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CONVENTION CONCERNING THE PROTECTION OF THE WORLD CULTURAL AND NATURAL HERITAGE

BUREAU OF THE WORLD HERITAGE COMMITTEE

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IUCN evaluation of nominations of natural and mixed properties to the World Heritage List: Addendum

TECHNICAL EVALUATION OF WORLD HERITAGE NOMINATIONS OF:

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATIONS

UKRAINE

During April 2001, IUCN undertook evaluations of five nominations for World Heritage natural sites in Ukraine, as follows:

1) Holy Tops;
2) Polissian Swamps and Slovechno-Ovruch Ridge;
3) Kaniv's Hills;
4) Karadag; and
5) Podillian Ridge.

The individual reports on these evaluations are appended.

IUCN has not been able to recommend the inscription of any of the sites as they do not meet World Heritage natural criteria or conditions of integrity as laid out in the Operational Guidelines.

IUCN recognises that this will be a disappointment to the authorities in Ukraine. However, it believes that other sites in Ukraine, including sites shared by Ukraine and neighbouring State Parties, may have greater potential to meet natural criteria than the five sites to be reviewed by the Bureau. Potential sites for nomination could be identified by means of a World Heritage expert workshop, organised by the World Heritage Centre and the Ukrainian authorities. Such a workshop could develop an understanding of World Heritage requirements, help in the selection of appropriate sites and set the required standards for their management. Ideally, the workshop would involve natural heritage specialists from neighbouring countries as well as Ukrainian specialists, though cultural interests should also be involved, because several sites reviewed by IUCN have important cultural components. Financial support for the organisation of such a workshop was offered by UNDP during the IUCN field mission.

Accordingly IUCN recommends that the Bureau invite Ukraine to discuss with the World Heritage Centre and UNDP the convening of a workshop along these lines. Within the limits of its need to undertake independent evaluations, IUCN would be happy to participate in the workshop. It would also be appropriate to invite attendance by ICOMOS.

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

HOLY TOPS (UKRAINE)

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet**: 1 reference.

ii) **Additional Literature Consulted**: Ministry of Environment and Natural Resources. 2000. **National Report on the State of Environment in Ukraine 1999**. Rayevsky Scientific Publishers. Kiev; Hilton-Taylor, C. (Compiler) 2000. **Vegetationszonen und Klima**. Ulmer Verlag, Stuttgart, Germany.

iii) **Consultations**: 5 reviewers contacted; Government of Ukraine officials and park staff.

iv) **Field visit**: Gerhard Heiss and Yuri Badenkov, April 2001.

2. SUMMARY OF NATURAL VALUES

The nominated site of Holy Tops (HT) is based upon the Svjati Gory National Nature Park in Donetska Oblast, eastern Ukraine. It covers a small part of the Seversky Donets River catchment. The site consists of a cluster of forest patches located on both sides of the Seversky Donets river, covering a total area of 40,589ha. HT contains three geomorphological features: the river valley with its floodplain and terraces (nearly 70% of the area); a hilly plateau, which is the northern branch of the Donets Heights, and which overlooks the river valley (nearly 30% of the nominated area); and, the steep slopes between the plateau and the floodplain into which a series of erosion gullies have been cut.

The site consists of magmatic and metamorphic rocks of the Precambrian era, and metamorphic and sedimentary complexes of the Palaeozoic. The upper strata are mainly made up of a deep layer of Cretaceous sediments. The Seversky Donets valley contains the present floodplain and several older floodplains (now marked by terraces) which are made up of sandy and sandy-clay alluvium, the oldest dating from the Cretaceous period. Only the first three of the eight terraces occur within the nominated site: the first and highest of these contains many natural ponds. A marked feature of the landscape is the chalky rock outcrops and cliffs on the right, southern riverbank, rising up to 100-120m above the base of the valley.

On the slopes there are relict stands of chalk pines (a variety of Scots pine), whilst floodplain forest remnants are found on the flat, left, northern bank of the river. Within the site, there are 943 vascular plant species, 49 of which are listed in the Red Data Book of Ukraine and 17 in the European Red Data Book. There are 43 mammal species, 197 birds, 10 reptiles, 9 amphibians, and 41 fish species. Notable animal species are wolf, otter, sea eagle, imperial eagle, peregrine falcon, corncrake and lesser kestrel.

3. COMPARISON WITH OTHER AREAS

The HT is part of the Pontian Steppe Biogeographic Province. This province has been seriously altered by human action in the past, and natural vegetation is now restricted to scarce remnants. The province is represented by one natural World Heritage site in Romania (the Danube Delta). However, the Danube Delta is a wetland and cannot be considered representative of a biogeographic province where steppe is the key feature. Nonetheless, the condition of the floodplain (alluvial) forests in the Danube Delta World Heritage site is of significantly higher value than the remnant floodplain forests in HT, which are a relatively minor part of the nominated area's forest cover. Although steppe elements occur within the nominated area, forest dominates, covering over 90% of the site, and represents the dominant natural vegetation cover.

The vegetation of HT has been much affected by human activities. About 200 exotic species of vascular plants have been introduced into the area. Some 8,000ha of coniferous plantations are found within HT, and old growth stands are very scarce. While a proportion of oak forest stands in the northern part of the site contain individual trees 300 to 400 years old, these are few and scattered among younger forest stands.

Pontian Steppe elements are also important within the 33,308ha Askaniya Nova Biosphere Reserve in Ukraine, indeed, this may be the best steppe remnant of the biogeographic province. However, World Heritage quality is doubtful, both in terms of international significance and because of integrity problems (only 11,312ha are under state control; and exotic game (zebra) has been introduced to preserve the steppe vegetation). Another site within the Pontian Steppe Province is Karadag on the Crimean peninsula, (also nominated for World Heritage status in 2001). It should be noted that the southeastern part of the Crimean peninsula has been identified by IUCN/WWF as part of the South Crimean Mountains and Novorossia Centre of Plant Diversity. This area represents an enclave of Mediterranean vegetation in the Black Sea area but also contains some steppe elements.

In summary, all existing reserves of the Pontian Steppe Biogeographic Province represent either different features, such as steppe or coastal wetland, (e.g. Chemomorskiy Ukraine) than HT or are very limited in size. For example, the three Ukrainian Nature Zapovedniks (Category I, IUCN) of Luganskiy, Ukrainskiy Stepnoy and Elanetskaya Steppe are all less than 3,000ha in area.

The chalk cliffs, which rise over the flat valley bottom, represent the most impressive feature in HT, and these may be unique within the Pontian Steppe Province. However, this feature can be found in more impressive forms, for example, along the southern coast of the Baltic (e.g. Jasmund National Park, Germany; Wolinski National Park, Poland), in Northern France and Southern England.

While the diversity of plant and animal species within HT may be considered important on a national scale, it is not outstanding in a global context. Rare and threatened species of fauna and flora are mostly of national importance, though a few are regionally significant; they are not considered important at the international scale.

In conclusion, the nominated site is part of the largest forest area in the steppe region of Ukraine, which stretches along the river valley of Seversky Donets from Kharkov to the border of Russia. HT's conservation value is that it contains the last remnants of original vegetation in the highly industrialised and populated region of the Donets Basin. However, the nominated site has been significantly affected by human activities and very few areas are in a natural state.

4. INTEGRITY

4.1. Boundaries

The nominated site does not form a single unit but is made up of numerous individual units, some of which are only a few hectares in size (see Map 2). In general the boundaries of these units follow the boundaries of forest lands. The complex mosaic of forests, agricultural lands and settlements makes it impossible to form a natural unit based upon the river and its valley. Moreover, the individual units of the nomination are divided from each other by railways and roads. Though the Seversky Donets River is the focus around which these units are located, the river itself is mostly excluded from the nominated area. The exception is a 10km stretch of the river which is included within the eastern extremity of the nominated site.

4.2. Management

The Ministry of Environment and Natural Resources oversees National Nature Parks in Ukraine and is responsible for all regulations and activities affecting HT. However, the day to day management of the nominated site is carried out by seven different authorities: 25% of the area is under the direction of the national park administration; 72% is managed by two different state forest districts; and 3% belongs to local administrations (Slavyanogirs city council and Yariv village council) and organisations (Scientific Research Institute of Complex Mechanisms). Each authority has its own budget for the management of its territory and acts independently within the regulations and under the supervision of the national park administration. A council with representatives from all authorities and organisations has been established for the co-ordination of activities. However, the authorities, responsibilities and priorities within the co-ordination council are unclear.

The resources available to enforce regulations are insufficient (for example, rangers have to patrol 500km of reserve boundaries with four bicycles).

A zoning plan has been elaborated, but not yet approved by the Cabinet of Ministers. According to the plan, HT will be subdivided in four zones. Forest management will be prohibited in the strict reserve zone (10% of the area). Sanitary cuttings (e.g. extraction of dying trees) will be permitted on 80% of the nominated site. The remaining 10% will be reserved for buildings, infrastructure, and economic use.

