludosa* or *Saxifraga hirculus*.
- In spruce forests: *Cypripedium calceolus*, *Botrychium virginianum* and *Huperzia selago*.
- In broad-leaved forests: the rare fern *Cystopteris sudetica* can be found, being the only known site for Belarus.
- In meadowlands: *Gladiolus imbricatus*, *Iris sibirica* and *Coeloglossum viridae*.

3.3 Exploitation of resources

The Berezinsky State Biosphere Reserve, considering the core area and the buffer zone, is a State property and all kind of exploitation is forbidden since 1925, when the Reserve was declared. Only small amounts of mushrooms and berries can be collected with special permits awarded to the local population in specific sites well defined.

3.4 European interest justifying the Diploma

According to the information collected during the appraisal visit and from other sources, Berezinsky National Biosphere Reserve seems to maintain and even improve its ecological condition compared to when the European Diploma was awarded. This statement is based on the following aspects:

1. Strong commitment to the safeguard of the original character of ecosystems by means of management practices inside and outside the Reserve based on a remarkable scientific activity;
2. Excellent conservation situation of ecosystems nearly disappeared in other European countries;
3. Good population levels of relevant rare, threatened and/or valuable species in the European context;
4. A clear commitment of the authorities not only to the conservation of ecosystems and biodiversity, but also to the education and the economic development of local people while maintaining the singularity of the ecological values;
5. Transmitting an unequivocal conservation message regarding the implications of management decisions that can be controversial, like the general rule of leaving dead wood on the forests to complete the vital cycles of xylophages or forbidding hunting practices in the Reserve while allowing the activity on alternative grounds;
6. Managing the Reserve within a previous planning process giving rise to Management Plans periodically reviewed;
7. Achievement of long series of monitoring scientific data, so valuable for the assessment of the conservation situation and of possible changes, obtained and managed by an excellent management and scientific team highly motivated and committed;
8. Openness to international scientific and managerial activity and cooperation with other protected areas from all over Europe, participating in international conferences and activities to disseminate the experience gained in Berezinsky;
9. Strong commitment in training the new generations of nature conservation professionals and in the education on ecological issues to youngsters;
10. An excellent web page also in English with a great deal of information and references;
11. Early involvement in relevant international events, some of which have taken place in Berezinsky;
12. Efforts for international networking: UNESCO MaB Programme of Biosphere Reserves, Ramsar Convention list of wetlands of International importance, Wetland Link International (WLI), Twinning agreements with Northern Vosges and Kampinosky National Park, PAN Parks, etc.
13. At national level, Berezinsky participates in the State programmes "Development Programme of the National Environmental Monitoring System of the Belarus Republic" and "Development Programme of the Specially Protected Natural Areas of Belarus Republic";
14. Use of the European Diploma logo in all publications, web page and presentations.

4. CONSERVATION MEASURES

4.1 Legal protection status

Berezinsky Reserve was created in 1925 as a hunting Reserve by the Act of the Council of the People of the Belarus SSR. In 1959 it was declared State Nature Reserve. In 1979, when joining the UNESCO MaB Programme, it was declared as National Biosphere Reserve. Its protection has been confirmed by Regulations of the Council of Ministers of 2nd May 1992.

4.2 Boundaries/zoning/buffer zones

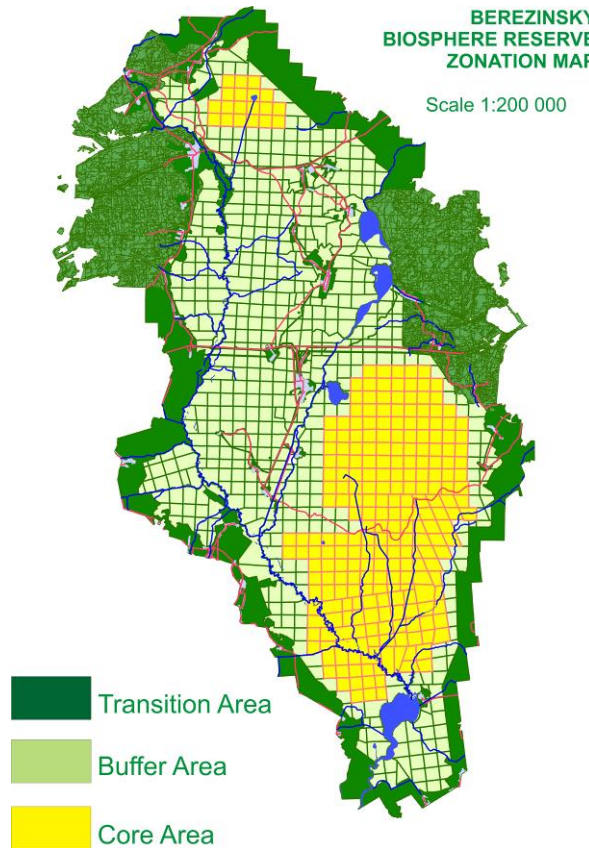
When the protected area joined the UNESCO MaB network of Biosphere Reserves, the three categories were designated at Berezinsky:

- Core area: Any kind of human interference into natural processes are forbidden: hunting, forestry, agriculture, etc. The natural ecosystems evolve in totally natural conditions

- Buffer Zone: All human uses are also forbidden, although the dead timbers may be taken out. Scientific research, studies of impact on nature and restoration measures are allowed.
- Transition Zone: all economic activities are under the control of the Reserve authorities. It consisted of a strip of 1-2 km all around the buffer zone, but in 2015 it was enlarged.

Additionally, a hydrological protection area of 5 km alongside the external boundaries of the Reserve (core area and buffer zone) was established to prevent any hydrological regime modification potentially affecting the Reserve. In this area no drainage nor use of chemicals are allowed.

During the last 10 years some changes of boundaries and size have occurred. At present the Reserve has a surface area of 86.072,8 ha: the core area has 27.204 ha and buffer zone 58.868,8 ha. The transition zone has 46.598,1 ha



4.3 Supervision and warding

The number of Wardens varies according to budgetary availability. At the moment there are a total of 128 Agents, distributed across the territory in 7 departments. They work in groups of 3-4, equipped with motor vehicles and/or boats and radio communication devices. During their detachments they live in different houses located in strategic places and constructed according to the traditional architecture.



Warden house in a mature mixed forest of *Quercus robur* and *Alnus glutinosa* close to Berezina river

4.4 State of conservation of the main species and their habitats.

According to data provided by the Scientific Deputy Director of the Reserve, Mr. Valery Ivkovich, the data on the abundance of the most noteworthy fauna are the following:

- Brown bear (*Ursus arctos*): 39 - 40 individuals (35-35% of total population in Belarus)
- Eurasian lynx (*Lynx lynx*): 15 individuals
- Wolf (*Canis lupus*): 25 individuals
- Otter (*Lutra lutra*): 75 individuals
- European bison (*Bison bonasus*): 19 individuals
- Spotted eagle (*Aquila clanga*): 8 pairs
- Lesser spotted eagle (*Aquila pomarina*): 16 pairs
- White-tailed eagle (*Haliaeetus albicilla*): 3-4 pairs
- Osprey (*Pandion haliaetus*): 8 pairs
- Capercaillie (*Tetrao urogallus*) 280 individuals
- Black grouse (*Tetrao (=Lylurus) tetrix*): 276 individuals
- Willow grouse (*Lagopus lagopus*): not seen since 2001
- Ural owl (*Strix uralensis*): 8-10 pairs
- Great gray owl (*Strix nebulosa*): 3-5 pairs
- Black stork (*Ciconia nigra*): 5-7 pairs

The willow ptarmigan (*Lagopus lagopus*) often suffers from big fluctuations of several years. Berezinsky lies on the southernmost part of their European geographical range and this species has not been registered since 2001.

4.5 Land use planning

Land use planning of the reserve is carried out on the basis of forest inventory and management projects. Forest inventory and management projects are developed by a specialised enterprise from Ministry of Forestry with the participation of reserve staff for a ten-year period. The current project is to be implemented between 2019 and 2028.

4.6 Threats

In general terms the Berezinsky Reserve is well preserved. However, according to the information provided by the authorities, two elements of concern have been identified: the M3 road and a process of decay affecting very old and huge trees of the species *Fraxinus excelsior*.

