

World Heritage Sites

Protected Areas and World Heritage



BELOVEZHSKAYA PUSHCHA / BIAŁOWIEŻA FOREST BELARUS AND POLAND

Situated on the watershed between the Baltic and the Black Seas, this immense relatively undisturbed forest of evergreen and deciduous broad-leaved trees is the last large primary temperate forest in lowland Europe and one of its largest biodiversity reserves. It contains several rare species of mammal such as wolf, elk, lynx and otter, and some 300 reintroduced European Bison, an endangered species.

Threats to the Site: Large-scale official commercial logging and development of the surrounding old-growth forest.

COUNTRIES

Belarus and Poland

NAME

Belovezhskaya Pushcha / Białowieża Forest

NATURAL WORLD HERITAGE TRANSBOUNDARY SERIAL SITE

1979: Białowieża Puszcza Forest inscribed on the World Heritage List under Natural Criterion vii;

1992: Belovezhskaya Pushcha Forest inscribed on the World Heritage List under Natural Criterion vii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

INTERNATIONAL DESIGNATION

1976: Białowieża Puszcza Forest designated a Biosphere Reserve under the UNESCO Man and Biosphere Programme (10,502 ha).

1993: Belovezhskaya Pushcha designated a Biosphere Reserve under the UNESCO Man and Biosphere Programme (191,300 ha).

IUCN MANAGEMENT CATEGORY

Belovezhskaya Pushcha National Park, Belarus:
Białowieża Forest, Poland:

II National Park
Ia Strict Nature Reserve

BIOGEOGRAPHICAL PROVINCE

Middle European Forest (2.11.05)

GEOGRAPHICAL LOCATION

Belovezhskaya Pushcha forest lies between western Belarus about 60 km north-northwest of Brest and eastern Poland, 62 km south-east of Białystok, located between 52° 30' to 52° 59'N and 23° 35' to 24° 20'E; Białowieża forest, between 52° 41' 55" to 52° 59' 15" N and 23° 43' 10" to 23° 56' 30" E.

DATES AND HISTORY OF ESTABLISHMENT

Historically the forest was well protected as a royal hunting reserve. In the 14th century limited hunting rights were granted.

1538: The first recorded law protecting the forest;

1541: Declared a hunting reserve to protect the bison;

1557: A forest charter was issued, appointing a special board to examine the rights of forest usage;

1800's: The forest was opened to public use;

1888-1917: The Tsar was the last private owner; 1917: the forest came under state jurisdiction;

Bialowieza Puszcza

1921: The Polish sector of the forest protected as a National Forest Reserve, following heavy mechanised logging in World War I;

1931: Bialowieza Puszcza designated a Polish National Park (4,500 ha);

1944: At Yalta the forest was formally divided between the USSR (87,607 ha) and Poland (62,500 ha); The Pushcha was protected for hunting, under Decision 657 of the Soviet Union of People's Commissars and in 1957, under Order 2252-P of the USSR Council of Ministers;

1947: Bialowieza National Park re-established following heavy logging during and after World War II: Strict Reserve (4,747 ha), Research Restitution Centre (217.8 ha), Botanic Park (47 ha);

1976: The Polish forest designated a UNESCO Biosphere Reserve;

1996: The National Park was extended northwards by 5,186 ha to 10,502 ha; to be governed by the Nature Protection Act of 1991;

2003: The Polish government lifted a ban on felling trees in the surrounding forest over 100 years old, and increased the permissible harvest;

Belovezhskaya Pushcha

1940: Belovezhskaya Pushcha State Game Reserve established;

1944: At Yalta the forest was formally divided between the USSR (87,607 ha) and Poland (62,500 ha); The Pushcha was protected for hunting, under Decision 657 of the Soviet Union of People's Commissars and in 1957, under Order 2252-P of the USSR Council of Ministers;

1957: The Belovezhskaya Pushcha Forest declared a Hunting Reserve;

1991: National Park status for 87,606 ha declared by Decree 352 of the Byelorussian SSR Council of Ministers; 1993: Designated a UNESCO Biosphere Reserve;

1994: The Property Management Department of the Belorussian Presidency introduced a multi-purpose management regime for Belovezhskaya Pushcha Forest;

1997: The Park was awarded the European Diploma by the Council of Europe, for its management regime; renewed in 2002.