A management plan does not yet exist, but is under preparation. A management plan for rare and threatened species was presented to the IUCN field mission. This plan lists the species but does not specify the activities required to manage them.

4.4. Threats

Although the nomination document claims that no people live within the nominated site, a village (Slawjanogorsk) is located within the northern boundary of HT. Other villages and settlements are excluded from HT, but many are found immediately outside the site boundaries, or are located as enclaves within the nominated area. All these settlements create minor pressures upon the protected area.

In 1999, there were 19 recorded cases of high level pollution recorded on the Seversky Donets River, and 70 cases on its tributaries. In particular, manganese compounds, oil products, and nitrite/nitrogen levels in Seversky Donets exceed the average levels of Ukraine's main rivers. The Krasnooskil reservoir, on a tributary river 16km upstream of the nominated site, shows the highest phenol concentrations of all main water reservoirs in Ukraine.

In the period 1995-1999, there was a registered decrease in the water level of the Seversky Donets Basin. If water levels continue to drop this will lead to the death of trees and the eventual deforestation of HT. HT is also proposed as a priority area for prospecting for the production of geothermal energy.

Recreation plays an important role within the park. The combination of a well-known monastery at Holy Tops and one of the last forest remnants in the region represents a big attraction for visitors. Medicinal water sources are the basis for several health resorts within the park's territory, with a capacity to accommodate 28,000 people and an annual visitation of 120,000 people. It is planned to double the areas designated for recreation within the Donetsk region, by 2026 (an increase of 170,000ha), and it is likely that many new recreation areas will be establish within the boundaries of HT.

In summary, the reserve, and the nominated site, are so fragmented by infrastructure, settlements and agricultural lands that it is impossible to form a self-sustaining ecological unit. There are several different authorities with management responsibilities, and most parts of the reserve are dedicated to some kind of forest production. The environmental condition of water resources is poor but park management is not in a position to improve the situation as the river is mostly excluded from the park. Park management also lacks sufficient resources and equipment to secure needed environmental improvements in the reserve. Finally, recreation pressures seem likely to grow appreciably in future.

To conclude, it is clear that HT does not meet the conditions of integrity as laid out in the Operational Guidelines (paragraph 44 (b)).

5. ADDITIONAL COMMENTS

The nominated site has important cultural values. It is named after the monastery which is found on the slopes of the right bank of the Seversky Donets River where monks' cells and rooms for prayer have been hewn into the chalk cliffs. The hill tops are crowned with churches which overlook the extensive plains stretching along the left river bank; seen from below, they are an impressive feature. Several buildings are under restoration and the monastery is now inhabited once again by 70 monks.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

HT Park was nominated under criteria (i), (iii), and (iv). IUCN does not believe that the site meets any criteria nor the Conditions of Integrity as laid out in the Operational Guidelines (paragraph 44 (b)).

Criterion (i): Earth's history and geological features

Geological features and processes may be important in a region dominated by plains and lacking in relief, but the geological and geomorphological features and processes of HT are clearly not of global importance. IUCN does not consider that the site meets criterion (i).

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

HT contains two dominant features: steep valley slopes with chalk cliffs, and forests. From a global perspective the chalk cliffs are not a unique feature and more impressive chalk cliffs are found, for example, along the coasts of the Baltic, France and the UK. The forests of the site have been heavily impacted by forest management, and anthropogenic influence will continue for the foreseeable future within most of the nominated area. Although the features of the site are nationally significant they are not of global significance. IUCN does not consider that the site meets criterion (iii).

Criterion (iv): Biodiversity and threatened species

The numbers of plant and animal species found in HT are not exceptional, and the rare and threatened species found in the nominated site can be found elsewhere in the region. IUCN does not consider that the site meets criterion (iv).

7. RECOMMENDATIONS

That the Bureau does not recommend the inscription of Holy Tops on the World Heritage List under criteria (i), (iii) and (iv).

IUCN's advice regarding future work on World Heritage in Ukraine is set out in its note to the Bureau covering all five nominations from the State Party.

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

POLISSIAN SWAMPS AND SLOVECHNO-OVRUCH RIDGE (UKRAINE)

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet:** 1 reference**.**

ii) **Additional Literature Consulted:** Ministry of Environment and Natural Resources 2000. **National Report on the state of environment in Ukraine 1999**. Rayevsky Scientific Publishers, Kyiv.

iii) **Consultations:** 5 reviewers contacted; Government of Ukraine officials and park staff.

iv) **Field Visit:** Yuri Badenkov, Gerhard Heiss, and Zbig Karpowicz, April, 2001

2. SUMMARY OF NATURAL VALUES

The nominated site of the Polissian Swamps and Slovechno-Ovruch Ridge (PSSOR) is part of the catchment area of the Prypyat River. The Prypyat swamps are one of the most extensive wetland areas in Europe, stretching from the Polish border to the Dnjepr River (about 500 km), and enclosing more than two million hectares. An area of 37,110ha has been nominated for World Heritage status along the Belarus border. The site consists of four protected areas which encompass eight separate core areas covering in total 16,120 ha linked together by a buffer zone of 20,990 ha.

The most important landscape features of the nominated site are the open and forest-covered peatlands, and the glacially-formed sand ridges, dunes and low hills dominated by Scots pine. The site contains one small lake of about 10ha, which has been artificially enlarged by a dam. The deforested Slovechno-Ovruch Ridge (316m), which rises above the forested bogs, is included in the eastern-most part of the nominated site, covering about 5% of its total area.

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PSSOR is located on the northern part of the Ukrainian crystalline shield. The crystalline base of the lower parts of Polissian swamps is formed from granites. Quartzites and shales dominate on the Slovechno-Ovruch Ridge, along with intrusions of granites and labradorite. These strata are covered by a 10 to 15m layer of loess which, when exposed to erosion, gives rise to a network of ravines.

The forests show boreal and boreonemoral characteristics, which reach their southern limit in northern Ukraine. The forests are mostly young in age (less than 100 years) and contain significant areas of artificial plantations which cause serious impacts on soil systems (i.e. through the operation of drainage ditches). Old trees are very scarce and survive only as single trees kept for bees' nests. Extensive drainage systems are found in most parts of the nominated sites altering the natural water systems of the reserve.

About 600 vascular plants are recorded from the site, which are characteristic of this forest type. The fauna are represented by 38 mammals, 180 birds, 7 reptiles, 11 amphibians, and 10 species of fish. Noteworthy species are moose, wolf, lynx, otter, imperial eagle, peregrine falcon, capercaillie, corncrake, and European bog turtle.

3. COMPARISONS WITH OTHER AREAS

The Boreonemoral Biogeographic Province is represented by one existing World Heritage site (Belovezhskaya Pushcha/Bialowieza Forest in Belarus/Poland). By comparison with PSSOR, Belovezhskaya Pushcha/Bialowieza Forest is larger (more than 90,000 ha) and better preserved. It also displays a more diverse

range of forest types (in particular deciduous broadleaf types), and has more species of flora (over 900 vascular plants, 200 mosses) and fauna (55 mammals, 212 birds, 7 reptiles, 11 amphibians), including the European bison.

There are also close similarities between PSSOR and other reserves in Poland, Belarus and the Russian Federation, most notably the Prypyatskiy Strict Nature Reserve (Category I, IUCN) in Belarus, some 40 km to the northeast of the nominated site. This reserve is larger (62,213ha), more diverse in landscape features, and its natural qualities are more intact. The Prypyatski reserve and the Belarus lands adjoining the Prypyat River, and the river itself, are areas of regional importance to conservation.

Other comparable areas are Berezinsky Strict Nature Reserve in Belarus (76,201ha), Mazurski Landscape Park in Poland (49,616ha), and the following protected areas in Russia: Samarskaya Luka National Park, (127,186ha); Marii Chodra National Park (36,593 ha); Smolny National Park (36,482 ha); Nizhnyaya Kama National Park (25,848 ha); Khvalynsky National Park (25,514 ha); and Chavash Varmane National Park (25,199 ha). Many of these sites are larger than the proposed PSSOR and with greater natural integrity. For example, Poland's Mazurski Landscape Park has suffered far less human impact than the nominated site. There are two other Ukrainian National Parks in Polissia: Shatsky (49,000ha, including a strict nature protection zone of 5,900 ha) and Desnyansko-Starogutsky (16,200 ha, with no strict nature protection zone).

To conclude, PSSOR is the best representation of the Boreonemoral biogeographical province in Ukraine but there are far more important sites with Boreonemoral characteristics in neighbouring countries. Moreover, the state of preservation of the forests in the nominated site is not satisfactory, and several other reserves within the biogeographical province have been better protected.

4. INTEGRITY

4.1. Boundaries

The nominated site forms a very small part of the catchment area of the Prypyat River and is divided into core areas and buffer zones. The core areas consist of eight separate units, the largest being approximately 10,000ha. The boundaries of the core areas enclose either the ecologically least altered areas, or particular features (e.g. the only lake of the area). The buffer zone functions as a link between the individual units of the protection zone and includes all the significant parts of the ridge. The ridge itself consists mostly of agricultural lands and settlements with about 5,000 inhabitants. Several public roads also fragment the buffer zone.

