Stockholm May 1998

To: IUCN/WCPA Europe
FNNPE - EUROPARC Federation

# Parks for Life: Action for Protected Areas in Europe

## Report on Priority Project 14 a)

## POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE

In November 1996 WCPA Europe and FNNPE - EUROPARC Federation decided to undertake 'Parks for Life' Priority Project 14 a) as a joint excersise and I agreed to become voluntary coordinator of the Project. Now "a first" report is finished, enclosed. Herewith is the report presented to WCPA Europe and FNNPE-EUROPARC Federation for decision on a future work on World Heritage Sites in Europe. Please note that the report is just a compiled list, a catalogue of proposed but not evaluated Potential Natural World Heritage Sites in Europe.

Your Sincerely

Lars-Erik Esping
Member WCPA Europe
Coordinator of the 'Parks for Life' Priority Project 14 a)

Contents:



*The views expressed in this report are not necessary those of the IUCN/WCPA and EUROPARC Federation. The List is compiled from inter alia information received through around 25 experts, mostly WCPA members, which have kindly volunteered to take part in the project.*

*I like to thank heartily all those who have contributed and in different ways helped me with this study on Potential Natural World Heritage Sites in Europe.*

Lars-Erik Esping

Lars-Erik Esping
Member, WCPA Europe
Coordinator of the 'Parks for Life' Priority Project 14 a)

Address: Hyggevagen 7
S - 163 54 Spanga
Sweden
Tel.: +46 8 361 436, Fax: +46 8 698 1662 c/o Ms Aslin

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IUCN-WCPA Europe
FNNPE - Europarc Federation

## Parks for Life: Action for Protected Areas in Europe

## Report on Priority Project 14a)

# *POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE*

### Introduction

"Parks for Life - Action for Protected Areas in Europe" was launched 1994 and is one of a number of regional action plans being prepared by IUCN's World Commission on Protected Areas (WCPA earlier CNNPE) as a result of the IV World Park Congress (Caracas, Venezuela 1992) and a contribution to the implementation of the Caracas Action Plan. The European plan was prepared in association with the Europarc Federation (FNNPE), the World Wide Fund for Nature (WWF), the World Conservation Monitoring Centre (WCMC) and BirdLife International.

In Parks for Life 30 Priority Projects are proposed. No. 14a) deals with "Identification of Potential Natural World Heritage Sites."

The Convention Concerning the Protection of the World Cultural and Natural Heritage, known as the World Heritage Convention, was adopted by UNESCO in 1972 and entered into force in 1976. Its rationale is that there are elements of the cultural and natural heritage of individual countries that are of such outstanding, universal value that their protection should be the concern and responsibility of the international community.

Sites are nominated by Governments, the States, and following evaluation by IUCN/ICOMOS and acceptance by the World Heritage Committee, are inscribed on the World Heritage List, as Natural, Cultural or Mixed Natural/Cultural Sites or as Cultural Landscapes (being a sub-category of Cultural Sites).

When Parks for Life was launched 1994 there were only 11 natural sites and 3 mixed sites inscribed on the List for Europe. These 14 sites were covering Europe in a very uneven way. Nine of them or about 65 percent were situated in the Mediterranean and Balkan regions.

Today, 15 natural and 5 mixed sites are on the List, see box 1. There are nearly 8 times as many cultural sites in the region.

In Parks for Life it is stated in part 7.3.2 that:

> "The present set of natural World Heritage sites in Europe is far from adequate. Though candidates for the World Heritage List are now rigorously evaluated, there are further protected areas that should be included. The potency and prestige of the Convention make their inscription a high priority."

To remedy the situation, the Action Plan proposed as Priority Project 14 a) to:

> "Prepare a guide to potential Natural Heritage Sites in Europe extending east to the Urals, and use this to promote the use of the Convention to protect the finest elements of Europe's natural heritage."

This proposal was based on the premise that there were only a limited number - perhaps only a dozen or so sites - of fairly large, relatively natural areas left in Europe, which might meet the criteria of the Convention, but have not been included in the List as Natural World Heritage Sites.

Such a guide would hopefully promote a more even coverage of Europe's very different ecosystems, natural features and landscapes from the Arctic to the Mediterranean, from the Atlantic to the Ural mountains.

It was further believed that the best way to ensure that these remaining areas in Europe of outstanding, universal value and which are of pristine or near-pristine nature, achieve effective and longlasting protection, was to have them included on the World Heritage List.

The European members of the World Commission on Protected Areas (WCPA) and the Federation of Nature and National Parks of Europe (FNNPE - Europarc Federation) decided in November, 1996 to undertake this project as a joint exercise. The North Eurasian WCPA region later decided to take part. The author of this report, Lars-Erik Esping, former Director Natural Resources and Conservation, the Swedish Environmental Protection Agency, agreed to become a voluntary coordinator of the project.

While no funds were available to cover the costs of a Europe-wide study by consultants, WCPA and FNNPE requested a limited number of experts, mostly WCPA members, to participate through suggesting potential sites. These experts received a "Call for participation" and a Memorandum from January 1997 "Identification of Potential Natural World Heritage Sites in Europe" with some annexed papers.

About 25 experts have kindly taken part. Two parts of Europe have not been included in the project: the Balkan peninsula and the Alps. The idea was to set up special working groups for these areas, but these could not be carried through during 1997 depending on lack of funds.

The preliminary results of the project were presented at the WCPA's European Regional Working Session on "Protecting Europe's Natural Heritage", organized in co-operation with the Europarc Federation 9-13 November 1997 on the Island of Rügen, Germany. The
./. project was also discussed during the Conference at a Workshop on "Natural World Heritage Sites in Europe". The report from the Workshop is added as Annex 4. The report and its List of potential areas have been revised after the Rügen session and Workshop, Annex 1 and 2.

## UNESCO-Guidelines

In paragraph 8 in UNESCO's "Operational Guidelines for the Implementation of the World Heritage Convention", which deals with tentative lists, it is "stipulated" that natural properties should be grouped according to biogegraphical provinces.

This recommendation has as far as possible been followed in the study. For more information, see Annex 1.

The Operational Guidelines calls for only a carefully selected amount of sites of outstanding, universal value to be nominated, not of all those of great interest.

"The areas shall be of **outstanding universal value** as natural features *or* as geological-physiographical formations *or* as natural sites for science, conservation *or* natural beauty and shall be **carefully selected**. They shall also fulfil special conditions of **integrity** and have an adequate **long-term protection**", paragraphs 43, 44, 45 in the Operational Guidelines - see
./. also Annex 3.

It was stressed in the WCPA/FNNPE Memorandum of January 1997 that it was important to avoid proposing a longer list of sites, which were unlikely to be put forward by the States or supported by IUCN/ICOMOS and which would not be accepted by the World Heritage Committee, even if nominated.

## Outcome of the project

The main purpose of the study has been to carry out a review so as to indicate, for each of the biogeographical provinces, those natural areas which are of such outstanding, universal value that they have the potential to be inscribed as Natural World Heritage Areas (NWHS).

For the study the following five sources have been used.

1. The existing - the inscribed - Natural or Mixed World Heritage Sites.

2. The World's Greatest Natural Areas - an Indicative Inventory of Natural Sites of World Heritage Quality, IUCN 1982.

3. The Nordic List - Nordic World Heritage; Proposals for new areas for the UNESCO World Heritage List - a joint list commissioned of the Nordic Council of Ministers, Nord 1996:31.

4. Sites proposed by experts who have responded to WCPA's and FNNPE's "call for participation".

5. Areas in the Russian part of Europe, reported by Mr. Alexei Blagovidov, Department on Nature Reserves, the State Committee on Environmental Protection of the Russian Federation, Moscow and areas under consideration by a Russian-German working group.

The Nordic List is especially interesting as experts from the State authorities in the five Nordic countries, Denmark, Finland, Iceland, Norway and Sweden, have jointly recommended 16 Nordic areas as NWHS. In that way it is an evaluated list in which the most outstanding and/or representative areas from a Nordic point of view are included, archipelagos, fjords, mires, forest areas etc.

In all 86 areas have been put forward from the various sources as candidates for World
./. Heritage status. These proposals are presented in Annex 1 "A Compiled List, a Catalogue of Proposed but not Evaluated Potential Natural World Heritage Sites in Europe" and in Annex 2 "A Summarizing List of Proposed Potential Sites and Areas."

The 86 proposed sites are spread over all biogeographical provinces (see Annex 1, 2 and Map 1), which helps to facilitate a choice between different areas in the selection of any new NWHS. But no attempt has been done to make a selection or to present an **evaluated** list of the most important areas. Neither has special attention been given to the country of occurrance in drawing up the list.

It would be quite unrealistic to include anything like 86 additional sites on the World Heritage list as natural or mixed sites in addition to the 20 already inscribed. When the project started it was indicated "**a dozen sites**". Since then six new areas are already inscribed.

However, around one third of the 86 potential areas seem to better fulfil the criteria for World Heritage Cultural Landscapes (see Annex 3, paragraph 35 - 42) than those for Natural Sites. Areas proposed as Cultural Landscapes or Mixed Natural and Cultural Landscapes must, of course also fulfil the criteria of outstanding, universal value. They must be outstanding Cultural Landscapes "per se".

Consequently, when an area is under discussion, it may potentially be nominated and inscribed as a (i) Natural Site, (ii) Mixed Natural and Cultural Site or (iii) as a Cultural Landscape or mixed Natural/Cultural Landscapes.

It is important to note that some of the natural sites on this List are not typical of their biogeographical province (BP). This applies especially to outstanding "features" often geological features, such as Surtsey, the volcanic island off Iceland. Neither can a Norwegian fjord be a typical representative of the taiga BP. The BP concept is therefore sometimes too

crude a tool for classification purposes. To cover these kinds of areas, thematic studies are necessary as a complement.

It may also be of interest to refer to an Expert meeting organized by UNESCO in la Vanoise 1996. This examined *inter alia* the continuum from nature to culture that is covered by "World Heritage and acknowledge the complexity of the interactions between nature and culture.

The expert group recommended that the World Heritage Committee consider "developing one set of criteria, incorporating existing natural and cultural heritage criteria and promoting a unified identity for all World Heritage sites as the outstanding heritage of humankind." This proposal has been followed up by a new meeting in March 1998.

To sum up: The 86 candidate areas are very valuable and interesting natural areas or landscapes and are representative of the European BPs. But only a strictly selected number of them will reach the high standards which IUCN and UNESCO's World Heritage Committee are applying to Natural or Mixed World Heritage Sites. A number may also qualify under the criteria of Cultural Landscapes. In all probability however, some of the candidate areas will fail to pass the test of integrity.

Nevertheless Annex 1 to the Report will hopefully provide an essential "**context**" for identifying the remaining Natural or Mixed Natural/Cultural World Heritage Sites in Europe. It may also be of assistance in drawing up a list of potential European World Heritage Cultural Landscapes or Mixed Natural/Cultural Landscapes. It is for individual countries to prepare the case for and to nominate individual sites for World Heritage status. But Annex 1 will provide a background against which such arguments can be developed and the Candidate sites can be assesed.

For the future work with European World Heritage Sites more detailed analysis and investigations for the identification of new areas must be carried out. The recommendations from the Rügen Workshop have to be considered, see the recommendations in Annex 4.

Stockholm 25 April 1998

Lars-Erik Esping

Annexes:

Annex 1. A Compiled List, a Catalogue of Proposed but not Evaluated Potential Natural World Heritage Sites in Europe

Annex 2. A Summarizing List of Proposed Potential Sites and Areas

Annex 3. Criteria for NWHS and Cultural Landscapes

Annex 4. Report of the Workshop on "Natural World Heritage Sites in Europe"

Map 1. Biogeographical Provinces and the Potential NWHS etc.

Map 2. Biomes

Lars-Erik Esping
Member WCPA Europe
Coordinator P.P. 14a

Address: Hyggevägen 7, S-163 54 Spånga, SWEDEN

Phone: 46 8 361436
Fax: 46 8 6981662 c/o Ms. I. Åslin

Box 1

## Natural Sites from Europe already on the World Heritage list

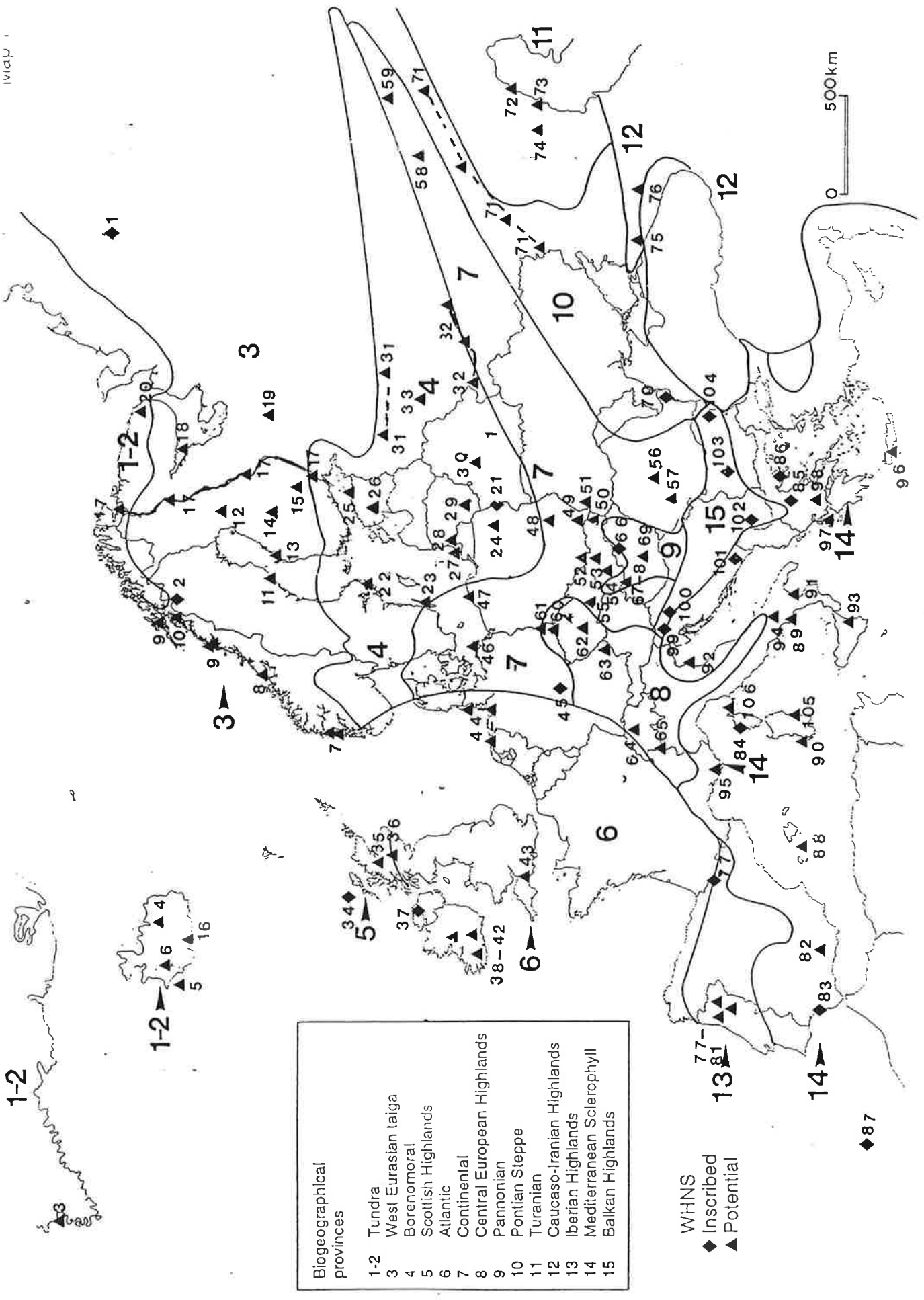
| | |
|---|---|
| Belarus | Belovezhskaya Pushcha (see also Poland) |
| Bulgaria | Pirin National Park<br>Srebarna Nature Reserve |
| Croatia | Plitvice National Park |
| France | Girolatta, Porto Gulfs and Scandola Reserve |
| Germany | The Messel Pit Fossil site |
| Hungary | Caves of Aggtelek (see also Slovak Republic) |
| Poland | Bialowieza National Park (see also Belarus) |
| Romania | Danube Delta (core) |
| Russian Federation | Komi Virgin Forest |
| Slovak Republic | Slovak Karst (see also Hungary) |
| Slovenia | Skocjan Caves |
| Spain | Doñana National Park<br>Garajonay National Park, Canary Islands |
| United Kingdom | Giant's Causeway<br>St Kilda Island |
| Yugoslavia (Montenegro) | Durmitor National Park |

Five other sites have been included for their "mixed" qualities, that is their natural and cultural aspects have been judged inseparable and qualify under both natural and cultural criteria. These are:

| | |
|---|---|
| France/Spain | Mont-Perdu-Tres Serals |
| Greece | Meteora<br>Mt. Athos |
| The former Yugoslav Republic of Macedonia | Ohrid and its Lake |
| Sweden | The Laponian Area |

No sites have yet been added under the new category of cultural landscapes.

*POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE*



MAP 2

Parks for Life: Action for Protected Areas in Europe

Report on Priority Project 14a)

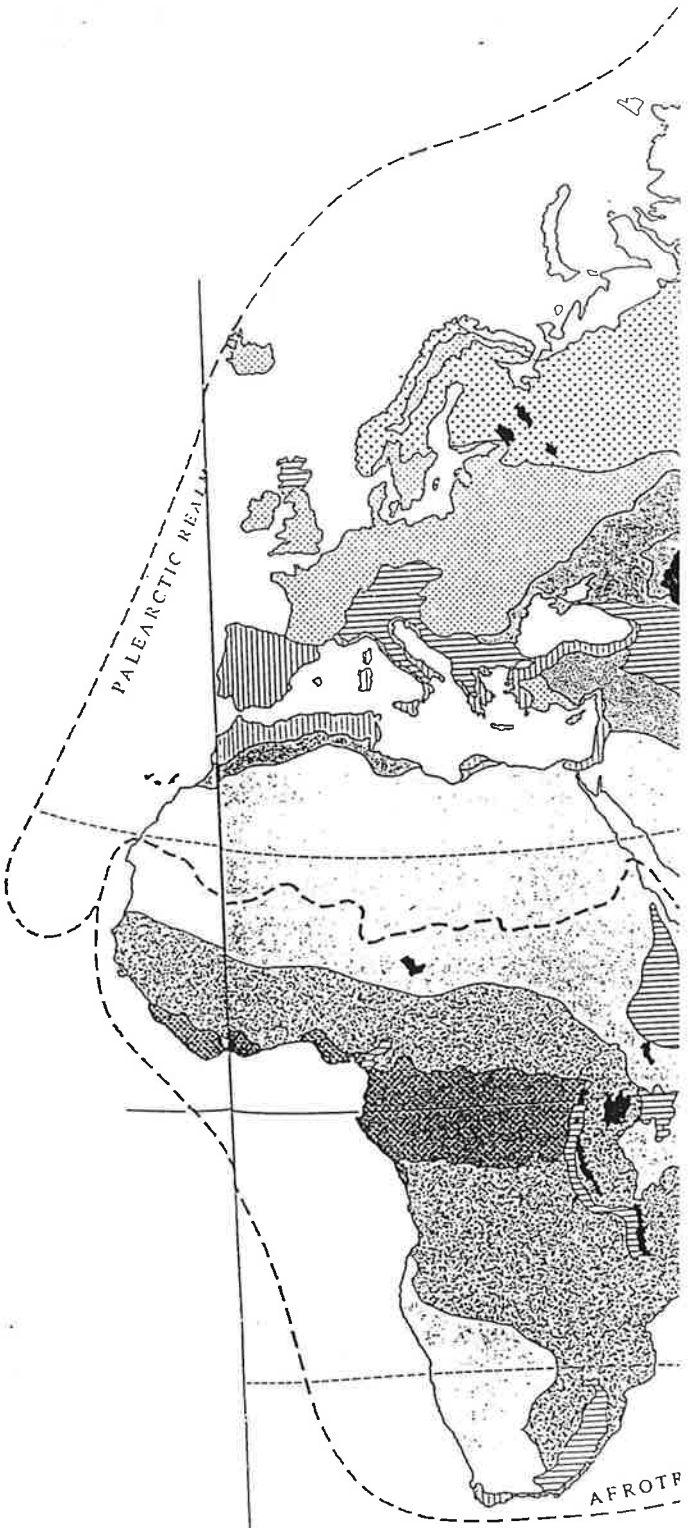
*POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE*

BIOMES

Map indicating the major biomes.
Biomes relevant for this project have got the biome numbers used of Udvardy.

The fourteen major biomes corresponding to the major ecosystem groups of the world

- Tropical humid forests
- Subtropical and temperate rain-forests or woodlands
- 5 Temperate broadleaf forests or woodlands and sub-polar deciduous thickets
- 3 Temperate needleleaf forests or woodlands
- 6 Evergreen sclerophyllous forests, scrub or woodlands
- Tropical dry or deciduous forests (including monsoon forests) or woodland
- Tropical grasslands and savannah
- 11 Temperate grasslands
- Warm deserts and semi-deserts
- 8 Cold winter (continental) deserts and semi-deserts
- 9 Tundra communities and barren arctic deserts
- 12 Mixed mountain and highland systems with complex zonation
- Mixed island systems
- 14 River and lake systems




After: Action Plan for Biosphere Reserves

UNESCO: Nature and Resources Vol. 20; 4

Stockholm April 1998 Annex 1

**Parks for Life: Action for Protected Areas in Europe**

**Report on Priority Project 14a) - WCPA and FNNPE**

# *A Compiled List, a Catalogue of Proposed but not Evaluated*

# *POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE*

*This is a list of candidate sites with descriptions of areas proposed as being of interest as Potential Natural and/or Mixed World Heritage Sites or as Mixed World Heritage Natural/Cultural Landscapes. To make this list more complete Natural Sites inscribed on the World Heritage List, as well as nominated areas, are included.* ***Notice*** *that it is a list of possible sites, which have not been evaluated.*

*For a general presentation of the project PP 14a), see the Report 25 April 1998 and the Memorandum: "Identification of Potential Natural World Heritage Sites in Europe" January 1997.*

Lars-Erik Esping
Member WCPA Europe
Coordinator P.P. 14a)

Hyggevägen 7, S-163 54 Spånga
SWEDEN

Phone: 46 8 361436
Fax: 46 8 6981662 c/o Ms. I. Åslin

## A. *Introductory description*

It is stipulated in paragraph 8 in the Operational Guidelines to the World Heritage Convention dealing with tentative lists, that natural properties should be grouped according to biogeographical provinces - BPs.

The use of BPs for the selection of Natural World Heritage Sites (NWHS) is built on a biome by biome framework complemented by a BP analysis. This system is built on M.D.F. Udvardy's "A Classification of the Biogeographic Provinces of the World" (IUCN Occasional Paper No. 18, 1975)

### Biomes

As mentioned a search for European natural sites of World Heritage status should ideally take place within a biome by biome framework complemented by a biogeographical analysis.

If we look on Europe from the viewpoint of its biomes - the chief and dominant ecosystems - Europe will be covered by the following biomes: (see M. Batisse: "Action plan for biosphere reserves", 1984 UNESCO: Nature and Resources Vol. 20:4, 1984 and the excerpt, map 2):

| No. | Biome Types |
|---|---|
| 3 | Temperate needle-leaf forests or woodlands |
| 5 | Temperate broad-leaf forests or woodlands, and subpolar deciduous thickets |
| 6 | Evergreen sclerophyllous forests, scrubs or woodlands |
| 8 | Cold-winter (continental) deserts and semideserts |
| 9 | Tundra communities and barren arctic desert |
| 11 | Temperate grasslands |
| 12 | Mixed mountain and highland systems with complex zonation |
| 13 | Mixed island systems |
| 14 | Lake systems |

### Biogeographical Provinces

In addition to the differences in geology and climate across Europe there are also large variations in vegetation. The combination of geological, morphological and climatological features determines the distribution of soil and vegetation patterns. Climatic conditions modulate the close relationships between soil and vegetation. Distinct geographical areas having their own specific character and originality can be identified by the composition of natural plant and animal life. These can be grouped into different BPs.

Following Udvardy's system for biogeographical division, Europe is situated in the **Palaeatic Realm**, which is divided in a number of **Biogeographical Provinces** - ecosystematic subdivisions of the realm. Each province will be characterized by a major biome or biome-complex.

For this project the division, which has been used in "Europe's Environment - the Dobris Assessment", (European Environment Agency, 1995) has been chosen - Map 1 (see also Map 3.6 Biogeographical provinces in Europe. Source: Udvardy 1975 - "the Dobris Assessment" page 23). Reference is also done to Udvardy in the text.

Below follows a presentation of the existing, nominated and proposed potential Natural World Heritage Sites, NWHS, in the BPs of Europe, presented from north to south and west to east, see also map 1. Some proposed areas which may fit better as Cultural Landscapes or Mixed Natural and Cultural Landscapes have also been included.

Together, for this compiled list, catalogue, the following five sources have been used:

1. The Existing Natural or Mixed Natural and Cultural Sites.

2. The Worlds Greatest Natural Areas - an Indicative Inventory of Natural Sites of World Heritage Quality, IUCN 1982.

3. The Nordic List - Nordic World Heritage Proposals for new areas for the UNESCO World Heritage List - a joint list commissioned of the Nordic Council of Ministers, Nord 1996:31.

4. Sites proposed by experts and organizations which have responded to WCPA's and FNNPE's "Call for participation".

5. Areas in the Russian part of Europe, under preparation by Mr. Alexei Blagovidov, Department on Natural Reserves, the State Committee on Environmental Protection of the Russian Federation, Moscow and areas under consideration by a Russian-German working group as the Fennoscandian Greenbelt.