2002: Belovezhskaya Pushcha National Park (BPNP) in Belarus enlarged to 100,312 ha with a buffer zone of 92,000 ha;

2004: The forest area in Belarus enlarged to 152,200 ha with a core area of 30,000 ha (UNESCO/IUCN, 2004; BP XXith CI, 2004).

LAND TENURE

The Belorussian and Polish States. In Belarus, in the Kamenetsky and Pruzhansky Districts of the Brest Region and Svisloch District in Grodno Province. Administered since 1994 by the Administrative Department of the President's Office. The Forest and Game Hunting Department of the Ministry of Natural Resources & Environmental Protection is responsible for the conservation of biodiversity and the use of natural resources. In Poland, the site is in the voivodship of Podlasie, administered by the Bialowieski National Park Management under the General Board of National Parks within the Ministry of the Environment.

AREA

92,669 ha (UNESCO List, 2008). The UNESCO/IUCN Mission of 2008 determined the areas of the property to be 87,606 ha in Belarus and 5,069 ha in Poland totalling 92,675 ha. The Belarus authorities however stated in 2008 that only 5,235 ha of its National Park was covered by World Heritage site protection (UNESCO, 2009).

ALTITUDE

145m to 202m

PHYSICAL FEATURES

The Pushcha forest nominally covers between 150,000 and 214,600 hectares of a flat to rolling lowland plain on the hydrological divide between the Baltic and Black Seas. The land is covered by glacial formations with deposits of deep sands overlying clays and loams, podzols and bog soils above Cretaceous bedrock, which forms a mosaic of peat bogs, streams and river valleys. The organogenic peat and marshy peat formations in valleys and local depressions often contain raised mire systems (Okolow, 1994). The forest is drained by the River Orlowka, a tributary of the northward-flowing Narewka which crosses the northern part of the Park in Belarus. The Pavaya Lisnaya river drains the south (MAB-Belarus, 1993). The soils are mainly acidic.

CLIMATE

Conditions are cool-temperate continental with a mean annual precipitation of 620mm, two-thirds of which falls between April and October. The mean annual temperature is 7°C with average January and July temperatures of -5°C and 18°C. Snow cover persists for an average of 92 days per year between mid-October and the end of April. Conditions favouring plant growth occurs for 205 days per year (MAB-Belarus, 1993).

VEGETATION

Belarus: The ancient Forest of Belovezhskaya Pushcha is the last large primary mixed deciduous and evergreen temperate forest in lowland Europe, and is thought to have first established 4,000 years ago following a change in climate. It extended, before recent enlargement, 55 km from east to west and 51 km from north to south with the National Park in the centre. When designated in 1992 the Park's area was 87,607 ha, 90% being forested. Of the total 62.2% was coniferous, 28.2% deciduous and the remaining 9.6% (8,087 ha) was hay meadow, arable, water and marsh (N. Bambiza *in litt.*, 2002). It has scattered stands of virgin old growth averaging 250-350 years old and it is claimed that there are over 1,000 trees between 300-600 years old. The core areas of the World Heritage site are the only nearly untouched islands of primeval forest in the whole forest area. This makes them very vulnerable to negative changes in their surroundings.

The vegetation is of humid western European type with intermixed northern and southern elements. It has 12 major forest associations, the co-dominant communities being the typical east European linden-hornbeam *Tilio-Carpinetum* and the typical central European oak-hornbeam *Quercus-Carpinetum*. Principal forest species include Scots pine *Pinus silvestris*, Norway spruce *Picea abies*, hornbeam *Carpinus betulus*, little-leaved lime *Tilia cordata*, oak *Quercus robur*, sycamore *Acer platanoides*, maple *Acer* spp., ash *Fraxinus excelsior*, downy and white birch *Betula pubescens* and *B. verrucosa*, aspen *Populus tremula* and black alder *Alnus glutinosa*. There are aquatic communities and 38 nationally

threatened plant species. In total, within the hundred plant communities of the forest, 1,040 vascular plant species are recorded, including 26 tree and 138 shrub species, almost two-thirds being indigenous, more than 3,000 species of fungi, 375 species of lichens and 260 mosses. The Red Book of Belarus lists 65 higher plants, 4 mosses, 16 lichens and 7 mushrooms. The forest retains unique associations of saprolitic invertebrates living in rotten wood, bogs and fens (UNESCO/IUCN, 2004).