The boundaries of the nominated site do not enclose any of the major tributaries of Prypyat River, indeed they exclude most of the more important smaller streams.

In conclusion, the nominated site is not a complete ecological unit, and it omits certain key elements of the Prypyat ecosystem.

4.2. Management

A management plan does not exist. Furthermore there is no single administrative body with overall responsibility for the supervision and management of PSSOR. The state forest board based at Sjedjesowka has both planning and management responsibilities for the Polissian Nature Reserve (the largest reserve with 20,104ha). However, a separate forest board (based at Kovanka) is responsible for the overall supervision of the seven other core areas, and of the buffer zone. The day-to-day management of the nominated site is the responsibility of its owners, the state forest board and several agricultural enterprises. The actual management of the site is still strongly influenced by forestry. Fires, which play an important role in natural dynamics of this pine-dominated forest ecosystem, are consequently suppressed (though this may be justified from a conservation viewpoint because of the small size of the reserves). Sanitary cuttings are common; and no areas are entirely free from logging.

There are relatively large numbers of staff, but the budgets for managing the reserves are minimal. The prevailing economic difficulties affecting all sectors of life in Ukraine make it difficult to secure the resources and priority needed to undertake programmes of ecological restoration, and to achieve better levels of management of the protected areas system as a whole and the PSSOR area in particular.

4.3. Threats

The nuclear accident of Chernobyl has affected PSSOR with radioactive fallout. However, contamination is lower than might be expected in a site which is located only 160 km west of Chernobyl. After the accident, the average Caesium contamination in the region rose from 0,15 Curie per km^2 to 1 Curie per km^2 (max. levels 7 Curie). The pollution with isotopes of plutonium is only slightly above that in non-contaminated territory and levels of strontium-90 are in the lowest category on the national classification scale.

5. ADDITIONAL COMMENTS

Plans for a transboundary reserve with Belarus were mentioned during the site visit. While such cross border co-operation would be very welcome, the potential additional area in Belarus that might be added to the nominated site is, however, rather small (less than 10,000ha). The opportunity to link the Prypyatskiy Strict Nature Reserve in Belarus (40km northeast of PSSOR) with the PSSOR reserve, and so to establish an ecological unit of international significance, is restricted because of the extent of habitat fragmentation caused by settlements and intervening infrastructure.

6. APPLICATION OF WORLD HERITAGE CRITERIA

The PSSOR was nominated under all four natural criteria. IUCN does not consider that the site meets the criteria, for the reasons summarised below:

Criterion (i): Earth's history and geological features

The PSSOR site includes only a very small part of the Prypyat River basin. It rises with gentle slopes to the Slovechno-Ovruch Ridge 150m above the lowest point. There are no impressive geomorphic and physiographic features, nor any on-going geological processes of outstanding global importance. IUCN does not consider that the site meets criterion (i).

Criterion (ii): Ecological processes

Terrestrial and fresh water ecosystems are seriously altered by human influence. The natural dynamics of forest ecosystems have been, and still are, suppressed. Forest ecosystems will need more than 100 years to regain their natural condition. While the precise scientific affects are as yet unclear, it is evident that drainage in the surroundings of the PSSOR has affected the natural processes of water and forest ecosystems within the site itself. Active intervention is desirable to help restore damaged ecosystems. IUCN does not consider that the site meets criterion (ii).

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The flat basin area, gentle slopes of the ridge and rather monotonous forest ecosystems create a landscape which cannot be considered of outstanding natural beauty or of great aesthetic importance. IUCN does not consider that the site meets criterion (iii).

Criterion (iv): Biodiversity and threatened species

PSSOR is representative of the boreonemoral biogeographic province. Flora and fauna show average levels of diversity but do not reach outstanding levels for the province. Most threatened species are of national importance, only a few are of regional importance and even these are commonly found in many other reserves in the province. IUCN does not consider that the site meets criterion (iv).

Finally, the site does not meet the related conditions of integrity described in Operational Guidelines (paragraph 44 (b)).

7. RECOMMENDATIONS

That the Bureau does not recommend the inscription of Polissian Swamps and Slovechno-Ovruch Ridge on the World Heritage List.

IUCN's advice regarding future work on World Heritage in Ukraine is set out in its note to the Bureau covering all five nominations from the State Party.

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

KANIV'S HILLS (UKRAINE)

1. DOCUMENTATION

i) **IUCN/UNEP-WCMC Data Sheet:** (1 reference).

ii) **Additional literature consulted:** Ministry of Environment and Natural Resources. 2000. **National Report on the State of Environment in Ukraine, 1999**. Raevsky Scientific Publications. Kiev. 184 pp; Hancock, P.L. *et al.* 2000. **The Oxford Companion to The Earth.** Oxford University Press.

iii) **Consultations:** 6 external reviewers contacted; Government of Ukraine officials and park staff.

iv) **Field visit:** April 2001. Gerhard Heiss, Yuri Badenkov and Zbigniew Karpowicz

2. SUMMARY OF NATURAL VALUES

Located on the banks of the River Dnieper in central Ukraine, Kaniv's Hills (KH) straddles the border of Cherkaska and Kyivska Oblasts. The nominated area of 14,230ha is essentially made up of two protected areas. There are also three historical-cultural reserves but these are located almost entirely within the boundaries of the protected areas (see Table 1). KH has five independent core areas, two of which are located on the east bank of the Dnieper River; the other three are islands on the river (see Map 2). The core areas are linked by a buffer zone. A small area of the buffer zone (2,000ha adjacent to Kanivskyi Nature Reserve) is included within the nominated area.

Table 1. Protected Areas and Historical-Cultural Reserves of Kaniv's Hills

Protected Areas and Historical-Cultural Reserves	**Area (ha).**
Kanivskyi Nature Reserve (including: buffer zone of approximately 2,000ha; Shevchenko's National Monument (27ha); and Tarasova Hill cultural reserve)	3,381
Trakhtemyrivsky Regional Landscape Park (including 309ha of Traktemyrivskyi historical reserve)	10,711
Traktemyrivskyi historical reserve (total area 447ha).	138
Total	14'230

KH is an area of low hills (80-255m) on the shores and islands of the Dnieper. The hills of the nominated area are derived from a terraced floodplain which was formed by the deposition of wind-blown loess and alluvial sediments during the last, or Mindelian, Ice Age (100,000-18,000 bp). After the retreat of the ice sheets the plateau was covered by forest until it was deforested during the 19th century. Exposed to the elements, the loess and sand plateau was extensively cut by erosion, forming a dense network of some 300 ravines. Reforestation during the 20th century stabilised the hills once more.

The nominated area includes elements of alluvial forest on the islands of the Dnieper and a mosaic of forest and steppe grasslands on the mainland. The varied topography and habitat has led to a diversity of plantlife, including almost 1,000 vascular plant species. Fauna are also relatively diverse with 51 species of mammals including beaver and wild boar. KH is a stopover for migrating waterfowl and some 226 birds species have been recorded including a range of raptors. However, all of KH has been altered to varying degrees by human activities and now contains large areas of forest plantations and agricultural land.

3. COMPARISON WITH OTHER AREAS

Loess is a type of terrestrial sediment formed by the accumulation of wind-blown dust. Loess has been accumulating on the land surface for several million years but accumulation increased notably at the beginning of the Quaternary period (2.6 mya) with the greatest accumulation rates coinciding with the cold and arid conditions of glacial periods. Loess deposits are light and pours in nature making them ideal for cultivation and loess is a major component of the soils of the world's 'breadbasket' regions. Its light and porous nature also make loess prone to erosion and large–scale landslides and mass flowage of loess is triggered by heavy rainfall. Loess is found in many parts of the globe, but the thickest and most extensive cover occurs in China, middle Asia (Tajikistan, Uzbekistan, Kazakhstan) central and western Europe, central north America, the *pampa* and sub-Andean basins of South America and New Zealand. The thickest deposits of loess occur in north-central China on the Loess Plateau, where it reaches a depth of 330m.

Like lake sediment, loess deposits act as a record of climate change. Steady deposition of loess on China's Loess Plateau has resulted in sequences that provide the most complete terrestrial record of climate change for the Quaternary period. Loess successions have also been studied in the 'Palouse' region of Eastern Washington, USA where sequences reach depths of 75m. The sequences in Europe, including KH, are discontinuous and fragmented and are therefore not considered valuable for study.

In conclusion loess deposits are found throughout the world and deposits in China and the USA are more valuable than those of KH in terms of their contribution to the study of Earth's history.

It is difficult to compare the ecological values of KH to other natural areas. It contains only fragments of two natural ecosystems: alluvial forest and steppe grassland, which occur in small patches within the nominated site. The site has been so substantially altered by human activities (see section 3) that comparison with other World Heritage sites is not really possible.

