A GLOBAL OVERVIEW OF PROTECTED AREAS ON THE WORLD HERITAGE LIST OF PARTICULAR IMPORTANCE FOR BIODIVERSITY

A contribution to the Global Theme Study of World Heritage Natural Sites

Text and Tables compiled by
Gemma Smith and Janina Jakubowska

Maps compiled by
Ian May

UNEP World Conservation Monitoring Centre
Cambridge, UK

November 2000

UNEP WCMC PATRIMONIO MUNDIAL · WORLD HERITAGE · PATRIMOINE MONDIAL IUCN The World Conservation Union

TABLE OF CONTENTS

MAPS

EXECUTIVE SUMMARY

This working paper provides a global overview of the current coverage of existing World Heritage Sites of particular importance for the conservation of biodiversity, and suggests existing protected areas of significant biodiversity value, which may merit future World Heritage nomination.

In 1996, IUCN initiated a project to prepare a global strategy for Natural World Heritage sites, and as part of this process began to prepare a series of thematic global overviews on World Heritage site coverage. This document is an updated addition to these theme studies.

A total of 141 sites, representing 64 countries and over 142 million ha of protected areas were identified as being of particular importance for biodiversity. The sites detailed in this study were selected on the basis of natural World Heritage sites that lay within or contained a site that had been defined as:

1. Criterion iv (significant biodiversity) (95 sites)
2. A WWF "Global 200" site (124 sites)
3. A Centre of Plant Diversity (CPD) (74 sites)
4. A Conservation International (CI) biodiversity hotspot (57 sites)
5. Vavilov Centres of Plant Genetic Diversity (40 sites)
6. An Endemic Bird Area (EBA) (71 sites)
7. Contains "Critically Endangered" taxa (60 sites)
8. Wetland of International Importance (Ramsar site) (16 sites)
9. An area of marine importance (contained coral reefs (14 sites), mangroves (18 sites) or turtle nesting beaches) (15 sites)

Global maps illustrating the distribution of the sites for each category were also produced. A coarse GIS analysis found only 6 out of 141 sites contained 8 of the 9 indicators listed above, no current natural and mixed World Heritage site (as of November 1999) contained all 9 indicators. While terrestrial ecosystems are well represented, marine and wetland environments are not. Additionally over 90 sites were identified as potentially meriting consideration for future nomination.

It is hoped that this preliminary overview will assist IUCN in making comparative evaluations and provide the World Heritage Committee with a starting point for making decisions on new World Heritage nominations.

INTRODUCTION

A global overview of World Heritage sites of particular importance for biodiversity

1.0 Overview

In 1996, IUCN initiated a project to prepare a global strategy for Natural World Heritage sites, and as part of this process began to prepare a series of thematic global overviews on World Heritage site coverage.

These overviews are intended to assist IUCN in making comparative evaluations of World Heritage site nominations and to provide the World Heritage Committee with a firmer basis for making decisions. They also provide State Parties with the global perspective relevant to identifying potential World Heritage properties in their territories.

Global overviews of fossil sites, wetland and marine protected areas and forest protected areas have already been prepared, and two others are in development. In 1998 a preliminary working paper was compiled by the World Conservation Monitoring Centre (WCMC), providing an overview of World Heritage in the context of biodiversity conservation. The current document builds upon this first attempt, and addresses some of the key information needs identified in the 1998 study, as requiring further development.

The purpose of this study is essentially threefold:

- To provide an overview of current natural World Heritage sites of significant biodiversity value

- To identify existing protected areas of potential significant biodiversity value, that may be considered for future nomination and inscription on the World Heritage List

- To identify types of biodiversity richness that are currently missing from World Heritage sites

This overview identifies 141 natural and mixed World Heritage sites of particular importance for biodiversity. They represent 64 countries and over 142 million hectares of protected areas. It also identifies 94 existing protected areas (ranked according to increasing levels of biodiversity value), that may merit future World Heritage nomination.

2.0 Issues to Consider

Biodiversity is a very broad subject area to cover, it is therefore important to define the issues that should be considered and the type of questions that should be addressed by an overview such as this.