Poland: The National Park is in the centre of the forest with a core area of scattered stands of primeval forest. Within this section of the forest (58,000 ha) there are 113 plant associations including 20 forest associations, four communities of water plants, two shrub communities and 13 communities of peat bogs and meadows. Within the strict preservation area there are 632 species of vascular plants, 443 being native, comprising about 29% of the flora of Poland. All the major forest associations found in this part of Europe occur: lime-hornbeam and oak-hornbeam communities and northeastern European forms such as pine-spruce-oak communities. The dominant tree species are the same as those across the border. Beech, yew and larch are absent.

35 species of shrubs are recorded. Brushwood associations on the peat soils are composed mainly of grey willow *Salix cinerea*, dwarf birch *Betula humilis* and *Pinus silvestris*. Meadow associations and aquatic communities also occur. Rare plant species include mountain arnica *Arnica montana*, swamp willow *Salix myrtilloides*, river birch *Betula obscura*, *Isopyrum thalictroides*, twelve Orchidaceae, *Saxifraga hirculus*, the aquatic species *Pedicularis sceptrum-carolinum* and *Lathyrus laevigatus*, and *Hedera helix*, here at the eastern limit of its range. According to the Society for Conservation Biology (2003) there are 5,500 different species of plants in the whole forest including 254 lichen species, 80 liverworts and more than 3,000 fungi (C. Okolow, pers. comm., 1995).

FAUNA

Belarus: The Pushcha forest has typical European forest faunal communities with 68 mammal, 250 bird, 13 amphibian, 7 reptile and 26 fish species and some 8,500 insect species have been recorded in the adjacent Polish park (Society for Conservation Biology, 2003). The Belarus Red Book lists 11 mammal, 52 bird, 2 reptile, 1 amphibian, 8 fish and 38 insect species. Notable mammals include the reintroduced bison or wisent *Bison bonasus* (VU), wolf *Canis lupus*, Eurasian lynx *Lynx lynx*, Eurasian otter *Lutra lutra* and European beaver *Castor fiber*, also reintroduced. There are large populations of red deer *Cervus elaphus*, roe deer *Capreolus capreolus*, and wild boar *Sus scrofa*, and about 300 elk *Alces alces*, introduced in 1864. The bison was reintroduced in 1929, and now numbers over 315 animals on the Belorussian side. The tarpan, the European wild forest horse *Equus caballini gmelini* used to live in the forest, became extinct, but was genetically reconstituted and reintroduced. The avifauna includes black stork *Ciconia nigra*, white stork *Ciconia ciconia*, golden eagle *Aquila chrysaetos*, greater spotted eagle *A. clanga* (VU), white-tailed eagle *Haliaeetus albicilla*, great snipe *Gallinago media*, corncrake *Crex crex*, eagle owl *Bubo bubo*, great grey owl *Strix nebulosa* and Eurasian curlew *Numenius arquata*. The forest also hosts 9 species of woodpecker (MAB-Belarus, 1993; Tomialojc & Wesolowski, 2005).

Poland: There are over 11,500 different species of animals (Society for Conservation Biology, 2003) including 68 species of mammal: the reintroduced European bison (VU), grey wolf and lynx, common otter, reintroduced European beaver. Common mammals are wild boar, elk, red deer and roe deer. Also recorded are northern birch mouse *Sicista betulina* and masked shrew *Sorex caecutiens* (the only known population in Poland). The bison, exterminated in the forest in 1919, was re-established in 1929, initially in a 297 ha fenced reserve which is part of the Park. Here there are 300 animals, along with the reintroduced tarpan. In 1952 bison were reintroduced into forest areas outside the fenced reserve and at present 260 bison range freely on the Polish side.