KH is part of the Middle European Forest Biogeographic Province which includes three natural World Heritage sites: the Srebarna Nature Reserve (Bulgaria); the Messil Fossil Pit (Germany); and the Caves of the Aggtelek Karst and Slovak Karst (Hungary/Slovakia). None of these sites has steppe or alluvial forest elements. However, Srebarna, as a wetland, is comparable to the shore and island portions of KH. Though Srebarna has less bird species (180) compared to KH (226), it contains important populations of globally endangered species such as the Dalmatian pelican. Except for the 'near-threatened' white-tailed eagle, there are no globally or regionally threatened bird species in KH. Srebarna is also a single, albeit small, natural area, whereas KH is made up of isolated elements of a highly altered waterbody i.e. reservoir shore and islands downstream from a large dam. The Danube Delta in the Pontian Steppe Biogeographic Province covers almost 680,000ha of wetlands, being far larger with far greater natural integrity than KH.

Compared to other areas in Ukraine, KH is not exceptional in terms of its importance for bird conservation. Of the 102 Important Bird Areas identified by Birdlife International in Ukraine, Sivash Bay on the Sea of Azov, incorporating elements of steppe, mire and coastal habitat, is considered to be the most important. Although the white-tailed eagle occurs in KH, the home range of these birds extends outside the nominated area, along the length of the river valley. There are other areas in Ukraine which are more important for this species: Dneprovsko-Teterevskoe Zakaznik [30,000 ha]; Kiev Reservoir [102,000ha]; and the Dnieper and Desna valley lowland forest [120,000ha].

In terms of habitat, steppe and alluvial forest cover very small areas of KH. The alluvial forest covers just 520ha of the 3,300ha Nature Reserve and steppe areas occur as patches of remnant grassland in the forest of the Nature Reserve. The forest is encroaching on the steppe areas, which can only be maintained by grazing domestic animals. These patches of steppe are not comparable with proper steppe reserves, such as Askaniya-Nova (33,000ha) and even the smaller but more natural Ukrainsky Stepnoy (2,756ha) and Elanetskaya Step' (1676ha). The most undisturbed steppe grasslands in Ukraine are found in the former military zones of the eastern Kerch Peninsula.

The nomination notes that the Nature Reserve has been the subject of extensive research and, in comparison with similar areas in the region, this is probably the site's most important attribute. However, there are several other sites in Ukraine (such as Askaniya Nova, the Crimea, and the Carpathians) which have been equally well researched and which continue to be used by universities.

4. INTEGRITY

Ecological Condition

Much of KH has been altered by human activity. For example, 96% of the Regional Landscape Park is used for agriculture and commercial forestry plantations and five large villages are located within the core area of the park. Although there are small areas in the nominated site in a more natural condition, these are largely artificial or secondary in origin and cannot be considered to represent true natural systems. The steppe areas, for example, are either being reforested by natural colonisation or are being artificially restored by grazing. This implies that forest, not steppe, is the natural ecosystem of the site. In some areas, the Nature Reserve has been artificially reforested to prevent erosion of the surface area. There are also sanitary cuttings in the nature reserve.

The Dnieper has been dammed in the vicinity of KH, which includes areas of the reservoir which were flooded in 1975. Much of the wetland areas of the nomination are therefore artificial. Some of the islands are also artificial. The northern and eastern boundaries of the KH are formed by the reservoir, which is severely eroded along its banks. Changes in the water level of the reservoir and discharges from the dam also have large impacts on the wetland areas of the nomination. For example, the river would naturally freeze in the winter but with the discharge of warm water from the power plant this is not now always the case. The management of the water level of the reservoir and the rate of discharge of water into the river is not controlled by the management bodies of KH.

Management and Land Tenure

Each of the units of the nomination has its own management plan, and staffing levels for each unit are considered to be adequate. However, there is no overall management plan for the site and the IUCN field mission noted that there is inadequate coordination of the management of the individual protected areas.

The Kanivskyi Nature Reserve and the Shevchenko's National Monument are managed by the Shevchenko University in Kiev while Trakhtemyrivsky Regional Landscape Park and historical reserve are managed by a joint-stock company. The joint stock company rents park land from the state and private landowners. The management goals of the Regional Landscape Park are to create a 'past landscape' based on cultural and traditional practices. The aim is to attract tourism to the park for which a large modern 'park centre' has been constructed on the reservoir shore together with holiday chalets. A network of trails will be laid for visitors. In addition to tourism, the company also plans to profit from wheat farms, commercial forests and traditionally managed orchards and vineyards. Though this is an innovative approach to protected areas management, IUCN is concerned that, without some government control, the long-term security of the area cannot be guaranteed.

Boundaries

The nominated site is made up of five individual components. Although these areas are linked by the buffer zone, the nomination does not constitute a self-sustaining unit. Some key natural areas are also outside the boundaries of KH. For example, the Khmilnyanskyi Ravine, one of the largest in Europe, is not wholly included within the site's boundaries.

There are other problems with the boundaries of the nomination. For example, the Nature Reserve directly adjoins the city of Kaniv: there is no buffer zone between them. Within the Regional Landscape Park there are small strictly protected 'nature reserves' which amount to 4% of the park area. However, their management is a challenge as they are made up of some 69 individual parcels of land.

Threats

The aesthetic qualities of KH are threatened by industrial and residential developments immediately outside the park's boundaries. Housing has been developed on the east bank of the Dnieper, opposite the nominated area. These developments are within sight of the Nature Reserve and have destroyed the scenic views across the river to the east. It is likely that further areas on the east bank will be developed for housing, in particular 2000ha opposite the Nature Reserve, which is in private ownership. There are also industrial development proposals for

areas adjacent to the nominated area. A proposal for an aluminium re-smelting plant on the shore of the Dnieper between the Nature Reserve and the Regional Park was however recently rejected.

5. ADDITIONAL COMMENTS

The nomination document describes prehistoric 'mammoth bone dwellings' but these are about 5km outside the site's boundaries, on private land, and are therefore not directly linked to the nominated area.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

KH has been nominated under criteria (i), (iii) and (iv).

Criterion (i): Earth's history and geological features

Although the geology of the ravines of the nominated area bears testament to the last glacial period. It represents one specific phenomenon of this period – the deposition of loess – which is common worldwide. Because erosion was first induced (by deforestation) and then halted (by reforestation) by human intervention within the site, the integrity of geological processes is not in evidence. IUCN does not consider that the site meets criterion (i).

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The site consists of a Nature Reserve containing artificially planted forests and steppe fragments of a secondary character; a National Monument, which is a landscaped garden; and a Regional Landscape Park, which is a cultural landscape on the edge of a large, recently flooded, artificial reservoir. Though these features have aesthetic qualities in their own right, they cannot be considered to be superlative or aesthetic in a strictly natural sense. IUCN does not consider that the site meets criterion (iii).

Criterion (iv): Biodiversity and threatened species

The site has no endemics, total floral richness is well below that of many other areas in the region and the fauna present are well represented elsewhere. The fragmented structure of the nomination, and its overall artificial nature, mean that it does not contain ecosystems of sufficient size or integrity for the conservation of globally important biodiversity. IUCN does not consider that the site meets criterion (iv).

7. RECOMMENDATION

That the Bureau does not recommend the inscription of Kaniv's Hills on the World Heritage List under criteria (i), (iii) and (iv).

IUCN's advice regarding future work on World Heritage in Ukraine is set out in its note to the Bureau covering all five nominations from the State Party.

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

KARADAG (UKRAINE)

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet:** (1 reference).

ii) **Additional literature consulted:** Ministry of Environment and Natural Resources. 2000. **National Report on the State of Environment in Ukraine, 1999**. Raevsky Scientific Publications, Kiev; The Executive Committee of Feodosiya Municipal Council. 2001. **Territory of Priority Development "Feodosiya"**. Feodosiya; Svetov, A.P. & A.I. Golubev. 1966. Volcano apparatus of Central Kareliya *Yatuliisk* volkano complex. In **Dokladi Akademii Nauk SSSR**, vol.171, #1,pp 171-174. Embleton, C. (Ed) 1984. **Geomorphology of Europe**. Macmillan Publishers, London.

iii) **Consultations:** 6 external reviewers contacted; Government of Ukraine officials and park staff; Geological Department of Moscow State University and Institute of Geology, Petrozavodsk, Kareliya.

iv) **Field visit:** May 2001. Gerhard Heiss and Yuri Badenkov.

2. SUMMARY OF NATURAL VALUES

The nominated site of Karadag is a mountain massif on the southeastern Crimean coast of the Black Sea, within the Feodosiya district of the autonomous Republic of Crimea. The nominated site covers 3,835ha which is comprised of the 2,874ha Karadag Strict Nature Reserve and a buffer zone (960ha). The Strict Nature Reserve includes a coastal area on the Black Sea (810ha) and a core strictly protected zone of 440ha. The buffer zone includes Tepsen – a medieval settlement covering 20.9ha - and a marine area (940ha) stretching 1 mile out to sea.