A third one must also be considered, not as an imminent danger, but obviously as an emergent threat due to the climate change: the fire. Increasing temperatures, especially in summer, and eventual reduction of rainfall are key factors that in the long run may increase the risk of fire events.

M3 road:

This infrastructure, which is not fenced, crosses the Reserve from East to West approximately by its intermediate zone along 17 km. The continuously increasing use of the road, as a consequence of the improvement of the economic situation of the country, is increasing the mortality of small fauna and the number of accidents by car crash with big fauna (namely red deers and elks). This provokes big risks to human security and to the transports and, of course, a considerable problem of habitat fragmentation and of non natural mortality of wild species, that must be corrected as soon as possible.

According to studies performed for several years, accidents with big fauna are mostly concentrated in 3 specific places. The solutions to be implemented to solve this problem should, therefore, be located in these points. The authorities of the Reserve informed that the Government of the Republic of Belarus is planning the renovation of the M3 road and this should be the opportunity to build passages for large fauna, since they are very expensive and cannot be assumed by the Reserve budget.

Small passages have been built under the road for small fauna, namely amphibians, with limited success. However, no solutions have been implemented so far to avoid mortality of big fauna: underpasses are not possible due to the flooding condition of the land.



Some signs have also been installed urging drivers to reduce speed. Traffic authorities make speed controls with fines to infringers.

Disease of *Fraxinus excelsior* trees:

Within the core area huge old ash trees are dying in a sudden way by an unknown agent or by a number of them acting together. The authorities are monitoring the situation and making consultations with experts, but for the moment no solution has been found. New small trees are appearing in the area, so that the process may be reversible in the long term.



*Huge old ash trees falling,
whereas young ones emerge*

**Fire risks:**

Over the past ten years, very few and small fires occurred on the territory of the reserve. To prevent fires, some preventive works are performed annually, like plowing of quarter lines making linear glades acting as firebreaks (see picture below). For firefighting the early detection of fires in the reserve is a priority. For that purpose, 5 observation towers with a height of 30 m are installed, which are equipped with video cameras. There is a fire truck, motor pumps, backpack sprayers and other equipment. Forest guard duty in all forestry divisions are duly trained for these events.



Linear glades acting as firebreaks, forming a grid of 1 km long

5. MANAGEMENT

5.1 Management Plan

Berezinsky State Biosphere Reserve has an Integrated Management Plan 2009-2013, revised for another period 2015-2019. The new Management Plan is foreseen to start in the year 2020.

5.2 Institutional responsibility

The authorities responsible for the Reserve conservation and management are under the direct responsibility of the office of the Belarus Republic Presidency.

5.3 Capacities

The national authorities responsible for the Berezinsky Reserve also are responsible for side related activities like tourism and the Barsuki Experimental Forest and Hunting Ground, located in the transition zone of the biosphere reserve. It is not part of the lands of a specially protected natural area. For that reason, the total staff number is quite high (512) and it can be described as follows (data provided by the Deputy Director):

Financed by the State budget (287 people):

- Management - 9
- Forest Protection Department - 7
- Department of Wildlife Conservation - 6
- Scientific department - 16
- Department of Tourism and Environmental Education - 23
- 7 forestry departments - 128 (forest guard)
- Service department - 9
- Accounting and economic planning department - 15
- Human Resources Department and Secretariat - 6
- 2 forestry departments of the Experimental forest-hunting enterprise "Barsuki" - 68 (forest guards)

Production activities (225 people):

- Management - 2
- Production department and accounting - 12
- Hunting Ground - 15
- Woodworking workshop - 62
- Hotels and shops - 61
- Construction department - 10
- Car and tractor park - 47 (drivers and technicians)
- The team for logging in the Experimental hunting and hunting enterprise "Barsuki" - 16

5.4 Budget

During the last five years, the Berezinsky Reserve annual budget has been as follows:

2014	3.594 M US Dollars (equivalent to 3.209 M€)
2015	2.911 M US Dollars (equivalent to 2.599 M€)
2016	1.727 M US Dollars (equivalent to 1.542 M€)
2017	1.886 M US Dollars (equivalent to 1.684 M€)
2018	2.552 M US Dollars (equivalent to 2.279 M€)

5.5 Research and Monitoring Programmes

A total of 100 permanent plots have been established since the 70s as the basis for ecological, monitoring in Berezinsky main ecosystems. Some of them are active for more than 50 years:



A particular effort is being made for the fulfilment of Condition 3, aiming at obtaining data to assess the effect of hunting practice outside but near the Reserve on game species populations. There are two specific monitoring actions for that purpose: "*Analysis of modern state and perspectives of development of mammal complexes of Berezinsky Biosphere Reserve*" and "*Analysis of modern state of diurnal Birds of Prey on the territory of Berezinsky Biosphere Reserve*".