Some 251 species of birds have been noted in the Bialowieza region. 120 breed in the Park and include black stork, crane *Grus grus*, pygmy owl *Glaucidium passerinum* and eagle owl, a large number of raptors such as Pomeranian eagle *Aquila pomarina*, greater spotted eagle *A. clanga* (VU), booted eagle *Hieraeetus pennatus*, three-toed woodpecker *Picoides tridactylus*, white-backed woodpecker *Dendrocopos leucotos*, redwing *Turdus iliacus*, nutcracker *Nucifraga caryocatactes* and red-breasted

flycatcher *Muscicapa parva*. 13 species of amphibians, seven reptiles and 27 species of fish have been noted. Some 8,500 species of insects are recorded including the beetles *Carabus menetriesi*, *Orthothomicus longicollis*, *Pytho kolwensis* and *Boros schneideri* (Okolow, 1994; Reklamowo & Grzegorzczak, 1997).

CONSERVATION VALUE

Belovezhskaya Pushcha is one of the largest biodiversity reserves on the continent, containing the last fragments in Europe of mixed deciduous temperate lowland forest with some traces of primeval forest and many very ancient trees. By comparison with other lowland European forests it has suffered, until very recently, little human disturbance, especially on the Belarussian side. The site contains many relict plant and animal species typical of the surrounding forests, including the European bison (MAB-Belarus, 1993).

CULTURAL HERITAGE

184 old Slav burial tumuli from the 10th and 11th centuries have been found, and Slav tribes are known to have peopled the area between the 10th and 13th centuries. The eponymous white tower (*belaya vezha*) was built at Kamenetz in the 13th century. Until the 20th century, the forest remained largely virgin, protected as a royal hunting reserve for Lithuanian princes, Polish kings and Russian Tsars, and for its bison and scenery. The forest was first exploited for timber, charcoal and iron in the 16th century. Logging of the Polish section under King Augustus III of Saxony suggests that the present forest, though pristine, is in fact well-grown secondary forest. During that period alien ungulates were introduced for the hunt and large carnivores were persecuted. Traces of 18th-19th century forest bee-keeping are visible on some 100 pines in the core area. However, from the mid 19th century, the western half of the forest was logged commercially and suffered very heavy logging during the first half of the 20th century. Palace Park, a former imperial Russian hunting lodge near the village of Bialowieza, dates from the 1890s, where a monument commemorates the hunting by Augustus. The Pushcha is valued in Russian culture, being connected with the landscape painter I.I. Shishkin, philosopher Jean-Jacques Rousseau, painter N. S. Samokish, Byelorussian poet, N.A. Gusovsky, and the revolutionary writers A.I. Gertsen and N. P. Ogarev (Anon, 1991). The Belovezhskoe Accords, announcing the dissolution of the Soviet Union to become the Commonwealth of Independent States was signed in the forest at Viskuly Lodge in 1999.

LOCAL HUMAN POPULATION

Centuries of human activity have created clearings, hunting grounds, riverside meadows, road systems and trails, forest settlements, narrow-gauge railways, felling sites, and gravel-pits. People use the forest for bee-keeping, charcoal-burning, animal rearing, game-keeping and hay. In Belarus about 4,000 people live within the Biosphere Reserve: 2,500 within the transition area; and 1,500 in the buffer zone. Within the extended forest there are 22 villages with some 30,000 inhabitants (UNESCO/IUCN, 2004). They are mostly farmers, growing potatoes, rye, wheat, oats, barley, rape and sugar-beet. In Belarus the Reserve offers few financial benefits to the local population, but health and community services are provided in addition to rural development assistance. There are also some work and training opportunities in forestry, forestry protection and other services. The nearest town is Kamenyuki (MAB-Belarus, 1993). In Poland the village of Bialowieza is located 1 km from the Park. There are no human settlements in the strict preservation area but some 3,000 people live in villages nearby.

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VISITORS AND VISITOR FACILITIES

In the Belarussian sector visitors averaged 50-60,000 a year, during the 1990s, and 83,000 visitors were recorded in the first nine months of 2004. The Nature Museum has been supplemented by an Ecological Awareness Centre housed in a very popular 'Grandfather Frost house' as a tourist attraction. Tourist and ecological trails have been improved and there are carriage rides, bicycle rental and guides available. Plans to encourage international tourism were implemented after the provision of adequate access and accommodation, water and sewage, and the impacts of tourist litter and environmental pollution had been fully assessed (MAB-Belarus, 1993). Commercial hunting is encouraged in a neighbouring 3,500 ha enclosure, to lessen pressure on the Park.