Highlands form the southernmost part of the Crimean peninsula and cover about 6,000km^2. They consist of three parallel ridges separated by longitudinal depressions. The dominant rocks are limestones with volcanic intrusions. The mountains generally have gentle northern slopes, flat tops and steep southern cliffs falling into the sea. The highest point (1,545m) is in the western part of the southern or main ridge where high precipitation and anthropogenic deforestation has caused intensive karstification. In the lower eastern part (average altitude approximately 600m), rainfall is lower and arid landforms can be found.

Karadag forms the south-easternmost point of the southern or main ridge and is isolated from the rest of the ridge by a depression. The highest peaks in Karadag are Holy Mountain (586m), Magnetic Range (378m) and Karagach (333m). The nominated site is dominated by limestone in the north and massif of volcanic rocks along the coast which have been deformed by tectonic processes. The Karadag mountain massif represents the composite volcanic facility of the Jurassic period, formed at the base of the Carpathian-Crimean-Caucasus geosyncline. Karadag and adjacent areas are characterised by geosynclinal development processes combined with underwater volcanic. The combination of tectonic movements in sedimentary rocks transformed by magma intrusions has given rise to a large diversity of rock types and formations including almost all known types of magmatic rocks and lava flows (composite tuff-lava; necks, dykes and veins; and intrusive massifs).

Karadag has a relatively high number of plant species (2,658 species) including 1,169 species of vascular plants. Some 37 plant species are considered threatened on a European scale. The nominated site includes 42% of the Crimean peninsula's flora and 23% of Ukraine's flora. Approximately 40 species are considered Crimean endemics, and one species of hawthorn is only found in Karadag. Almost 3,500 animal species occur within Karadag, including 29 mammal and 210 bird species. Notable species are common porpoise, white-tailed eagle, black vulture, griffon vulture, peregrine falcon, hen harrier, great bustard, corncrake, Black Sea beluga, and Black Sea salmon.

3. COMPARISON WITH OTHER AREAS

The Karadag reserve is part of the Pontian Steppe Biogeographical Province. This Biogeographical Province is represented by the Danube Delta World Heritage site in Romania. The Danube Delta's main features are wetlands with alluvial forests which neither represent the characteristic feature (steppe) of the Biogeographical Province nor specific features of the proposed site. However, Mediterranean elements play a significant role on the southern ridge of the Crimean Mountains whereas steppe elements are mostly secondary (man-induced).

Karadag is located within the IUCN/WWF South Crimean Mountains and Novorossia Centre of Plant Diversity. This Centre covers much of southern Crimea and, in response to this floristic diversity, a number of reserves have been established on the peninsula. Most notable are the Yalta Mountain Forest Nature Reserve (14,523 ha) and the Crimean Nature Reserve (44,175 ha) in the western part of the highlands. Both sites offer similar but higher numbers of flora and fauna than Karadag. The Yalta Mountain Forest is home to: 1,363 species of vascular plants, 30 species of mammals and 113 bird species; Crimean NR: 1,180 species of vascular plants, 37 mammals and 256 birds. Additionally, the larger size of these areas means that they are able to protect higher numbers of each species. The Crimean Nature Reserve includes all three ridges (southern, inner, and outer ridge) of the range within its boundaries. Among Crimean reserves, however, only Karadag offers a spectacular coast.

At the beginning of the 20th century, the reserve's forests were cut down completely (except inaccessible slopes of the coast where old juniper trees have survived) and now a patch system of natural deciduous forest regrowth, artificial pine plantations and meadows has developed. Open meadows are very important for many of the rare species of the property and anthropogenic management is considered to be necessary for their preservation.

In conclusion, the plant and animal species diversity of this site cannot be considered outstanding, even on the regional scale. Vegetation has been seriously affected by former human activities and will need more than 100 years for full restoration.

The site has volcanic features. Reference sites for volcanism in Europe are: the Aeolian Islands World Heritage Site (Italy) which represents the original study site for two eruption types; Mount Etna (Italy), the highest volcano on the European mainland (3,323 m); Caldera di Taburiente in the Canary Islands with its 2,000m high caldera walls; Pico de Teide National Park (3,718 m) also in the Canary Islands; and several reserves (e.g. Myvatn-Laxa, Jökulsargljufur, Skaftafell) on Iceland - the most active volcano zone in the world. Karadag offers significant features of volcanism from a specific period (Jurassic). However, the site shows neither volcanic features nor dimensions and landscape features which are not found elsewhere in the world or are of outstanding universal value.

4. INTEGRITY

4.1. Management

Karadag Nature Reserve is under the jurisdiction of the National Academy of Science (NAS) and management is carried out by a Directorate, appointed by of the NAS. There are currently 110 persons on the Reserve staff. There is no management plan for the site and one should be developed along with a clearly defined zoning plan for the reserve.

4.2. Human use of the area

Karadag receives 5,000-7,000 visitors per year, who mainly use the walking trails of the reserve, and 30-35,000 visitors to the Dolphinarium and Museum located in the Reserve Headquarters. There are also 16,500 tourists, mostly divers, to the coastal waters of Reserve. Haymaking is permitted for staff of the Reserve on 13ha of territory. A Russia Black Sea Fleet monitoring station covers 6ha at the centre of the reserve. This area is not managed by the reserve's administration and a road crosses the reserve to link the station with Planerscaya village, just outside the northern boundary of Karadag.

4.3. Threats

Karadag faces pressures from the adjacent settlements including illegal grazing, haymaking, and hunting. There is no buffer zone between the Reserve and neighbouring settlements, agriculture lands (vineyards) and roads. Coniferous plantations were established 30-40 years ago in the northern part of Reserve under State reforestation programmes.

In 2000, Ukraine passed a law concerning economic development in Crimea. One of the priority regions for development is Greater Feodosia, including Karadag Strict Nature Reserve. Under the new law, the priority industries are tourism, agriculture, manufacturing, and the conservation of natural and historical heritage. One of the priority investment projects concerns the Dolphinarium in Karadag and this will probably involve the development of visitor infrastructure. Other projects have been proposed for areas adjacent to the reserve. Given the limited territory of Karadag it is likely that these developments will have an impact on the reserve.

5. ADDITIONAL COMMENTS

Regional management context

The Crimean Mountains are part of the IUCN/WWF South Crimean Mountains and Novorossia Centre of Plant Diversity. The nominated property contains a significant part of Crimea's flora. However, the property's size is completely insufficient for long-term preservation of its flora under natural conditions. There are two other notable reserves of larger size, containing higher species numbers and enclosing parts of all three ridges of the Crimean highlands in the western part of the Centre of Plant Diversity. The two reserves are contiguous which offers a protection unit of approximately 60,000ha. Together with the Karadag reserve, a cluster site of the three sites may be able to protect all of the significant landscape features of the South Crimean Mountains. Such a nomination may meet World Heritage criteria. However, IUCN is uncertain of the integrity of these sites as external reviewers noted human pressures on these sites.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The site has been nominated under all four criteria.

Criterion (i): Earth's history and geological features

The nominated site represents the combination of volcanic and geosynclinal processes in the Black Sea area. It contains a very complex composition of rocks types and formations. However, Karadag is not outstanding when compared to other volcanic mountain massifs in Europe or globally. IUCN does not consider that the site meets this criterion.

Criterion (ii): Ecological processes

Charade's size is insufficient for long term maintenance of ecological processes. Long-term preservation of plant diversity will require more effective management. Home range areas for many of the rare and threatened animals are insufficient and survival cannot be guaranteed within the protected area. IUCN does not consider that the site meets this criterion.

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The nominated site includes a typical coastal mountain landscape. Though nationally important, it cannot be considered as being of universally outstanding character. IUCN does not consider that the site meets this criterion**.**

Criterion (iv): Biodiversity and threatened species

The biodiversity of flora and fauna is lower than other reserves in the area which probably contain the same endemic species as Karadag. On a regional scale many reserves show much greater floral diversity. For example, Mount Olympos National Park (Greece) 1,800 vascular plants; Cilento National Park (Italy) 3,200 vascular plants. The only endemic which can be found exclusively on Karadag cannot be considered of world-

wide significance. The fauna is notable at the national scale only. IUCN does not consider that the site meets this criterion.

The site meets the condition of integrity described in the Operational Guidelines paragraph 44 (b) concerning criterion (i) but does not meet the other conditions of integrity (v, vi, vii).

7. RECOMMENDATION

That the Bureau does not recommend the inscription of Karadag on the World Heritage List under natural criteria.

IUCN's advice regarding future work on World Heritage in Ukraine is set out in its note to the Bureau covering all five nominations from the State Party.

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

PODILLIAN RIDGE (UKRAINE)

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet:** (1 reference).

ii) **Additional literature consulted:** Ministry of Environment and Natural Resources. 2000. **National Report on the State of Environment in Ukraine, 1999**. Raevsky Scientific Publications. Kiev. 184 pp; Hancock, P.L. *et al.* 2000. **The Oxford Companion to The Earth.** Oxford University Press; Middleton, J and T. Waltham. 1986. **The Underground Atlas: A Gatezetteer of the World's Cave Regions**. St. Martin's Press. New York.

iii) **Consultations:** 6 external reviewers contacted; Ukrainian government officials; Geology Department, Moscow State University.

iv) **Field visit:** April 2001. Gerhard Heiss and Yuri Badenkov.