Issues to consider when evaluating an area for biodiversity importance include:

- Biogeographic coverage
- Total number of species in area/species richness
- Degree of endemism
- Number of globally threatened species
- Importance for economically important species, including wild relatives

Questions to consider when looking at the existing World Heritage List in relation to biodiversity include:

- Which World Heritage sites are of particular importance for the protection/conservation of biodiversity?
- What types of biodiversity richness are currently missing from World Heritage sites?
- What sites might be of World Heritage quality in terms of biodiversity but are not currently listed?

3.0 What is Biodiversity?

One of the first things to identify in a study such as this is to determine what is meant by the term biodiversity. It is an imprecise term contracted from 'biological diversity'; that may be measured at genetic, species, habitat or ecosystem level.

The Convention of Biological Diversity (CBD) defines biodiversity as "the variability among living organisms from which all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the complexes of which they are part; this includes diversity within species, between species and of ecosystems themselves".

Depending on the type of study, an appropriate indicator of biodiversity should be used. In many instances species is generally considered to be the most useful measure of biodiversity assessments, at local, national, regional or global levels. Common measures of species biodiversity include the following:

Species richness
Species richness refers to the number or count of species occurring at a given area. It is one of the easiest and most straightforward methods of measuring biodiversity. Ideally the measure consists of a complete catalogue of all the species occurring in the area under consideration. However in practice this is very difficult to achieve, due to many species being very small, and thus being difficult to identify and count in situ. Additionally in many countries of the world a high proportion of smaller species have not been scientifically named. Indeed it is estimated that 80-95% of all living species have yet to be described. Species counts may reflect the biological richness of an identified area, however they do not reflect its uniqueness or indicate the area's importance in a wider context.

Endemism
A species may be defined as an endemic if it is confined entirely to that area, and occurs nowhere else. Endemism may be described in a geographical context, for example endemic to a mountain peak, desert basin, river system or lake or an island. The concept of endemism generally becomes more significant as the defined area reduces in size. Assessing the number of endemic species in an area is more difficult than counting the total number of species in a given area. The former activity cannot be carried out in isolation, as it relies on having a complete knowledge of the distribution of species involved. If a World Heritage Site, or an area that is nominated as such contains species that are endemic to it, then the site is likely to be of significance for that species. The occurrence of endemics could thus potentially add weight to the acceptance of a nomination, when used in conjunction with all other factors being considered.

Threatened species
A species may become threatened as a result of human activities and/or natural phenomena, the former affecting many more species. Anthropogenic threats include habitat loss, overexploitation for subsistence or commercial use and the introduction of exotic species (species that have not evolved naturally in that environment). These species are at significant risk of extinction due to the small size of remaining populations. The most threatened species are, therefore of the highest importance for the conservation of biodiversity.

This study has used species and ecosystem level indicators.

4.0 Assessment Methodology

In the 1998 pilot study, potential activities were identified that could be carried out using existing information that would help to review the current pattern of World Heritage sites, and assist in the guidance of future policy. A number of datasets were chosen help identify World Heritage sites of floral and faunal biodiversity importance. These were chosen based on their availability at WCMC, to ensure that a useful project could be completed within the timeframe available.

The site identification programmes and datasets that were used in the initial pilot study have been supplemented in this current study. Those datasets considered useful and subsequently used are the following:

Biogeography

- Udvardy Biogeographical Provinces
- Baileys Ecoregions

Prioritisation Programmes

- WWF Global 200 Ecoregions
- CI Global Biodiversity Hotspots
- Vavilov Centres of Plant Genetic Diversity (centres of crop origin and diversity)
- Centres of Plant Diversity (CPD)
- Endemic Bird Areas (EBAs)

Species

- Critically Endangered species
- Turtle nesting sites

Habitat

- Coral and mangrove distribution
- Wetlands of International Importance (Ramsar sites)

Using a Geographical Information System (GIS) all natural and mixed (cultural and natural) World Heritage properties (as of November 1999) were overlaid on top of the aforementioned datasets, allowing sites of biodiversity importance to be coarsely identified (Table 1). Additional tables and maps were derived from each individual dataset. Where appropriate cross-referencing using additional textual materials was also used, to provide greater value to

the tables and ensure that the study was as accurate and comprehensive as possible, thus aiding in the more specific identification of World Heritage sites of biodiversity importance.