In the Polish section there were about 80,000 visitors in 1997, 30% of whom visit the strict preservation area where access is limited to guided groups. (The UNESCO/IUCN 2006 report stated that there were 18,287 visitors in 2004.) Trained guides are provided by the tourist offices and are assigned to individual tourist groups and youth excursions. Guided trips are allowed to use traditional horse drawn vehicles and bicycles. Bialowieza village on the boundary of the Park has about 1,000 beds of varying standards (B.Zaroszevicz, *in litt*, 2004). Other facilities on the site include a nature education centre, museum and tourist lodges (World Heritage, 1998).

SCIENTIFIC RESEARCH AND FACILITIES

The Belovezhskaya Pushcha was first covered with a net of exploitation tracks, and subsequently studied scientifically, in the mid 19th century. Ongoing research includes natural ecosystems and their restoration, natural succession, forest management, agricultural research, and floral and faunal surveys. Research is also planned for the social sciences, in particular ethnobiology, cultural anthropology, rural technology and traditional land-use systems. There is now a scientific research centre laboratory situated near the Park headquarters at Kamieniuki, conference and library facilities, and accommodation for up to 100 visiting scientists as well as several field stations for ecological, hydrological and climatological monitoring. There is an advisory Scientific Council. The Global Environment Facility (GEF) financed a project during the 1990s.

The Polish sector of the Park has been used for scientific research since the 1920s when Professor Paczoski, a prominent botanist and phytosociologist, became its first manager. The results of his

research are included in *Forests of Bialowieza* (1930). Zoological studies, especially on wood-boring insects, begun in 1929 by his successor, Professor Karpinski, were extended by Professor Dehnel. The Park staff are currently studying the structure of the forests, the ecology of bison, and entomology. Seventeen scientific institutions are carrying out research in the Park, coordinated by the University of Bialystok. The Park management facilitates studies on the structure and functioning of natural ecosystems, natural succession, the flow of materials and energy within ecosystems, and human impacts on these processes, the circulation of parasites in natural and modified ecosystems, the classification of animals, especially of lower systematic units, biological control of pest insects, forest management, genetically valuable ecotypes of indigenous tree species, and the improvement of forest productivity.

There are five research institutions located in Bialowieza: the Natural Forests Department of the Forest Research Institute field station, established in 1930; the Mammal Research Institute of the Polish Academy of Sciences (1954); Bialowieza Geobotanical Station of Warsaw University (1956); the Plant Demography Laboratory of the Institute of Botany of the Polish Academy of Sciences (1980); and the Laboratory on the Ecology and Protection of Natural Habitats (1991). There are permanent study plots, some established in 1936, for the study of forest dynamics. The Museum of Nature and Forestry is managed by a custodian (Okolow, 1994).

MANAGEMENT

Belarus: Until very recently the Pushcha forest in Belarus was not as heavily logged as in Poland having been well preserved by rulers of all nationalities and regimes in order to protect the bison and their own hunting. This occasionally hunted out species that were then re-introduced. Recent responsibility for the Reserve until 1994 rested with the Forest Department, with a management team of a Director, deputies and support wardens, with staff from the Reserve's scientific laboratory. Protection was ensured by cross-country patrols, with fire-risks monitored by air patrols. One of the main tasks was to control wildlife populations, especially red deer, whose numbers are high and whose browsing has a destructive impact on forest re-planting (Anon., 1991). Licensed hunters may take wolf and wild boar. A 20-year Management Plan was drafted for 1996-2016 to complement the Polish Bialowieza National Park Management Plan, which is essentially a forest management plan. Four Park management zones totalling 20,000 ha were defined: Wilderness Protection (18.3%), Regulated Nature zone (32.3%), Regulated Recreational Use zone (3.8%) and Economic Activity zone (45.6%), (BPXXIth CI, 2004). The present General Director of the Park stated that over time salients and enclaves on the forest edge are being absorbed into the National Park to enlarge it and lessen its fragmentation (N. Bambiza *in litt.*, 2002). In 2008, according to the State Party, Belarus considered only 5,235 ha of its 87,606 ha National Park to be a World Heritage site. This implies that the remainder of the forest assumed by the WHC to be within the site (82,371 ha) has not been nor will be maintained to World Heritage standards though logging within the property ceased in 2004 (UNESCO, 2009).