It is obvious that some of the natural sites on this List are not typical for a separate BP. They are above all primarely very special "features", often geological features, as the Giant's Causeway on Ireland and the Skocja Cave in Slovenia. Neither can a Norwegian fjord be a typical representative of the Taiga BP. The BP concept is further sometimes a too crude tool to be really usable-ideal on European circumstances.

One also has to observe that often the geological and physical (physigraphical) formations will not be assessed when using a biome based biogeographical framework. Special thematic studies may be necessary to cover e.g. fossil sites, caves and other special geological formations. Such studies are in progress through Pro GEO's working group "Geosites".

## B. *The Compiled List - Catalogue*

**Existing - Nominated - Proposed Potential European World Heritage Sites**

# 1, 2, 3 BP 1, 2, 3. THE ARCTIC-TUNDRA-TAIGA-BIOGEOGRAPHICAL PROVINCES

These BPs are here combined to one group representing the following BPs and biomes.

BPs according to:

Europe's Environment:
Tundra
West Eurasian Taiga
Udvardy:
2.25.9 Arctic Desert
2.26.9 Eurasian Tundra
2.5.5 Icelandian
2.6.5 Subarctic Birchwoods
2.3.3 West Eurasian Taiga
2.42.14 Lake Ladoga

**Biomes:**

9. Tundra communities and barren arctic desert
5. Subpolar deciduous thickets
3. Temperate needleleaf forests or woodlands
14. Lake systems

**Countries:**

These BPs cover Iceland, Spitzbergen, the northern parts of Norway, Sweden, Finland and European Russia. Also Greenland, which ordinarily is classified as part of the Nearctic Realm, will be dealt with depending on its links with Denmark.

# 1. BP1. ARCTIC

The Arctic can be defined as a barren desert, "the Arctic Desert BP", which will gradually southwards pass over into the Arctic Tundra. Greenland is the most typical example of the arctic region, with its large shield of inland ice, several kilometres thick and inhospitable to most forms of life.

## 2. BP2. TUNDRA

The tundras occupies the extreme north of Europe. The tundra proper is characterized by the following features: It is unforested, with the exception of trees occasionally found in the valleys. The winter is long and severe. The summer is short and cool, but has long hours of daylight. The mean temperature of the warmest month does not exceed 10 °C. Frosts occur even in summer. Cloudiness is extensive, and there are strong winds. There is little precipitation because, due to the low temperature, a negligible quantity of moisture passes into the atmosphere. At a certain depth below the surface of the ground, there is usually a layer of permanent ground frost - permafrost.

Beginning at the north, the tundra zone may be divided into the following subzones.

Along the northern border lies the *arctic tundra* as on Greenland, where not only trees, but even shrubs are absent. Vegetation in general is extremely scant.

South of it we find the subzone of the typical, or *shrub tundra*. While there are no trees, shrub thickets (dwarf birches and willows, and ledum) grow not only along river courses, but are very characteristic also in the areas between rivers. Considerable areas are occupied by lichen (reindeer-moss) tundra.

It is followed of the *southern tundra*, where there are forests, but only along the river courses. There are many sphagnum peat bogs, often with palsa bogs (peat mounds).

Finally, in the southernmost outskirts of the tundra, where it merges into the zone of continuous forests, the taiga, lies the transitional subzone of the *wooded tundra*, or preforest zone. Sphagnum peat bogs reach a tremendous development.

## 3. BP3. TAIGA - the West Eurasian Taiga

The Taiga is a wide, cool and moist temperature climate belt, dominated by coniferous forests. The Taigabelt is often divided in Northern, Middle, Southern and Subtaiga parts, the later is part of the Boreonemoral BP. The Northern Taiga is a semi-open coniferous forest in the hills and plains of the Nordic countries and the northern Russian region. The dominant trees are spruce, pine and birch and larch in the Russian part, which give the northern taiga its appearance of uniformity and homogenity. Deciduous species as birch, aspen and alder are of secondary importance. Lichens, mosses and berry-bearing shrubs cover the ground. Further to the south the forests are getting thicker and the trees bigger, more broad leave trees appears and we get more of a mixed coniferous - deciduous forest land. The northern taiga is poor in vascular plants, besides rich in mosses and lichens.

While the winter is severe, the summer is warm, the mean temperature of the warmest month being over 10 °C. As a rule, the mean annual precipitation is about 500 mm.

To the west of the taiga belt there are the Northern Highlands and Mountains, the Swedish-Norwegian Scandes, part of the Caledonian Mountain Range. They border in west to the atlantic with a formidable landscape of fjords and archipelagoes. The highlands are by Udvardy named "*the Subarctic Birchwoods Biogeographical Province* ".

The formation characteristic for Iceland, mostly tundra, is by Udvardy named "*the Icelandian BP*".

## 1.1* Existing NWHS

*BPs 1, 2, 3 are described together as BP1

### 1.1.1 *The Virgin Komi Forests* — No. 1
***Russian Federation***

**Size:** 3.300.000 ha
**Criteria:** N (ii) (iii)
**Inscribed:** 1995

The Virgin Komi Forests cover 3.28 million hectares of tundra and mountain tundra in the Urals, as well as one of the most extensive areas of still virgin boreal forest in Europe. This vast area of conifers, aspens, birches, peat bogs, rivers and natural lakes, have been monitored and studied for more than 50 years. The area provides valuable evidence of the natural processes affecting biodiversity in the taiga. (Source: UNESCO)

### 1.1.2 *The Laponian Area* — No. 2
***Sweden***

**Size:** 940.000 ha
**Criteria:** N (i), (ii), (iii) and C (iii) - a mixed natural and cultural area
**Inscribed:** 1996

This area is situated in the tundra, taiga and subarctic BPs.

The property consists of two landscape types, an eastern lowland area of Archaean geological origin and a western mountainous landscape covering two-thirds of the area, formed more recently and comprising part of the Swedish-Norwegian Scandes. Glacial activity has had a major influence of the development of the landscape, and the current complement of flora and fauna are evidence of colonisation following the last glacial retreat some 9.000 years ago.

The lowland (taiga) consists of a plain with isolated, flat-topped hills covered by taiga vegetation with large open areas. Pristine pine and spruce forests cover approximately 1.000 sq.km and a variety of swamp types cover another 1.000 sq.km, the latter being

the largest untouched mire complex in western Europe. Deep canyons cut by melt water are a notable feature.

Two-thirds of the site comprises a thinly-vegetated mountainous landscape with steep valleys and powerful rivers. More than one hundred peaks higher than 1.800 m and about 100 glaciers have been recorded. Birch, low heath and alpine meadows (one of the floristically richest areas in Sweden), are found below boulder fields, permanent snow fields and glaciers.

More than 150 bird species have been recorded, including 100 residents. Notable species moose, Arctic fox, brown bear, lynx, wolverine, otter, pine marten, capercaillie, whooper swan, bean goose, jack snipe, golden eagle, gyrfalcon and white tailed eagle.

Although there is no permanent population, the site is of great cultural and economic significance for **the Saami people**, and reindeer herding is practiced throughout. The Saami have been resident for 4.000 to 5.000 years, and have progressively substituted reindeer hunting for reindeer herding from the sixteenth century onwards. Today some 200-250 Saami spend summers in the northern area, especially in the western part, herding 30.000-35.000 reindeer. The rights of the Saami to land, water, fishing and hunting are legally regulated and protected.

## 1.2 Proposed Potential NWHS

Here follows 13 areas presented in the publication "Nordic World Heritage Proposals for new areas for UNESCO World Heritage List" Nord 1996:31. These proposals are the recommendations from a group of experts representing the responsible authorities in each of the five Nordic countries, Denmark with Greenland, Finland, Iceland, Norway and Sweden. The work is commissioned by the Nordic Council of Ministers and published as Nord 1996:31.

The areas are presented from west to east and starts with the northernmost. The text is compiled from the Nordic report.

After these 13 areas, 5 areas proposed in another way follow.

### 1.2.1 *Isfjord-Disco Bay* No. 3
### *Greenland*

**Size:** 796.000 ha
**Criteria:** proposed N (i), (ii), (iii)

Isfjord contains the Jakobshavn Glacier, which is a floating, calving branch of the inland ice cap. The glacier is particularly famous for its high velocity of 1 m/hour and its production of calving ice which amounts to about 30 $km^3$ a year. This is more than is

known for any other glacier and comprises about 10% of the entire production of calving ice from the ice cap.

**Integrity:**

Most of the area, i.e. Isfjord itself with its glacier cover, is in the nature of things self-protecting since the size of the natural phenomenon and its dynamism impede destructive activity. No environmentally disturbing activities are taking place.

**Comparison with similar areas:**

There are no immediately comparable areas elsewhere in the world.

### 1.2.2 *Mývatn-Laxá river* No. 4
### *Iceland*

**Size:** 440.000 ha
**Criteria:** Proposed N (i), (ii), (iii), (iv)

Geologically the area is extremely young, having ongoing geological processes such as volcanism, continental plate drift and geothermal activity. Rare and unique examples of volcanic activity on the Mid-Atlantic Ridge.

The young landforms carry examples of various stages in the immigration of the vegetation with new areas of lava lacking vegetation, areas with only moss and lichens, and areas with vascular plants, bushes and trees.

Mývatn and Laxá are known for their productivity and biodiversity which are greater than in any other freshwater habitat at the same latitude. The species composition among aquatic birds is unique in the world. Fifteen species of duck permanently breed in the area and occasional breeding has been recorded for several species that are not known to breed elsewhere in Iceland. Mývatn and Laxá are the only breeding area in Europe for Barrow's goldeneye (*Bucephala islandica*).

**Integrity:**

The whole municipality (4.400 $km^2$) is protected under the terms of Act no. 36/1974. This entails that all constructional activity and other disturbance of the natural environment must be approved by the Nature Conservation Council.

**Comparison with similar areas:**

The bird life at Mývatn is unique. More species of ducks nest here than anywhere else in the world.

The duck populations in Lough Neagh in Northern Ireland and Lock Leven in Scotland can partly be compared with those in the Mývatn area. The bottom fauna in Mývatn has a production that is 8 to 30 times grater than that of other lakes at the same latitude.

## 1.2.3 *Surtsey* — No. 5
*Iceland*

**Size:** 150 ha
**Criteria:** Proposed N (i), (ii), (iv)

Surtsey, the southernmost of the Vestsmannaeyjar Islands, was formed during a volcanic eruption lasting from November 1963 to June 1967. The eruption, which is the largest submarine eruption near Iceland in historic time, started 130 metres below the surface of the sea. Only two months later, an island had been formed which reached 174 metres above sea level.

The area is an island where the natural evolutionary processes have been able to act without any kind of human impact. The geological and subsequent geomorphological processes are constantly active. The immigration of plants and animals to the new land area has been continuously studied and documented by scientists.

**Integrity:**

Because of the outstanding opportunity to study the evolution of Nature, changes in landforms and the immigration of flora and fauna to the island, the decision to protect the island from human disturbance was taken very early. Surtsey was afforded protection in 1965.

**Comparison with similar areas:**

The kind of volcano which formed Surtsey is rare outside Iceland, but similar ones occur in the Pacific Ocean. Surtsey, because of its location and climatic conditions, is outstanding in an ecological context.

## 1.2.4 *Thingvellir* No. 6
## *Iceland*

**Size:** 5.000 ha
**Criteria:** Proposed N (i), (ii), (iii), C (iii)

Thingvellir is a sub-Arctic area of great importance for its outstanding cultural and natural history, proposed as a mixed WHS.

Examples of various geological phenomena are found at Thingvellir where the landscape is characterized by young volcanism and lavas transected by parallel fissures and faults that follow the direction of the SW-NE trending Mid-Atlantic Ridge. The Thingvellir plain has been formed by continental drift, tectonic subsidence and volcanism, since 50% of the drainage basin of the lake consists of lava flows. The plain has been the focus of volcanic activity since the end of the Ice Age.

The landscape at Thingvellir has beautiful and mystical forms created entirely by continental drift, volcanism and glacial erosion, the three fundamental elements which created Iceland being found here at one place.

Thingvellir is the most important historic site in Iceland. The first countrywide parliament, the Althing (*Althingi*), was established at Thingvellir in AD 930. The Althing is, furthermore, the oldest documented parliament in the world. The parliament was held in the open-air in the midst of the rocky ravines at the northern corner of Thingvallavatn.

**Integrity:**

The area illustrates a variety of active geological processes, the most important of which is the complete rift system. It is considered necessary to extend the protected area, in part to protect a number of volcanic formations and the entire catchment area of Thingvallavatn, amounting to approximately 1.000 $km^2$.

**Comparison with similar areas:**

On account of the geological and limnological factors, in other words the places where the plates are drifting apart and forming lake landscapes, Thingvellir, on the middle of the Mid-Atlantic Ridge, can be compared with the East African Rift Valley System.

Volcanoes on the Mid-Atlantic Ridge are only visible above sea level in a few places, including Jan Mayen, the Azores and Tristan da Cunha. However, it is only in Iceland that the axis of the ridge can be observed.

## 1.2.5 *West Norwegian fjord landscape* No. 7
*Norway*

### 1.2.5.1 *Geirangerfjord*

**Size:** About 50.000 ha

### 1.2.5.2 *Naeroyfjord*

**Size:** About 55.000 ha
**Criteria:** Proposed for both 5.1 and 5.2 N (i), (ii), (iii), C (v)

The proposed fjord landscape in western Norway consists of two subareas. Subarea Geirangerfjord is situated 120 km north of subarea Nærøyfjord. In broad terms, these two landscapes greatly resemble each other, but in detail they complement one another with their special geological characteristics and distinctive cultural relicts. The conservation merits are principally associated with the combination of geology and a living cultural landscape. Glacial erosion during the Quaternary era and other geological processes have created the precipitous fjord sides. There is still a relatively active geological environment in the form of rock falls, active screes, alluvial fans and snow avalanches. In the midst of this magnificent, fascinating, and for many, almost frighteningly confined fjord landscape, people live and actively carry on a traditional form of agriculture. Geirangerfjord and Nærøyfjord lack significant technical encroachments of recent date, except in the built-up areas, and are consequently the largest unspoilt fjord landscapes in Norway. Comparable fjord systems cannot be found elsewhere in Europe and they are also exceptional natural and cultural heritages on an international scale. Proposals have been put forward to protect both fjords in a new national plan för national parks and other major protected areas in Norway.

**Integrity:**

The area contains complete sections of fjords with associated drainage basins where every element of significance for active processes of geological, ecological and biological development is represented.

**Comparison with similar areas:**

Fjord landscapes are also found in Alaska, Chile, Greenland and New Zealand. Geirangerfjord and Nærøyfjord stand out from these on account of their morphology, vegetation and characteristic, living cultural landscape. Nowhere else in the world do we find a fjord landscape which, in a comparable manner, illustrates the interplay between wild, dramatic scenery and cultural influences that have given the landscape great merit as an area to be experienced.

### 1.2.6 *Coastal spruce forest in Almdalen* No. 8
*Norway*

**Size:** 1.900 ha
**Criteria:** Proposed N (iv)

Almdalen is a narrow, steep-sided, V-shaped valley surrounded by a low upland plateau. It contains a river named Dunaelva. Down towards the fjord, the valley floor is relatively flat, and has fluvial deposits.

The area has an important locality of the rare coastal spruce forest, the "boreal rainforest", which is particularly rich in species. This type of forest occurs in only a few small areas in central Norway. Almdalen is the largest protected area of boreal rainforest in Europe. The coastal spruce forest is characterised by a great abundance of mosses, fungi and lichens. The protection of this spruce forest with its rich and rare lichen flora is an undertaking of great international interest.

**Integrity:**

The area is of such a size that it will be possible to ensure the future protection of the entire forest environment.

**Comparison with similar areas:**

The central Norwegian coastal spruce forest is, with regard to its content of species, unique in a global context. Comparable forest environments, but with other kinds of trees, are found in North America, along the Pacific coast of Russia and in a few small pockets in northern Japan.

### 1.2.7 *North Norwegian archipelago* No. 9
*Norway*

**Size:** 250.000 ha of land and sea
**Criteria:** Proposed N (i), (iii), (iv), C (v)

The coast of Nordland is topographically and biologically varied with broad strandflats and an archipelagic landscape in the south, and islands with precipitous birdcliffs fringed by a narrow strandflat, sand dunes and bouldery beaches in the north. The region has unique qualities associated with its plant and animal life, cultural monuments, geology and scenery. The birdcliffs on Røst and Væroy are among the largest in the Nordic countries and have earned an international reputation. The area was settled very early, contains many unique cultural monuments, and largely takes the form of an old cultural landscape.

It is divided in two parts.

*Helgeland Islands*. It is the largest continuous archipelago in the country and consists of thousands of islands, islets and skerries. The strandflat is up to 6 km broad and the islands are separated by extensive areas of shallow water.

*Outer part of Lofoten.* This northern part consists of the southernmost islands in Lofoten (Røst and Værøy), along with the outer coasts of the islands of Moskenesøya and Vestvågøa.

The area is first and foremost known for its enormous birdcliffs with their puffins, razorbills, guillemots and kittiwakes, etc. On the outer side of Lofoten, there are also huge populations of wintering seabirds, including eiders and king eiders.

The world-famous Moskenes Maelstrom is wrapped in legends, and many of the mountains served as navigational marks and are associated with legends. The Moskenes Maelstrom was one of the natural phenomena of the Nordic countries that was best known in Medieval Europe, partly through the description of the Nordic peoples written by Olaaus Magnus in 1555.

**Integrity:**

An area bearing a uniform character and containing all the salient features of an archipelagic landscape, in its geology, fauna, flora and a coastal culture that is rich in traditions. Most of the area has been proposed for protection under the terms of national plans for protecting nature and culture.

**Comparison with similar areas:**

In its size and configuration the area is unique in the world. The scenery stands out as more extreme than any other arcipelagic landscape proposed in the Nordic report and the area has a character that differs from all the others.

### 1.2.8 *North Norwegian fjord landscape* — No. 10

***Norway*** **(Norwegian part of a Swedish/Norwegian World Heritage Area)**

**Size:** 120.000 ha
**Criteria:** Proposed N (i), (iii), C (v)

The area includes a number of fjords, Mannfjord, Grunnfjord and Hellemofjord, all of which are arms of Tysfjord, along with the mountainous areas in the east and south up to the national border to Sweden.

The combination of magnificent scenery, ancient cultural landscape and a living Sami settlement beside Hellemofjorden is unique. The area consists of an extensive, unspoilt mountain massif with varied topographic, ranging from high peaks in the northwest to a rounded upland plateau landscape in the east. The mountainous area is broken up by a highly branched system of fjords and many large and small U-shaped valleys. The scenery is characterised by large, smoothly polished, sloping slabs of rock on the mountainsides, and karstic landscape dotted with numerous caves. The shortest distance on the Scandinavian peninsula between the fjord and main watershed occurs in this area. A wide range of vegetation types is found here, including coniferous woodlands in Hellemobotn and Mannfjordbotn. This is a core area for the Lule Sami settlement in Norway and has many important cultural monuments from earlier settlement phases, representing appreciable cultural-historical values.

**Integrity:**

Together with the adjacent Lapponian Area in Sweden, that was included on the World Heritage List in 1996, the Tysfjord area will provide a cross-section over the Scandinavian peninsula from the marine limit of the former inland sea in the Gulf of Bothnia to the fjord systems of the Atlantic Ocean coast on the Norwegian side. A continuous area of open countryside without major forms of disturbance provides the basis for the preservation of large ecological systems in extremely varied landscape. Parts of the area are already protected as national parks, and the remainder is proposed for similar protection.

**Comparison with similar areas:**

The Sami cultural monuments, the degree to which the area is unspoilt, its size and uniformity, and the variation in the types of scenery are unique.

### 1.2.9 *Raised Coastline of Västernorrland - Höga kusten* No. 11
*Sweden*

**Size:** 130.000 ha (half land, half sea)
**Criteria:** Proposed N (i), (ii), (iii) and partly as a Cultural Landscape

This area has experienced the greatest land uplift in Europe, 286 m, following the last Ice Age (0.9 m per century). The highest hilltops today were islets in the outermost archipelago when the ice-sheet margin was situated on this coastline 9.300 years ago. These islets with unwashed moraine above wave-washed rocks (calotte hills) clearly display the marine limit, for instance in the Skuleskogen National Park. The entire area shows abundant examples of the sorting of moraines through wave action during land emergence, a process that is still continuing and can be studied at present sea level.

This is an area of great natural beauty and a landscape with particularly valuable cultural historical elements - old fishing villages.

**Integrity:**

The greater part of the area has a certain protection from building activities and other measures that may significantly damage the natural and cultural environments. The area contains 1 national park (Skuleskogen, 30 $km^2$), 15 nature reserves and 12 bird reserves. The size of the area and the relatively stable character of the geological phenomena help to make the integrity of the area relatively high.

**Comparison with similar areas:**

The continuity and extent of former and ongoing postglacial geological processes probably lack their counterparts in Sweden and Europe.

### 1.2.10 *Olvassuo mires* — No. 12
### *Finland*

**Size:** 46.400 ha
**Criteria:** Proposed N (ii)

The Olvassuo aapa mire wilderness represents the purest kind of aapa mire. The area is also highly representative for a set of mire complex types in various development phases and for biotopes that depend upon them. It is a classic object for research which will help to assess the substance of the aapa concept, first defined in Finland and subsequently established as an international concept (cf. aapa bog and aapa mire).

Olvassuo is a continuous open mire, the centre of which chiefly consists of wet, poor flark fen. The flarks are long and narrow, the strings generally being fairly long and disrupted by wet ground. In the most luxuriant types of mire, birch-covered rich fens are among the types of vegetation encountered. The herb-rich, flark poor fens are extensive and flark rich fens are also met with in the area, which also contains some important raised peat bogs. Hanging mires in various stages of development can be found on esker slopes.

**Integrity:**

The area has good integrity since it comprises an entire aapa mire ecosystem and the most important portions are protected both as a strict reserve and a mire protection area.

**Comparison with similar objects:**

In addition to Finland, large aapa mires also occur in Sweden and in Russian Karelia. However, the aapa mire belt is broadest and most varied in Finland. Not least the aapa mire environment, but also other typically Fennoscandian types of mires, are richly and diversely developed in the Olvassuo area. This means that this area, compared with other objects, particularly in other countries, is outstanding and ideal for both research and educational use.

## 1.2.11 *Vaasa archipelago* No. 13
## *Finland*

**Size:** 151.300 ha (land area 20%)
**Criteria:** Proposed N (ii)

Land uplift is exceptionally pronounced in the Vaasa archipelago, with the result that the area is continually changing, geologically and biologically. It contains clear chronological series of geological features as well as biological succession phases from primary successions to climax forests.

The archipelago stretches from the open sea to the mainland-like shores of the large, inhabited island of Björkö in the intermediate archipelago. The area represents a unique natural entity, even in a global perspective. The terrain is extremely flat. The land is rising at a rate of 90-92 cm per century. The geomorphological features that are most typical for the area are the De Geer moraines which make up an extensive tract of parallel, relatively low, long narrow ridges with regular shapes. The De Geer moraines in the area are among the best developed and most typical examples in Finland, and comparable ones occur in few other parts of the world.

**Integrity:**

There is no serious threat to the area.

**Comparison with similar objects:**

Coasts where land uplift is taking place are found elsewhere in Finland, Sweden and Norway. The waters of the Vaasa archipelago are exceptionally shallow and the area contains several kinds of moraine. These features distinguish it from the Höga kusten of Sweden (see 1.3.9) and other coasts where land uplift is taking place. In contrast to similar objects, the special features of the area lead to distinctly different geomorphological features giving a special type of scenery.

## 1.2.12 *Koli landscape* No. 14
*Finland*

**Size:** 13.000 ha (Koli NP 11.500 ha)
**Criteria:** N (i), (iii), C (ii), (iii) and as a Cultural Landscape

The Koli region with its ridges of bedrock belongs to the northern Karelian schist zone and is characterised by rows of forested ridges formed of hard rock types that are poor in nutrients, such as quartzite. Between these ridges are narrow zones of dolerite. The summit of Ukko-Koli reaches 347 metres above sea level. The most important glaciofluvial formation is a beaded esker forming a row of islets crossing Lake Pielinen. Many kinds of lush forests occur on the dolerites. particularly luxuriant valley groves are found near streams and springs where large numbers of demanding species grow. The ancient dense forests of the Koli area are particularly magnificent.

The Koli region has a long history of human influence. Traces of swidden agriculture are still visible in the woodland and on meadows and pastures on the slopes of bedrock ridges. They tell of harmonic co-existence between Man and Nature. The presence of these woods and fields produced by swidden practices, mixed with natural woodlands, increases the biodiversity of the ridges. During the national romantic era around 1900, the Koli landscape earned renown as a symbolic landscape. It became the landscape of the Finnish soul. Many Finnish and internationally known artists have sought motifs or inspiration for their works by travelling to Koli. The best known of these is the composer Jean Sibelius.

### Integrity

The greatest threat to the Koli landscape in recent years has been the building of summer cottages on the shores and plans to build more tourist facilities on the bedrock ridges. The local authorities are attempting, in co-operation with the environmental protection authorities, to solve the integrity problem, too, in the course of the ongoing planning process.

### Comparison with similar objects

In the Koli area, examples of weathering, bedrock caves, accumulations of peat, long eskers and other glaciofluvial features are found which may also be met with elsewhere in the Fennoscandian shield region. However, it is difficult to find a comparable place where these geological features are equally well represented and concentrated in a compact area. The site also has an aesthetically harmonic value.

### 1.2.13 *Saimaa archipelago* No. 15
*Finland*

**Size:** 5.000 ha
**Criteria:** Proposed N (ii), (iii), (iv)

The Saimaa archipelago consists of four separate, well-preserved subarchipelagos in Lake Saimaa, the Kolovesi National Park and its surroundings, the Linnansaari National Park, and two areas covered by the national shore protection programme.