Additionally this procedure has allowed for the identification of 'gaps' in World Heritage coverage, and thus is a coarse method of identifying priority areas that may be considered for future World Heritage nomination.

The text that follows provides a brief explanation of the indicators used, and their significance in determining biodiversity importance.

5.0 Current World Heritage Sites

The Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), was adopted by the General Conference of UNESCO in 1972. To date more than 150 countries have acceded to the Convention, making it one of the most universal international legal instruments for the protection of the cultural and natural heritage. The Convention's primary mission is to define and conserve the world's heritage, by drawing up a list of sites whose outstanding values should be preserved for all humanity and to ensure their protection through a closer co-operation among nations.

Sites inscribed onto the World Heritage List may be defined as of natural heritage value or cultural heritage value. Those properties that have natural and cultural values are described as mixed sites. The World Heritage list can be viewed on-line at:
http://www.unesco.org/whc/nwhc/pages/doc/main.htm

"Natural heritage" designates outstanding physical, biological, and geological features; habitats of threatened plants or animal species and areas of value on scientific or aesthetic grounds or from the point of view of conservation. "Cultural heritage" is a monument, group of buildings or site of historical, aesthetic, archaeological, scientific, ethnological or anthropological value. World Heritage Operational Guidelines recognise that biodiversity values can be present within sites inscribed under cultural criteria, as cultural landscapes. Such cultural landscapes are not addressed in this study.

Global maps illustrating the distribution of the 150 current natural and mixed World Heritage properties (as of November 1999), at each indicator level are included in this report. These maps are also accompanied by a list of sites (Annex 1).

5.1 Criterion (iv)

"Natural" properties submitted for inclusion in the World Heritage List are considered to be of outstanding universal value if they meet at least one of four selection criteria. In addition to being of outstanding universal value, sites will only be accepted on to the World Heritage List if they fulfil conditions of integrity as defined by 44(b)(i):

"…sites 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.).."

Sites inscribed under criterion 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"*. (See Annex 3 for additional criteria).

Current properties fulfilling criterion iv (95) have been identified in this study, as they are clearly of significant biodiversity value. These sites are mapped (Map 1) and listed (Table 2) including a summary justifying their inclusion under criterion iv.

5.2 World Heritage Sites in Danger

In accordance with Article 11.4 of the Convention, the World Heritage Committee "shall establish, keep up to date and publish, whenever circumstances shall so require, under the title of "list of World Heritage in Danger", a list of properties appearing on the World Heritage List for the conservation of which major operations are necessary and for which assistance has been requested under this Convention."

The list includes cultural and natural heritage properties that are threatened by serious and specific dangers such as the threat of disappearance caused by accelerated deterioration, large-scale public or private projects or rapid urban or tourist development projects; destruction caused by changes in the use or ownership of the land; major alterations due to unknown causes; abandonment for any reason whatsoever; the outbreak or the threat of an armed conflict or natural disasters.

A World Heritage property may be added to the "List of World Heritage in Danger" at any time. There are currently 18 natural and mixed World Heritage sites of significant biodiversity value, that are listed as "in danger" (Table 3). What significance does this have for biodiversity?

Mapped distribution of these properties (Map 2) illustrates that most sites "in danger" occur in Africa (11 out of 18), 82% of which are within the central part of the continent (Central African Republic, Democratic Republic of Congo, Niger), an area that has experienced periods of military conflict in recent times. This suggests that inscription onto the World Heritage List does not necessarily guarantee effective stewardship, ensure site integrity or safeguard biodiversity, considerations that should be noted when nominating potential sites.