Since 1991, Polish and Belarus authorities have tried to work together on management issues and the Director of the Belarussian Park has been nominated as a member of the Scientific Council of the Polish Bialowieza National Park. Between 1992 and 1996 the National Park was the subject of a transboundary Forest Biodiversity Protection Project funded by the Global Environmental Facility. The project aimed at supporting research culminating in land use plans, involving local people in the management and benefits of the area and introduced a Geographical Information System. One issue was the proposal to remove a two-metre high barbed-wire fence along the border which bisects the forest and impedes the movement of wildlife, fragmenting the populations and hindering the movements of staff. However, its removal could attract Belarussian bison herds to the broadleaf forests of Poland, so a gated fence will probably remain (UNESCO/IUCN, 2004). Formal monitoring includes eight topics. A bilateral transboundary cooperation agreement between the two National Park authorities in November 2006 prioritised the conservation of the forest's biodiversity and its use for educational and recreational purposes, but no further recommendations for transboundary cooperation were made (IUCN, 2008).

In 2004, the 75th anniversary of the reintroduction of the bison, there were celebrations of the Year of the Bison with many promotional and conservation activities. Chief among these, urged by a 2003 IUCN and UNESCO Mission, was to achieve an integrated transboundary management plan for both sectors, incorporating improved practices for managing both the core area and the adjacent forests. The Mission also recommended restoring disturbed old forest ecosystems, restoring the damaged hydrological regime, removal of the border fence, better protection of rare species, better legislation, a surveillance Council, better empowered scientific advisors and more international oversight (UNESCO/IUCN, 2004). Another possibility was enlargement of the core area by including more of the 120,000 ha Belovezhskaya Pushcha National Park, two-thirds of which is relatively undisturbed, to represent the primeval relic forest better than the small core can do (UNESCO/IUCN, 2004). In April 2004, a cross-border conference of forest stakeholders was held in Brussels. This resulted in the Bialowieza-Kamenyuki-Brussels Appeal 2004 to raise funds to achieve the collaboration (BPXXI CI, 2004).

Poland: The 10,500 ha National Park surrounding the World heritage site comprises about 17% of Poland's Bialowieza forest. It consists of a strictly protected core zone of 5,967.18 ha with a zone of active nature and landscape management of 4,534.82 ha around the village (B.Jaroszewicz, *in litt.*, 2002). In this zone, clear felling, hunting and the use of insecticides are banned. Access is limited to research and guided visitors; all motor vehicles are banned. The Hwozna Protective District covers an area of 5,155 ha. It comprises a mosaic of old growth forest stands, including conifer species that are not represented in other areas of the Park. This is surrounded by a 1 km wide forest buffer zone to the north, west and south. A zone of 272 ha in the southwestern part of the site, the Research Restitution Centre, is used for breeding bison and tarpan horses. The Park's headquarters are at Palace Park near the village of Bialowieza, outside the strict protected zone. The multiple use zone surrounding it is 49 ha in area (World Heritage, 1998). A management plan and 20-year protection plan were to be completed by 2007. Between 1992 and 1996 a transboundary Forest Biodiversity Protection Project was funded by the Global Environmental Facility. From the early 1990s there was a movement to expand the Park over the whole extent (62,219 ha) of Poland's Bialowieza Forest (B.Zaroszewicz, *in litt.*, 2004). This plan was rejected by the government which, in 2003, instituted a management plan for a new Reserve, the Natural Forests of Bialowieza, for sustainable multi-purpose management of 8,581 hectares of forest throughout the remaining forest in place of its conservation (Verhart, 2003).