Saimaa is a unique area consisting of an interconnected chain of lakes. The fragmented, disrupted impression given by the lake landscape with its numerous islands and shallows, and the barren character of the area, are a result of its geological history. The area contains several biological relicts from former marine conditions, and these have adapted to freshwater conditions as the land emerged.

The landscape of the Saimaa archipelago has a distinctive character. Its beauty is first and foremost a consequence of the ever-changing details.

A number of endemic species live in the area, the most notable of which is the fresh water Saimaa ringed seal (*Pusa hispida saimensis*).

**Integrity:**

The greatest threat to the various subareas of this natural heritage object in recent years has been the building of summer cottages and freetime homes on the shores. The most important parts are now protected as national parks. Those portions that are not protected through legislation belong to the national shore protection programme.

### 1.2.14 *Skaftafell* No. 16
*Iceland*

**Size:** 500,000 ha
**Criteria:** N (i), (iii)
**Proposed by:** IUCN list 1982

This 500,000 ha area in Southeastern Iceland is a living glacial refugium, surrounded on three sides by Europe's largest glacier, the Vatnajökull, but providing an excellent habitat where plants and animals live at the margin of an inland ice field. These conditions are similar to those that were typical in many parts of Europe during the last glacial period, the time when *Homo sapiens* was evolving into his present form. Over 200 species of flowering plants occur, including birch, willows, and a wide range of grasses and mosses. Being an oceanic island, Iceland has few species of native terrestrial mammals - only the Arctic fox - but the bird fauna is extremely rich, including skuas, gulls, and many others. (Source: IUCN 1982)

### 1.2.15 *Green Belt of Fennoscandia* No. 17
***Finland, Russian Federation and Norway***

**Size:** ?
**Criteria:** N (i), (ii), (iii), (iv)??
**Proposed by:** a Russian, Finnish, Norwegian, German working group

The Green Belt of Fennoscandia is an outstanding European natural heritage. It can be characterised as a specific part of the European boreal taiga zone, with a unique complex of geological formations, geomorphological forms, untouched ecosystems (old growth forests, mires, lakes, rivers, coast, archipelagoes) from the Barents Sea to Ladoga and the Gulf of Finland. The nomination will consist of clusters, representing the whole diversity of the Green Belt. Existing protected areas as well as planned protected areas should be included.

The Green Belt stretches from the tundra in the north over the taiga down to the boreonemoral BP in the south and includes biome 9, 5, 3, 14 (14 = Lake Ladoga). More than 350 different areas are included in the clusters.

It is the intention to nominate this complex of areas 1998.

Two areas, Kandalakcha and Vodlozero have earlier been proposed. These two are now included in the Green Belt.

### 1.2.15.1 *Kandalakcha state reserve* No. 18
***Russian Federation***

**Size:** 180.000 ha
**Criteria:** N (ii), (iii)
**Proposed:** IUCN List 1982

This 180.000 ha reserve comprises an archipelago of 53 islands in the Kandalakcha Bay of the White Sea, a number of islands in the Barents Sea, and the Lapland reserve on the Kola Peninsula; both tundra and taiga habitats are well represented. This desolate reserve is covered in low-growing vegetation, lakes, swamps, and peat bogs; seemingly devoid of life, there are in fact many species of mammals and birds, including moose, bears, wolverines and beavers. The birds are abundant in summer, and the area is a northern terminus for many migratory species. (Source: IUCN 1982)

### 1.2.15.2 *Vodlozero National Park, Karelia and Arkhangelsk region* No. 19
*Russian Federation*

**Size:** About 500.000 ha
**Criteria:** N (i), (ii), (iii)
**Nominated:** 1995

The Vodlozero nominated area includes the National Park Vodlozero and the Landscape Preserve Kozhozetsky. Its length from north to south is about 150 km and from east to west from 30 to 60 km.

The nominated area is located on a flat landscape where the mire moraine plain dominates together with many lakes and small rivers. Forest complex of the Vodlozero provides ecosystem of pristine northern and middle Eurasian taiga, unique in the purity of its genetic fund and the state of preservation. It is one of the worlds largest primival forests of this type.

**Integrity:**

The area is of such a size that it will ensure the future protection of the areas total environment as forests, mires, lakes and rivers, flora and fauna.

### 1.2.16 *Eastern Kola peninsula* No. 20
*Russian Federation*

**Size:**
**Criteria:** N (i), (ii), (iii), (iv) ?

The eastern part of the Kola peninsula constitute the largest, continuous tundra area in Europe.

The area is under consideration by the Russian-German working group.

## 1.4 Conclusions: Arctic, Tundra, Taiga BPs

*The Arctic BP* is covered by one outstanding area on Greenland.

*The Icelandian BP* (Udvardy) - part of the tundra BP - is represented by three areas, of which the small volcanic island, Surtsey is a geological feature.

*The tundra and taiga BPs* including Udvardys **subarctic birchwoods** are covered by the two existing WHS Komi and Laponian Area, and the potential areas in Finland and Russia, especially the Green Belt of Fennoscandia with Vodlozero NP. Only the Eastern Kola peninsula seems to be genuinely representing the tundra BP.

Some of the other proposed areas are not especially representative for these BPs. They are above all geological features and/or landscapes as the Norwegian fjords, the Raised Coastline of Västerbotten, the Archipelagoes and coastal landscapes in Norway, Finland and Sweden. This is just illustrating the difficulties to use a BP grouping for all kinds of potential sites. Thematic studies are sometimes preferable or necessary.

In general these three BPs seem to be well "covered" by the existing, and proposed potential WH sites and landscapes.

# 4. BP4*. BOREONEMORAL BIOGEOGRAPHICAL PROVINCE

*BPs 1, 2, 3 are described together under BP1

**BP**: Udvardy 2.10.5 Boreonemoral

**Biome**: 5. Temperate broad-leaf forests or woodlands

**Countries**: Southern Norway, Sweden and Finland and all Estonia, Latvia, Lithuania, Belarus, south-western Russia and north-eastern Poland.

The Boreonemoral BP is made up of mixed broadleaved - coniferous forests with the climax being the decidous forest. However, the successional stages are mostly mixed or can even be conifer-dominated. This forest belt is also called the Southern Taiga. The forests are mixed with pastures and arable land on plains and plateaus with loess soil. The numbers of sphagnum bogs is much lower in this BP and they almost disappear in the south. In eastern Europe the boundary between taiga and the mixed, boreonemoral forest corresponds to the northern boundary of the oak. This BP is covering the southern part of Scandinavia, the Baltic countries, parts of north-eastern Poland, most of Belarus and adjacent parts of Russia.

## 4.1 Existing NWHS

### 4.1.1 *Belovezhskaya Pushcha/Bialowieza Forest* No. 21
***Belarus and Poland***

**Size**: 98.100 ha (Belaraus, 87.600 ha, Poland 10.500 ha)
**Inscribed**: 1992

Located on the watershed of the Baltic and Black Seas, this immense forest range, consisting of evergreens and broad-leaved trees, is the home of some remarkable animal life, including rare mammals such as the wolf, the lynx, the otter, as well as some 300 European bison, a species which has been reintroduced into the park. (Source: UNESCO).

## 4.2 Proposed Potential NWHS

### 4.2.1 *Stockholm archipelago* No. 22
*Sweden*

**Size:** 350.000 ha
**Criteria:** Proposed N (i), (ii), (iii), (iv) and as a Cultural Landscape (parag. 39 ii)

Along the Swedish and Finnish coasts of the Baltic is an island realm of a size and character that, in several respects, is outstanding on a global scale. The greatest concentration of single islands, groups of islands and continuous, extensive archipelagos is found in a belt stretching from Stockholm in the west across Åland to Åboland in the east. This part of the Baltic has more than 100.000 islands, islets and skerries. Of these the Stockholm area has been chosen in the Nordic report.

The Stockholm archipelago numbers approximately 30.000 islands, islets and skerries. The coastline of the mainland and islands is more than 10.000 km long. It is 80 km from the centre of Stockholm to the outermost islands. The north-south extent is about 150 km. Within this area, there are many different natural variations and zonations both on land and in the water.

The naked rock in the archipelago shows very clear traces of the movement and directions taken by the ice sheet and the powerful effect of the ice on the landscape. This is important documentation of Earth history in the Quaternary era. Land uplift is an active geological process that is still taking place, creating new islands and changing existing ones in a manner that probably lacks its parallell beyond the Baltic.

The area is very important for the coastal birds and seals of the Baltic.

**Integrity:**

The entire area has a certain degree of protection against the erection of buildings and other actions that may manifestly damage the natural and cultural environments (Natural Resources Act). A large number of nature reserves (about 60) and bird reserves have been set up to protect particularly valuable areas. The vast open spaces of the area, its natural character and the absence of exploitation in the form of settlements are additional important aspects of its integrity.

**Comparison with similar areas:**

The area that is delimited forms an extremely large, chiefly unexploited archipelago of basement bedrock. Similar areas are found in Finland, but are to a greater extent occupied by weekend homes. The size of the area, its large complex of natural qualities and a high degree of integrity make it appropriate that the Stockholm archipelago is represented in the World Heritage List.

## 4.2.2 *Alvar of Öland* No. 23
*Sweden*

**Size:** around 40.00 ha
**Criteria:** Proposed N (i), (ii), (iii), (iv), C (iii), (v) and as a Cultural Landscape
**Proposed:** The Nordic report

The southern part of the island Öland is an outstanding example of scenery characterised by various forms of karst, including dolines, as well as stone polygons and weathering, which are continuously shaping the landscape.

Because of very special geological, climatological and cultural-historical factors, the southern part of Öland has large areas with very unusual kinds of natural environment, not least various forms of alvar vegetation and extensive, open, shore meadows.

Stora Alvaret features a number of very uncommon kinds of landscape and some environments with an abundance of species. Many plants and animals are endemic, have a disjunctive distribution, or exist here on the border of their range. The shore meadows carry a number of very special plant communities and are the habitats of many uncommon and demanding species.

The cultural landscape on southern Öland consists of alvar vegetation, shore ridges and shore meadows, and is the richest area for ancient monuments in Sweden, and probably the whole of northern Europe. It features a considerable number of excellent examples of traditional settlement and traditional land-use, not least since the Iron Age.

**Integrity:**

The greatest threat to the alvar landscape and the shore meadows is inadequate grazing pressure. The nature conservation authorities are endeavouring to secure the most valuable parts by creating nature conservation areas and establishing agreements with livestock farmers in the area.

**Authenticity:**

The cultural landscape is characterised by an ancient, well-preserved plot landscape. The settlement structure is old and well-preserved, as regards both buildings and land-use. The well-preserved, rich assemblage of ancient monuments help us to understand that the area has maintained continuity in land-use from as long ago as the Iron Age.

**Comparison with similiar areas:**

The extensive, varied alvar landscape of the Stora Alvaret lacks its parallel in Europe and probably in the world. Small areas of alvar vegetation are found in northern Öland, on Gotland and on Ösel and the mainland of Estonia, but these cover a total area that is significantly less than that of Stora Alvaret. The shore meadows of eastern Öland are probably the most biologically diverse grassland in the country with respect to vascular plants and birds. These two kinds of landscape have a genuine natural and cultural historical relationship and form an outstanding integrated entity.

### 4.2.3 *Biebrza National Park* No. 24
***Poland***

**Size:** 59.233 ha
**Criteria:** N (ii), (iv)
**Integrity:** 2, 4, 6, 7
**Proposed by:** Dr. Czeslaw Okolow, Poland

The Biebrza valley is the largest peat land complex in Poland, with low bog and to a lesser extent transition and raised bogs, as well as mineral elevations, meandring lowland rivers - Biebrza and its tributories with extensive network of oxbow lakes. It represent the best preserved such complex in Europe. There are typical zonation of vegetation along and across the meandring valley, flooded each year. The Biebrza area is especially rich in flora and fauna with special richness of birds, both breeding and migrating or resting during migration. Bird fauna consists of 262 species/178 breeding. The largest world population of river warbler breeds here. Many other species of birds breed in the valley including considerable numbers of waterfowl, white and black storks, terns etc. Biebrza is probably the best preserved example of such biotopes in the boreonemoral part of Europe, if not in the whole continent.

### 4.2.4 *Ontika Landscape Reserve - Glint of Saka-Ontika-Toila* No. 25
***Republic of Estonia***

**Size:** 890 ha
**Criteria:** N (i), (iii), C (iii)
**Integrity:** 3, 6
**Proposed by:** Ministry of the Environment and Arne Kaasik

The Glint of Saka-Ontika-Toila, 890 ha, represents the highest (56 metres) and longest uninterrupted stretch of the Baltic Glint. The reserve contains also the picturesque valley of the River Phhajôgi (Holy River). The highest waterfall of the country (20 m high) - Valaste juga is located here, too. It has been under protection since 1957.

This is the most outstanding part of the North-Estonian Glint.

### 4.2.5 *Sooma National Park* No. 26
***Republic of Estonia***

**Size:** 36.700 ha
**Criteria:** N (ii), (iii), (iv)
**Integrity:** 1, 2, 4, 6
**Proposed by:** Ministry of the Environment and Arne Kaasik

This is a vast area (36.700 ha) of Central-Estonian mires, founded as a NP in 1993. Four large bogs - Kuresoo, Valgeraba, Ördi and Kikepera, located in the catchment of one of the longest rivers in the country - the River Pärnu, make up the national park. The listed bogs have formerly been protected as mire reserves, founded in 1981. The wooded meadows of the River Halliste have been considered as a botanical reserve (256 ha) since 1957 and being now included in the national park.

**Comparison with other similar areas:**

The territory perform a peculiar habitata in the lower reaches of the river and holds several plant and bird species with limited distribution in the country. This is an area of extensive flooding in spring.

### 4.2.6 *Kuršių Nerijos (Curonian Spit) National Park* No. 27
***Republic of Lithuania***

**Size:** 26.400 ha
**Criteria:** N (ii), (iii), (iv), C (iv), (v)
**Integrity:** 1, 2, 3, 4
**Proposed by:** Environmental Protection Ministry

Kuršių Nerijos (Curonian Spit) National Park is the most unique and precious Lithuanian park, covering the area of 26.400 hectares (including 16.700 of marine and lagoon aquatory). It has been established to protect and manage in environmentally sound way the most valuable Lithuanian coastal landscape with unique dune ridge, cultural heritage and rich biodiversity. It is a very important migration area for waterfowl and other birds on the East Atlantic flyway. Many natural and cultural objects have been granted the status of monument (natural monuments - 12, cultural values - 147). The part of the National Park where great dunes are situated has been designated as a strict nature reserve zone according to the Master Plan of Curonian Spit National Park.

Part of the Curonian Spit is situated on the Russian (Kaliningrad Oblast) side of the spit and is protected as Kurshkaya Kosa NP. The total Curonian Spit area has been recognized as an internationally important transboundary protected area.

**Authenticity or integrity:**

The Curonian Spit National Park is a natural and cultural complex, which has been formed by nature and man for ages. The dune ridge of the spit is on the European level of importance. Moreover, all Curonian Spit is an integral natural complex (with status of a national park on both Russian and Lithuanian sides). It has been designed and managed on the basis of the similar principles on both parts.

**Comparison with other similar properties areas:**

Two Baltic coast territories: Vistula Spit (between Poland and Russia) and Hel Peninsula (Poland) have similar natural origin. However, the scale, landscape diversity and cultural heritage of the Curonian Spit are much richer comparing to their territories.

### 4.2.7 *Nemunas Delta Regional Park* No. 28
***Republic of Lithuania***

**Size:** 26.600 ha
**Criteria:** N (i), (ii), (iii)
**Integrity:** 1, 2, 4, 5, 6, 7
**Proposed by:** Environmental Protection Ministry

A large part of the area is covered by flooded meadows and pastures, while smaller area is occupied by marshland. Only a small part is covered by forests or shrubs. Totally more than 430 vascular plants are found here. NDRP is critically important for the migratory birds on the East African-European-Arctic flyway. Totally 290 bird species have been registerred in NDRP, of which 160 are breeding. Among the breeding birds, two species (Aquatic Warbler, 800 - 100 pairs, Corncrake 170 - 200 pairs) are considered as globally threatened, 35 are considered of conservation concern in Europe. The delta area is one of the most important wetland ecosystems in Lithuania and has been designated as a site of international significance to migratory birds under the terms of the Ramsar Convention Area.

### 4.2.8 *Cepkelia strict reserve* No. 29
***Republic of Lithuania***

**Size:** 10.590 ha
**Criteria:** N (i), (ii), (iii), (iv)
**Integrity:** 1, 2, 3, 4, 6, 7
**Proposed by:** Environmental Protection Ministry

Cepkeliai (5.858 ha) and Pastalikes (966 ha) mires are the largest mire complex in Lithuania. More than 1/2 territory is covered by raised bogs, also there is significant

area of fens and swamps, permanently flooded forests. Sandy continental dunes neighbouring with raised bogs create a unique landscape. 227 species of vertebrates, including 36 species of mammals, 176 species of birds (of which 122 inseat species have been registered. This area is famous for its extremely rich flora - 669 species of vascular plants and mosses. There is a great diversity of natural communities of bogs, fens and swamps. Cepkeliai reserve has been designated as a site of international significance under terms of the Ramsar Convention Area.

### 4.2.9 *Berezinskij Zapovednik* No. 30
### *Belarus*

**Size:** 76.200 ha
**Criteria:** N (i), (iii), (iv)
**Integrity:** 2, 4, 5, 6
**Proposed by:** Dr. Czeslaw Okolow, Poland

Berezinskij state nature reserve includes the upper course of river Berezina and its tributories with large marshlands rivers, peat bogs, over 50 smaller and bigger rivers, old river beds and backwaters. Typical zonation of vegetation beginning from sedge marshes, by pine bog marshes, pine and broadleaved forest communities. Rich bird fauna/205 bird species from that 152 breeding species. Of mammals brown bears, beavers and wolves may be mentioned. The Zapovednik was created in 1925 and it covers nowadays 76.200 hectares.

### 4.2.10 *Russian Federation*

Other areas under consideration are:

#### 4.2.10.1 *Russian Plain* No. 31

**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow.

This is two areas in western-middle Russia representing the Russian Plain. Tsentralno-Lesnoy Zapovednik, Tver region and Darvinsky Zapovednik, Vologda region.

#### 4.2.10.2 *"The Forest Defense Line"* No. 32

**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow.

This is a cluster of 8 National Parks and Zapovedniks (Z) - State Nature Reserves, covering the southern parts of the Russian plain, from west to east:

Bryansky Les Z, Bryansk region
Orlovskoje Polesje NP, Orlov region
Kaluzhskie Zaseki Z, Kaluga region
Galitchja Gora Z, Lipetsky region
Mordovsky Z, Mordovia Republic
Smolny NP, Mordovia Republic
Prisursky Z, Chuvashiva Republic
Volzhsko-Kamsky Z, Tatarstan Republic

Some of the areas are situated in the Boreonemoral BP, some in the Continental BP.

#### 4.2.10.3 *Metshera depression* No. 33

**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow.

A cluster of forest areas 2 NPs and 1 Zapovednik: Meschora NP, Vladimir region
Meschorsky NP, Ryazan region
Oksky Z, Ryazan region

## 4.3 Conclusions

The Bialowieza area, the Biebrza Valley, Nemunas delta and the Berezinskij with their mix of broadleave forests and wetlands are typical for BP4. The Alvar of Öland, the Glint of Saka and the Curonian Spit are more odd areas, geological features and cultural landscapes. The areas in the Russian Federation are indications of areas of interest. This BP seems to be well covered with the inscribed and proposed areas including those in Russia.

# 5. BP5. SCOTTISH HIGHLANDS BIOGEOGRAPHICAL PROVINCE

BP: Udvardy: 2.31.12 Scottish Highlands

Biome: 12. Mixed mountain and highland systems with complex zonation

Country: Scotland, United Kingdom

The northern parts of Scotland - the Scottish Highlands - are a glaciated plateau sloping down to the south east. A few bold summits rise above the general level of 300 metres up to 1.400 metres. Deep valleys break up the plateau dividing it in many ridges and hills. Moorlands with many bogs, lakes and rivers stretches over vast parts of the lower

land. Along the coasts there are rough coastlines and a hugh amount of islands as the Hebrides, the Orkneys and the Shetland islands.

## 5.1 Existing NWHS

### 5.1.1 *St. Kilda* No. 34
*Scotland*

**Size:** 850 ha
**Criteria:** N (i), (iii), (iv)
**Inscribed:** 1986

St. Kilda is situated west of the Outer Hebrides. There are 4 main islands and also several sea-stacks - rocky outcrops. Described as "the most majestic sea rocks in existence" the unrivalled grandeur of the St. Kilda archipelago is legendary. The large sea-bird colonies include gannets, puffins, guillemots and kittiwakes. (Source: Masterworks of Man and Nature)

## 5.2 Proposed Potential NWHS

### 5.2.1 *Cairngorms National Nature Reserve* No. 35
*Scotland*

**Size:** 50 - 60.000 ha
**Criteria:** N (iii), (iv) and as a Mixed Natural and Cultural Landscape
**Proposed:** IUCN List 1982 and Roger Crofts, Scottish Natural Heritage

The Cairngorms represents the unique combination combining geological and geomorphological history, current geomorphological processes, and Arctic/Alpine climatic conditions and accompanying flora and fauna. The Cairngorms Massif displays major stages in the Earth's history of the last 350 million years. It is notable for the landforms which reflect the humid climates of the tertiary period, and the cold climates of the quaternary period particularly forms of glacial erosion and periglacial activity. Its altitude and position in Scotland mean that it experiences the continental climate of the Alpine area along with Arctic conditions similar to the southern edge of the Tundra Belt. The plant and animal associations on the high plateau therefore mimic these conditions. Further down the slopes and on the lower ground are substantial remnants of the Caledonian Pine Forest ecosystem with the whole range of flora and a considerable range of the native fauna represented. The area is subject to major habitat regeneration projects particularly within the pine forest ecosystem. The area receives a considerable number of visitors and there is a small area of downhill skiing. The area has received many conservation accolades: it is an SPA under the EU Birds Directive for breeding dotterel and other internationally threatened species and a proposed SAC under the EU Habitats Directive for its Arctic-Alpine and pine forest habitats. It has also been put forward by the UK Government for tentative listing as a natural World Heritage Site. A management strategy has been prepared for the area and the UK

Government propose that the area be designated a National Park. The management strategy for the Cairngorms places particular emphasis on regeneration of the Caledonian pine forest ecosystem on the valley floors and lower slopes of the massive and on rejuvenation of the Arctic-Alpine habitats.

### 5.2.2 *Flow Country* No. 36
*Scotland*

**Size:** 500,000 ha
**Criteria:** Mixed Natural and Cultural Landscape
**Proposed by:** Roger Crofts, Scottish Natural Heritage

An area approaching 500,000 hectares in the north mainland of Scotland is a unique hydromorphological system of blanket peat and lake systems. The area has evolved over some 5,000 years as a result of the deterioration in the climate and the deforestation of the area by man. The area displays an important ecological gradient between the higher and wetter western part and the drier and lower eastern part which is reflected in the species composition as well as in the nature of the hydromorphological systems. The area in total is significant for its landscape character. The area is also significant as a breeding ground for internationally protected waders. For the most part, the area is subject to low intensity crofting agriculture, although some areas have been ploughed, the hydromorphological systems disturbed or destroyed and the area planted with non-native coniferous trees. Some 40% of the total area is protected as Sites of Special Scientific Interest and all of these are proposed as Special Areas of Conservation under the European Habitats Directive.

## 5.3 Conclusions

This small BP has an outstanding site in St. Kilda, representing the Scottish archipelagoes. Cairngorms and Flow Country may likely be classified as Mixed Natural and Cultural Landscapes.

# 6. BP6. ATLANTIC BIOGEOGRAPHICAL PROVINCE

BP: Udvardy: 2.9.5 Atlantic

Biome: 5. Temperate broad- leaf forests or woodlands

Countries: Ireland, UK-England and Wales, southern Scotland, nearly all France, northern Spain, Belgium, Luxembourg, the Netherlands, western Germany and western Denmark.

The Atlantic province is under the influence of a mild oceanic climate. Evergreen dwarf shrubs grow where forests cannot establish themselves for climatic or cultural reasons.

This region was once dominated by broadleaved deciduous forests of oak and beech. Today, the Atlantic region shows a substantial increase of planted coniferous forests. Human influence controls the degreee of enclosure or openess of the landscape, a man made landscape. It varies from enclosed - bocages or hedges - to open landscapes, subject to swift changes.

Moreover there are very large divergences between different areas in the western and eastern parts of this BP and between the open plains and the mountainous parts. There are tidal waters along the coasts.

## 6.1 Existing NWHS

### 6.1.1 *The Giant's Causeway and Causeway Coast* No. 37
*Northern Ireland, UK*

**Size:**
**Criteria:** N (i), (iii)
**Inscribed:** 1986

At the foot of the basaltic cliffs along the sea coast at the edge of the Antrim Plateau in Northern Ireland, the Giant's Causeway is made up of some 40.000 massive black columns sticking out of the sea. The dramatic sight has inspired legends of giants striding over the sea to Scotland. The study of these formations by geologists for 300 years has greatly contributed to the development of the earth sciences, and shown that this striking landscape was caused by volcanic activities during the Tertiary period some 50-60 million years ago. (Source: UNESCO)

## 6.2 Proposed Potential NWHS

### 6.2.1 *Killarney National Park* No. 38
*Ireland*

**Size:** 10.129 ha
**Criteria:** N (iii), (iv), C, Probably a Mixed Natural and Cultural Landscape
**Proposed by:** Dr. Alan Craig, National Parks and Wildlife Service

The site is 10,129 ha in extent. It contains areas of woodland, moorland and freshwater ecosystems in an Atlantic environment. Features of international scientific importance include oceanic woodlands of oak, with a unique yew woodland and varied wet woodlands. There are numerous noteworthy species of flora and fauna, including several plants with unusual discontinuous distributions in Western Europe. A herd of red deer is the only indigenous wild herd of deer remaining in the country. Three large lakes comprise 24% of the total area. It includes part of the highest mountain range in Ireland, maximum elevation within the park 840 m.