5.3 Case Studies

The 1998 pilot study identified the possibility of developing case studies using information readily available from WCMC and IUCN, to demonstrate the biodiversity value of a wide range of different types of natural World Heritage site. A number of potential locations were suggested; the case studies selected are the following (Annex 2):

- Galápagos – demonstration of endemism, speciation and scientific contribution
- Bwindi – demonstration of a key threatened species
- Manú National Park – demonstration of high biodiversity

6.0 Biogeographical Coverage

Creating a hierarchical system of geographical areas that act as a framework for cataloguing species and ecological areas to be conserved, is essentially how the concept of biogeographical provinces originates. Paragraph 8 of the World Heritage Convention operational guidelines stipulates that natural properties should be classified according to biogeographical provinces (BPs). The use of BPs for the selection of such sites is built upon a biome by biome framework originating from M.D.F. Udvardy's "A Classification of the

Biogeographic Provinces of the World" (1975), a hierarchical biogeographic classification system for all terrestrial and freshwater areas of the world.

Areas of similar type can be found at similar latitudinal and continental locations. Biogeographical provinces and ecoregions have a great significance with regard to conservation and development of resources. By grouping areas with a structured classification, it is possible to make predictions about areas that fall in the same biogeographical area. This limits experimental conservation practises and increases 'early warning' signals. Knowledge of this enables the identification of under-represented provinces, and potentially the prioritisation of such areas for future World Heritage nomination.

It should also be recognised that if this approach is used incorrectly, it may run the risk of lowering the high standards demanded of nominated sites, by nominating lower-grade sites irrespective of their comparative international value. This is an issue that should be carefully considered by the World Heritage Committee and evaluators.

In this study Udvardy Biogeographical Provinces and Bailey's Ecoregions have been used as ecosystem indicators of biodiversity.

6.1 Udvardy Biogeographical Provinces

Using Udvardy's classification system, the world is divided into a hierarchy of Biogeographical Realms (the largest of biogeographical units that encompasses major climatic or physiographic zones) Biomes and Provinces. The following realms are recognised: Paleaearctic Realm, Nearctic Realm, Afrotropical Realm, Indomalayan Realm, Oceanian Realm, Australian Realm, Antarctican Realm, Neotropical Realm.

In this study World Heritage Sites of biodiversity importance have been classified according to the biogeographical realm (Table 1) to which they belong. A map and table (Map 3 & Table 4) identifying Udvardy's Biogeographic Provinces, and the location of natural and mixed World Heritage sites within them, also accompanies this report.

A map and table (Map 4 & Table 5) illustrating Biogeographical Provinces that do not currently contain World Heritage sites has also been produced. This may be used to identify potential sites for future inscription on the World Heritage List.

6.2 Bailey's Ecoregions

As with the Udvardy classification system, Bailey's ecoregions are large areas of a similar climatic state and vegetation type that break down into hierarchical layers.

This system divides the world into domains based on climatic similarity. Domains are further subdivided into divisions using climate type as a basis. Humid temperate domain can be further subdivided into the divisions of hot continental, prairie and subtropical. Divisions are divided into provinces with the use of climax plant formations. The prairie division can be split down to prairie parkland, prairie brush-land and tall-grass prairie.

Further details can be found in "*Ecoregions: The Ecosystem Geography of the oceans and Continents*" (Bailey, 1998).

7.0 Key Prioritisation Programme Areas

7.1 WWF Global 200 Ecoregions

In an attempt to provide a geographic focus for conservation work, the Worldwide Fund for Nature (WWF), has identified 200 sites, known as the 'Global 200'. Based on a landscape approach, these are biologically outstanding ecoregions of the Earth, which are most representative of the world's biodiversity and therefore most deserving of conservation attention. By concentrating its efforts in a limited number of these key ecoregions (80% of which fall within the priority biomes), WWF aims to be able to mount more comprehensive conservation programmes at an ecologically appropriate scale and thereby increase its long-term impact on saving the Earth's biodiversity.