The Scientific Council of the Polish Bialowieza National Park in its role as an advisory board for administration of the Park has proposed the adoption of monitoring systems for pollution, staff exchanges at different levels and a direct telephone link between the headquarters at Bialowieza and Kamieniuki. In 2004, on the 75th anniversary of the reintroduction of the bison, an IUCN/UNESCO mission recommended several policies to both parks including enlarging the core areas, especially necessary in Poland, by including the whole National Park and beyond it, to better protect their relatively small area (UNESCO/IUCN, 2004). In 2006 there was a cooperation agreement between the two National Park authorities, focussing on measures to facilitate the movement of park staff between the two countries but this did not occur at ministerial level. By 2008 the property was in a good state of conservation and appeared effectively managed. The authorities were drafting management principles for the whole Bialowieza forest surrounding and including the property to encourage an approach more focussed on conservation. Eventually a transboundary conservation strategy with shared objectives and activities could result from this approach (UNESCO, 2009).

MANAGEMENT CONSTRAINTS

Belarus: The forests of the World Heritage sites are the only nearly undisturbed islands of old-growth forest in the whole area and are very vulnerable to negative changes in their surroundings. Until 1991 the greatest hazard came from run-off generated by the 40 tons of pesticide and over 30,000 tons of fertiliser used annually by large state farms within or close to the buffer zone. Further disturbance to the hydrological balance has been caused by drainage and land reclamation projects underway since the 1960s, with roads and over 90 km of canals constructed within the Reserve so far, which threaten one of the most economically important species in the forest, the Norway spruce, which is extremely sensitive to changes in the ground water table (Anon, 1991). There were also an estimated 60,000 free-ranging cattle within the Pushcha, 1,200 being permitted to graze over 11,000 ha of forest within

the reserve. Other provisions made for farming within the buffer zone included 1,500 ha of hay meadows for intensive cultivation, in addition to 240 ha of arable land and 750 ha of meadows for cultivation by Park employees. Disease amongst the bison has necessitated some sanitary culling; and rampant invasion of the forest by up to 165 alien plant species has to be limited (N. Bambiza *in litt.*, 2002). It was said that illegal hunting by high officials among others should be restrained.

The greatest present danger to the forest comes from large-scale government-sponsored commercial logging, which is intensifying its fragmentation. In 1994 the Property Management Department of the national Presidency took over management of the forest. Under the economic pressures of soaring inflation and lack of funds it introduced a multi-purpose forest management regime. Commercial and agro-industrial use of the forest increased markedly. Drought during the 1990s had led to the infestation of 1,300 hectares of spruce forest by the spruce bark beetle *Ips typographus*. The affected area has been excised by the present administration which aims to cut 60,000 cubic meters of timber annually to control the disease. Two sawmills were built, and in 1998, a large \$1.5 million timber processing factory was built at Kamieniuki within the National Park itself to use the dead and broken trees killed by spruce bark beetle, wood-borers and storms. The government manager, N. Bambiza, stated that cutting and removal of timber, even if infested, has not been done in the World Heritage site (*in litt.*, 2002). This industrial-scale commercial logging of the surrounding old-growth forest, and its conversion to conifer plantations, is an ongoing threat to the integrity of the forest. It occurs on both sides of the border although the two States Parties do not successfully coordinate their initiatives (UNESCO, 2005).

It is claimed by conservationist opponents of these sanitary fellings that 100,000 cubic metres of wood (equivalent to 300 hectares of forest) were cut down during six months in 2002, including 30-40 year old scientific monitoring plots, and other species than spruce, ignoring the part played in nature by dead trees and invertebrate life. Much wood was then left unused which could spread the disease. This large-scale but covert commercial logging was done without coordination with the Academic Council of the Park. After 2001, many local and experienced forest managers, economists and scientists were let go and journalists were allowed to visit only under strong guard (BelaPAN News, 2003). The new Park management is said to have victimised and alienated the local people for their opposition to its policy. These facts are detailed on the website of the Belovezhskaya Pushcha XXI Group (BPXXIth CI, 2004), are detailed in Annexes to the UNESCO/IUCN Mission Report of 2004, and are widely condemned in the published discussions of the similar Polish forestry policy. Both policies exploit for commercial profit to the state, the uniquely untouched nature of the Pushcha (Wesolowski, 2003a, 2003b). The UNESCO/IUCN Mission Report of 2008 stated that 82,371 hectares of the property within Belarus “had not been managed in a way compatible with its World Heritage status, thus potentially affecting the integrity of the property”. It also noted the fragmentation of the property by the fencing in Belarus constricting the movements and affecting the genetics of large mammal populations, including management staff, several networks of vehicular trails which should be reduced to limit incursions, the presence of invasive red oak, and overgrazing of flora by bison and deer (UNESCO, 2009).