Measures for assessing the viability of Berezinsky as adequate habitat for a free-living herd of 19 bison (*Bison bonasus*) is also being implemented between 2015 and 2019, in order to obtain information on the possibilities of this species to recover the Berezinsky micropopulation.

Game species census and monitoring is also being made using camera-traps and a quadcopter (drone). The aim is to determine the number of permits that can be awarded without damage to the game species populations of the area.

Integration in international programmes: Berezinsky is actively cooperating with other international protected areas whereby the exchange of knowledge and experience is promoted.

Scientific Chronicle of the Reserve (LETOPIS): The chronicle of nature started to be published in 1969 and it is one of the main scientific documents of the reserve. It annually records the results of observations of natural processes and phenomena in accordance with a unified program. The chronicle of nature is compiled on the basis of primary observations and contains all the information about the current state of the reserve's ecosystems and their components.

The annual Nature Chronicle program contains information on the following issues:

- climatic indicators,
- features of phenological phenomena in the life of plants and animals,
- the dynamics of the number of background and rare species of animals,
- forest taxation indicators on permanent plots in forest ecosystems,
- analysis of direct and indirect effects on the natural complexes of the reserve,
- the results of environmental and forestry activities, scientific and environmental education activities.

5.6 Relationship between the Reserve Administration and other stakeholders

The relations between the administration of the reserve and other stakeholders mainly concern the issues of conducting economic activities in the transition zone.

The administration of the reserve considers and agrees for stakeholders in carrying out clear cutting in this zone, conducting various types of hunting, clearing vegetation under power lines, and extracting sand or gravel.

5.7 Public services including waste management

Waste management in the reserve is carried out by a specialised enterprise, which is located in the regional center -Lepel. Covering the territory of the reserve, 70 containers to collect solid household waste were installed. Garbage is removed from containers twice a week (Monday and Friday) with a special car, to a landfill outside the reserve.

5.8 Use of renewable energy systems

Heating of houses and office buildings in the village of Domzheritsy is carried out centrally from the local heat station. Renewable sources of energy are used such as wood chips and sawdust. The local population uses firewood for heating.

The Museum of Mythology has solar panels to operate.



6. USES AND SOCIO-ECONOMIC ACTIVITIES

6.1 Exploitation of natural resources

All economic uses are forbidden in the Core Area and in the Buffer Zone of the Berezinsky State Biosphere Reserve. Forestry, farming and hunting activity is allowed outside the Reserve and part of the funds for Berezinsky conservation and management come from this activity

6.2 Tourism and leisure activities

The authorities responsible for Berezinsky Reserve are very much involved in tourism as a cross-cutting activity. Some accommodation infrastructures are financed and managed by them and part of the benefits are used for the Reserve conservation needs.

The scientific research is the basis of the tourism and awareness raising activities in the Reserve. Ecological tours are organised for groups of visitors for the observation of wild animals on their original habitats, with the recommendations of the scientific department. Between March and September some one-day weekend excursions are conducted under the guidance of the staff, making a great emphasis on the ecological education of the population.

6.3 Education and awareness raising

Berezinsky has its main administrative premises in the village of Domzheritzky. In this area there are also a number of centres for education and awareness raising:

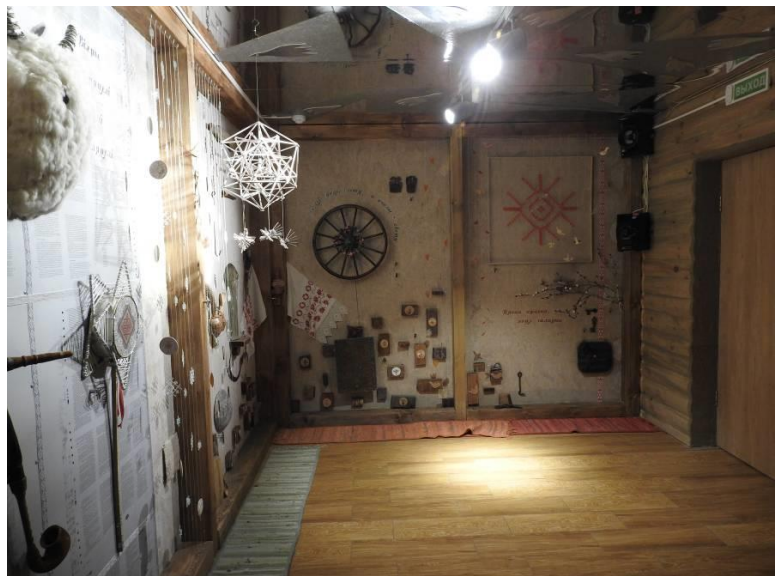
- **Nature Museum**

Inside a building garnished with wooden traditional ornamental sculptures, it hosts a collection of dioramas representing the most noteworthy fauna of Berezinsky. It also has a souvenir shop with articles hand made by local artists.



- **Museum of Mythological Tourism**

This original infrastructure was opened in 2017 and shows some elements and articles of the local culture related to the supernatural world, like amulets, designs of fantastic creatures, musical instruments, herbs and devices to avoid "bad spirits", etc. Many of them are of great artistic quality. This initiative was funded by the European Union and implemented under the United Nations Development Programme in Belarus, aiming at attracting visitors to the countryside to enjoy and learn from different prospects offered by nature.



- **Zoo**

A small zoo has been built to offer the visitors to see some relevant species typical from Berezinsky: a female bear, red deers, lynx, wolves, elks, etc. They mostly are irrecoverable individuals with no opportunities to survive in the wild.



Entrance to Zoopark (left) and lesser-spotted eagle (Aquila pomarina) (right)

Furthermore, there is a school on ecological education for teenagers in the village of Domzheritz, providing an excellent training for future professionals on nature conservation, very much appreciated by the local population.

6.4 Car traffic and public access

The Berezinsky Reserve is well connected by car with the capital city and with all urban areas of the Minsk and the Vitevsk Regions, by means of the road M3.

For tourists and visitors of the Reserve the access to the main facilities (reception centres and museums) is very easy, since they are mostly located in the neighbouring area of the village of Domzheritz, 3 km south to M3 road. From there, the visitors accompanied by staff members can reach the different areas authorised for this purpose.

6.5 Hunting/fishing

Hunting and fishing are forbidden inside the Berezinsky State Biosphere Reserve. However, hunting is allowed in an area located nearby, the "Barsuki" game reserve of about 90.000 hectares whose management is under the responsibility of the authorities of the protected area too. This area benefits from the scientific and monitoring activity deployed by the Reserve staff, in order to obtain information on the population levels for the establishment of the number of hunting permits affecting the different game species.

The hunting activity attracts many hunters from all over the country and is a good source of revenues and economic development in the local communities surrounding Berezinsky. It is also a source of income for the conservation of Berezinsky State Biosphere Reserve.

Fishing in the reserve is strictly limited. Sports (amateur) fishing is allowed free of charge only in specially designated sections of water bodies (lakes) and waterways (Berezina, Serguch, Serguchsky Canal) for local residents living in settlements within the borders of the reserve, reserve workers and citizens temporarily residing in hotels and guest houses of the reserve. Fishing is permitted with specially issued tickets. There is a limit on the weight of captures per fisherman.

6.6 Human occupation

Inside the Berezinsky Reserve there is only an urban area with about 900 inhabitants: the village Domzheritz, where the main administrative complex of the Reserve is located. The rest of the Reserve has a few scattered houses, most of them belonging to the Reserve staff.

In the seventies a small village located in the middle of the core area was dismantled and all its inhabitants were obliged to move to peripheral areas of the Reserve. The site was totally restored and at present only a few fruit trees and cereal crops witness the former human settlement. Amazingly, a female brown bear and her cubs uses this area for feeding purposes and it has revealed to be of great importance for the successful reproduction of bears. The Reserve managers keep cultivating the cereal grounds year after year for that purpose. A wooden hide has been installed for fauna monitoring.