Further details of the Global 200 are available on-line at:
http://www.panda.org/resources/publications/sustainability/priorities/priorities.htm

Maps identifying natural and mixed World Heritage sites within these ecoregions accompany this report (Map 5, 6 & 7). Ecoregions that do not currently contain World Heritage sites have also been mapped (Map 8).

7.2 Centres of Plant Diversity (CPD)

Concern about the rapid loss and degeneration of natural ecosystems and the urgent need to highlight the areas of prime botanical importance, hotspots, was the rational behind identifying Centres of Plant Diversity (CPD), a project undertaken by WWF and IUCN in 1994.

CPDs are concerned with first order sites that are of global botanical importance. Such areas are species rich, even if the number of species may not be accurately known, and/or is known to contain a large number of endemic species. CPDS must have one or both of these two characteristics.

The sites are also likely to contain:

- an important genepool of plants of value to humans or that are potentially useful
- a diverse range of habitat types
- a significant proportion of species adapted to special edaphic conditions
- or the site is threatened or under imminent threat of large-scale devastation

“Centres of Plant Diversity” provides accounts of almost 250 major sites for conservation of plant diversity globally. Information provided includes patterns of plant distributions, threats and conservation efforts. These sites have been identified using factors such as floristic statistics, alongside inputs from experts familiar with particular geographical areas.

These publications can be obtained from IUCN and the data (currently only for part of Volume 3: The Americas) can be accessed on the Internet at:
http://nmnhwww.si.edu/botany/projects/centres/menutemp.html

A map (Map 9) and list (Table 6), showing the distribution of CPDs containing World Heritage sites accompanies this report. CPDs without World Heritage sites are also identified (Table 7).

7.3 Conservation International – Biodiversity Hotspots

The distribution of biodiversity around the globe is uneven, with some areas having far greater concentrations of living creatures than others. In an attempt to highlight those biologically rich areas that are under the greatest threat of destruction, Conservation International (CI) has created the concept of "biodiversity hotspots". Twenty-five priority hotspots have been identified, representing a variety of global ecosystems. Selection of these hotspots was based on three criteria: the number of species present, the number of endemic species in an ecosystem and the degree of threat faced. Hotspot areas cover less than 2% of global terrestrial ecosystems, yet account for 44% of all vascular plant species and 38% of birds, mammals, reptiles and amphibian vertebrate groups.

A concept first created by British ecologist Norman Myers, the identification of hotspots is one method of prioritising and targeting conservation activities and investments to have the greatest impact. The concept has been used by Conservation International and others to develop conservation strategies and to focus conservation activities.

The 25 global biodiversity hotspots are located in:

Tropical Andes
Mediterranean region
Madagascar and Indian Ocean Islands
Mesoamerica
Caribbean
Indo-Burma
Brazil's Atlantic Forest Region
Philippines
South Africa's Cape Floristic Region
Mountains of south-central China
Sundaland (in Indonesia, Malaysia, and Brunei Darussalam)
Brazil's Cerrado
Southwestern Australia
Polynesia and Micronesia Island complex, including Hawaii
New Caledonia
Western Ghats of India and the island of Sri Lanka
Darién and Choco regions of Panama and Colombia, and Western Ecuador
California Floristic Province (extending from southern Oregon to the northern part of Baja California)
Africa's western cape/succulent karoo
New Zealand
Central Chile
Guinean forests of West Africa
Caucasus
Eastern Arc Mountains and coastal forests of Tanzania and Kenya
Wallacea (Eastern Indonesia)

A map showing the distribution of CI biodiversity hotspots containing World Heritage sites accompanies this report (Map 10). CI hotspots without World Heritage sites are also mapped (Map 11).