2. SUMMARY OF NATURAL VALUES

Podillian Ridge (PR) is located in west Ukraine, adjacent to the historic town of Kamyanets-Podilsky in Khmelnytska Oblast. The nominated site covers an area of 87,105ha and is entirely located within the boundaries of the Podilski Tovtry National Nature Park (261,316ha).

The nominated site is part of the Podillian (Podilski) ridge which extends from western Ukraine to Romania, a distance of over 500km. This ridge rises 60m above the surrounding Podillian plateau and is 15-20km wide. It derives from a system of fossil barrier reefs which were laid down during the Miocene. Today it forms one of the world's most important areas of gypsum karst. The Podillian ridge is characterised by a concentration of karstic phenomena, such as sinks, depressions, springs and caves. There are many long cave systems, including two which contain more than 100km of mapped galleries: Optimisticheskaya (151km), and Ozernaya (105km). These caves are considered to be the longest gypsum caves in the world but they are not part of the nominated site.

The site is characterised by valleys, occupied by agricultural land and settlements, and by forested uplands, which together form a patchwork landscape. Forests of oak, hornbeam, beech and lime are dominant. No original forest remains; most forests are very young in age, and there are few stands older than 100 years. There are also 2,200ha of artificial pine plantations.

Some 1,700 species of vascular plants have been recorded from PR, which is considered the most important location for relict and endemic species in Ukraine. Many are endemic to the Podillian region. Wildlife is represented by 55 mammals, 140 birds, 12 amphibians, and 10 reptiles. Noteworthy species are European otter, black stork, grey crane, and osprey. The site contains a number of regionally threatened species. Seven plant species and 33 animals are included on the European Red List.

3. COMPARISON WITH OTHER AREAS

The Miocene period (23 – 5mya) is characterised as a period of climatic cooling with the expansion of glaciation and falling sea levels. The fossil record of this period is notable for the diversification of the primates and the appearance of elephants and cats. The spread of grasslands during the Miocene also lead to the development of new grazing mammal species. As PR does not represent any of these phenomena, it cannot be considered as representative of this stage in Earth's history.

As geological features, fossil reefs are common throughout the world. Some of the most well studied are the Permian reefs of west Texas, the Devonian reefs of western Canada, Europe and Australia and the Triassic reefs of the European Alpine province. The Miocene reef in Sigatoka valley, Fiji has also been the subject of much research. The Carlsbad Caverns (USA) World Heritage site is based on the 560km long Permian fossil reef (Capitan Reef) which surrounds the Delaware Basin of western Texas and southeastern New Mexico. The site's extensive cavern system has developed within this 610m thick reef complex.

Nine sites have been inscribed on the World Heritage list on the basis of their karst features. A further 23 natural sites and nine cultural sites have secondary karst values. Within Europe the Caves of the Aggtelek Karst and Slovak Karst (Hungary/Slovakia) and Skocjan Caves (Slovenia) have both been inscribed on the World Heritage List for their karst features. The Aggtelek/Slovak site displays an array of typical temperate zone karst features and Skocjan is noted for its textbook portrayal of karst hydrogeology. The northern section of the Western Caucasus World Heritage site (Russian Federation) consists entirely of karst with some of the world's deepest and most extensive caves. Although PR is gypsum rather than limestone karst, is does not contain features which are not already present in Aggtelek/Slovak and Skocjan. Even if the nominated area were enlarged to include other caves on the Podillian Ridge it is unlikely that it would be comparable to the karst areas already on the World Heritage List.

PR is part of the Middle European Forest Province, which stretches from the southern Urals to the North Sea. It is a very diverse biogeographical province in Europe in terms of its landscapes. However, the province has been significantly altered by human activities and natural sites are now restricted to highland areas. The Eastern Carpathians area has the highest level of natural integrity within the province, and is therefore of greatest conservation importance. Shared by Slovakia, Poland and Ukraine, this area contains the most extensive primeval forests of common beech in the world. Protected areas in the Eastern Carpathians include: the Ukraine's Carpathian Biosphere Reserve (57,880ha), Poland's Bieszczady National Park (27,834ha) and Slovakia's Stuzica Regional Landscape Park (strict protection zone 1,708ha). The Carpathian Biosphere Reserve is more important than PR in terms of biodiversity but the landscape features of the Carpathians cannot be compared with those of the nominated site. The most similar area is the Medobory Nature Reserve (Ukraine), but with an area of 10,455ha, this is smaller than PR and shows a lower level of biodiversity: 1,120 vascular plants; 32 mammals; and 134 bird species.

In terms of natural World Heritage sites, Srebarna Nature Reserve (Bulgaria), the Messil Fossil Pit (Germany), and the Caves of the Aggtelek Karst and Slovak Karst (Hungary/Slovakia) also belong to the Middle European Forest Province. (The karst features of the Aggtelek/Slovak site are compared to PR above.) The Messil Fossil Pit is a fossil site and does not share any similarities with PR. Nor is it relevant to compare Srebarna to PR as the former is a wetland and the latter is predominantly a forest site.

4. INTEGRITY

4.1 Boundaries

The boundaries of the nominated area enclose the least disturbed and most valuable parts of the Podilski Tovtry National Nature Park. However, natural habitat exists in patches within agriculture and commercial forestry. This makes it impossible to form an ecological unit in which human impacts can be minimized. In several areas, the reserve is only several hundred meters wide. A cluster of many small patches of habitat cannot be effectively protected in the long-term.

4.2 Ownership and legal status

Although under the authority of the Ministry of the Environment and Natural Resources of Ukraine, only 3,015ha or 1.1% of Podilski Tovtry National Nature is owned and directly managed by the Directorate of National Park Owners. The rest of the Park territory is owned and run by commercial forestry, spa resorts, and private and collective farms.

4.3 Management

The Directorate of the Podilski Tovtry National Nature, assigned by the Ministry of the Environment and Natural Resources of Ukraine, is responsible for the management of the National Nature Park. The activities of the

various enterprises and institutions located in the park are coordinated by the Technological Council of the National Nature Park, which is headed by the Park Director. The main management objective of the park is the preservation of present levels of biodiversity. Since current agricultural and forestry practices are needed to maintain biodiversity in the site, it would seem that the park would need to be managed as a cultural landscape rather than as a natural area.

An integrated management plan for the site does not exist but plans which cover specific activities have been developed: a zoning plan for forests has been approved by state and private forest enterprises; a five-year scientific programme was adopted in 1999 by the Ministry of Environment; and a plan covering recreation is in development. However, these activity-specific plans do not substitute for an integrated management plan which would govern all activities within the nominated area and ensure effective long-term management of the site.

4.4 Threats

The main threats to the area are:

- Settlements. The number of people living within the nominated site is not given in the nomination document, but the IUCN field mission observed several settlements and noted that a few thousand people must live within PR's boundaries. However, given the complicated nature of the boundary of the site, it is difficult to establish precisely where it runs on the ground and so to know exactly how many people live within the site.

- Agriculture. Arable fields encircle the small patches of protected natural areas without buffer zones.

- Mining. There are a number of limestone quarries inside the National Nature Park, some of which are also inside the nominated site.

- Roads. There is a well-developed infrastructure within the National Nature Park with roads crossing parts of the nominated site.

- Hydropower Station. More than 150km of the Dniestr river shore have been affected by a hydropower installation established in 1984. The reservoir has caused shore erosion, landslides, and unseasonal water level fluctuations.

- Air pollution. Industry, such as cement and sugar factories adjacent to PR, causes atmospheric pollution in the area. .

- Tourism. Hundreds of thousands of tourists visit the National Nature Park each year. There is no tourism management plan for the Park . Many tourists visit the region to stay at health resorts, several of which are found within the nominated area. The IUCN mission observed significant local air pollution caused by furnaces at these resorts.

5. ADDITIONAL COMMENTS

The IUCN field mission was informed that there are plans to create a free economic development zone covering the National Natural Park. However, studies on the impact of this development on the nominated area have not been carried out.

The Historical-Culture Reserve ‘Kamenets-Podilsk City’, which is in the process of being nominated for inclusion in the World Heritage List under cultural criteria, is situated inside the boundaries of PR. However, there does not seem to be any coordination between the management of the cultural area and the proposed natural site.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The site has been nominated under all four criteria.

Criterion (i): Earth's history and geological features.

The site has national geological significance, but it is not outstanding at the international level when compared to other areas containing similar features such as karst and fossil reefs. In terms of Earth's history, PR is not an outstanding representation of the Miocene period. IUCN does not consider that the site meets this criterion**.**

Criterion (ii): Ecological processes

PR has been heavily influenced by human activities and natural areas have been fragmented or are managed for their cultural landscape value rather than natural processes. The small pockets of natural areas are not of sufficient size for natural processes of international significance to take place. IUCN does not consider that the site meets this criterion**.**

Criterion (iii). Superlative natural phenomena, scenic beauty

The landscape of the nominated site has been much modified, and is now a cultural landscape, reflecting the region's long and often dramatic history. However, it cannot be considered to contain "superlative natural phenomena" nor to be an area of "exceptional natural beauty" as required to meet this criterion. Therefore IUCN does not consider that the site meets this criterion**.**

Criterion (iv). Biodiversity and threatened species.