It is also an area of outstanding beauty, based on its distinctive combination of mountains, lakes, woods, waterfalls and archaeological monuments. The area has been a major focus of tourism for two centuries.

**Integrity**

The site is a National Park wholly owned by the state.

### 6.2.2 *The Burren, with nearby turloughs Ireland* No. 39

**Size:** 36.700 ha
**Criteria:** N (ii), (iii), (iv), Probably a Mixed Natural and Cultural Landscape
**Proposed by:** Dr. Alan Craig, National Parks and Wildlife Service

The Burren is an area of limestone karst topography, heavily influenced by past glaciation, about 36.700 ha in extent. Most of the Burren is characterised by terraced hills of bare limestone, with a well developed underground system of caves. Almost all water flow is underground, with virtually no surface water, except at the eastern periphery, where the water table comes to the surface of limestone lowlands. The most remarkable glacio-karstic feature of the limestone lowlands is a number of turloughs, seasonal lakes which empty in summer.

The area is noted for its rich flora and invertebrate fauna. In particular, its distinctive flora includes a unique mixture of plants of Mediterranean, Arctic and Alpine affinities growing together in close proximity. There are areas of hazel scrub with a little true woodland, but the rich flora is mainly associated with crevices in open limestone pavement and grasslands on very shallow soils. A factor in the maintenance of the flora and vegetation is a traditional pattern of low-intensity winter grazing by cattle.

Some turloughs lie within a single continuous area of karst limestone hills and adjoining lowlands, but there are other important turloughs nearby separated from the main area by drift-covered lowlands. These include most notably those at Coole-Garryland, considered to be the most important and diverse turlough complex in the country, and therefore probably in the world since turloughs, as a glacio-karstic phenomenon, are thought to be virtually unique to Ireland.

**Integrity**

Parts of the site are owned by the state, as Nature Reserves and a small National Park, for which land acquisition is still proceeding.

### 6.2.3 *Owenduff/Nephin Bog Complex* No. 40
*Ireland*

**Size:** 14.213 ha
**Criteria:** N (ii), (iii), (iv)
**Proposed by:** Dr. Allan Craig, National Parks and Wildlife Service

Owenduff/Nephin Bog Complex, 14.213 ha in extent, is the largest intact area remaining of the peatlands of County Mayo. It is an excellent example of a peatland complex with extensive tracts of Atlantic blanket bog vegetation with pool systems, grading uninterrupted into wet heath and mountain blanket bog, with associated cliffs, lakes and streams. The site is centred on the Owenduff River catchment, the largest remaining river system in the country without human habitation at all but its lowest reaches, together with adjoining parts of the Nephin Bog mountain range. The blanket bogs house many rare plant species, such as the moss *Homalothecium nitens*.

It is an area of great wildness and natural beauty, and one of the few remaining intact peatlands in Europe to be preserved to such a degree.

**Integrity**

Substantial parts of the site are owned by the state, with a view to Nature Reserve and/or National Park designation.

### 6.2.4 *Roundstone Bog Complex* No. 41
*Ireland*

**Size:** 4.200 ha
**Criteria:** N (ii), (iii), (iv)
**Proposed by:** Dr. Alan Craig, National Parks and Wildlife Service

Roundstone Bog Complex, about 4.200 ha in extent, is the largest intact area remaining of the peatlands of County Galway. It is an excellent example of a peatland complex with extensive tracts of Atlantic blanket bog vegetation with pool systems, grading uninterrupted into wet heath, and forming a mosaic with rock outcrops and small oligotrophic lakes. Some of the lakes contain small lake islands, with stunted but quite species-rich woodland vegetation. The flora of the site is remarkable for a concentration of rare species of *Ericaceae*, all having disjunct. European distributions, namely *Daboecia cantabrica, Erica mackaiana, Erica erigena* and *Erica ciliaris*. There is also a rich bryophyte flora, including *Homalothecium nitens* and other noteworthy species, and a diverse fauna associated with the complex of petland and aquatic ecosystems, including otters and several E.U. Birds Directive annexed species.

The lake-strewn peatlands constitute an area of very distinctive scenic beauty, particularly when viewd from Errisbeg, a hill at the eastern edge of the site, and from the nearby Twelve Bens Mountains.

**Integrity**

Parts of the site are owned by the state, with a view to National Park designation, and it is official policy to seek to acquire the remainder of the site.

### 6.2.5 *Clara Bog* No. 42
### *Ireland*

**Size:** 665 ha
**Criteria:** N (ii), (iii), (iv)
**Proposed by:** Dr. Alan Craig, National Parks and Wildlife Service

Clara Bog is a raised bog covering 665 ha. It is the largest remaining true rasied bog of the Irish midlands, which were once very extensive, but have now largely been cut away, for use of the peat as domestic and more recently industrial fuel. The site is bounded on the north by a glacial esker ridge and to the south by cut-away bog. On the eastern edge it grades into fen and a small ash woodland. The surface topography is undulating, with the peat depth exceeding 10 m in places. Extensive parts of the bog have vegetation typical of raised bogs, with well developed complexes of hummocks and hollows and lawns of *Sphagnum spp*. A few dry *Calluna*-dominated ridges also occur. The most outstanding feature of this raised bog is the series of soaks which may be fed by springs seeping up through the peat, with the esker ridge acting as a pressure head. These soak complexes are the best remaining examples in Ireland, and now a phenomenon rare throughout Northern Europe.

**Integrity**

70% of the site is now a state owned Nature Reserve. Restoration measures, including blocking of old drains, are in progress as part of raised bog restoration programme.

### 6.2.6 *Dartmoor National Park* No. 43
### *England*

**Size:**
**Criteria:** Cultural Landscape or Mixed Natural and Cultural Landscape
**Proposed by:** Professor Aitken Clark

Dartmoor, with over 11,000 entries on the County Sites and Monuments Register, has a hugely dense population of archaeological features. It is not, however merely a

collection of unassociated monuments. Here are to be found prehistoric and historic landscapes of considerable significance; together these form a palimpsest of acknowledged international importance.

Dartmoor's prehistoric landscapes are amongst the finest, certainly within Europe. Here can be found, for example, over 10,000 hectares (25,000 acres) of Bronze Age field system, made up of over 125 miles (250km) of field boundaries, known as reaves. Within and above the field systems are the remains of prehistoric houses and enclosures. Prehistoric ceremonial monuments (stone circles, stone rows, burials) are additional essential components of the archaeological landscape: approximately one third of all the stone rows to be found in Brittany, Great Britain and Ireland are on Dartmoor.

Dartmoor also has extensive medieval landscapes (abandoned settlements and associated field systems) and industrial landscapes; in particular the remains of tin working from medieval times through to the early years of this century. British production of tin was of major European importance throughout this period.

The Dartmoor longhouse, of which about 125 remain, is a rare vernacular building type described as being of national and international interest.

Dartmoor's topography, geology, climate and human influences have combined in a fashion that enables 10,000 years of human activity to be visibly traced in a cultural landscape of immense attraction and interest, a unique educational and research resource, admired and visited by some 10 million local, national and international visitors every year.

### 6.2.7 *The International Wadden Sea* (Danish-German-Dutch Wadden Sea) — No. 44

**Size:** 1.000.000 ha
**Criteria:** N (i), (ii), (iii), (iv), C (v) and a Mixed Natural and Cultural Landscape
**Proposed by:** The Nordic Report, Dr. H.D. Knapp, BfN Germany and Dr. Arnold Boers, The Netherlands

The Wadden Sea stretches for nearly 500 km, from the Skallingen peninsula in the north in Denmark along the German coast to den Helder in the south in the Netherlands. This is a very dynamic environment where the sea and the wind are continuosly building up and breaking down landscape elements; marshes, tidal flats, sand dunes, sandy beaches and cliffs.

A chain of islands and sand dunes separates the Wadden Sea from the North Sea. The tidal range is about 1,5 m in the northern and western parts of the area and 3-4 m in the inner part of the German Bight. Several large rivers flow into the Wadden Sea. Most of these are seriously affected by human activities and only the River Varde in Denmark can be regarded as a natural estuary.

The Wadden Sea is one of the largest tidal wetland areas in the world, providing habitats for waterfowl and shorebirds and critical stopover points for coastal birds which migrate along the East Atlantic flyway with up to 12 million individuals of 50 species each year. The rich and varied ecosystem is also a critical spawning and feeding area for 102 species of North Sea fish as well as for the harbour seal (*Phoca vitullina*), the grey seal (*Halichoerus gryphus*) and the bottlenose dolphin (*Tursiops truncatus*).

Due to the long history of human intervention, people are an integral part of this system, but the extent and diversity of human uses in now threatening to undermine the integrity of the entire system. Today, the Wadden Sea is fringed by one of the most industrialised regions of Europe and the construction of port facilities and embankments has resulted in the substantial loss of habitats.

It is a very difficult situation to give the Wadden Sea a long time protection.

In 1982 Denmark, Germany and the Netherlands signed a joint declaration on the Protection of the Wadden Sea.

A policy was adopted at the Sixth Trilateral Meeting of Ministers in 1991, with the aim of wise use and the appreciation of precautionary principles in regional planning (Common Wadden Sea Secretariat, 1992). There are also proposals to make a joint nomination of the Wadden Sea to the World Heritage Convention, and to look at the possibility of a common Ramsar site and a common Natura 2000 site. (See The Dobris Assessment).

The German part is covered of three National Parks with a total area of 533,000 ha.

**Comparison with similar areas:**

There are no other area in the world comparable to the Wadden Sea with its universally significant, biological richness. But the impacts of man on the natural values are very extensive - large-scale pollution, diking, traffic, fishing, military training areas etc.

## 6.3 Conclusions

This large BP has no existing typical NWHS. The Giant's Causeway is mostly a geological feature.

In Ireland there are some proposed areas which are natural sites as the bog complex.

Dartmoor, Killarney and the Burren have to be regarded as Mixed Natural and Cultural Landscapes.

It may also be noted that UK during 1980 proposed the Lake District as a Mixed Natural and Cultural site. The application was reviewed by the World Heritage

Committee (1989) but Lake District was not inscribed. Since then the new category "Cultural Landscapes" in 1992 has been added to the Operational Guidelines.

The Wadden Sea is a very difficult area to protect, to fulfil the criteria of integrity, but worthy all possible protection. A nomination shall preferably include all the three countries - Denmark, Germany and the Netherlands.

Still no areas have been proposed in France. There are, however some areas which may be proposed as Mixed Natural and Cultural Landscapes.

# 7. BP7. THE CONTINENTAL BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.11.5 Middle European Forest

Biome: 5. Temperate broad-leaf forest or woodland

Countries: This BP includes north eastern and middle Germany, east Denmark, southern Sweden, western and southern Poland, western and northern Ukraine, middle Russia to the Urals, eastern Czechien and Slovakia as well as part of Hungary and the western and middle Romania.

This BP represents a mosaic of various types of open land, forests, mountains and cultural landscapes. The Continental province is the heartland of the West Palaearctic broadleaved deciduous forest. The Carpathians belong to this woodland belt. The central continental region with cold winters and warm summers favour temperate forests of deciduous trees. A lot of mountain ranges as Harz, Thuringer Wald, the Tatra and Carphatians with the Transylvanian Alps are parts of this BP.

## 7.1 Existing NWHS

### 7.1.1 *Messel Pit* — No. 45

**Fossil Site**
***Germany***

**Inscribed:** 1995
**Criteria:** N (i)

Messel Pit is the richest site for understanding the living environment of the Eocene era, between 57 million and 36 million years BC. In particular, it provides unique information about the early stages of the evolution of mammals and includes exceptionally well preserved mammal fossils, ranging from fully articulated skeletons to stomach contents. (Source: UNESCO)

## 7.2 Proposed Potential NWHS

### 7.2.1 *Jasmund National Park* No. 46
*Germany*

**Size:**
**Criteria:** N (i), (ii), (iii), (iv)
**Proposed by:** Dr. H.D. Knapp, Bf N, INA, Germany

The Jasmund NP represents one of the last relatively pristine areas and one of the most magnificent landscape features in Central Europe. It encloses a grand limestone coast with geomorphological forms of extraordinary beauty as the chalk cliffs. Most of the area is covered by beech-forests of many various types.

The Jasmund area contains a great natural exposure of marine chalk sediments, representing one important phase of the earth history - from a phylogenetic point of view - the transition from Mesozoikum. It also demonstrates actual natural processes of very interesting coastal dynamic.

It is a nature monument feature and a geological feature of outstanding beauty with more than 1,5 M. visitors a year. It also encloses a lot of specific ecosystems of importance for protection of biological diversity.

**Integrity**

It is protected as a National Park and managed by a state agency on the base of a management plan.

**Comparison with similar properties**

Single aspects are similar to the cliffs at Moen Island, Denmark and at the Channel Coast, but the whole complex of the marine and terrestrial ecosystems and the geological structures are unique all over the world.

### 7.2.2 *Slowiński National Park* No. 47
*Poland*

**Size:** 18.000 ha
**Criteria:** (i), (ii)
**Integrity:** 5, 6
**Proposed by:** Dr. Zbigniew Krzan, Tatra NP Office, Poland

The Slowiński NP includes 18.000 ha of lowland on the coast of the Baltic Sea with numerous lakes and wind-born phenomena (wandering sand dunes). In average dunes

pass the distance 3,5 - 9,7 meters per year. Reachness of ecosystems related to diversified habitats: seashore, lakes, rivers, dunes, peat soils, forests and meadows. Well protected flora consists, 800 species of vascular plants, and about 1.000 nonvascular plants, including both boreal, subcontinental, atlantic and few mountain species which grows in 46 plant communities. The fauna is dominated by birds (250 described species) and insects. Mammals represents about 40% of species known in Poland with rare sea mammals as: ring seal, grey seal and common porpoise. Slowiński National Park is also a Biosphere Reserve. Own administration, research station, visitors centre, long term legislative protection on national level.

### 7.2.3 *Swietokrayski National Park* — No. 48
***Poland***

**Size:** 7.629 ha
**Criteria:** N (ii), (iii), (iv) and C
**Integrity:** 5, 6
**Proposed by:** Cr. Zbigniew Krzan, Tatra NP Office, Poland

Swietokrayski is the oldest mountain range in Poland, from paleozoic era, sandstones, shist and quarts stones. Total area 7.626 ha, and 1.700 ha under strict protection. In over 90% covered by well protected seminatural forest communities: silver fir, beech, scots pine, spruce, larch and 11 other woody species with 700 monument trees. Strict reservations of *Larix polonica* from 1920, and fragments of fir wood of primeval character. Special attraction are unvegetated stony areas inside forest called "goloborza". The flora consists of 700 vascular plant species and the fauna includes 210 vertebrates and up to 4.000 invertebrates. Numerous rare, relict and mountain species of plant and animals. Important cultural site with well protected complex of monastery buildings from XI Century on the top of "Swiety Krzyz" (The Holy Cross) mountain. Own administration, research station, visitors centre, long term legislative protection on national level.

### 7.2.4 *East Carpathians - Bieszczady Region* — No. 49-51
***Poland, Slovak Republic, Ukraine***

**Size:** about 100.000 ha
**Criteria:** N (i), (ii), (iii), (iv). Mixed Natural/Cultural Landscape
**Proposed by:** Dr. Zbigniew Krzan, Tatra National Park Office, Poland and Dr. Ivan Voloscuk, Slovak National Park Service, see also Europe's Environment, page 195.

The area where the borders between these three countries meet forms Europe's largest natural mountain beech forest ecosystem. The history and remoteness have made it a priority target for nature conservation.

In the ***Polish*** part the Woolosate valley forms the core area of the Bieszczady national park. This strictly protected nature reserve, covering 4.400 ha, is a beech-dominated forest ecosystem with intermixed single sycamores and interspersed alder woods in the moist lowlands. Some years ago, the national parks in this region of Poland were tripled in size to 15.337 ha (later 27.000 ha), protecting peat and rock formations.

On the ***Slovakian*** side the protected landscape area of Vychodne Karpady with about 67 000 ha plus a buffer zone of about 31.000 ha is linked with the Polish national park and includes the famous Stuzica Reserve. This is believed to be the largest remaining area of virgin forest in Central Europe, covering about 700 ha. Additionally, on the ***Ukranian*** side, a nature reserve of 2.000 ha exists, planned to be increased to 5.000 ha. (Source: The Dobris Assissment)

### 7.2.4.1 *Polish Bieszczady National Park* — No. 49
***Poland***

**Size:** 27,000 ha
**Criteria:** (ii), (iv). Natural/Cultural Landscape
**Proposed by:** Dr. Zbigniew Krzan, Tatra NP Office, Poland

Part of East Carpathians, area 27.000 ha, mostly covered by deciduous forests with very few small settlements. Main protection object is to protect semiprimeval or natural beech wood. Important centre of endemism of flora and fauna, and home area of big predators: brown bear, wolf, lynx and others. Vegetation quite different from those existing in West Carpathians. Very high biodiversity. Specific vertical zonation: forest zone and subalpine zone distinct from alpine meadows in West Carpathians. 15 forest and 60 non forest plant communities with endemic *Pulmonario-Alnetum viridis, Aceri-Fagetum, Astrantio-Knautietum, Nardetum carpaticum orientale* and *Poa-Deschampsietum*. The fauna is represented by big predators: brown bear, wolf, lynx and others, as well as by red deer, roe deer, bison (*Bison bonasus*) (20 heads), elk (*Alces alces*), wild boar (*Sus scrofa*) and numerous bird species with golden eagle, owls (*Bubo bubo*) and *Strix uralensis* and many others. Trilaterial (Polish-Slovak-Ukrainian) biosphere reserve. Own administration, research station, visitors centre, long term legislative protection on national level.

**Integrity:**

Long-term legislative protection by the National Law. Yearly management plans. Long-term protection plan.

For the Polish side of East Carpathians it is suggested to organize Natural/Cultural or Landscape WHS on the whole area of the park. Bieszczrady NP is surrounded by 2 comparatively big landscape parks (IUCN Cat. V), and is separated from direct human economic influences. The history of the area, however is complicated. Until the World War II, numerous human settlements with intensive agricultural and pasture activity took place on majority of the valleys and slopes. After the wartime most settlements

disappeared, and ecosystems changed secondarily to more natural. Remains of the past human presence on the area are now under protection as a cultural heritage.

### 7.2.4.2 *East Carpathian Primeval Forest* No. 50
*Slovakia*

**Size:** 100.000 ha
**Proposed by:** Dr. Ivan Voluscuk, Slovak NP Service, Slovakia

The East Carpathian Biosphere Reserve is situated in eastern-most Slovakia at the junction of political boundaries of three European countries - Poland, Slovakia and Ukraine. The reserves were founded in order to protect primeval ecosystems undisturbed by man - Stužica, Riaba Skala, Hvešová, Rožok, Plaša. From 1977 it is named the East Carpathian Landscape Protected Area.

**Integrity:**

These areas in the Slovakian East Carpathians are strict protected Natural Reserves with virgin forests. Today Poloniny National Park is prepared in Slovakia. Together with the greater part of the Bieszczady National Park on the Polish side and the reserves on the Ukrainian side they together compose an integrated tri-lateral transboundary Protected Area with unique East Carpathian geosystems and ecosystems.

### 7.2.4.3 *Carpathian Forest Reserve and NP* No. 51
*Ukraine*

**Size:** 20.000 ha
**From:** IUCN's Global study of Forest Protected Areas, 1997.

20.000 ha protected forest area in Zakarpatska region; covers only 4% of the country, but contains 33% of the Ukraine's forest resources, over 50% of plant species (2.110 total) and highest forest concentration area (53% of region is forest); severe threats have endangered the area, but structural changes are planned to promote the Carpathians as a recreation zone to reduce the industrial impact.

### 7.2.4.3.1 *Uholka Virgin Forest and Pop Ivan Marmarossky Virgin Forest* No. 51
*Ukraine* - part of 7.2.4.3

**Size:** more than 10.000 ha
**Criteria:** N (ii), (iii), (iv)
**Proposed by:** Dr. Ivan Voloscuk, Slovakia

The Uholka Virgin Forest is a beech primeval forest, the largest in Europe - more than 10.000 ha.

Pop Ivan Marmarossky is a mixed beech-fir virgin forest, the most unique in Europe (800 - 1.700 m).

These are two strict protected reserves with unique virgin broad leaf forests, the largest in central Europe. They are parts of the Carpathian Zapovednic and the Carpathian Biosphere Reserve.

### 7.2.5 *Tatra Mountains (part of the area)* No. 52-53
***Poland and the Slovak Republic***

There there are National Parks on both side of the border - transboundary NPs - proposed as NWHS.

### 7.2.5.1 *Tatra National Park* No. 52
***Poland***

**Size:** 21.164 ha
**Criteria:** N (ii), (iii), (iv)
**Proposed by:** Dr. Zbigniew Krzan, Tatra National Park, Poland

Highest mountain range of Carpathians with highest peak 2.500 m asl. Alpine character. Total area: 21.164 ha. Distinctive climatic zonation, and adequate zonation of vegetation including: two forest zones (decidous wood up to 1.250 m. asl., coniferous up to 1.550 m. asl.), dwarf pine zone (up to 1.800 m. asl), alpine meadows (to 2.300 m. asl) and rocky peaks. High diversity (geological, geomorfological, outstanding variation of phenomena: crystalline (granit) and sedimentary (limestone, dolomite) rocks, oligotrophic lakes, springs, waterfalls, caves and surface karst, diversity of plants (5.000 species, with 1.000 vascular plant species), rich fauna (290 vertebrates and about 5-6 thousand of invertebrates), many endemic and rare mountain species. National park from 1954, transfrontier (Polish-Slovak) biosphere reserve from 1993. Own administration, scientific division (important area for research on national and international level - up to 150 scientific programs yearly), visitor's centre, and policy, international cooperation.

**Integrity:**

Long-term legislative protection by the National Law. Yearly management plans. Long-term protection plan in preparation (to be finished in december 1998).

For the Polish Tatra NP it is proposed to nominate a NWHS on part of the area - 15.303 ha. The area will contain the most valuable and the best protected parts of the

national park, with very limited past human influences. The parts contains primeval, natural and seminatural ecosystems, phenomena important on a global level, and is of outstanding beauty. On proposed part there are no permanent human settlements, and intensive economic activities do not take place. The remaining area of the national park (about 6.000 ha) should be a kind of buffer separating proposed NWHS from the man managed land.

### 7.2.5.2 *High Tatras* — No. 53
*Slovak Republic*

**Size:** 125,000 ha?
**Criteria:** N (i), (ii), (iii), (iv)
**Proposed by:** Dr. Ivan Voloscuk, Slovak NP Service

The Tatry Mountains are about 55 km long and 17 km wide and include the West Tatra, High Tatra and Belianske Tatra Mountains. The most important is ***High Tatras***. It is the highest mountains of Slovakia and Poland and the entire 1.800 km long Carpathian arc. They are also a symbol of national identity and of independence of the indegenous Slavonic people who settled in the West Carpathian basins many centuries ago. The elevation is 1.000 - 2.655 m. From 1993 it is Biosphere Reserves, Tatras.

For the Slovakian part of the Tatra the following is proposed:

The north side of Tatras, Bielovodsak valley, Javorina alley, Široká valley, the central side of the highest Tatras, from mountains vegetation degrees to alpine and subnival degree, are parts of Tatra National Park and the Biosphere Reseves Tatras, which will meet the criteria for a NWHS. Tatra National Park was established in 1948. The area has an unique relief - surface and a rich biodiversity, and is representative of the Carpathian flora and fauna.

### 7.2.6 *The Ravines of the Slovak Paradise and Dobsiska Ice Cave* — No. 54
Slovakia

**Size:** 4.100 ha
**Criteria:** (i), (iii), (iv)
**Nominated:** 1997

The Gorges of the Slovensky Raj (the Slovak paradise) and the Dobsinska Ice Cave represents valuable, principal stages of geological and geomorphological evolution.

Slovensky Raj has a high variety and exceptionally high concentration of gorges, ravines, on a small territory, 17 gorges on 4.100 ha. It also has a high concentration of different fauna and flora elements.

In the Slovensky Raj there are numerous underground karst phenomena, caves and gorges. The Dobsinska Ice Cave is 1.230 meters long and has an immense cavity, partly filled with ice. The ice mass reaches a thickness exceeding 26 meters and an ice volume of more than 110.000 $m^3$.

### 7.2.7 *Moravsky Kras - the Moravian Karst* No. 55
### *Czech Republic*

**Size:**
**Criteria:** Probably a Mixed Natural-Cultural Landscape
**Proposed by:** Dr. D. Turoňová, Dr. J. Čeřovsky, Agency for Nature and Landscape Protection of the Czech Republic (AOPK ČR)

The area has an exceptional complex of well developed karst with a great variety of all karst phenomena, both surface and underground, with specific flora, fauna and vegetation. Unique evidence of pleistocene fauna was found in cave sediments and exceptional archeological findings document the development of humans since ancient times. The natural beauty of the caves is a quite exceptional one; they are annually visited by over half a million people.

**Integrity:**

The Moravian karst contains typical, scientifically interesting and beautiful surface and underground karst phenomena and also a rich biodiversity. By all means it belongs to the best developed and most valuable karst areas in Europe. Moreover, its archeological sites are of a great importance, as well as the history of karst explorations and cave opening.