7.4 Vavilov Centres of Plant Genetic Diversity

Russian botanist N.I. Vavilov (1887 - 1943) was known for undertaking systematic plant collection, pioneering research, and for the conservation of crop diversity in the early 20th

century. However he became most widely associated with the identification of 12 major geographic regions, that contain highly diverse crop genetic resources. Known as "Vavilov Centres of Plant Genetic Diversity", these centres are believed to be where key cultural plants such as wheat, coffee and maize originate in wild form. They are found in geographical regions such as the Mediterranean, the Mexican highlands, Central China, and the Northern Andes, areas that are characterised by a long agricultural history, ecological diversity, mountainous terrain, cultural diversity, and a lack of heavy forest cover. These centres may or may not be located where a crop was first domesticated; wheat and barley were domesticated in south-west Asia, but a current centre of their varietal diversity is in Ethiopia; the tomato originated in north-west Peru, but the greatest domestic varietal diversity is in Mexico. Here these cultivated plants exist in wild form with a high level of genetic variation, and subsequently have a high adaptation and surviving ability.

As more and more land is used for agriculture and development, wild plants and Vavilov centres are increasingly threatened with extinction. Since cultural plants are based on very few variants, wild plants are essential to maintain and preserve the heritage of genetic variation.

A map (Map 12) and list (Table 8), showing the distribution of Vavilov Centres containing World Heritage sites accompanies this report. Vavilov Centres without World Heritage sites are also mapped (Map 13).

7.5 Endemic Bird Areas (EBAs)

Endemic Bird Areas (EBAs) are hotspots of restricted-range species with a breeding range less than 50,000 km^2. These species are under threat due to high vulnerability to pressures such as destruction of habitat, and therefore are of high importance to the conservation of biodiversity. An EBA encompasses the ranges (part or whole) of at least two endemic restricted-range birds. EBAs have been identified at a global level through the work of the Birdlife Biodiversity Project by Birdlife International.

All EBA's are given a priority rating of High, Urgent or Critical, depending on the biological value and current threat to the site. The biological importance of a site is measured by the number of restricted-range species occurring in an EBA and whether they are shared with other EBAs. Additionally, the size of the EBA is also a factor. The current threat level was assessed on the percentage of the restricted-range species in each EBA that are threatened and the categories of these species. The combination of the aforementioned criteria resulted in an overall priority rating.

Many natural World Heritage properties (71 of 150) were contained within EBAs, consequently it was thought useful to note the ranking system to allow further prioritisation of these sites.

Further details concerning EBAs can be found in "*Endemic Bird Areas of the World: Priorities for their conservation*" (Stattersfield *et al.*, 1998).

A map (Map 14) and list (Table 9), showing the distribution of EBAs containing World Heritage sites accompanies this report. EBAs without World Heritage sites are also mapped (Map 15) and listed (Tables 10 & 11).

8.0 Key Areas for Identified Species

8.1 Critically Endangered Taxa

The *1996 IUCN Red List of Threatened Animals* provides taxonomic, conservation status and distribution information on species that have been evaluated using the IUCN Red List categories. This system is designed to determine relative risk of extinction. Its main purpose is to catalogue the species that are regarded as threatened at a global level.

"Critically Endangered" taxa are those facing an extremely high risk of extinction in the wild, in the immediate future. These species have low population numbers and are often restricted to small geographical areas.

Using the UNEP-WCMC Species Conservation Database (SCD), critically endangered vertebrates were identified on a country-by-country basis. Map and literature based species distribution records were then used to determine which taxa fell within natural World Heritage properties.

The 1996 Red List can be obtained from IUCN, data can be accessed on-line at: http://www.wcmc.org.uk/species/animals/animal_redlist.html. It should be noted that since the analyses for this study were completed, an updated edition of this publication has been produced (late 2000). The *IUCN 2000 Red List of Threatened Species* can be accessed on-line at: http://www.redlist.org There have been some changes in category listing, for several species, however full analysis of this data is required to ensure this information is as up-to-date as possible. Given project time constraints re-analysis was not possible. It is recommended that any future studies up-date this information.

A map (Map 16) and list (Table 12), showing the distribution of "Critically Endangered" taxa contained within World Heritage sites (according to IUCN 1996 Red List data), accompanies this report.

8.2 Marine Turtles

Few reptiles are marine and the sea turtles are the most prominent of these species. This group is almost totally marine dwelling, only the females venture on to the beaches once every two to four years to lay clutches of eggs. It is generally recognised there are seven species, all are listed on the IUCN Red List and many populations have plummeted in recent years.