Wooden hide for fauna observation. At bottom the cereal crop maintained to feed fauna

6.7 Cultural heritage

The Reserve has some historical monuments and witness of cultural heritage. The most relevant are:

- The Serguch Canal: During the XIXth century there was a plan to use the navigation capacities of the river Berezina and its tributaries for transport purposes. At this time the communication between the river basins of the Black Sea and of the Baltic Sea were considered as strategic for enabling the communications by means of boats across the area, because of its situation halfway between both seas. The siltation has greatly affected this Canal, but it is still active, although without this function, and nowadays the Baltic Sea basin is still connected with the Black Sea basin. At present it works ecologically as one more of the river channels of the Reserve.
- A monument reminds the place where the French Army under the command of Napoleon crossed the river Berezina.
- Other monuments were erected to honor the activity of the local partisans during the Second World War against the German troops.

An important cultural heritage testimony is the handicraft. In this area wood artists are relatively common. The doors and some elements of the Nature Museum in Domzheritz is made with this technique and they are really marvellous.



Some signs of the Berezinsky Reserve have been made by local artists by means of wooden sculptures representing the local fauna of a great beauty and originality.

Sculptures with signs addressing the visitors to the Museum:



7. CONNECTIVITY OF THE AREA

7.1 Ecological connectivity with other areas

The boundaries of the Berezinsky Reserve are totally permeable to animal movements, since it is not fenced. Therefore, the ecological connectivity with natural peripheral areas is considered by the authorities as "sufficient". An important element limiting natural animal movements is the M3 road, linking Minsk and the city of Vitebsk (see section III.6 "Threats").

According to the information provided by the Reserve managers, the monitoring of fauna reveals that there are exchange of individuals among Berezinsky and other natural sites in the neighbouring area.

7.2 Other forms of recognition awarded

- UNESCO Biosphere Reserve in February 1979, with a core area of 22.161 ha, a buffer zone of 58.050 ha and a transition zone of 1-2 km alongside the external boundaries with 32.660 ha. Additionally, a hydrological protection perimeter of 5 km outside the Reserve and a hunting reserve of 90.665 ha adjacent to the Reserve.
- In 2015 Berezinsky participated in the 50th anniversary of the European Diploma programme in Migliarino (Italy) and signed a Twinning agreement with the Biosphere Reserves of Kampinosky National Park (Poland) and of the Northern Vosges (France)

- Convention on Wetlands of International Importance (Ramsar Convention): Berezinsky was added to the Belarus list on 25th January 2010.
- Since 2011 the Berezinsky Centre for Environmental Education is a member of the programme Wetland Link International (WLI), led by the Wildfowl and Wetlands Trust (UK).
- Berezinsky State Biosphere Reserve has obtained in 2015 until 2020 the certificate FSC™ for the system of forest management and supply chain.

8. IMPLEMENTATION OF CONDITIONS AND RECOMMENDATIONS

When the European Diploma was renewed in 2010, Resolution CM/ResDip(2010) established one condition and five recommendations. **According to the information collected during the appraisal visit**, the undersigned expert could draw the following conclusions:

Assessment of CONDITION 1 - *The protection regime and ownership of the land should be kept unchanged.*

The protection regime and ownership of the land has remained in the same situation for nearly 95 years. In principle, there are not reasons to think that may be changes in this sense. However, for the long-term future it is essential that the Reserve remains a state property, in order to meet the needs that can arise and to cope with the challenges that may appear.

For the ongoing renewal, **this condition should be maintained.**

Assessment of RECOMMENDATION 1 - *Sufficient resources need to be generated both by the Government and by the Reserve to protect effectively the biodiversity resources and to continue scientific research. In addition to extra-budgetary sources of income, other sources should be tapped, especially in cooperation with NGOs such as Okhova Ptushak Belorusi (Belorussian BirdLife) and the WWF.*

Despite the request by the Secretariat of the Group of Specialists to the Reserve's authorities to organise a brief meeting with stakeholders of Berezinsky, during the appraisal visit no opportunity to have their feedback was put forward. Key stakeholders are these two NGOs, but no information could be retrieved.