Poland: Large-scale commercial logging both government-sponsored and illegal, in the surrounding old-growth forest, and its conversion to conifer plantations, are also the main present threats to the Polish part of the forest. A secondary threat is of infestation by bark beetle as a result of a prolonged drought. At present “only about 13% [of Bialowieza Forest] is free of any management, where natural processes can operate without human intervention”; and “the importance of preserving the whole Bialowieza Forest as a national park is not recognised by the authorities. Against all the evidence, and legal obligations, government agencies plan to continue logging at a rate of approximately 150,000 m³/year until 2011” (Tomialojc & Wesolowski, 2005). The multi-purpose forest management of the surrounding Bialowieza forest instigated by the Ministry of the Environment in 2003 was done to increase its economic productivity. Contrary to a 1998 government prohibition, this has allowed commercial logging of trees over 100 years old, supposedly to control infection by spruce bark beetle although such logging tends to disperse the disease. This was done without consulting the Park’s Director (BBC, 2003) or considering the part played by the beetles, by dead trees and by the lack of management in the forest’s natural ecology (Wesolowski, 2003a,b).

Many conservationists and scientists hold that the remaining old-growth stands will have disappeared within the next ten years and that the Park's management has no effective means or even intention to prevent this (Polish Academy of Sciences, 2003). According to Wesolowski (1997), the strictly protected National Park covers only 8% of the total forest area. In this area cutting rates have doubled in recent years, threatening the chance of expanding the National Park, though forest management has been banned within 500m of the core zone (UNESCO, 2001, 2005). The ongoing replacement of primeval forest by conifer plantations, intensified forest management, clear-felling and selective logging, are the greatest and ongoing threats to the integrity of the forest. There are also negative impacts from the trampling by tourists of vegetation and soil, the introduction of invasive alien species, air pollution, a nearby railway line carrying very large quantities of highly toxic chemicals, the disturbance of water regimes by drainage of farmland in the contiguous Belarussian forests and the creation of a reservoir river near the Park. A large hotel and recreational complex are located near Bialowieza village. A border crossing point planned at Bialowieza will inevitably attract tourist traffic into the heart of the forest which would be better routed around the forest if this is to be preserved.

STAFF

Belarus: There are one General Director, 4 Deputy Directors, for science & research, tourism, economy and trade, General Forest Warden and Chief Bookkeeper. In 1993 there were 195 full time staff and 25 researchers; 180 in administration & resource management and 17 in training (MAB-Belarus, 1993).

Poland: There was a total of 113 employees in 2000: 83 in the Park and 30 in a special economic unit. Over 50% have university qualifications in forestry or protected area management and feilld staff are routinely trained. A major activity is management of the bison at the restoration centre, and of free-ranging bison, and manning the research laboratories, museum and technical department (Okolow, pers. comm., 1995; World Heritage 1998).

BUDGET

Belarus: In 1993, the budget was 400 million roubles (US\$184,832), provided by the Belarus Council of Ministers. Government funding has been limited but stable (UNESCO/IUCN, 2004). The present budget is not reported but is considered sufficient (UNESCO/IUCN, 2006).

Poland: In 2002 funding was about 3.5 million zlotys (\pm US\$900,000) (B.Zaroszevicz, *in litt.*, 2004).

LOCAL ADDRESSES

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General Board of National Parks, Wawelska 52/54, 00-922 Warsaw.

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DATES

Bialowieza: 1982, Updated 8-1986,11-1987, 5-1990, 8-1995,7-1997,11-1999,10-2008,1-2010, 5-2011, January 2012.

Belovezhskaya Pushcha: August 1994. Updated 10-2008, 1-2010, 5-2011, January 2012.