Although PR contains a number of species considered threatened at the European level, the site suffers from problems of integrity. The boundaries do not allow for the establishment of a viable ecological unit, there are a number of diverse pressures upon the site and there are indications that these will increase in future. In addition the management framework is unreliable. IUCN does not consider that the site meets this criterion**.**

7. RECOMMENDATION

That the Bureau does not recommend the inscription of Podillian Ridge on the World Heritage List under natural criteria.

IUCN's advice regarding future work on World Heritage in Ukraine is set out in its note to the Bureau covering all five nominations from the State Party.

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

KAIETEUR NATIONAL PARK (GUYANA)

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet** (6 references)

ii) **Additional Literature Consulted**: Anon. 2000. Seminar on Natural Heritage in the Caribbean, Paramaribo, Suriname, February 2000. Synthesis Report. UNESCO; Barnett, A. & R. Shapley. 1999. **The Final Report of the Potaro Plateau Zoological Expedition**. Dept. of Life Sciences University of Surrey, U.K.; Bourne *et al*. 2000. Vocal Communication and Reproductive Behaviour of the Frog Colostethus beebei in Guyana. **Journal of Herpetology** 39-00A; Eggleton, P. *et al.* 1999. A Checklist of Termites from Kaieteur National Park, Guyana. **Proc. Entomol.Soc.** 101 (3) pp 687-689. Washington; Forte *et al*. 1988. **Rapid Rural Appraisal, Chenapau/Kaieteur National Park** (Draft) Internal document, Co-operative Republic of Guyana; Hutchinson, C. 1999. Kaieteur National Park Tourism Development – Preliminary Observations and Recommendations. Draft memo, **Conservation International**; Lechner, L. 1997. Infrastructure Development at Kaieteur National Park. Prepared for World Bank and the Government of Guyana – **National Protected Areas System Project**; Schuerholz, G. 1991. **Kaieteur National Park, Guyana. Diagnostic Report**. WWF – USA; Wilkinson, B. 1998. (26-11-98) Environment – Guyana Mining Activities Taking a Toll. **Global Information Network**; Wilkinson, B. 1999. (03-11-99) Population – Guyanan Amerindians Increasingly Militant. **Global Information Network**.

iii) **Consultations**: 7 external reviewers contacted, the Hon. Samuel Hinds, Prime Minister of Guyana, the Hon. Vibert DeSouza, outgoing Minister of Amerindian Affairs, Guyana National Commission for UNESCO, Protected Areas System Project senior staff, Iwokrama (internationally funded research NGO active in Guyana) staff and national park staff.

iv) **Field Visit:** April 2001, Peter Hitchcock.

2. SUMMARY OF NATURAL VALUES

The Kaieteur National Park (KNP) constitutes the only formally recognised protected area currently existing in Guyana. Covering an area of approximately 63,000ha of the Guiana Shield, KNP contains a good representation of the Guyanan moist forests, as well as some examples of upland savannas and other habitat types. The site also includes the renowned Kaieteur Falls which mark the point where the Roraima formation gives way to the coastal lowland. At this point, the Potaro River falls 226m to the splash basin below, entering a scenic gorge about 20km long before discharging onto the lowlands.

KNP includes a diverse tropical rain forest. In some areas, the forest opens onto a wide shrub-herb "Guiana type" savanna. Some 1,100 plants have been recorded in the Preliminary Checklist for KNP but much work remains to be done to survey the biological resources of the park. Several endemic plant species are found in the park, including a member of the family *Rapataceae* endemic to the Guiana Shield, and a newly described fern (*Hecistopteris kaieteurensis)*. Preliminary studies from recent visits by scientists have indicated that the area contains a moderate diversity of fauna, with numerous previously unidentified forms and several species of particular conservation concern. A preliminary survey of the plateau has recorded 53-54 species of mammals, including giant otter, bush dog and jaguar. The co-habitation of three species of capuchin monkey on the plateau is another feature. The avifauna is of interest with 187 recorded species, comprising nearly 50% of the total number of species recorded in Guyana. Several bird species have been newly discovered in Guyana, while others are rare or endangered.

3. COMPARISON WITH OTHER AREAS

Though KNP is the only protected area in Guyana, a national system of protected areas has been proposed under which there will eventually be an additional seven protected areas. KNP is representative of Udvardy's Guyanan Biogeographical Province which includes two natural World Heritage sites: the Central Suriname Nature Reserve (CSNR) and Canaima National Park in Venezuela. KNP is also representative of the 'Guyanan Moist Forest' one of the WWF Global 200 priority ecoregions for conservation action.

With 1.6 million hectares, CSNR includes a much more complete example (i.e. 3000% more) of the different habitat types that are typical of the lower elevations of the Guiana Shield. The Reserve comprises the entire gradient of altitudes from almost sea level (25m) to the top of the highest peak in Suriname (1,230m). Canaima National Park is also much larger than KNP, covering 3 million hectares, and it contains greater habitat diversity and altitudinal range (350-2,730m). The flat summits of the tepuis in Canaima contain high levels of endemism which has led to the recognition of 'Pantepui' as a distinct biogeographical entity. For example, the Pantepui region is home to 36 bird species which are totally restricted to the vicinity of the tepui mountains. Though KNP includes several outlier tepuis of Roraima sandstone, these are minor in extent compared with those of Canaima and are therefore represent lower levels of biodiversity.

CSNR is home to almost 6,000 species of vascular plants and a diversity of animals. The biodiversity values of KNP are less evident, even when it is compared to other areas in Guyana which have already been identified in World Heritage Global Strategy fora as potential World Heritage sites, such as the Upper Mazaruni watershed. The low level of biodiversity recorded at KNP relative to other protected areas in the region is a reflection of the relative intensity of surveys. The survey of the biological resources of KNP is far from complete. However, due to the lower habitat diversity of KNP, the final tally of species will fall well short of those of CSNR and Canaima. This has been substantiated by recent work conducted by the Smithsonian Institute which reports that KNP represents only 17% of the species recorded for Guyana, Suriname and French Guiana; although the authors indicate that this "is no doubt an underestimation of the total taxa of the area", and the true level of biodiversity in KNP may be higher than that recorded to date, it will not be comparable to that of CSNR and Canaima. Moreover, the biodiversity of the nominated area is far from being representative of the Guiana Shield province as a whole. Table 1 summarises some of the relevant components of these World Heritage sites with which the nominated site has been compared.

Apart from CSNR and Canaima, there are about 40 other designated protected areas distributed among five countries (Brazil, French Guiana, Guyana, Suriname, Venezuela) covering forest and savanna ecosystems in the Guianan province, of which perhaps the most notable is the Pico da Neblina Transfrontier Park (Brazil 2,200,000ha and Venezuela 1,360,000ha).

The nomination document relies to some extent on the nominated site being representative of habitats in the Guiana Shield. Although, KNP's location and altitudinal range provide a sample of the shield, the site fails to capture adequately the tepui component of the shield and contains only small areas of typical Guiana Shield savanna landscape.

KNP includes the renowned Kaieteur Falls. In South America the falls are second in height only to the Angel Falls (918 m), within the Canaima World Heritage site. Unlike the Angel Falls, however, Kaieteur carries a large volume of water year round. But, Angel Falls is only one element of Canaima's extensive tepui landscape from which the park derives its scenic value. Though KNP includes several outlier tepuis, these are minor in extent compared with those of Canaima. The Iguazu/Iguaçu World Heritage sites also contain a far more impressive waterfall feature.

Table 1: Comparative Analysis with other Major Protected Areas on the Guiana Shield.

	Kaieteur National Park (Guyana)	**Central Suriname Nature Reserve World Heritage site (Suriname)**	**Canaima World Heritage site (Venezuela)**
Size (hectares)	63,000	1,600,000	3,000,000
Plant diversity	1,100	6,000	4-5,000

Mammal diversity	53	110 (estimate) (185 national)	118
Bird Diversity	187	400 (680 national)	550
Altitudinal Range (metres)	500 – 1,200	25 - 1,230	350 - 2,730

In summary, KNP is clearly not in the same league as other sites in the region in terms of size, diversity and biological importance.

4. INTEGRITY

Boundaries

KNP is part of a continuous tract of mostly pristine rainforest which extends west to the Venezuelan border and east to the Suriname border and into Brazil. However, without the protection of the surrounding forests, KNP is a small protected area, which fails to capture adequately the tepui component and savanna landscapes of the Guiana Shield.