Inputs from the NGOs on the recommendation 1 couldn't, therefore, be obtained during the appraisal visit. However according to Annual reports, some cooperation activities with different conservation bodies were held:

- 2013 - Joint project "Restoring peatlands and applying concepts for sustainable management in Belarus - Climate Change mitigation with economic and biodiversity benefits", by BirdLife Belarus, Michael Succow Foundation and RSPB from UK;
- From 2015 multi-year project "Pilot Geo-Information System (GIS) of satellite monitoring of marshes for protection and restoration under intense anthropogenic impact" financed by Russia and Belarus;
- 2016-2017 Granted project "Natural succession forest ecosystems after different types of anthropogenic disturbances".

The **Recommendation 1** has, therefore, been **fulfilled**.

For the ongoing renewal **this recommendation should be maintained.**

RECOMMENDATION 2 - *Further efforts should be taken to prevent negative effects from the fragmentation of the Reserve by the M3 road and to preserve the integrity of the core area.*

The authorities have constructed a few small vertebrates' passages under the M3 road, in order to allow small fauna, like amphibians, reptiles and small mammals, to cross the road. The results seem to be quite limited. Sometimes it gets flooded and they don't solve the problem of the individuals preferring to cross the road on surface. On the other hand, some monitoring activities and studies have been carried out during the recent years to characterise the effect of the road, but no actions have been taken to avoid this significant

cause of non natural mortality to all organisms that do not use the small passages under the road. Some car crash with red deers and elks have occurred.

The recommendation 2 has, therefore, been only **partially fulfilled**.

For the ongoing renewal **this recommendation should be maintained and re-classified as a condition**.

RECOMMENDATION 3 - *Further study on the dynamics of the mammal populations, animal movements and fauna migration between the core and the buffer zones should be carried out in order to follow the progress of the effect of hunting on the current situation and manage the populations accordingly.*

These studies have been made since several years. Although the conclusions and findings have not been provided, they seem to have been incorporated in the new Management Plan which is in preparation.

The recommendation 3 has, therefore, **been partially fulfilled**.

For the ongoing renewal **this recommendation should be reformulated**.

RECOMMENDATION 4 - *Continue with the efforts between the appropriate Ministries to ensure that the development of the tourism is well controlled*

The tourism activity within the Reserve is quite limited and in all cases the visitors are accompanied by staff members. For the near future, the authorities are ready to assume in the same way a higher demand of tourism and specialised visits (ornithologists, etc.) integrating this activity also as a source of income for local people, since they obtain good results.

The recommendation 4 has, therefore, **been fulfilled**.

For the ongoing renewal **this recommendation should be maintained**, to prevent increases of demands, as it is occurring elsewhere.

RECOMMENDATION 5 - *In order to mitigate possible risks and hazards connected with climatic changes and possible large-scale disturbances on the Reserve, the study programme on these topics should be continued.*

The Berezinsky Reserve has a Management Plan and a team of scientists which is making continuous measurements of the physical and biological parameters within permanent plots and gathered long series of data.

The recommendation 5 has, therefore, **been fulfilled**.

For the ongoing renewal **this recommendation should be maintained**, having regard the important challenge of climate change and other large-scale modifications like pollution, alien invasive species, potential hydrological changes beyond the Reserve, etc.

9. FINAL APPRAISAL

The undersigned expert **recommends the renewal of the European Diploma for Protected Areas to Berezinsky State Biosphere Reserve for 10 years, since the area is of exceptional European interest and it is managed in an exemplary way.**

As stated above, the condition formulated at the time the European Diploma was renewed is considered to be useful and therefore it should be maintained in the same terms. The recommendations n° 2 is proposed to be upgraded to Condition n° 2 with much more specific actions to be implemented in the near future. The remaining 4 recommendations are still valid and useful and therefore are proposed to be maintained or reformulated.