The Moravian karst is a protected landscape area with a good management plan. The speleological and archeological studies of the newly discovered cave systems is done on a high professional level. Tourism in the area is under control by the environment ministry and regulated to be a soft one.

**Comparison with other similar properties:**

Compared with other European karst areas, the Moravian karst is quite exceptional not only because of its wealth of both non-living and living karst phenomena, but particularly because of its paleontological and archeological importance and the cave exploration traditions.

## 7.2.8 *Tustea - the Dinosaur eggs hill* No. 56
## *Romania*

**Size:**
**Criteria:** N (i)
**Proposed by:** Dr. Grigore Baboianu and Dr. Dan Grigorescu, Committee for Nature Protection of the Romanian Academy

Outcrop of the Upper Cretaceous continental deposits from the Hateg Basin (South-Western Transylvania) that contain clutches with dinosaur eggs, some of them unhatched, showing in the scan CTs the presence of embryos inside. Near the eggs were found bone remains of dinosaur "babies" belonging to a species of hadrosaurus (duck+billed dinosaurs) namely *Telmatosaurus transsylvanicus*.

This is the only place in Europe, among the almost hundred sites that provided dinosaur eggs or at least egg shells fragments, were the connection between eggs, embryos and "babies" was found, allowing the recognition of the dinosaur species which laid the eggs.

The "Dinosaur eggs hill" from Tustea offers a model of multidisciplinary studies (involves paleontological, taphonomical, sedimentological, stratigraphical studies) that allow a complex reconstruction of one of the paleoenvironments inhabited by the dinosaurs just prior to their global extinction.

**Comparison with other similar properties:**

Clutches with dinosaur eggs are known in Southern France (Provence, Var, Corbieres) and in North-Eastern Spain (Lerida) but no where the establishment of the dinosaur species which laid the eggs was possible due to the lack of connected bone remains.

The only places in the world where this connection is known are in Montana ("Egg Mountain"), Gobi (Mongolia) and different places in China.

## 7.2.9 *Poiana Stampei Peat Bog* No. 57
## *Romania*

**Size:** 612 ha
**Criteria:** N (iii), (iv)
**Proposed by:** Dr. Grigore Baboianu and Dr. Nicolae Boşcaiu, Committee for Nature Protection of Romanian Academy

It is the biggest peat bog, ombrogenous area, in Romania, with 612 ha surface at 910 m altitude.

It is almost entirely covered by a *Pinus sylvestris* forest. Besides other boreal plants, there is the glacial relict of *Sphagnum wulfianum* .It has been protected since 1955 as scientific reserve.

The Polana Stampai Peat Bog is an area of exceptional beauty and esthetic importance and has important and significant natural habitats for in-situ conservation of biological diversity.

### 7.2.10 *Zhiguly-Samara Curve* No. 58
***Russian Federation***

**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow

This is a cluster of two areas in the environs of the Samara Curve - river Volga, Samarskaja Luka NP, Samara region and Zhigulevska Zapovedik, Samara region.

### 7.2.11 *Baschkirishe Ural* No. 59
***Russian Federation***

**Size:** around 300.000 ha

**Nominated:** 1997

This cluster of areas represents very different kinds of biotopes with very rich fauna and flora, situated in the southern Ural Mountains and includes:
Bashkiria NP
Shulgan Tash and
Bashkirsky Zapovednics and the Altyn Solok Zakaznik, all in the Bashkortostan Republic

## 7.3 Conclusions

The proposed areas are mainly concentrated to the Carpathians, its northern and north-eastern parts and to Russia with two clusters of very interesting areas. The proposed areas are more or less influenced by man. Some of them seem to fit best as Mixed Natural and Cultural Landscapes. The East Carpathians - the Bieszczady Region (7.2.4) with its hugh "virgin" beech forests in Poland, Slovakia and Ukraine seems to be exceptional for west-European conditions.

The Jasmund NP and Moravian karts are foremost geological features with important estetic values.

# 8. BP8. CENTRAL EUROPEAN HIGHLANDS BIOGEOGRAPHICAL PROVINCE

**BP**: Udvardy 2.32.12 Central European Highlands

**Biome**: Mixed mountain and highland systems with complex zonation

**Countries**: The Central European Highlands include the Alps proper from France in southwest over Switzerland, Germany, Austria, Liechtenstein, Slovenia to Italy with the Apennines. The Alps are Europe's most majestic mountain range. A northern part, outlier, of this BP goes through southern Germany and western Czech Republic to southern Poland.

This BP is characterized by high mountains, glaciers, steep slopes and deep valleys. These are huge natural landscapes with large differences in vegetation between north and south and in elevation from the summits to the valleys. Low growing plants and dwarf shrubs and many endemic plants characterize the higher parts with their rocks and screes. In the southern parts there are much Mediterranian influence and endemism in the vegetation. In the northern parts the broadleaved forests are dominant. Most of the Alpine landscape below the timberline is a result of agricultural landuse and is much influenced by tourism.

## 8.1 Existing NWHS

## 8.2 Proposed Potential NWHS

### 8.2.1 *Bohemian Switzerland, Saxonian Switzerland* — No. 60-61
***The Czech Republic and Germany***

#### 8.2.1.1 *České Svycarsko - Bohemian Switzerland* — No. 60
***The Czech Republic***

**Size:**

**Criteria:** N (i), (ii), (iii), (iv). Probably a Cultural Landscape or Mixed Natural and Cultural Landscape

**Proposed by:** Dr. D Turoňová, Dr. J. Čeřovsky, Agency for Nature and Landscape Protection of the Czech Republic (AOPK ČR)

The territory is a part of cretaceous sandstone plateau (cca 120 - 500 m asl.) deeply eroded into canyon-like valleys, gorges and bizarre castellated rocks with isolated single basalt hills. Geomorphological forms such as rock arches windows, towers, clocks, karrens, pseudo-karrens, and various rock ornaments occur in such a variety and quantity as nowhere else in Europe. In the Czech Republic, the territory is a "protected landscape area", the core zone has been proposed as national park. The whole area is

covered by woodland. It is bilateral with the German national park "Sächsische Schweiz"- Saxonian Switzerland.

**Criteria:**

The property is a unique geomorphological complex canyon and castellated rocks territory of an exceptional beauty with interesting and valuable flora and vegetation. The "Pravčická" gate near Hrensko is the largest sandstone rock arch in Europe.

**Integrity:**

The property is a protected area with a management plan. It is used by tourism. But it has not been seriously affected in the past nor in the present. The forests are commercially managed (with some conservation restrictions) and will require a certain rehabilitation.

**Comparison with similar properties:**

There is no equal area anywhere in the world. The phenomenons of the central European "Rock Cities" is quite unique in Europe, and - mostly because of its forest cover - unique in the world.

### 8.2.1.2 *Nationalpark Sächsische Schweiz - Saxonian Switzerland* No. 61
***Germany***

**Size:** 5.868 ha
**Criteria:** as 8.2.1.1
**Proposed by:** Dr. H.D. Knapp, BfN-INA, Germany

The natural conditions are quite similar to those in the Czechian area, see above.

### 8.2.2 *The Virgin Forest of the Novohradské Mountains - Pralesy* No. 62
***Czech Republic***

**Size:**
**Criteria:** N (ii), (iii), (iv)?
**Proposed by:** Dr. Turoňová, Dr. J. Čeřovsky, Agency for Nature and Landscape Protection of the Czech Republic (AOPK ČR)

The property consists of two territories: The Nature Reserve "Žofín Virgin Forest" and the Nature Reserve "Hojná Voda". The geological substrate is granite, the altitude 735 - 825 m asl. and 815 - 890 m asl. Both are natural and original central European montaneous forest ecosystems of a primeval character - composition and structure. The

greater part belongs to the floristically rich mixed beech wood community - Association *Dentario Eneaphylli Fagetum.*

**Criteria:**

The ecosystems are representative unaltered natural forests absolutely unique in this type in Europe. Both areas are continuously protected since 1838. Thus belonging to the oldest nature reserves in Europe and on the earth.

**Integrity:**

Both areas enjoy the status of strict national nature reserves. Their primeval natural status is good in spite of some random selective wood cutting in the past and the browsing of wild animals. All past interventions, as well as the present vegetation, are recorded in detail and the ecosystems are being monitored.

**Comparison with similar properties:**

Both virgin forests belong to the oldest nature reserves in the world. Their history and their natural value make them quite unique globally.

### 8.2.3 *Bayerischer Wald - Bavarian Forest National Park* No. 63
*Germany*

**Size:** 24,000 ha
**Criteria:** N (i), (ii), (iv)
**Proposed by:** Dr. H.D. Knapp, BfN, INA, Germany

The Bavarian Forest NP represents the largest connected mountain forest area of Central Europe with a specific ecosystem complex. It is founded 1970. It covers an area of 24,000 ha. The greatest oldgrowned forest in Central Europe are found in the park.

**Integrity:**

The Bavarian Forest is protected as a National Park and is on some international "lists" as Biosphere Reserve, European Diploma area and Important Bird Area. It is on IUCN's list of Category II areas. It is a large area in Central Europe without human distrubances and strictly protected.

### 8.2.4 *Bernese Oberland* No. 64
*Switzerland*

**Size:**
**Criteria:** N (i), (ii), C - some, probably a Mixed Natural and Cultural Landscape
**Proposed:** IUCN List 1982

This site contains the most spectacular landscape of the Swiss Alps, with spectacular mountains including Jungfrau (4.158 m), Eiger (3.970 m), Gross Fiescherhorn (4.049 m), Finsteraarhorn (4.274 m), Schreckhorn (4.078 m), and Wetterhorn (3.701 m). The mountain scenerey is superb, with a full range of glaciers, snowfields, hanging valleys, meadow, and waterfalls (most scenic is Trummelback Falls). The area is dotted with small traditional villages and shepherd's huts, and criss-crossed by trails, chair-lifts, and Europe's highest (and most spectacular) railroad. (Source: IUCN 1982)

### 8.2.5 *Grand Paradiso/Vanoise National Parks and Mont Blanc* No. 65
*France, Italy, Switzerland*

**Size:** 320.000 ha
**Criteria:** N (ii), (iii), (iv) and C - probably a Mixed Natural and Cultural Landscape
**Proposed by:** IUCN List 1982 and CICM - International Centre for Mountain Conservation through its President, Dr. Dominique Ramboud

IUCN: This area of the Franco-Italian Alps covers over 200.000 ha of wild nature, including a number of peaks of over 3.000 metres including Grand Paradiso (4,061 m) and Mont Blanc (4.807 m). This alpine area is excellent habitat for chamois and alpine ibex, with well over 10.000 chamois and perhaps as many as 5.000 ibex; the area provides an outstanding example of how endangered species can be brought back to significant population levels. While much of the area is fully protected, there is a very large buffer zone where shepherds and farmers continue to live in a traditional style. (Source: IUCN 1982)

**Mont Blanc, proposed by CICM**

Mont-Blanc, with an elevation of 4.807 m is the highest summit of Western Europe, but does not benefit from any protected area statue. This lack has been highlighted since 1986 - the 200th anniversary of the first ascent - by many NGOs, mountaineers and environmentalists. They call for the establishment of a new kind of protected area, aiming to offer a field laboratory for sustainable development in the European mountainous regions where some 320.000 ha in France, Italy and Switzerland, including neighbouring Vanoise and Gran Paradiso national parks, would be divided in different zones like in a biosphere reserve.

The landscape itself offers a great diversity, in particularly because of huge altitude differences in the Mont-Blanc massif itself (from elevations of about 1.000 m in surrounding valleys, to nearly 5.000 m).

A great biological richness is due to the special situation of this area, located at the "corner" of the Alps (the Alpine "bow" coming from the South and the Mediterranean Sea turns eastwards). In the proposed area, thanks to the different elevations and exposures, one can meet almost all the associations of the Alpine flora and fauna. The Mont-Blanc region appears then as a miniature of all the Alps. The protection of the last herds of Alpine Ibex in Gran Paradiso through the establishment of a royal hunting preserve in 1857 allowed to save a species which was already on the verge of extinction.

Besides the natural features, the symbolic and cultural values of the Mont-Blanc region are in favour of international protection.

The Mont-Blanc is situated at the meeting point of three countries - but, while the national boarders are loosing their historical political and military significance, especially in the European Union, nature conservation is still a national issue, which leads to problems of coherence and efficiency. Therefore, besides the direct results of an international protected area, France, Italy and Switzerland could set an example to all the Alpine countries who are very slowly implementing the so-called "Alpine convention".

But overall, the Mont-Blanc region is the very place where a new relationship between European people and the mountains originated. For instance Rousseau and Ruskin made the region famous in literature and painting. With the first ascent of Mont-Blanc (1786) a new era began: mountaineering was born, which is not only an outdoor activity, but also a philosophy for many of the "addicts"; it was also the beginning of summer tourism in mountains. The emergence of tourism marked the architecture in villages such as St-Gervais-les-Bains around 1900.

The success of winter tourism and the multiplication of ski resorts brought some prosperity and also new problems, damaging the environment, throwing off balance between economic activities, especially to the detriment of agriculture. Considering, for instance, that the population of a town like Chamonix (10.000 permanent inhabitants) reaches peaks of 100.000 inhabitants in summer and in winter, it is easy to understand that, not only Mont-Blanc deserves an international protection, but it needs it before the problems magnitude changes.

It is therefore the expectation that the co-operation engaged by France, Italy and Switzerland for the creation of an "Espace Mont-Blanc" will be reoriented towards sustainable development and that the resulting international protected area would offer the three States the opportunity to claim the inscription of Mont-Blanc on the World Heritage List.

## 8.3 Conclusions

This BP, although it is including a magnificent mountain landscape, is at the same time marked of extensive human influence and tourism. Many areas seem to fit best as Mixed Natural/Cultural Landscapes. No real investigation has been carried out in this project, but especially for the Mont-Blanc region more information is included. It has been under consideration to set up a Working Group for BP8. This was not possible during 1997 depending on lack of funds.

# 9. BP9. PANNONIAN BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.12.5 Pannonian

Biome: 11. Temperate grasslands

Countries: The larger part of Hungary, Eastern Austria and surrounding parts of Slovakia, Croatia and Yugoslavia (Serbia).

The Pannonian BP is recent in origin and secondary in nature. It has a steppe-like appearance and covers the plains of the Middle Danube in the Carpathian basin.

The pusztas on the Hungarian plain are large grasslands, arable land with salt-affected soils, treeless, windy, open space. The flora and fauna are rich and with many endemics.

## 9.1 Existing NWHS

### 9.1.1 *Caves of Aggtelek Karst and Slovak Karst* No. 66
***Hungary/Slovak Republic***

**Size:**
**Inscribed:** 1995
**Criteria:** N (i)

The variety of formations and the fact that they are concentrated in a restricted area means that the 712 caves currently recognized make up a typical karstic system in i temperate zone. Because they display an extremely rare combination of tropical and glacial climatic effects, they make it possible to study geological history over tens of millions of years. (Source: UNESCO).

## 9.2 Potential NWHS

### 9.2.1 *Neusiedler See and Seewinkel* No. 67
*Austria*

*Lake Fertö-Hansag National Park* No. 68
*Hungary*

This large Austrian-Hungarian natron lake and surrounding wetlands are under consideration as a joint WHS. The Austrian part has earlier been nominated as a NWHS, but was withdrawn 1997. A new joint nomination of the whole lake area, as a Cultural Landscape or a Mixed Natural/Cultural Landscape is under consideration.

### 9.2.1.1 *Neusiedler See - Seewinkel NP* No. 67
*Austria*

**Size:**
**Criteria:** N (i), (iii), (iv) and C
**Proposed by:** Austrian Government

The site comprises a large area covering, on Austrian territory, the hills of Rust and the Leithagebirge, the terraces of the Parndorfer Plate, the Neusiedler Lake (Neusiedler See), and the area of small lakes in the south-east (Seewinkel).

The Pannonian climate is the most arid of Austria, with an annual precipitation of about 500 mm and very hot summers. Vegetation principally comprises mosaics of dry meadows surrounded by wetlands and salt marshes, reedbeds encircling the Neusiedler Lake and the characteristic pannonic oak/hornbeam forest.

Some 190 species of birds breed in the Neusiedler See - Seewinkel area. The number of species increases considerably during migration periods. It is also an important resting area during the annual migration of reed inhabiting birds such as geese and ruff. Globally threatened species found in the area are the Great Bustard and the Predatory Bush Cricket.

It is one of the oldest cultivated areas in Austria, inhabited since prehistoric times. Agriculture took place during Neolithic and was intensive during Roman times. The characteristic treeless open landscape of the Seewinkel is a product of past human activity. Modern land use is intensive agriculture, mainly for grain and vineyards.
(Source: the Austrian nomination and IUCN)

For the Hungarian area the following description is given:

9.2.1.2 *Fertö-Hanság NP* No. 68
*Hungary*

**Size:** 19.669 ha
**Criteria:** N (i), (iii), (iv) and C
**Proposed by:** Dr. Zoltan Szilassy, National Authority for Nature Conservation, Ministry for Environment and Regional Policy, Hungary

At the western boarder of the Fertö-Hanság National Park lies the westernmost Eurasian natron lake, Lake Fertö, which with isolated remnants of the Hanság bogs area used to the be one single, enormous wetland. The whole landscape teems with life. It is a realm of seasonal floods, breeding and migrating bird flocks, undulating reeds, meadows with flowers, tinkling pastures, and colourful forests. Innumerable generations have managed to achieve and maintain an equilibrium with nature here, sustaining and forming the natural wealth of this wonderful area through the centuries.

The Hungarian part of Lake Fertö comprises one-fifth of the lake's total area. It was declared a Landscape Protection Reserve in 1977 together with the adjacent reedbeds, meadows, the quarry at Fertörákos and the Szárhalmi Forest, it was redesignated as a National Park in 1991. The Fertö-Hanság National Park as it stands today, was established in1994 by annexing the Hanság Landscape Protection Reserve.

"Nationalpark Neusiedler See - Seewinkel" was established in 1994 on the Austrian side of Lake Fertö and on certain parts of the adjacent Seewinkel (Fertözug) area. Thus, Hungary and Austria found themselves in the unique position of being able to create an international cross-border reserve of floating reed-grass communities, similar to fairy rings, typical vegetation of open fen surfaces. The area important for Great White Egrets, Purple Herons and Spoonbills as well as for ducks and songbirds in the reedbeds such as Bluethroat, various warbler species and Reed Buntings. Among birds of prey, Merlin, Hen Harrier and White-tailed Eagles, which follow geese flocks, are regular winter visitors.

Interesting amphibians are the Warty Newt and Smooth Newt, Common Toad and Fire-bellied Toad. An important event is the seasonal migration of frogs, toads newts and Water Snakes, when these little creatures make their way from Lake to Szárhalmi Forest and vice-versa, Szárhalmi Forest is the most extensive one on the Fertömelléki hill ranges. The various Turkey and Downy oak woods are under Sub-Mediterranean, Sub-Atlantic and Continental influence, which lends the forest a unique character. The sloping grasslands and rock vegetation which have developed on the limestone rock of the Lajta Hills are of national importance.

The Fertörákos quarry is situated in the lap of the hills, near the Austrian border. The Romans mined and used its easy-to-fashion stone and the result of this exploitation is most impressive, with an artificial rock formation looking like a palace of giants whose roof is a plateau with pannonic slope grasslands. On the pastures flocks of racka sheep, a herd of Hungarian Grey Cattle and buffalo wander about in a larger and larger area on

the eastern side of Lake Fertö. The pastures are maintained by the constant grazing and trampling of these animals.

The landscape features and natural heritage of the Hanság are different from those of the Fertö region. Its original scenery has been significantly influenced by water regulation, which has steadily intensified since the end of the 18th century. Wherever water has remained it is a source of proliferating life. Water Lilies and Water Violets bloom in the canals, while in the meadows orchid species open their flowers and the white tufts of Common Cottongrass flutter about in the spring wind.

The area is also a:
Biosphere Reserve: 12.542 ha (core area 375 ha) and
Ramsar Site: 2.870 ha.

### 9.2.2 *Hortobágy National Park* No. 69
### *Hungary*

**Size:** 70.000 ha (55.000 ha strictly protected)
**Criteria:** N and C - a Mixed Natural/Cultural Landscape
**Proposed by:** Dr. Zoltan Szilassy, National Authority for Nature Conservation, Ministry of Environment and Regional Policy

The word "Great Plain" recalls and image of unwooded pastures - a beautiful image that has inspired numerous artists and poets. Today, this type of landscape is represented on salt plains, pusztas, the largest of which, Hortobágy, saw the great dream of Hungarian naturalists come to fruition when our first National Park was created 1973, its birth marked a milestone in the history of modern Hungarian nature conservation.

The surface of the Hortobágy has been smoothed almost to perfection, helped by the floods of the River Tisza and its tributaries. The most conspicuous phenomena of the puszta are the tumuluses, which were probably burial sites and watch mounds of the nomads invading the Carpathian Basin from the eastern steppes in the Copper Age. These tumuluses blend gently into the natron plains, whose microrelief is also noteworthy, variegated by meandering salt rills, natron banks and bottomlands. The different levels (the "floors"of the puszta) are often just a few inches above or below each other, yet they ensure the development of differing floras and faunas, conjuring a rich mosaic from the seemingly homogenous plain.

Man has played a decisive role in the formation of Hortobágy as we see it today. The close-cropped grasslands are a result of forest burning, water regulation, the draining of marshes, and extensive grazing. Today, the names of various puszta recall the memory of formerly flourishing settlements destroyed during the Mongol and Turkish invasions.

The boundaries of the National Park have been defined in such a way that all important stages of natural landscape development are represented and thus protected. In addition to the puszta, the most valuable parts of the flood plain at Tiszacsege have also received

protected status, as well as the gallery forests, the oxbow lakes and marshes supplied by the river, and oak woods on the puszta.

The Hortobágy is world famous for its salt puszta. The ancient traditions of nomadic grazing and the ancient breeds themselves (the Grey Hungarian Cattle the Racka sheep), which have been forming the landscape for centuries, have survived to the present day. The Great Bustard, a strictly protected bird, lives on loess grasslands on the edge of the puszta, while the Short-toed Lark, a rarity in Hungary, nests on the barren salt plains. The Collared Pratincole is found on wet salt plains where puddles remain until early May.

From a distance, the barren pastures seem to slowly merge into meadows, and salt marshes. The Aquatic Warbler is a rare bird, which nests in meadows. The Great White Egret, the logo of Hungarian nature conservation, lives in heronries in the dense reedbeds, together with Spoonbills and Glossy Ibis. Grebes nesting on little islands among Water Lilies and Fringed Water-Lilics peacefully tolerate the constant hubbub in marsh tern colonies.

Scattered woods on the puszta are also rich in species, and famous for their nesting birds of prey. Redfooted Falcons occupy Rook and Magpie nests, the Saker population has recently increased, Imperial Eagles have begun to breed, and a first pair of Long-legged Buzzards have also nested.

The Hortobágy is the most important bird migration spot in the Carpathian Bassin. About 330 bird species have been recorded on the puszta, nearly as many as in the whole territory of Hungary. It is most fascinating to see the huge bird flocks swarming over the wind-rippled waters in spring, following their instincts. The autumn highlight for birdwatchers is the migration of Common Cranes and wild geese.

## 9.3 Conclusions

This BP is to the greater parts a natural-cultural landscape, with some outstanding areas of high interest for their rich biodiversity as Hortobagy and Neusiedler See - Lake Fertö.

It is also wellknown for its karst formation with features as the Aggtelek-Slovak Karst caves.

# 10. BP10. PONTIAN STEPPE BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.29.11 Pontian Steppe

Biome: 11. Temperate grasslands

Countries: Romania, Moldova and southern Ukraine and Russia

The name "steppe" is given to an area which is more or less level, unforested, not flooded by high water in spring, well drained, and covered throughout the entire vegetative season with a more or less dense herbaceous vegetation. The Pontian Steppe BP covers the true steppes of Eastern Europe - grasslands - and the steppe-woodlands of Ukraine.

The east-west oriented belt of steppe/grassland stretches from the central Russian uplands to the Caspian and Black Seas. These steppes are vast treeless plains with low rainfall. In the lowlands, northwest of the Caspian Sea, the steppes form a transitional zone with desert-like areas, semi-deserts. Only further to the east of the lower Volga can true desert be found, on the border to Asia.

## 10.1 Existing NWHS

### 10.1.1 *Danube Delta* — No. 70
***Romania***

**Size:** 442.000 ha
**Inscribed:** 1991
**Criteria:** N (iii), (iv)

The waters of the Danube, which flow into the Black Sea, form the largest and best preserved of European deltas. The Danube Delta hosts over 300 species of birds as well as 45 fresh water fish species in its numerous lakes and marshes. (Source: UNESCO)

## 10.2 Proposed Potential NWHS

### 10.2.1 *Russian Black Soil* — No. 71
***Russian Federation***

**Size:**
**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow

This is a chain, cluster, of areas along the southern border of the Russian Plain including typical parts of the steppe. From the border to Ukraine to southern Urals the following areas are included (Z = Zapovednic):

Les-Na-Vorskle Z., Belgorod region
Tsentralno Tshernozemny Z., Kursk region
Khopersky Z., Voronezh region
Voroninsky Z., Tămbov region
Pirvolzhskaja Lesestep Z., Penza region
Khvalynsky NP., Saratov region
Orenburgsky Z., Orenburg region

## 10.3 Conclusions

The Danube Delta is one of the most important wetlands in Europe.

The proposed chain of steppe areas in Russia seems to represent very important typical steppe areas.

# 11. BP11. TURANIAN BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.21.8 Turanian

Biome: 8. Cold winter (continental) deserts and semideserts
14. River and lake systems (Caspian Sea)

Countries: Russian Federation and Kazakhstan, the European part.