KNP, together with the rest of the Potaro River catchment, provides the potential to protect a geographically significant example of a complete river catchment from upland tepui, through upland mature river, major waterfall, deeply incised canyon and lowland floodplain. However, in its current form the nominated site does not contain "…all or most of the key interrelated and interdependent elements in their natural relationships…" (Operational Guidelines paragraph 44. (b)(i)).

KNP's integrity depends on maintaining the natural habitat of adjacent lands, something that at present cannot be guaranteed. Also, given that the catchment of the Potaro River is not protected, future development upstream of the park could impact the Falls and the associated river environment. For example, the construction of roads close to the park boundaries would pose a significant threat to the park. IUCN concludes that the current boundaries of the site do not include key natural elements and are not adequate to protect the park against future development.

Legislation

KNP is the only formal protected area in Guyana. Originally established in 1929, KNP has undergone many boundary changes. Reduced to less than 12,000ha during the 1970's and 1980's, KNP was enlarged in the 1990s to its current area of 63,000ha. The present national park was established by Government legislation in 1999 (amended in 2000 to re-instate Amerindian hunting rights). However, the legislation is limited in scope and does not formally establish a regulatory regime nor an institutional framework. Protection from forest operations is currently limited by policy level decisions, and the IUCN mission was informed that comprehensive regulatory legislation is being developed.

Although traditional peoples are still resident in the vicinity of the park, and claim land rights to at least part of the park, there is no traditional protection regime in place. There is potential for a negotiated form of traditional protection but this has been held up by an ongoing dispute between the Government of Guyana and the indigenous people of Chenapau (see 'Land Tenure' below).

Management

The nominated site is managed by the Kaieteur National Park Board appointed by the Office of the President, which retains overall responsibility and accountability to the Parliament of Guyana. A 'Master Plan' has been prepared for KNP but in reality it is more appropriately described as a tourism infrastructure plan for the Kaieteur Falls precinct. It certainly does not address the wider conservation issues of the national park. Indeed, it was prepared before the park was enlarged in 1999. No management plan has been initiated for the park and there is a real risk that the precinct planning for Kaieteur Falls section will dominate the management of the national park as a whole.

Human and Financial Resources

There are only two on-site wardens who operate with minimal resources. This level of staffing may be adequate to manage visitors to the Kaieteur Falls precinct but is inadequate for overall park management, especially for the surveillance of remote areas.

Public Use

Visitors to the park are currently estimated at 2,500-5,000 annually. Access to the nominated area is only by aircraft or boat. The IUCN field mission raised concerns about the cumulative impact of aircraft movements to and from the Kaieteur Falls airstrip. The more that tourism is developed at KNP, or in adjacent areas requiring access via the airstrip, the greater is the risk that the aesthetic value of this outstanding waterfall precinct will be impaired. This underlines the urgent need to commence management planning for the park.

Land Tenure

The nominated area is wholly owned by the Government of Guyana. However, the majority of the enlarged KNP is claimed by the Patamona community of Chenapau village as indigenous-owned land. This area encompasses all of Chenapau's hunting and fishing grounds and is the only source of clean water available to the community. The rivers and creeks in Chenapau's titled lands, which are contiguous with the borders of the extended park, have been disturbed by mining operations. Initial establishment of the park denied the Amerindian community their traditional rights to the land. Although a subsequent amendment of the legislation restored the rights to hunt and fish, the issue of indigenous land title rights is still the subject of dispute and court action. Resolution of the issue will be protracted.

Before the mission, IUCN received letters from the Captain of Chenapau, as well as from international non-governmental organisations representing the Chenapau Patamona people. These communications stated that the Chenapau Patamona had not been adequately consulted about the 1999 extension of the National Park and that this was the subject of an ongoing legal dispute with the Government of Guyana outlined above. The letters also stated that the Chenapau Patamona had not been adequately consulted about the nomination of the site for World Heritage status. The IUCN mission was scheduled to meet with a delegation of Patamona from Chenapau, however, a flight cancellation and civil disturbances in Georgetown delayed the mission by 24 hours. The Patamona delegation had left the planned rendezvous at Manzies Landing by the time the IUCN mission arrived.

Threats

KNP comprises mostly intact tropical rainforest with negligible vehicular access and development. Adjacent lands maintain their natural vegetation, mostly with tropical rainforest, and are sparsely inhabited. There are no current major development projects that put the park's integrity at risk; the principal activity conflicting with the objectives of the protected area is illegal fluvial mining for gold and diamonds both outside and within the nominated site. Though such mining is likely to be limited to exploitation of alluvial deposits along streams, the impact on water quality and aquatic life is potentially serious. The IUCN field mission noted that the Government of Guyana has been successful in controlling mining within the park. However, on-going effective control is challenging due to the difficulty of detecting small-scale mining operations. Mining in the unprotected upstream catchment of the Potaro River also represents a continuing, though limited, threat to the water quality of the KNP.

In conclusion, IUCN notes that KNP does not meet the conditions of integrity, especially in respect of catchment protection, lack of a management plan, inadequate regulatory legislation and an inadequate institutional framework and staffing.

5. ADDITIONAL COMMENTS

KNP is an integral part of a continuous tract of rainforest which extends from Canaima National Park in Venezuela, through Brazil and Guyana, to CSNR in Suriname. KNP therefore has the potential to contribute to the physical linking of the two existing World Heritage sites on the Guiana Shield. KNP would be one of the potential building blocks in such a visionary scheme that would link the existing World Heritage sites in one large transnational protected area. The Iwokrama Project Area to the east, the concession area held by Conservation International to the southeast and the proposed Pakaraima Mountains and Roraima national parks

to the west and northwest, together with KNP, are strategically located contributions to the concept of a major continuous rainforest (and savanna) link across the width of Guyana. The huge area of Guyana known as the Southeastern Forests have also been identified as being of high conservation value and could contribute significantly to the concept. The IUCN mission discussed the concept of such a "Guiana Parkway" with Guyana Government officials and reaction to the idea ranged from guarded support to enthusiasm.

There is also the potential for cooperation with Suriname and France to extend the concept through Suriname to French Guiana, possibly linking with a large protected area currently under consideration in southern French Guiana. The Mount Roraima section of Brazil would also make a valuable contribution to the concept, similar to that of the MesoAmerican Biological Corridor. This major corridor tract of protected areas within Guyana and its neighbours could be a viable World Heritage nomination in its own right and could become one of the world's great transfrontier protected areas. However, this proposal is very premature and is unlikely to be feasible within the next decade.

6. APPLICATION OF WORLD HERITAGE NATURAL CRITERIA

The nomination document does not specify the criteria under which the site has been nominated and the nomination document is thus considered incomplete. IUCN suggests that criteria (iii) and (iv) may be relevant.

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

Although the case for qualification against Criterion (iii) is not explicit in the nomination document, considerable attention is given to the natural beauty of the Kaieteur Falls. There can be no doubt that the Kaieteur Falls is a site of natural beauty. They are a national icon in Guyana and are known in adventure travel and local tourism circles. However, the falls are far less impressive than many other waterfall sites on the World Heritage List (Iguazu, Victoria Falls, Canadian Rocky Mountain Parks, and Nahanni).Apart from the falls, a case has not been made for the outstanding natural beauty of the nominated site as a whole. In this respect it contrasts with Canaima National Park World Heritage site in adjacent Venezuela, with its extensive tepui landscape and associated waterfalls such as Angel Falls.

Criterion (iv): Biodiversity and threatened species

The site protects a good example of the mid-altitude forest of the Guiana Shield. This includes several species of particular conservation concern such as jaguar, giant otter and harpy eagle although the numbers are not known. Given the close biogeographic relationship between Canaima National Park, Central Suriname Nature Reserve and KNP, all being part of the Guiana Shield, a comparative analysis of these three protected areas is relevant to assessment of the nominated site. The comparative analysis, summarised in Table 1, clearly shows that KNP has significantly lower levels of biodiversity than the existing World Heritage sites. Further surveys can be expected to increase the species lists for KNP but it will never compare with those of Canaima or Central Suriname. IUCN therefore considers that the nominated site does not meet this criterion.

In conclusion, IUCN does not believe that the KNP meets the relevant World Heritage criteria. However, it considers that the Guyana portion of the Guiana Shield has World Heritage potential, and that this could be of even greater value if linked with the Canaima World Heritage site to the west and perhaps also to the CSNR in Suriname to the south east. IUCN appreciates that the realisation of such a vision could take a number of years, as a number of countries would be involved. Nonetheless, from a conservation standpoint, such an extensive World Heritage site, based upon the tepuis, rainforest and savanna systems of the Guiana Shield, would be a potential addition to the global network of forest World Heritage sites.

7. RECOMMENDATIONS

That the Bureau advise the World Heritage Committee that KNP should **not** be inscribed on the World Heritage list because, in IUCN's view, it fails to meet the criteria.

The Bureau is further recommended to encourage the State Party to initiate management planning in the KNP and also to encourage the development of a national protected area system for Guyana.

The Bureau may also wish to note that important forests exist in the Guiana Shield region and encourage the State Party to explore the potential for a larger World Heritage nomination.