For the renewal of the European Diploma to Berezinsky State Biosphere Reserve **the following conditions and recommendations are proposed:**

CONDITION 1: *The protection regime and the ownership of the land should be kept unchanged*

CONDITION 2: *Based on the findings of the studies on the effect of the road M3 on the fragmentation of the Biosphere Reserve, create at least 3 passages for large fauna above the road by the end of 2022. Vegetate the viaducts with native plants to improve their naturalness and encourage fauna to use them.*

RECOMMENDATION 1: *Draft and adopt by 2021 a new management plan for a period for the long-term conservation of the Berezinsky State Biosphere Reserve for a duration consistent with the renewal of the European Diploma; include specific provisions dedicated to climate change and how to address this issue in relation to the long-term preservation of endemic species.*

RECOMMENDATION 2: *Sufficient resources need to be generated both by the Government and by the Reserve to protect effectively the biodiversity resources and to continue scientific research. In addition to extra-budgetary sources of income, other sources should be tapped. Cooperation with NGOs and/or enterprises committed with their corporate social responsibility should be promoted.*

RECOMMENDATION 3: *The ongoing studies on the dynamics of the mammal populations, animal movements and fauna migration between the core and the buffer zones should be continued, in order to follow the progress of the effect of hunting on the current situation and to manage the populations accordingly.*

RECOMMENDATION 4: *Continue with the efforts between the appropriate Ministries to ensure that the development of the tourism is well controlled.*

RECOMMENDATION 5: *In order to mitigate possible risks and hazards connected with climatic changes and possible large-scale disturbances on the Reserve (like contamination, changes of the hydrological regime, alien invasive species, increasing frequency of extreme events, etc.) continuous analysis of the long data series should be made in order to early detect the effects on Berezinsky ecosystems. For instance, eventual reduction of rainfall, changes of the snow cover dynamics, temperature rising, possible maladjustments among species potentially due to increasing aridity or to modifications of the annual cycle, etc, should be characterised. The menace of fire should be seriously considered as an increasing risk and additional preventing measures should be considered for implementation.*

10. ACKNOWLEDGEMENTS

The undersigned expert warmly acknowledges the availability of the Reserve staff and the facilities at the service of the appraisal visit. In particular, I wish to appreciate the perfect organisation and the efforts made by the Deputy Director and Head of the Research Division, Mr. Valey Ivkovich, who not only received me at the airport, but also accompanied me during the whole visit (along with his driver Mr. Vasily Sovosteeonok) and provided me with maps, written information and extremely useful comments and expertise.

I would also like to make a particular mention to the Director of the Reserve Andrei Prokoshin, who ordered the maximum cooperation and provided all logistic and ancillary arrangements for a successful visit. The participation of the Junior Researcher Mrs. Anastasia Ryzhkova, who acted as translator during the interviews with the Director, was extremely useful and I appreciate her kindness as well.

Mrs. Tatiana Romanovich, chairing the Rural Executive Committee of the village Domzheritzky, also attended the interview with the Reserve Director, explaining her valuable opinions on the situation of the local people in relation to the Berezinsky Reserve, which I appreciate so much.

Some members of the Warden Corps made also the visit easier and more productive. In particular, I would like to mention to the Senior inspector of the Kraytsy forestry division, Mr. Alexander Didenko and the Inspector of the Palik forestry division, Viktor Tolstik.

Last but not least, I very much appreciate the opportunity to join the ornithologist and Senior researcher Yuri Bogutsky, during the evening observation of birds and beavers from the observation tower located in the mouth of the Serguch Canal and the Berezina River. I had the opportunity to see many of the magnificent

landscapes and valuable wild species, while sharing his deep knowledge of the area and witnessing his strong commitment for the conservation, scientific progress and management of the Berezinsky Reserve.

All of them made this visit absolutely unforgettable. A huge THANK YOU to this fantastic and highly motivated team.

Granada, 19th August 2019



ANNEX I - PROGRAMME OF THE VISIT (19-20 June 2020)**1st day:**

- Arrival at Minsk airport in the evening
- Transport to Hotel and discussion of the program

2nd day:

- Meeting with the Director, general discussion with the activities of the reserve
- Visiting of objects of ecological education and tourism: The Museum of Nature, the House of Environmental Education, the Forest Zoo, the Museum of Mythology, the ecological path
- Field excursion by car to the core zone of a biosphere reserve: various types of wetlands, coniferous forests, mixed forests, windbreak areas, black alder swamp forests, small rivers

3rd day:

- Field excursion on a motor boat on the river Berezina: floodplain meadows, beaver settlements, deciduous forests
- Meeting with employees, local authorities, summing up the visit

4th day: Breakfast and departure. Transfer to the Minsk airport.