In the steppes the vegetation as a rule forms a continuous cover. In the semideserts bare earth are visible in the spaces between plants; but in contrast to the desert, the area under vegetation is greater than the area of bare spaces.

This is an arid and semi arid zone which surrounds the northern and eastern parts of the Caspian Sea. The semidesert occupies the lower Volga region.

## 11.1 Existing NWHS

## 11.2 Proposed Potential NWHS

### 11.2.1 *Volga delta* No. 72
***Russian Federation***

**Size:** 1.900.000 ha
**Criteria:** N (i), (ii), (iii), (iv). Probably a Natural and Cultural Landscape
**Proposed by:** Dr. Alexei K. Blagovidov, and Dr. Zoltán Waliczky, BirdLife International

Europe's largest river system, the Volga, is over 3.500 km in length and drains an area of 1.360.000 km$^2$. It discharges in to the northern Caspian Sea through a huge delta comprising more than 1.000 channels and with a seaward boundary over 200 km long. The Volga Delta is of international importance for wildlife conservation. An area of 652.000 ha is designated a Ramsar site. In the lower Volga extensive wetlands are found on the floodplains.

The delta and floodplain of the lower Volga are exceptionally rich and diverse wetland habitats, containing over 250 bird, 400 vertebrate and some 430 vascular plant species. Approximately 57.000 pairs of bird breed in the delta. There are 7.800 pairs of ciconiiformes in colonies. A total of 7 million birds migrate through the area in spring and 5 to 10 million in the autumn. However, agriculture (rice paddies and reclamation of land into polders for irrigated cropping) has produced salinisation and contamination from fertilisers and pesticides. (Source: Dobris Assessment and BirdLife International)

### 11.2.2 *Western Ilmen Area* No. 73
***Russian Federation***

**Size:** 7.300 ha
**Criteria:** (iii), (iv)
**Proposed by:** Dr. Zoltan Waliczky, BirdLife International

This important bird area (IBA) is located on the boundary of the Astrakhan region and the Kalmykia Republic, in the southeastern portion of the East European Plain. The wetland extends west of the Volga and stretches out to the Caspian Sea coast, following the natural boundary between the lake system and semi-desert areas.

Large number of breeding and migratory waterbirds and steppe species, including the Great Bustard (*Otis tarda*).

### 11.2.3 *Chernye Zemli Zapovednik* No. 74
***Russian Federation***

**Proposed by:** Dr. Alexie K. Blagovidov, State Committee on Nature Protection, Moscow

This area is situated in the Kalmykia Republic, west of the Volga Delta.

## 11.3 Conclusions

The Volga delta area is affected by human influences and impacts as all other huge European deltalands. However, its biodiversity values are exceptionally high, worthy all possible protection.

# 12. BP12. CAUCASO-IRANIAN HIGHLANDS BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.34.12 - Caucaso-Iranian Highlands

**Biome**: 6. Evergreen sclerophyllous forests, scrub or woodlands
12. Mixed mountain and highland systems with complex zonation

**Country**: Russian Federation

The Caucasian part of this large BP is a mountainous country with forests covering one-third of its area. The climate ranges from sub-tropical on the shores of the Black Sea to perpetual ice and snow on the crests. The mountains are well knowned for their exceptional rich flora and fauna with many endemics.

## 12.1 Existing NWHS

## 12.2 Proposed Potential NWHS

### 12.2.1 *Northwest Caucasus* — No. 75
***Russian Federation***

**Size:**
**Criteria:** N (i), (ii), (iii), (iv)
**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow

This is one of the areas with the highest biodiversity in Europe. The core area will be the Caucasus Biosphere Reserve keeping most of the zones endemic flora and fauna. There are hundreds of relict and endemic species. Also the landscape, the mountains, plains and valleys are of high value. This area includes:

Sotchi NP, Krasnodar region
Caucasus Zapovednic, Krasnodar region

### 12.2.2 *Central Caucasus* — No. 76
***Russian Federation***

**Size:**
**Criteria:** N (i), (ii), (iii), (iv)
**Proposed by:** Dr. Alexei K. Blagovidov, State Committee on Nature Protection, Moscow

This area includes the Elbrus mountains, with peaks over 5.000 m. Also this part of Caucasus is known for its very high biodiversity with very rich flora and fauna and a fascinating landscape.

It includes:

Teberda Z., Karachaevo-Cherkess Republic
Cabarda Z., Balkoria Republic
Severo-Osetinsky Z., Ossetia Republic
Prielbrussky NP, Balkaria Republic
and east of these areas: Dagestansky Z., Dagestan Republic

## 12.3 Conclusions

The two mountain areas are well representing the European part of this BP.

# 13. BP13. IBERIAN HIGHLANDS BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.16.6 Iberian Highlands

Biome: 6. Evergreen sclerorphyllous forests, scrub and woodlands

Countries: Parts of Spain and Portugal

The Iberian Highlands are mostly high plateaux landscapes often forested in the north, but becoming more arid and open table lands further south. The climate is affected regionally by latitude and proximity to the Atlantic Ocean and the Mediterranian Sea. The highest ranges are on the periphery of the peninsula, in the north the Pyrenees and Cantabrian Mountains.

## 13.1 Existing NWHS

### 13.1.1 *Massif Du Mont Perdu-Tres Serals* No. 77
*France-Spain*

**Size:** 38.000 ha
**Criteria:** N (i), (iii), (iv), C (iii), a Mixed Natural and Cultural Landscape
**Inscribed:** 1997

These areas are situated in the Central Pyrénées mountain range and includes the Parc National des Pyrénées Occidentales (France), the Parque Nacional de Ordesa y Monte Perdido (Spain) and other protected areas including the internationally recognised Ordesa-Vinamala Biosphere Reserve (Spain).

The site covers 38.000 ha of rugged mountain landscape. A wide variety of vegetation types are found, ranging from Mediterranean to alpine, with a high proportion of plants

endemic to the Pyrénées. Animal species of interest include montane lizard, lammergeyer, a bird species which is in decline throughout Europe, Bonnelli's eagle. Pyrenean chamois and wild goat, both endemic to the Pyrénées and a few brown bears.

**Integrity:**

The conservation plan is largely oriented towards limitation of road construction, and vehicle usage. Farming is recognised as an integrated activity for local communities, who have used the site for a long time. Other programmes include the management of the large numers of visitors to the site.

## 13.2 Potential NWHS

### 13.2.1 *Peneda-Geres National Park* No. 78
***Portugal***

**Size:** 72.000 ha
**Criteria:** N (i), (ii), (iii), (iv)
**Integrity:** 1, 2, 3, 4, 5, 6, 7
**Proposed by:** Robert Manners Moura (with colaboration of Mr. António José Oliveira from Peneda-Gerês National Park)

Representative area of Iberian Biogeographical Province Area: 72.000 hectares. Higher summit: 1.545 metres. Range of mountains under atlantic influence. Place with the southernmost remains of past glaciers. The last national woods of native *Pinus sylvestris* and *Taxus bacata.* Large forest and scattered woods of *Quercus robur, Quercus pyrenaica* and *Betula celtiberica*. Overcentenary clumps of *Ilex aquifolium*. Thirteen Portuguese flora endemisms; three Iberian fish endemisms; four Iberian reptile endemisms; three Iberian amphibious endemisms. Some wolve packs (*Canis lupus)*; some royal eagles couples (*Aquila chrysaetos*). There is also a native breed of big shepherd dog (*Castro Laboreiro*).

### 13.2.2 *Albergaria/Palheiros Forest* No. 78 a
**inside 13.3.1 *Peneda-Geres NP***
***Portugal***

**Size:** 1.650 ha
**Criteria:** N (i), (ii), (iii), (iv)
**Integrity:** see 13.2.1
**Proposed by:** see 13.2.1

Large and unique climax forest: *Quercus robur, Quercus pyrenaica, Betula celtiberica, Ilex aquifolium, Arbutus unedo, Vaccinium myrtylus, Iris boissieri, Woodwardia radians.*

Fauna: *Chioglossa lusitanica, Rana iberica, Vipera latesti, Lacerta schreiberi, Galemys pyrenaicus, Lutra lutra, Canis lupus, Capreolus capreolus, Aquila chrysaetos.*

Level difference: from 750 to 1.400 metres

This area is situated in Peneda-Geres National Park, sharing some of its endemisms (see 13.3.1).

### 13.2.3 *Montesinho Nature Park* — No. 79
### *Portugal*

**Size:** 74.800 ha
**Criteria:** N (ii), (iii), (iv). Probably a Mixed Natural and Cultural Landscape
**Integrity:** 2, 3, 4, 5
**Proposed by:** Robert Manners Moura (with colaboration of Montesinho Nature Park staff)

This area is representative of the Iberian Highlands Biogeographical Province in the fashion of sub-atlantic mountains (area: 74.800 hectares). Lovely manmade landscape of mountain pastures, groves and valleys, of clear waters and green meadows. Great level of biodiversity, with along many endemisms. Serpentine rocks where there is a portuguese endemism (*Jasione crispa ssp. serpentinica*). Three species of *Festuca*, two of them endemisms. One of the few Portuguese places with the endangered *Leuzea rhaponticoides*. Extensive forests of *Quercus pyrenaica. Castanea sativa* groves.

Fauna: probably the place of the country with more wolves (*Canis lupus*) in packs. Some rare lynx (*Lynx pardina*). Two endangered species: *Lacerta schreiberi* and *Rutilus arcassi* (Iberia endemisms). Other outstanding species: *Lutra lutra, Galemys pyrenaicus, Rhinolophus ferrumequinum.*

### 13.2.4 *Fisgas de Ermelo canyon* — No. 80
### - a site inside *Alvao National Park*
### *Portugal*

**Size:** 200 ha
**Criteria:** N (i), (iii), (iv)
**Integrity:** 1, 2, 3, 4, 5, 6, 7
**Proposed by:** Robert Manners Moura (with colaboration of Mr. José do Nascimento, Alvão Nature Park biologist)

Area: about 200 hectares. Amazing and uncommon landmark (canyon of metamorphic rocks, quartzites, deriving from old dunes of a gone inland sea) in a mountainous setting. Rock faces of 100 metres high and a succession of waterfalls and smaller cascades. Due to its morphologie (geoanticline) and an impressive gap through the middle, this spot is an excellent habitat for rock flora and fauna (endangered and endemic species).

Fauna: *Aquila chrysaetos, Falco peregrinus, Falco tinunculus, Falco Subbuteo, Bubo bubo, Corvus corax, Monticola saxatilis, Riparia riparia; Galemys pyrenaicus, Lutra lutra, Eliomys quercinus; Canis lupus, Capreolus capreolus.*

Flora: *Dianthus lusitanus, Silene foetida, Sedum sp., Saxigraga clussi, Teucrium salviastrum, Thimus caespititius, Phillyrea angustifolia.*

### 13.2.5 *The Coa River valley and its Archaelogical Park* No. 81
### *Portugal*

**Size:**
**Criteria:** N (i), (iii), C - archaeological site
**Integrity:** 1, 2, 3, 4, 5, 7
**Proposed by:** Robert Manners Moura (with colaboration of Prof. Maria Emilia, Universidade de Trás-os Montes e Alto Dourro/Côa River Archaelogical Park).

The Côa River valley is mostly a cultural area of high archeological interest and is at the same time an outstanding example of a Natural-Cultural site. The landscape forms a quite unique setting and context for an internationally acclaimed cultural heritage. These renown and highly interesting, intricate rock-carvings indicate that ancient people probably hunted and foraged in this valley during and after the last Ice Age. The site is proposed as a Portuguese econet Natura 2000 area.

Fauna: one of the few habitats of rare and threatened species such as the royal eagle (*Aquila chrysaetos*), usual passageway for packs of wolves (*Canis lupus*); river with otters (*Lutra lutra*), native tortoises (*Mauremys leprosa*) and a special breed of fish (*Rutilus alburnoides*).

Flora: *Juniperus oxycedrus, Quercus suber* and/or *Quercus ilex, Quercus faginea* woods; rivarine thickets of *Salix* and *Populus alba; Nerium-Tamaricetae* and *Securinegion tinctoriae*. Sub-stepp vegetation (*Thero-Brachypodietea*).

### *13.2.6 Taberna Desert* No. 82
### *Spain*

**Size:** 25.000 ha
**Criteria:** N (iii), (iv)
**Proposed by:** Dr. Zoltan Waliczky, BirdLife International

The Taberna Desert is a depression between the Sierra de los Filabres and the Sierra Alhamilla, to the north of Almeria. Perhaps the most spectacular arid zone in the Iberian peninsula, with seasonal rivers and creeks (usually dry) and relatively high cliffs. Very sparse vegetation and mainly bare ground, with *Nerium oleander* and *Tamarix* along

river courses. This is a semidesert area with scrub and steppic vegetation with interesting steppic birds communities.

Interesting species are: Blackeared Wheatear (*Oenanthe hispanica*), Black Wheatear (*O. leucura*), Spotless starling (*Sturnus unicolor*) and *Bucanetes githagineus*.

## 13.4 Conclusions

A real typical area in the central part of Spain is lacking. The areas in Portugal 13.2.1 - 13.2.5 have likely to be seen as a cluster of areas of interest as Natural World Heritage Areas or as Mixed Natural/Cultural Landscapes.

# 14. BP14. MEDITERRANEAN SCLEROPHYLL BIOGEOGRAPHICAL PROVINCE

BP: Udvardy 2.17.7 Mediterranean Sclerophyll

Biome: 6. Evergreen sclerophyllous forests, or woodlands

Countries: Coastal parts of Portugal, Spain, France, Italy, Slovenia, Croatia, Bosnia, Yugoslavia (Montenegro), Albania, Greece, Bulgaria, European Turkey and Russian Federation (the SE. Black Sea) and islands in southern N. Atlantic.
This BP is concentrated to the coastal parts of the countries involved.

The Mediterranean climate is characterised by its long, hot and dry summers and major rainfalls during the winter season. Everywhere the terrain, even close to sea level often slopes steeply, with following erosion. Typical for the vegetation is broadleaved evergreen sclerophylls; forests, scrubs and brushwoods. Resistant and hard leaves are prominent. Early periods of exploitation and fires have left only small remnants of the original evergreen forests. The islands in the southern North Atlantic, the Canary Islands, Madeira, and the Azores were once dominated by laurel and coniferous forests.

## 14.1 Existing NWHS

### 14.1.1 *Doñana National Park* No. 83
*Spain*

**Size:** 7.000 ha
**Criteria:** N (ii), (iii), (iv)

Located in Andalusia, Doñana National Park occupies the right bank of the Guadalquivir River at its estuary on the Atlantic Ocean. It is notable for the great diversity of its biotopes, especially lagoons, marshlands, fixed and mobile dunes, scrub

woodland and "maquis". It is home to five threatened bird species. It is one of the biggest heronries in the Mediterranean region and is the wintering site for more than 500.000 water fowls each year. (Source: UNESCO)

### 14.1.2 *Cape Girolata, Cape Porto and Scandola Reserve in Corsica* No. 84
***France* - a natural coastline and seascape**

**Size:** 12.000 ha
**Criteria:** N (ii), (iii), (iv)
**Inscribed:** 1983

The nature reserve, part of the Regional Natural Park of Corsica, occupies the Scandola peninsula, an impressive, porphyritic rock mass. Its vegetation is an example of scrubland. Seagulls, cormorants and sea eagles can be found there. The clear waters, with the islets and inaccessible caves, host a rich marine life. (Source: UNESCO.)

### 14.1.3 *Meteora* No. 85
***Greece***

**Size:**
**Criteria:** N (iii), C (i), (ii), (iv), (v)
**Inscribed:** 1988

This is a mixed cultural-natural WHS. The cultural aspects, the monasteric, are the predominant.

In a region of almost inaccessible sandstone peaks, monks settled on these "columns of the sky" from the 11th century on. At the time of the great revival of the eremetic ideal in the 15th century, 24 of these monasteries were built despite incredible difficulties. Their 16th-century frescoes are a fundamental stage in the development of post-Byzantine painting. (Source: UNESCO).

### 14.1.4 *Mount Athos* No. 86
***Greece***

**Size:**
**Criteria:** N (iii), C (i), (ii), (iv), (v), (vi)
**Inscribed:** 1988

A mixed cultural-natural WHS. The cultural aspects, the monasteries, are the predominant.

Orthodox spiritual centre since 1054, the "Holy Mountain", forbidden to women and children, and with an autonomous statute since Byzantine times, Mount Athos is also a

recognised artistic site. The layout of these monasteries (about twenty of which are presently inhabited by 1.400 monks) exercised its influence as far afield as Russia, and its school of painting influenced the history of Orthodox art. (Source: UNESCO.)

### 14.1.5 *Garajonay National Park* No. 87
*Canary Islands, Spain*

**Size:** 4.000 ha
**Criteria:** N (i), (iii)
**Inscribed:** 1986

Laurel forest covers some 70% of the park located in the centre of the Island of La Gomera in the Canary Islands archipelago. The presence of springs and numerous streams assures a lush vegetation resembling that of the Tertiary period which, due to climatic changes, has largely disappeared from southern Europe. (Source: UNESCO.)

## 14.2 Proposed Potential NWHS

### 14.2.1 *Archipelago De Cabrera National Park* - a marine park No. 88
*Spain*

**Size:** 10.000 ha (1.318 ha land)
**Criteria:** N (ii), (iii), (iv) - a Mixed Natural and Cultural Landscape with a Marine part
**Integrity:** 2, 3, 4, 5, 6, 7
**Proposed by:** Antonio Fernandes de Tejada, Direction General Conservacion Naturaleza, Madrid and Dr. Zoltan Waliczky, BirdLife International

Archipelago De Cabrera is a small archipelago to the south-east of Mallorca, formed by two main islands (Cabrera and Conejera) and many small rocky islets, with rocky limestone ground and high cliffs. Mediterranean scrub and small pinewoods occur on the largest islands. Almost inhabited, except in the harbour where a small miliary garnison and some fishermen houses occurs. Its conservation status is very good, rich in endemisms. Well conserved sea bed.

It was designated a National Park in 1991. Main threat before its protection were the military maneuvers. Now, militars maintains a post in the main island but their activities are compatible with nature conservation.

Now the main threats are illegal fishing, which disturb the breeding birds colonies. Also human presence in summertime may be a threat.

The archipelago is very important for marine birds and coastal raptors. A recovery plan for the Mediterranian Little Shearwater (*Puffinus yelkoan*) is carried out by the park authorities.

## 14.2.2 *Cilento NP and Paestum Archeological site* No. 89
*Italy*

**Size:** 180.000 ha
**Criteria:** N (ii), (iii), (iv), C (iii), (iv), (v)
**Nominated:** 1997

Cilento NP is situated south of Salerno and is stretching from sea level up to the mountains, highest peak around 1.900 m. The area is wellknown for its scenic landscape and its very rich flora. At Peastrum, a Greek harbour and town founded about 600 B.C. are situated. There are many archeological remains, temples etc. The area has many large caves, some with very rich remnants from Paleolithic and Neolithic time.

## 14.2.3 *Coastal dunes of SW Sardinia* No. 90
*Italy*

**Size:** 5.845 ha
**Criteria:** N (ii), (iii), (iv)
**Integrity:** 2, 3, 4
**Proposed by:** Protected Areas Research Unit, Italy, through I. Napoleone, S. Palladino, A. Testi

Series of coastal sand dunes of about 5.845 ha; (as a whole: lenght about 46.000 m, width from 42 to 3.400 meters, altitude from 10 to 178 m). The sites belong to the same physiographic region and depend on the strong western winds and great sand deposits on a low sea platform. The vegetation series belong to the classes of *Cakiletea maritimae, Ammophiletea, Quercetea ilicis* where the association *Pistacio-Juniperetum macrocarpae* is largely spread. These sites are characterized by plant species of great phytogeographic and dynamic value as *Iniperus phoenicea, Quercus coccifera, Pinus pinea* and are contiguous to relic habitats of the threatened species *Cervus elaphus corsicanus*, at present limited to some areas on southern Sardinia. In some sites there is an artificial re-forestation with *Acacia dealbata* and *Pinus pinea*. This outstanding landscape of sand dunes is one the more important ones of the Mediterranean region. While many sites are included in the regional plan of parks and reserves, many of them are threatened by seasonal anthropic pressure. The proposed sites are included in the regional plan of parks and reserves.

**Comparison with other similar properties:**

There are some similiarities with atlantic sand dunes in Doñana national park (Spain) concerning the altitude of the dunes and vegetation dynamic.

### 14.2.4 *The Pollino massif* — No. 91
### *Italy (Basilicata and Calabria)*

**Size:** 50.000 ha
**Criteria:** N (ii), (iii), (iv)
**Integrity:** 2, 3, 4, 5, 6
**Proposed by:** Protected Areas Resarch Unit, Italy, through I. Napoleone, S. Palladino, A. Testi

The site is located in the central part of the Pollino national park and covers about 50.000 ha. It is a calcareous-dolomitic massif of over 2.664 meters, shaped by glacial and karst morphology. The vegetation varies from high-montane to Mediterranean belt, providing a high habitat diversity. In the high-montane belt, characterized by *Seslerion apanninae* alliance, there is an important endemism, *Pinus leucodermis*, at its western limit, as a relic of Pleistocene glaciations. In the montane belt, the *Asyneumati-Fagetum* in association with *Abies alba* is common; it gives to this site a character of high naturalness. In the Mediterranean belt *Quercus ilex* were partially replaced with artificial coniferous reforestation. The proposed site is included in the Pollino national park (about 190.000 ha).

### 14.2.5 *Delta del Po* — No. 92
### *Italy (Emilia-Romagna)*

**Size:** 24.000 ha
**Criteria:** N (i), (ii)
**Integrity:** 1, 2, 5, 6
**Proposed by:** Protected Areas Research Unit, Italy, through I. Napoleone, S. Palladino, A. Testi

The Po valley, the widest alluvial plain in Italy, is located between the continental and Mediterranean regions. The 24.000 ha site, the Po river Delta, is a mosaic landscape formed by salty, brackish zones and wetlands of international value (10 Ramsar Convention sites). Vegetation types are represented by hygrophilous riparian associations (*Phragmitetum communis subass. typicum, Typhetum angustifoliae, Scirpetum lacustris*) and *Querco-Carpinetum boreoitalicum* as a relic of plain-alluvial woodlands); salt and sand associations (*Salicornietum fruticosae, S. herbaceae, Agropyretum boreoatlanticum subass. boreoadriaticum, Medicagineto-Ammophiletum*); Mediterranean Sclerophyll associations (*Orno-Quercetum ilicis*). The site offers an important habitat for wintering and reproduction to a large number of birds (e.g. *Botaurus stellaris, Bubulcus ibis, Egretta alba, Plegadis falcinellu,s Platalea leucorodia, Tadorna tadorna, Aythya nyroca, Circus aerugnosus, Larus genei, Gelochelidon nilotica*). The site is included in the regional park Delta del Po (about 60.000 ha); due to its location, the integrity of the site depends on the whole drainage area, submitted to the strong pressure of industrial and agricultural activities.

## 14.2.6 *Etna Volcano* No. 93
*Italy*

**Size:** 140.000 ha + a core area 58.000 ha
**Criteria:** N (i), (ii), (iii), (iv)
**Integrity:** 1, 2, 3, 4, 5, 6
**Proposed by:** Protected Areas Research Unit, Italy, through I. Napoleone, S. Palladino, A. Testi

Etna, one of the major active volcanoes on earth, is the highest in Europe standing at about 3.350 m. It has risen about sixty metres in the last fifty years because of eruptions. Its base circumference is about 250 kms and the volcanic area covers 140.000 ha. A core area of 58.000 ha is included in the "Etna nature park". Twenty-two eruptions were recorded before the Middle Ages, some of them mentioned a few centuries before. Christ by the ancient historians from Sicily's Greek area: Pindar, Aeschiylus, Diodorus and hesiod. Many more eruptions, about 200, were recorded from 100 A.D. onwards and the spectacular last one was in 1983-84-85. Detailed studies describe and explain physical and volcanological aspects of Etna: stretches and walls of lava, crags, escarpments and great valleys. Etna is also known for its unique biological aspects. Vegetation belts are characterized by high diversity and active dynamism in relation to the age of the substratum and the different temperatures, rainfalls, winds, fog and snow. Among the vegetation belts, endemic associations, spread over 1.900 m, as *Astragaletum siculi* and *Rumici-Anthemidetum aetnensis*, make the site unique among the world's mountains. A great number of endemics species enhance the unicity of that site: *Betula aetnensis, Viola aetnensis, Galium aetnicum, Senecio aetnensis, Anthemis aetnensis, Rumex scutatus* fo. *aetnensis*, etc.

## 14.2.7 *Isernia "La Pineta" - prehistoric site* No. 94
*Italy (Molise)*

**Size:**
**Criteria:** N (i), (ii) and C
**Integrity:** 1
**Proposed by:** Dr Francesco Angelelli, Dipartimento Per i Servizi Tecnicinazionali, Italy

Around 0,73 million years ago prehistoric man settled near Isernia. The deposit is one of the most ancient site at the European level to preserve evidence on the social organization and material culture of *Homo erectus*. The hunter's encampment was situated in the immediate vicinity of a watercourse by which it was occasionally overflown. No deposits as rich as that of Isernia exist elsewhere in Europe.

The fauna is represented by remains of large mammals of the Pleistocene; the most frequent are bison, rhinoceroses, bears, hippopotami, elephant and cervid. Sieving sediments containing authropic remains yelded vertebra and teeth of fish, long bones of anouri amphibians, a few fragments of turtle shells and some teeth of rodents.

The lithic industries are characterized by tools shaped from pebbles, chipped either on one side (choppers), or on both (chopping-tools) and Tayac points.

The enormous quantity of remains indicate a very intense hunting activity and the permanent camp site at Isernia "La Pineta".

The dimension of the area preserved, the variety and the great number of remains and tools found from the surface area so far explored, the presence of habitational structures, represent a decisive contribution to our knowledge of this phase of prehistory.

*Note: Two additional areas in Italy are included as No. 105 and No. 106.

### 14.2.8 *Camargue* No. 95
*France*

**Size:** 20.000 ha
**Criteria:** N (ii), (iii) and C. Probably a Mixed Natural, Cultural Landscape
**Proposed:** IUCN List 1982

This area of about 20.000 ha contains the Camargue Zoological and Botanical Reserve and several adjacent protected areas. A synthesis of natural and man-made wetlands, marshes, lagoons, meadows, and heath, this delta land is still in the process of creation, changing its appearance through the buildup of sediments carried from the Alps down to the Camargue by the Rhone river. With a combination of fresh, brackish, and salt water, this important wetland provides a very wide range of habitats, including eight main terrestrial biotopes. It is a very important habitat for birds, including 7 species which breed only here in France; the most spectacular of these is the flamingo. In addition, the area is an important winter habitat for migratory birds, with up to 200.000 ducks spending the cold months in the Camargue. While there are relatively few wild mammals, there are semi-wild cattle and white horses which provide a special attraction. The area is a Biosphere Reserve and holds the European Diploma. (Source: IUCN 1982)

**Integrity:**

The area has a lot of human influences.

### 14.2.9 *Lefka Mountains, Crete* No. 96
*Greece*

**Size:** 54.000 ha
**Criteria:** N (iii), (iv)
**Proposed by:** Dr. Zoltan Waliczky, BirdLife International

These mountains represent the most wild and uninhabited area of Crete. Strong bas-relief with more than 10 peaks over 2.000 m high and many gorges, mainly at the south part of the mountain. In the north maquis dominate, while coniferous woods occur at the south.

Main human activities is stock raising, hunting, apiculture and tourism.

The mountains are important for birds of prey, as Lammergeier (*Gypaetus barbaters*), Bonelli's Eagle (*Hieraaetus fasciatus*), Eleonora's Falcon (*Falco eleonorae*) and characteristic species of Mediterranean biome.

### 14.2.10 *Mesolongi* and *Aetoliko Lagoons*, and *Acheloos* and *Evinos Estuaries* — No. 97

***Greece***

**Size:** 95.000 ha
**Criteria:** N (iii), (iv)
**Proposed by:** Dr. Zoltan Waliczky, BirdLife International

These are wetland complex: Lagoons, extensive salt marshes, limited freshwater marshes, sandbanks, a remarkable remnant alluvial forest ("Fraxias" 60 ha) and salina (1.300 ha). There are many scatered hills and islets west of Acheloos estuary. Intensive agriculture with large pumping-plants. Great variety of birds of prey. Regular Red Kite (*Milvus milvus*) occurence in autumn. The largest colony of Gull-billed Terns (*Gelochelidon nilotica* >110 pairs).

30 raptors are observed, among them wintering Red Kite (*Milvus milvus*) and Osprey (*Pandion haliaetus*). The largest colony of Gull-billed Tern (*Gelochelidon nilotica* >110 pairs) in Greece. Max of migrating Glossy Ibis (*Plegadis falcinellus* 1800 on 1992). In the area 7 threatened Charadriiformes breed in large numbers, 4 of them exceed 1% European population criteria: Black-winged Stilt (*Himantopus himantopus*), Colored Pratincole (*Glareola pratincola*), Gull-billed Tern (*Gelochelidon nilotica*) and Little Tern (*Sterna albifrons*).

### 14.2.11 *Mount Olympos* — No. 98

***Greece***

**Size:** 39.000 ha
**Criteria:** N (iii), (iv) and C. A mixed Natural/Cultural Landscape
**Proposed by:** Dr. Zoltan Waliczky, BirdLife International

Mount Olympos is the highest mountain of Greece with extensive subalpine meadows, cliffs and Pinus heldreichii wood. At the lower altitudes there is broadleaved evergreen woodland and higher Fir and Black-pine forest. A rugged mount with steep slopes. Part of the area is a National Park.

This area is important for a large selection of birds of prey including Lammergeier (*Gypaetus barbatus*), Lanner (*Falco biarmicus*) and Eleonora's Falcon (*Falco eleonorae*), and a selection of species characteristic of the Mediterranean and Alpine biomes.

## 14.3 Conclusions

This BP seems well covered by the existing and proposed areas representing shores, wetlands etc, mostly Natural Sites or Mixed Natural and Cultural Landscapes.

# 15. BP15. BALKAN HIGHLANDS BIOGEOGRAPHICAL PROVINCE

**BP**: Udvardy 2.33.12 Balkan Highlands

**Biome**: 12. Mixed mountain and highland systems with complex zonation

**Countries**: The mountainous parts of southern Slovenia, Croatia, Bosnia-Herzegovina, Serbia (Montenegro), Albania, Macedonia, Greece (northern part) and Bulgaria.

The Balkan peninsula is mostly av mountainous landscape with extensive karst areas, more abundant here than in the rest of Europe. In the northern and middle parts there are large plains followed by a rough mountain landscape. The southern parts consists of open lowlands, plains and coasts, belonging to Mediterranean Sclerophyll. The climate is Mediterranean near the coasts but continental and cooler in the inlands, the mountainous parts.

## 15.1 Existing NWHS

### 15.1.1 *Skocjan Caves* No. 99
*Slovenia*

**Size:**
**Criteria:** N (ii), (iii)
**Inscribed:** 1986

This exceptional system of limestone caves contains collapsed dolines, about 5 kilometres of underground passages, caves more than 200 metres deep and many waterfalls. This is one of the most famous sites in the world for the study of karstic (limestone) phenomena. Source: UNESCO.

### 15.1.2 *The Plitvice lakes National Park* No. 100
*Croatia*

**Size:** 35.000 ha
**Criteria:** N (ii), (iii)
**Inscribed:** 1979

This area contains a unique system of lakes and waterfalls.

The waters which have flowed across the limestone and chalk have, over thousands of years, deposited travertine barriers, creating natural dams which in turn have created a series of beautiful lakes, caves and waterfalls. These geological processes continue today. The forests of the park are a refuge for bears, wolves and many rare bird species. Source: UNESCO.

### 15.1.3 *Durmitor National Park* No. 101
*Montenegro, Yugoslavia* - **with lakes, waterfalls and canyons.**

**Size:** 35.000 ha
**Criteria:** N (ii), (iii), (iv)
**Inscribed:** 1980

Formed by glaciers and cut by rivers on the surface and underground, Durmitor is a strikingly beautiful natural park. Along the Tara River Canyon, with the deepest gorges in Europe, the dense pine forests are interspersed with clear lakes and harbour a wide range of endemic flora. Source: UNESCO.

### 15.1.4 *Ohrid and its lake* No. 102
*Macedonia*

**Size:** 24.900 ha
**Criteria:** N and C
**Inscribed:**

This is a mixed cultural-natural NWHS in a lake district. One of the oldest Slavic cultures centres in the Balkans.

### 15.1.5 *Pirin National Park* No. 103
*Bulgaria*

**Size:** 27.400 ha
**Criteria:** (i), (ii), (iii)
**Inscribed:** 1983

The park has a limestone Balkan landscape, with its lakes, waterfalls, caves and pine forests, and a rich flora containing many endemic plant species. The rugged mountains, with around seventy glacial lakes scattered throughout them, are a relic of the ancient glacial days of Europe. Source: UNESCO.

### 15.1.6 *Srebarna Nature Reserves* No. 104
### *Bulgaria*

**Size:** 600 ha
**Criteria:** N (iv)
**Inscribed:** 1983

The Srebarna Nature Reserve is a fresh-water lake adjacent to the Danube, extending over 600 hectares. It is the breeding home of close to 100 species of birds, many of which are rare or endangered. Some 80 other bird species migrate and seek refuge there every winter. Source: UNESCO.

## 15.3 Conclusions

This is the BP with relatively most inscribed NWHS in Europe. It has not been included in the WCPA project to localize potential areas.

## Additional areas

BirdLife International has through Dr. Zoltan Waliczky, proposed two sites in Italy, which will be presented here as no. 105 and 106. Complementary information has been received from the Protected Areas Research Unit, Italy through Drs. I. Napoleone, S. Palladino and A. Testi. Their text is used below.

### 14.2.12 *Orosei Gulf and Gennargentu Mountains* No. 105
### *Italy*

**Size:** 74.000 ha
**Criteria:** N (iv)
**Integrity:** 1
**Proposed by:** see above and IBA Code IT 153

This is a large area of central east Sardinia that includes coastal and mountain habitats. Geomorphological features of great value, e.g. dolines, swallow-holes, gorges, rocky cliffs, caves, are widely present. Vegetation is dominated by the Mediterranean maquis along the coast (Orosei Gulf) and by broadleaved evergreen woodlands and pasturages

from the sea up to the inland mountain area (Gennargentu Mountains). Important breeding site for raptors (including Bonelli's Eagle and Eleonora's Falcon) and Mediterranean biome species.

**Habitat Land Use and Threats:**

Landscape, expecially in its interior part, is characterized by a relatively low anthropic presence: human settlements are absent, suitable agricultural soils are almost totally lacking, main land use is stock-rearing. But, human impact, due to stock-rearing and other traditional activities as wood-cutting and hunting, impoverished fauna. Some new roads, recently opened, locally modified the environmental situation. Public land property is widely prevalent.

Legal protection is still *in itinere*. Recently (on 19 February 1998), Ministry of Environment and Region Sardinia have agreed on the establishment of national park in i short time. The agreement, including provisional boundries with an area 73.757 ha large and regarding 24 towns, has been approved by the Cabinet of Ministries. The establishment of the national park has been signed by the President of Republic on 1/04/1998.

Tourism, fires and deforestation are the main threats. Besides, some local population and municipalities are up to now contrary to the establishment of the national park.

**Other Flora and Fauna:**

The flora importance is linked to the presence of ancient insular taxa, which here are well fit. On the Gennargentu top and orophile flora, with a meso-thermic character, maintained over time; it shows affinity with Corsican flora. Calcareous areas conserved an exclusive group of calciophile species, e.g. *Saxifraga callosa*; some of them are endangered because man activities. All the park's territory presents a lot of endemic, rare and phytogeographically important species.

The high vegetation diversity is related to geological, climatological and altitude differences allowing a mosaic of different habitats and vegetation types.

Vegetation presents many natural features as the very beautiful *Quercus ilex* woods in the Supramonte zone: some of these woods were never utilized by man. In general, park vegetation is represented by endemic associations with remarkable floristic originality; besides, vegetation is very diversified both in the structure and in the dynamic evolutionary successions.

From the sea level up to thousand metres sclerophyll evergreen woods and shrubblands, are spread; from 1,000 to 1,500 ca mesophile evergreen and decidous woods and over 1,500 low scrubs and perennial herbaceous species.

Amphibians: 5 endemic (*Discoglossus sardus, Euproctus platycephalus, Hydromantes flavus, Hydromantes supramontis, Hyla sarda*).

Reptiles: 3 rare (*Algyroides fitzingeri, Lacerta bedriagaae, Natrix (cettii) cettii*).

Mammals: *Monachus monachus* (irregurarly).

## 14.2.13 *Tuscan Archipelago* — No. 106
***Italy***

**Size:** 28,000 ha
**Criteria:** N (iv)
**Proposed by**: see above, and IBA code IT 056

The Tuscan Archipelago is composed of a complex of seven small islands, and some smaller islets, between Tuscany and Corse: Capraia (10.39 sq. km), Elba (223.5 sq. km) and Giglio (21.22 sq. km) partially included in the national park, Giannutri (2.32 sq. km), Gorgona (2.23 sq. km), Montecristo (10.39 sq. km) and Pianosa (10.25 sq. km) totally included. They are mainly covered by maquis and pine woodlands and rich of rocky cliffs. The islands support species of the Mediterranean biome, breeding Cory's and Yelkouan shearwaters and Audouini's Gull.

### Habitat Land Use and Threats:

Main land uses a tourism, fishing and agriculture.

Legal protection on the whole Archipelago is quite recent, the area was prescribed as a National Park by the national law n. 305 on 28/08/1989. But formal procedures for the establishment of the park are not yeat completed.

The greater threats to the protection of the Archipelago are caused by strong social expectations from the traditional tourism. Hostility to the park is still active from some local population and some municipalities. However, the establishment of the national park is making the protection of the islands, especially of the less populated ones, actual: e.g. now local customs guards and harbour office are trying to stop illegal fishing.

### General Ornithological Information:

Birds are the most characteristic components of the Tuscany Archipelago's Fauna. A LIPU's census stated almost 6,000 nesting pairs of *Larus cachinnans*, which represent 30% of the whole Italian population; about 150-200 pairs of *Larus audouinii*, representing 30-35% of the whole Italian population and 1-1.5% of the world population of that species. The above census also stated nearly 30 nesting pairs of *Phalacrocorax aristotelis desmarestii*; the population of this species is increasing since the

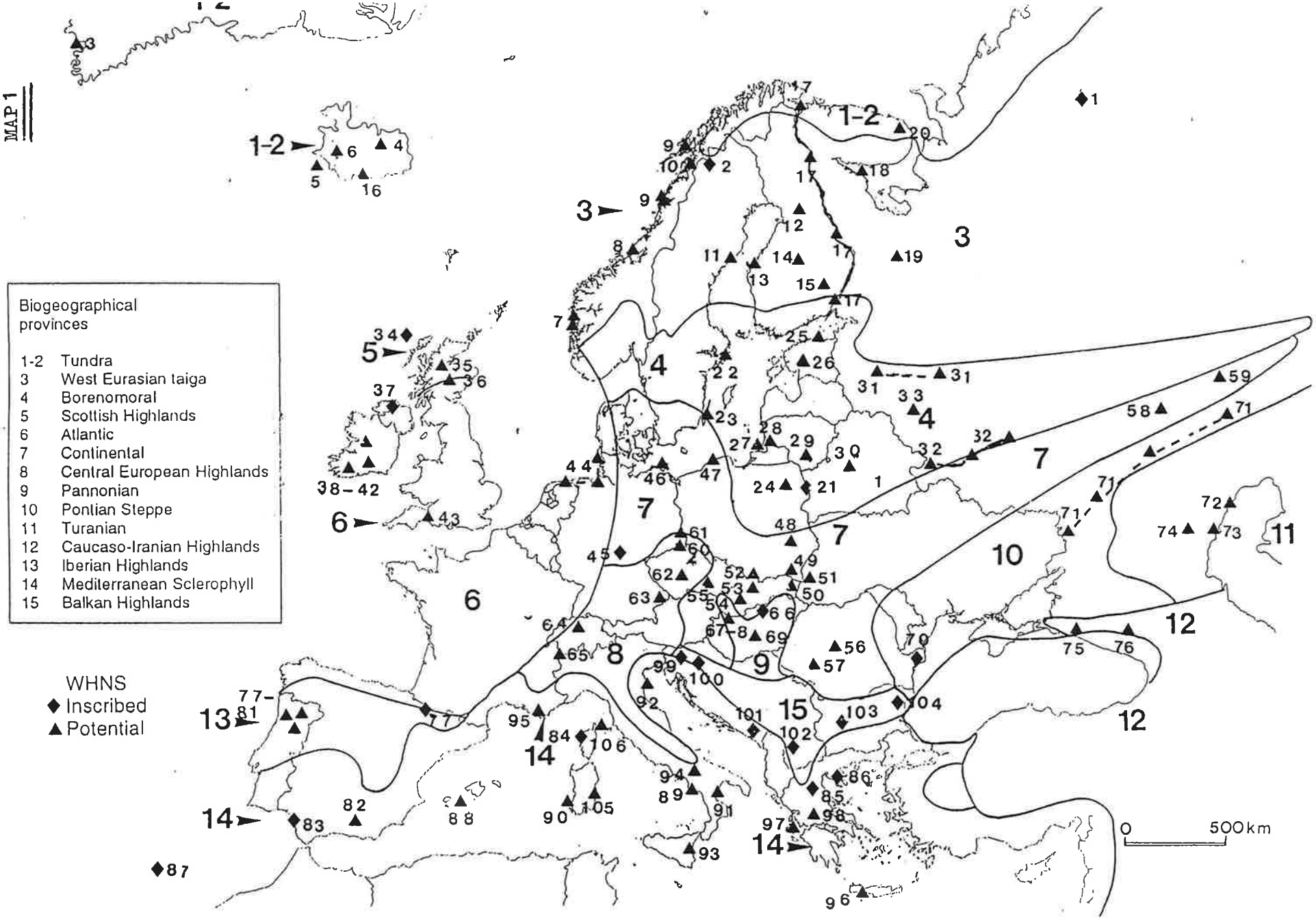
rather restrictive provisional protection rules, approved on 29/08/1990, made the islands shores quite difficult to reach.

**Flora**:

The vegeation landscape has been modified over time by fire, cut, deforestation and introduction of foreign species as *Pinus pinea, Cupressus sempervirens, Ailanthus altissima, Eucalyptus* sp. pl., etc.; but floristic and vegetation features of great naturalistic relevance still characterize the Archipelago.

Although the islands area is small, the flora presents several Sardinian-Corsican endemic species as *Arum pictum* (Montecristo), *Orchis insularis* (Elba, Giglio), *Scrophularia trifoliata* (Gorgona, Montecristo), *Soleirolia soleirolii* (Capraia), etc. In fact, the Tuscan Archipelago islands represent the last aspect of a rather complex palaeogeographical event that concerned the North Tyrrhenian sea from Miocene up to the present time. In this zone the ancient flora of the Sardinian-Crosican massif came into contact with the Plio-Pleistocene floras of the Italian Peninsula. A great number of species is still evidencing the penetration into the Tuscan Archipelago of the Sardinian-Corsican genetic element, as well as the boreal or Mediterranean South-European ones. That allowed in some islands as Elba a high floristic, phytogeographical and habitat diversity.

MAP 1


Biogeographical provinces
1-2 Tundra
3 West Eurasian taiga
4 Borenomoral
5 Scottish Highlands
6 Atlantic
7 Continental
8 Central European Highlands
9 Pannonian
10 Pontian Steppe
11 Turanian
12 Caucaso-Iranian Highlands
13 Iberian Highlands
14 Mediterranean Sclerophyll
15 Balkan Highlands
WHNS
Inscribed
Potential
0 500km

MAP 2

Parks for Life: Action for Protected Areas in Europe

Report on Priority Project 14a)

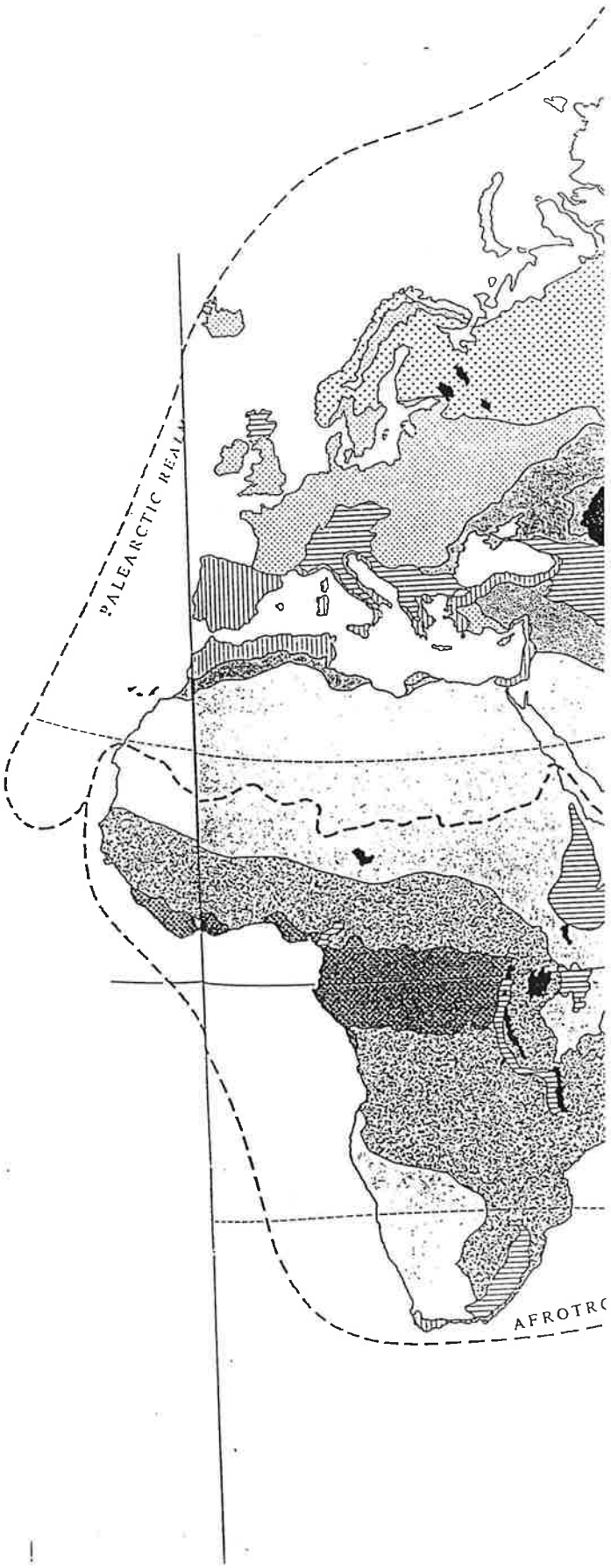
*POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE*

BIOMES

Map indicating the major biomes.
Biomes relevant for this project have got the biome numbers used of Udvardy.

The fourteen major biomes corresponding to the major ecosystem groups of the world

- Tropical humid forests
- Subtropical and temperate rain-forests or woodlands
- 5 Temperate broadleaf forests or woodlands and sub-polar deciduous thickets
- 3 Temperate needleleaf forests or woodlands
- 6 Evergreen sclerophyllous forests, scrub or woodlands
- Tropical dry or deciduous forests (including monsoon forests) or woodland
- Tropical grasslands and savannah
- 11 Temperate grasslands
- Warm deserts and semi-deserts
- 8 Cold winter (continental) deserts and semi-deserts
- 9 Tundra communities and barren arctic deserts
- 12 Mixed mountain and highland systems with complex zonation
- Mixed island systems
- 14 River and lake systems




After: Action Plan for Biosphere Reserves

UNESCO: Nature and Resources Vol. 20, 4

Stockholm April 1998 Annex 2

Lars-Erik Esping
Member WCPA Europe
Coordinator P.P. 14a
Hyggevägen 7, S-163 54 Spånga
SWEDEN

**Parks for Life: Action for Protected Areas in Europe**

**Priority Project 14a) - WCPA and FNNPE**

# *A Summarizing List of Proposed*

# POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE

This list includes 106 areas:

15 Inscribed Natural Sites
5 Inscribed Mixed Natural/Cultural Sites
86 Areas, Proposed or under Consideration: Many with both Naural and Cultural values as sites or landscapes.

Under "Remarks" around 30 of the areas are noted as Cultural Landscapes or Mixed Natural/Cultural Landscapes. (The Coordinator is personally responsible for these "proposals").

## Abbreviations:

**BP. No.** Biogeographical Province with number used in Annex 1

| | | | |
|---|---|---|---|
| N | Natural Site | I | Inscribed |
| C | Cultural Site | Nm | Nominated |
| M | Mixed N/C site | P | Proposed Potential Site |
| CL | Cultural Landscape | GF | Geological Feature |
| ML | Mixed N/C Landscape | BF | Biological Feature |

| No. on Map 1 | BP No. | Name | N | C | M | CL | Remarks |
|---|---|---|---|---|---|---|---|
| | 1. (1,2,3) | Arctic, Tundra, Taiga BPs | | | | | |
| 1 | 1.1.1 | Komi Virgin Forest | I | | | | |
| 2 | 1.1.2 | Laponian Area | | | I | | |
| 3 | 1.2.1 | Isfjord-Disco Bay | P | | | | |
| 4 | 1.2.2 | Myvatn-Laxa | P | | | | |
| 5 | 1.2.3 | Surtsey | P | | | | GF, BF |
| 6 | 1.2.4 | Thingvellir | P | P | | P | CL - ML? |
| 7 | 1.2.5 | West Norwegian Fjord Landscape | P | P | | | ML? Two fjords |
| 8 | 1.2.6 | Coastal Spruce Forest | P | | | | BF |
| 9 | 1.2.7 | North Norwegian Archipelago | P | P | | | ML? Two areas |
| 10 | 1.2.8 | North Norwegian Fjord Landscape | P | P | P | P | ML? |
| 11 | 1.2.9 | Raised Coastline | P | | | P | ML?, GF |
| 12 | 1.2.10 | Olvassuo Mires | P | | | | |
| 13 | 1.2.11 | Vaasa Archipelago | P | | | | |
| 14 | 1.2.12 | Koli Landscape | P | P | | P | CL - ML? |
| 15 | 1.2.13 | Saimaa Archipelago | P | | | | |
| 16 | 1.2.14 | Skaftafell | P | | | | |
| 17 | 1.2.15 | Green Belt of Fennoscandia | P | | | | Cluster of Areas |
| 18 | 1.2.15.1 | Kandalakcha Reserve | P | | | | |
| 19 | 1.2.15.2 | Vodlozero NP | P | | | | |
| 20 | 1.2.16 | Eastern Kola Peninsula | P | | | | |
| | 4. | Boreonemoral BP | | | | | |
| 21 | 4.1.1 | Bialowieza Forest | I | | | | |
| 22 | 4.2.1 | Stockholm Archipelago | P | P | | P | ML? |
| 23 | 4.2.2 | Alvar of Öland | P | P | | P | CL - ML? |
| 24 | 4.2.3 | Biebrza NP | P | | | | ML? |
| 25 | 4.2.4 | Ontika-Glint Coast | P | P | P | | ML? GF |
| 26 | 4.2.5 | Sooma NP | P | | | | |

| No. on Map 1 | BP No. | Name | N | C | M | CL | Remarks |
|---|---|---|---|---|---|---|---|
| 27 | 4.2.6 | Curonian Spit | P | P | P | | ML? |
| 28 | 4.2.7 | Nemunas Delta | P | | | | |
| 29 | 4.2.8 | Cepkelia Reserve | P | | | | |
| 30 | 4.2.9 | Berezinskij Zapovednic | P | | | | |
| 31 | 4.2.10.1 | Russian Plain | | | | | Russia - under consideration |
| 32 | 4.2.10.2 | The Forest Defence Line | | | | | Russia - under consideration |
| 33 | 4.2.10.3 | Metshera depression | | | | | Russia - under consideration |
| | 5. | **Scottish Highlands BP** | | | | | |
| 34 | 5.1.1 | St. Kilda | I | | | | |
| 35 | 5.2.1 | Cairngorms | P | | | | ML? |
| 36 | 5.2.2 | Flow Country | | | | P | ML? |
| | 6. | **Atlantic BP** | | | | | |
| 37 | 6.1.1 | The Giant´s Causeway | I | | | | GF |
| 38 | 6.2.1 | Killarney NP | P | P | | | ML? |
| 39 | 6.2.2 | The Burren | P | | | | ML? |
| 40 | 6.2.3 | Owenduff/Nephin | P | | | | BF |
| 41 | 6.2.4 | Roundstone Bog | P | | | | BF |
| 42 | 6.2.5 | Clara Bog | P | | | | BF |
| 43 | 6.2.6 | Dartmoor NP | | | | P | CL - ML? |
| 44 | 6.2.7 | Wadden Sea | P | P | | P | ML? |
| | 7 | **Continental BP** | | | | | |
| 45 | 7.1.1 | Messel Pit | I | | | | GF |
| 46 | 7.2.1 | Jasmund NP | P | | | | GF |
| 47 | 7.2.2 | Slowinsky NP | P | | | | |
| 48 | 7.2.3 | Swietokrayski NP | P | P | | | ML |
| 49 | 7.2.4.1 | Polish Bieszczady NP | P | P | | P | ML? |

| No. on Map 1 | BP No. | Name | N | C | M | CL | Remarks |
|---|---|---|---|---|---|---|---|
| 50 | 7.2.4.2 | East Carpathians - Slovakia | P | | | | ML? |
| 51 | 7.2.4.3<br>7.2.4.3.1 | Carpathian Forest, Ukraine<br>Uholka Virgin Forest | P<br>P | | | | |
| 52 | 7.2.5.1 | Tatra NP, Poland | P | | | | |
| 53 | 7.2.5.2 | High Tatras, Slovakia | P | | | | |
| 54 | 7.2.6 | Slovak Paradise | Nm | | | | |
| 55 | 7.2.7 | Moravian Karst | P | | | | ML? |
| 56 | 7.2.8 | Tustea | P | | | | GF - fossils |
| 57 | 7.2.9 | Poiana Stampei Bog | P | | | | BF |
| 58 | 7.2.10 | Samura Curve - Volga | | | | | Russia - under consideration |
| 59 | 7.2.11 | Baschkirische Ural | Nm | | | | Russia |
| | 8. | **Central European Highlands BP** | | | | | |
| 60 | 8.2.1.1 | Bohemian - Switzerland | P | | | P | CL - ML? |
| 61 | 8.2.1.2 | Saxonian - Switzerland | P | | | P | CL - ML? |
| 62 | 8.2.2 | Novohradske Mountains | P | | | | |
| 63 | 8.2.3 | Bavarian Forest NP | P | | | | |
| 64 | 8.2.4 | Bernese Oberland | P | P | | | ML? |
| 65 | 8.2.5 | Grand Paradiso/Vanoise NPs<br>Mont Blanc | P | P | | P | ML? With Mont Blanc |
| | 9. | **Pannonian BP** | | | | | |
| 66 | 9.1.1 | Aggtelek - Slovak Karst | I | | | | GF |
| 67 | 9.2.1.1 | Neusiedler See NP | P | P | | P | CL - ML? |
| 68 | 9.2.1.2 | Fertö-Hansag NP | P | P | | P | CL - ML? |
| 69 | 9.2.2 | Hortobágy NP | P | P | | P | CL - ML? |

| No. on Map 1 | BP No. | Name | N | C | M | CL | Remarks |
|---|---|---|---|---|---|---|---|
| | 10. | **Pontian Steppe BP** | | | | | |
| 70 | 10.1.1 | Danube Delta | I | | | | |
| 71 | 10.2.1 | Russian Black Soil | (P) | | | | Russia - under consideration |
| 72 | 11. | **Turanian BP** | | | | | |
| | 11.2.1 | Volga Delta | (P) | | | | Russia - under consideration |
| 73 | 11.2.2 | Western Ilmen Area | (P) | | | | Russia - under consideration |
| 74 | 11.2.3 | Chernye Zemli Z. | (P) | | | | Russia - under consideration |
| | 12. | **Caucaso-Iranian Highlands BP** | | | | | |
| 75 | 12.2.1 | Northwest Caucasus | (P) | | | | Russia - under consideration |
| 76 | 12.2.2 | Central Caucasus | (P) | | | | Russia - under consideration |
| | 13. | **Iberian Highlands BP** | | | | | |
| 77 | 13.1.1 | Mont Perdu-Tres Serals | I | | | | CL - ML |
| 78 | 13.2.1 | Peneda-Geres NP | P | | | | |
| 78 a | 13.2.2 | Albergaria Forest | P | | | | BF Inside 13.2.1 |
| 79 | 13.2.3 | Montesinho NP | P | | | | ML? |
| 80 | 13.2.4 | Fisgas de Ermelo Canyon | P | | | | GF |
| 81 | 13.2.5 | Coa River and Archeol. Park | P | P | P | | |
| 82 | 13.2.6 | Taberna Desert | P | | | | BF |
| | 14. | **Mediterranean Sclerophyll BP** | | | | | |
| 83 | 14.1.1 | Doñana NP | I | | | | |
| 84 | 14.1.2 | Cape Girolata, Scandola | I | | | | |
| 85 | 14.1.3 | Meteora | | | I | | |

| No. on Map 1 | BP No. | Name | N | C | M | CL | Remarks |
|---|---|---|---|---|---|---|---|
| 86 | 14.1.4 | Mount Athos | | | I | | |
| 87 | 14.1.5 | Garajonay NP | I | | | | Canary Islands |
| 88 | 14.2.1 | Archipelago De Cabrera | P | | | | CL - ML. + Marine Park |
| 89 | 14.2.2 | Cilento NP + Paestum | Nm | | | CL | |
| 90 | 14.2.3 | Coastal dunes, Sardinia | P | | | | |
| 91 | 14.2.4 | Pollino massif | P | | | | |
| 92 | 14.2.5 | Delta del Po | P | | | | |
| 93 | 14.2.6 | Etna Volcano | P | | | | |
| 94 | 14.2.7 | Isernia "La Pineta" | P | P | P | | GF. Prehistoric site |
| 95 | 14.2.8 | Camargue | P | P | | | CL - ML? |
| 96 | 14.2.9 | Lefka Mountains, Crete | P | | | | |
| 97 | 14.2.10 | Mesolongi - Evinos | P | | | | BF |
| 98 | 14.2.11 | Mount Olympos | P | | | | ML? |
| | 15. | **Balkan Highlands BP** | | | | | |
| 99 | 15.1.1 | Skocjan Caves | I | | | | |
| 100 | 15.1.2 | Plitvice Lakes NP | I | | | | |
| 101 | 15.1.3 | Durmitor NP | I | | | | |
| 102 | 15.1.4 | Ohrid and its lake | | | I | | |
| 103 | 15.1.5 | Pirin NP | I | | | | |
| 104 | 15.1.6 | Screbarna NP | I | | | | |
| | | **Additional Areas in BP 14** | | | | | |
| 105 | 14.2.12 | Orosei Gulf | P | | | P | ML? |
| 106 | 14.2.13 | Tuscan Archipelago | P | | | P | ML? |

ANNEX 3
to P.P.14a)

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION

# INTERGOVERNMENTAL COMMITTEE FOR THE PROTECTION OF THE WORLD CULTURAL AND NATURAL HERITAGE

# *Operational Guidelines for the Implementation of the World Heritage Convention*

**WHC-97/2**
**February 1997**

Annex 3 to:

**Parks for Life: Action for Protected Areas in Europe**

**Report on Priority Project 14a)**

# *POTENTIAL NATURAL WORLD HERITAGE SITES IN EUROPE*

Criteria for:

1. World Heritage Cultural Landscapes, paragraphs 35 - 42

2. Natural World Heritage Sites, paragraphs 43 - 45

Excerpt from: UNESCO's Operational Guidelines for the Implementation of the World Heritage Conention
WHC 97/2
February 1997

35. With respect to cultural landscapes, the Committee has furthermore adopted the following guidelines concerning their inclusion in the World Heritage List.

36. Cultural landscapes represent the "combined works of nature and of man" designated in Article 1 of the Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. They should be selected on the basis both of their outstanding universal value and of their representativity in terms of a clearly defined geo-cultural region and also for their capacity to illustrate the essential and distinct cultural elements of such regions.

37. The term "cultural landscape" embraces a diversity of manifestations of the interaction between humankind and its natural environment.

38. Cultural landscapes often reflect specific techniques of sustainable land-use, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature. Protection of cultural landscapes can contribute to modern techniques of sustainable land-use and can maintain or enhance natural values in the landscape. The continued existence of traditional forms of land-use supports biological diversity in many regions of the world. The protection of traditional cultural landscapes is therefore helpful in maintaining biological diversity.

39. Cultural landscapes fall into three main categories, namely:

(i) The most easily identifiable is the clearly defined landscape designed and created intentionally by man. This embraces garden and parkland landscapes constructed for aesthetic reasons which are often (but not always) associated with religious or other monumental buildings and ensembles.

(ii) The second category is the organically evolved landscape. This results from an initial social, economic, administrative, and/or religious imperative and has developed its present form by association with and in response to its natural environment. Such landscapes reflect that process of evolution in their form and component features. They fall into two sub-categories:

- a relict (or fossil) landscape is one in which an evolutionary process came to an end at some time in the past, either abruptly or over a period. Its significant distinguishing features are, however, still visible in material form.

- a continuing landscape is one which retains an active social role in contemporary society closely associated with the traditional way of life, and in which the evolutionary process is still in progress. At the same time it exhibits significant material evidence of its evolution over time.

(iii) The final category is the associative cultural landscape. The inclusion of such landscapes on the World Heritage List is justifiable by virtue of the powerful religious, artistic or cultural associations of the natural element rather than material cultural evidence, which may be insignificant or even absent.

40. The extent of a cultural landscape for inclusion on the World Heritage List is relative to its functionality and intelligibility. In any case, the sample selected must be substantial enough to adequately represent the totality of the cultural landscape that it illustrates. The possibility of designating long linear areas which represent culturally significant transport and communication networks should not be excluded.

41. The general criteria for conservation and management laid down in paragraph 24.(b).(ii) above are equally applicable to cultural landscapes. It is important that due attention be paid to the full range of values represented in the landscape, both cultural and natural. The nominations should be prepared in collaboration with and the full approval of local communities.

42. The existence of a category of "cultural landscape", included on the World Heritage List on the basis of the criteria set out in paragraph 24 above, does not exclude the possibility of sites of exceptional importance in relation to both cultural and natural criteria continuing to be included. In such cases, their outstanding universal significance must be justified under both sets of criteria.

D. Criteria for the inclusion of natural properties in the World Heritage List

43. In accordance with Article 2 of the Convention, the following is considered as "natural heritage":

"natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;

geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;

natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty."

44. A natural heritage property - as defined above - which is submitted for inclusion in the World Heritage List will be considered to be of outstanding universal value for the purposes of the Convention when the Committee finds that it meets one or more of the following criteria and fulfills the conditions of integrity set out below. Sites nominated should therefore:

(a) (i) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of land forms, or significant geomorphic or physiographic features; or

(ii) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; or

(iii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; or

(iv) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation;

and

(b) also fulfil the following conditions of integrity:

(i) The sites described in 44(a)(i) should contain all or most of the key interrelated and interdependent elements in their natural relationships; for example, an "ice age" area should include the snow field, the glacier itself and samples of cutting patterns, deposition and colonization

(e.g. striations, moraines, pioneer stages of plant succession, etc.); in the case of volcanoes, the magmatic series should be complete and all or most of the varieties of effusive rocks and types of eruptions be represented.

(ii) The sites described in 44(a)(ii) should have sufficient size and contain the necessary elements to demonstrate the key aspects of processes that are essential for the long-term conservation of the ecosystems and the biological diversity they contain; for example, an area of tropical rain forest should include a certain amount of variation in elevation above sea-level, changes in topography and soil types, patch systems and naturally regenerating patches; similarly a coral reef should include, for example, seagrass, mangrove or other adjacent ecosystems that regulate nutrient and sediment inputs into the reef.

(iii) The sites described in 44(a)(iii) should be of outstanding aesthetic value and include areas that are essential for maintaining the beauty of the site; for example, a site whose scenic values depend on a waterfall, should include adjacent catchment and downstream areas that are integrally linked to the maintenance of the aesthetic qualities of the site.

(iv) The sites described in paragraph 44(a)(iv) should contain habitats for maintaining the most diverse fauna and flora characteristic of the biographic province and ecosystems under consideration; for example, a tropical savannah should include a complete assemblage of co-evolved herbivores and plants; an island ecosystem should include habitats for maintaining endemic biota; a site containing wide-ranging species should be large enough to include the most critical habitats essential to ensure the survival of viable populations of those species; for an area containing migratory species, seasonal breeding and nesting sites, and migratory routes, wherever they are located, should be adequately protected; international conventions, e.g. the Convention of Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), for ensuring the protection of habitats of migratory species of waterfowl, and other multi- and bilateral agreements could provide this assurance.

(v) The sites described in paragraph 44(a) should have a management plan. When a site does not have a management plan at the time when it is nominated for the consideration of the World Heritage Committee, the State Party concerned should indicate when such a plan will become available and how it proposes to mobilize the resources required for the preparation and implementation of the plan. The State Party should also provide other document(s) (e.g. operational plans) which will guide the management of the site until such time when a management plan is finalized.

(vi) A site described in paragraph 44(a) should have adequate long-term legislative, regulatory or institutional protection. The boundaries of that site should reflect the spatial requirements of habitats, species, processes or phenomena that provide the basis for its nomination for inscription on the World Heritage List. The boundaries should include sufficient areas immediately adjacent to the area of outstanding universal value in order to protect the site's heritage values from direct effects of human encroachment and impacts of resource use outside of the nominated area. The boundaries of the nominated site may coincide with one or more existing or proposed protected areas, such as national parks or biosphere reserves. While an existing or proposed protected area may contain several management zones, only some of those zones may satisfy criteria described in paragraph 44(a); other zones, although they may not meet the criteria set out in paragraph 44(a), may be essential for the management to ensure the integrity of the nominated site; for example, in the case of a biosphere reserve, only the core zone may meet the criteria and the conditions of integrity, although other zones, i.e. buffer and transitional zones, would be important for the conservation of the biosphere reserve in its totality.

(vii) Sites described in paragraph 44(a) should be the most important sites for the conservation of biological diversity. Biological diversity, according to the new global Convention on Biological Diversity , means the variability among living organisms in terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species and of ecosystems. Only those sites which are the most biologically diverse are likely to meet criterion (iv) of paragraph 44 (a).

**45.** In principle, a site could be inscribed on the World Heritage List as long as it satisfies one of the four criteria and the relevant conditions of integrity. However, most inscribed sites have met two or more criteria. Nomination dossiers, IUCN evaluations and the final recommendations of the Committee on each inscribed site are available for consultation by States Parties which may wish to use such information as guides for identifying and elaborating nomination of sites within their own territories.

## ~~E. Procedure for the eventual deletion of properties from the World Heritage List~~

**46.** The Committee adopted the following procedure for the deletion of properties from the World Heritage List in cases:

~~(a) where the property has deteriorated to the extent that it has lost those characteristics which determined its inclusion in the World Heritage List; and~~

# 2. Report of the Workshop on:

# Natural World Heritage Sites in Europe

**Leader:** Prof. Dr Harald Plachter (Germany)
**Vice-Chair:** Dr Horst Korn (Germany)
**Rapporteur:** Lars-Erik Esping (Sweden)

## Introduction

The Workshop was attended by 26 participants from the following countries: Austria, Belarus, Georgia, Germany, Greece, Hungary, Ireland, Lithuania, Norway, Poland, Portugal, Russia, Spain, Sweden, United Kingdom and Yemen. There were also participants from UNESCO, IUCN, EUROPARC Federation, the European Centre for Nature Conservation (ECNC) and Centre International pour la Conservation de la Montagne (CICM). Most of the participants are actively involved in protected area management or administration.

## Objective

The objective of the Workshop was to review the preliminary report "Potential Natural World Heritage Sites in Europe" prepared by Lars-Erik Esping and consider the future direction for the project.

## Background

In *Parks for Life* it is stated in Section 7.3.2 that:

> *"The present set of natural World Heritage sites in Europe is far from adequate. Though candidates for the World Heritage List are now rigorously evaluated, there are further protected areas that should be included. The potency and prestige of the Convention make their inscription a high priority."*

To remedy the situation, the Action Plan proposed as Priority Project 14a) to:

> *"Prepare a guide to potential natural World Heritage sites in Europe extending east to the Urals, and use this to promote the use of the Convention to protect the finest elements of Europe's natural heritage".*

This proposal was based on the premise that there were only a limited number – perhaps only a dozen or so sites – of fairly large, relatively natural areas left in Europe, which might meet the criteria of the Convention, but have not been included in the List as natural World Heritage sites.

It was further believed that the best way to ensure that these remaining areas in Europe of outstanding, universal value, which are of pristine or near-pristine nature, achieve effective and long-lasting protection, was to have them included on the World Heritage List.

In November 1996, WCPA and EUROPARC Federation jointly decided to undertake this project. A limited number of experts were requested to participate through suggesting potential sites. About 25 experts took part. However, two parts of Europe – the Alps and the Balkan Peninsula – have not been included in the study because of their complexity and of lack of funds.

It was stressed in the WCPA/EUROPARC Memorandum of January 1997 that it was important to avoid proposing a longer list of sites, which probably were unlikely to be proposed by States or recommended by IUCN/ICOMOS and could not be acceptable to the World Heritage Committee.

The main purpose of the study has been to make a survey to indicate, for each of the biogeographical provinces, natural areas of such outstanding, universal value that they have the potential to be inscribed as World Heritage sites and filling some obvious gaps.

About 70 areas have been put forward from various sources as candidates for World Heritage status. These proposals are presented in "A Compiled List, a Catalogue of Proposed but not Evaluated Potential Natural World Heritage Sites in Europe". The Coordinator of the project summarized in his report the results of his work in the following way:

> *"The 70 candidate areas are very valuable and interesting natural areas or landscapes. But only a strictly selected number of them will reach the high standards, which IUCN and UNESCO's World*

*Heritage Committee are applying to natural or mixed World Heritage Sites. A number may also qualify to the criteria of cultural landscapes. In all probability some of the candidate areas will fail to pass the test of integrity."*

## Key questions and issues addressed

The Workshop adopted the draft agenda (see Annex) and after hearing the three introductory presentations of P.H.C. Lucas, Mechtild Rössler and Harald Plachter, discussed the following key questions:

- What are the targets to be addressed – only natural sites or cultural landscapes as well? Because of the human impact on nature in Europe only a few sites meet the criteria for natural sites, but there are very many cultural landscapes of outstanding universal value in Europe.
- Do we have to modify and/or clarify the evaluation parameters? The importance of keeping high evaluation standards was stressed and the evaluation parameters were clarified (outstanding universal value, conditions of integrity, interaction between nature and culture, etc.)
- Is the biogeographical approach appropriate? The criterion of "outstanding universal value" can be defined as a combination of uniqueness and representativeness. The latter calls for a biogeographical approach to zonal ecosystems and a thematical approach to azonal ecosystems. Within both types the most outstanding sites would have to be identified.
- Is the aim a final European list or a process? It was agreed that a plan with further specific steps for the ongoing process had to be worked out instead of focussing on a final list.
- How can one cover all the regions of Europe adequately? Further efforts have to be made to fill existing gaps in certain biogeographical regions or ecosystem types, especially in Eastern Europe, alpine regions and marine ecosystems.
- How can one introduce proposals into the political nomination process at national level and what is the role of IUCN? The State Parties have to nominate new World Heritage sites. IUCN acts as an independent advisor to the World Heritage Commission and evaluates the proposals through expert studies. For this reason IUCN is not active in drawing up lists of potential sites. However, this could be a task for WCPA and EUROPARC Federation, which through their members can have an influence on State Parties to nominate more natural World Heritage sites.
- Should the procedure and the criteria of the Operational Guidelines be changed? To include the idea of landscape protection into the evaluation procedure, the four criteria for natural sites and the six criteria for cultural sites could be unified to a single set ("menu") of criteria. This was the conclusion of a meeting at La Vanoise, France, in 1996.
- What should be Europe's contribution to the Global Strategy for Natural Heritage? Conserving the world's natural heritage is a process. Europe's contribution may enhance this process in an important way.
- How can one get the resources for this work? State Parties should host regional meetings and raise money for further work on subject.

In addition, participants from Georgia, Poland, Russia and CICM presented further areas for consideration as candidate areas or changes to the list presented. It was agreed that they should send their proposals to the Coordinator before 1 January 1998.

## Conclusions

The Coordinator is prepared to finish the ongoing work with the first report, which will be presented to WCPA-Europe and EUROPARC Federation for decision on the future work with World Heritage natural sites in Europe. For the future the workshop unanimously accepted the following Recommendation:

RECOGNIZING the fast deterioration and/or destruction of very valuable natural areas and landscapes in Europe – often of World Heritage standard and of huge interest for biological diversity – the participants:

RECOMMEND WCPA and EUROPARC Federation in all possible ways encourage the nomination of further natural World Heritage sites and mixed natural/cultural sites and landscapes of outstanding universal value in European biogeographical provinces and thematic categories for azonal ecosystems (e.g. wetlands or geological features).

To enhance that process it is necessary to:

1. RAISE more funds to support some countries with expert help and ask State Parties to the Convention to submit a request to the World Heritage Fund to host regional meetings to harmonize nomination proposals from European countries;
2. URGE IUCN Members to take an active part in the identification of potential sites, such as the model case for the Nordic countries;
3. WORK for a change of the World Heritage Convention Operational Guidelines so there will be only one set of criteria for all World Heritage sites, as proposed by the La Vanoise meeting in 1996, and reaffirming the diversity of European landscapes as expressed at the Vienna Meeting also in 1996.

CALLS UPON all European IUCN, WCPA and EUROPARC Federation members to cooperate in these efforts.

# Annex

## Agenda

### Part A. European Natural Sites in the World Heritage System

1. Introduction to the Workshop (Chair and Rapporteur)
2. Evolution of International Conservation Systems

   *Speaker:* Mr P.H.C. (Bing) Lucas, WCPA Vice Chair World Heritage
3. Natural sites and Cultural landscape: World Heritage in a Changing World

   *Speaker:* Dr Mechthild Rössler, Programme Specialist, UNESCO World Heritage Centre
4. Cultural and Natural Conservation Concepts in Europe

   *Speaker:* Prof. Dr Harald Plachter, Phillips University Marburg, Germany
5. Discussion

### Part B. The Situation in Europe

6. Potential World Heritage Sites in Europe
   a) Outcomes of the WCPA Priority Project 14a):

      *Presented by* Lars-Erik-Esping, Project Coordinator
   b) Presentation and views about some potential sites
   c) Discussion – Views and Proposals
7. Conclusions and Adoption of Recommendations

## Parks for Life

The aim of 'Parks for Life: Action for Protected Areas in Europe' is "to ensure an adequate, effective and well-managed network of protected areas".

Covering an area from Portugal to Bulgaria, Romania and the Baltic States, it sets out the policies and actions each country should take to improve its protected areas, as well as outlining action needed at international level. The action points are in the form of Recommendations (mainly to governments), Endorsements (of the many existing activities) and of 30 Priority Projects, which are the focus of coordinated action by IUCN and its partners.

Over 200 organizations and individuals contributed to the preparation of the 'Parks for Life', which was produced by the IUCN World Commission on Protected Areas as part of the IUCN Protected Areas Programme and the IUCN European Programme. in association with the EUROPARC Federation, the World Wide Fund for Nature (WWF), the World Conservation Monitoring Centre (WCMC) and BirdLife International.

## EUROPARC

EUROPARC - Federation of Nature and National Parks of Europe is a pan-European organization whose members are national parks, regional parks and nature parks, as well as NGOs and government agencies, across Europe. Members use the network of the Federation as a forum to share management experience, and to promote and extend the ideals of conservation. EUROAPRC Federation holds yearly assemblies, which have a series of workshops on specific themes, such as training needs and tourism appropriate to protected areas.

## Addresses

WCPA-Europe
IUCN "Parks for Life" European Coordinator
Hajdrihova 28, 1000 Ljubljana, Slovenija
Tel: +386 61 12 56 458
Fax: +386 61 12 64 162
E-mail: andrej.sovinc@guest.ames.si

EUROPARC-Federation
Kröllstraße 5, Postfach 1153, D-94475 Grafenau
Tel: +49 (0)8552 9610-0
Fax: +49 (0)8552 9610-19
E-mail: europarc@t-online.de