The Kemp's ridley (*Lepidochelys kempi*) is the least populous and listed as Critically Endangered. Around 3,000 nesting females all return to one beach, Rancho Nuevo in the Gulf of Mexico, to lay their eggs. This area does not contain any World Heritage sites.

The hawksbill (*Eretmochelys imbricata*) is also listed as Critically Endangered. Numbers of this species are low mainly, primarily due to commercial trade in tortoiseshell. Many World Heritage sites contain nesting sites such as Aldabra Atoll, Seychelles and Ujung Kulon, Indonesia. The species can be found at feeding grounds within some marine sites such as the Great Barrier Reef, Tubbataha Reef Marine Park, Philippines and Belize Barrier-Reef Reserve System.

The leatherback turtle (*Dermochelys coriacea*), the largest of the species which can measure around two metres in length, is listed as Endangered. This species is also found globally but many populations have plummeted in recent years (to an estimated global total of 34,000 in 1996), leaving the population in the Pacific Ocean close to extinction. The most important rookeries for this species are on the northern coast of French Guiana and Suriname. Serious

declines have affected populations on the Pacific coast of Mexico and Terengganu, Malaysia. There are currently no natural World Heritage sites in these areas.

The loggerhead turtle (*Caretta caretta*), which is also classed as Endangered can be found globally. It is estimated that around 30-40% of the world population nests on the south-east coast of the USA. Although no World Heritage sites are found here, one is present in the Everglades National Park, Florida that harbours also a nesting population of loggerheads.

The olive ridley turtle (*Lepidochelys olivacea*) is very similar in size and colour to the Kemp's ridley. Two of the main nesting sites are Escobilla, Mexico and along the beaches of Orissa, India. The Pacific population in Mexico has survived a huge loss of individuals but is making a recovery largely due to intensive conservation programmes. Those in Orissa are endangered by fishing practises of the nearby fleets. There are no World Heritage sites in these areas.

The green turtle (*Chelonia mydas*) is another species with a global distribution and listed as Endangered. Rookeries important for the species include Raine Island, Yemen and Sumatra. There are currently no World Heritage sites in these areas.

The flatback (*Natator depressus*) can be found in the coastal waters of Australia. The distribution of the species includes three World Heritage sites, the Great Barrier Reef, Shark Bay and Kakadu National Park. This is the species of least concern; it is listed as Vulnerable on the IUCN Red List.

There are no World Heritage sites covering the larger turtle nesting beaches. With the exception of the Kemp's Ridley, smaller rookeries can be found within many sites containing a beach element.

A map (Map 17) showing the distribution of marine turtle nesting sites within World Heritage properties (15) accompanies this report.

9.0 Key Habitat Areas

9.1 Ramsar sites

The Convention on Wetlands of International Importance (Ramsar Convention, 1971) is an intergovernmental treaty that aims to provide a framework for conservation and use of wetland sites of international importance. The mission statement declares:

"The Convention's mission is the conservation and wise use of wetlands by national action and international co-operation as a means to achieving sustainable development throughout the world."

The Convention has been ratified by 122 Parties. Currently 1,029 wetland sites are included on the Ramsar List of Wetlands of International Importance, totalling 78.2 million hectares. These sites are important for biodiversity, particularly as many provide habitat for a large variety of wetland birds. Key documents relating to the convention, its implementation and a list of current Ramsar sites can be accessed on-line at:
http://www.ramsar.org/index_key_docs.htm#conv

A list and description (Table 13), showing the distribution of Ramsar sites containing World Heritage properties accompanies this report.

9.2 Marine Biodiversity

Much of this report has focused on terrestrial ecosystems and measures of biodiversity, however the marine environment, which comprises 71% of the earth's surface and averages approximately 3.8km in depth, is also of significant biodiversity value. Although species diversity is low, there is a much greater range of phyla and classes than terrestrial equivalents, some with representatives found only within the marine environment. With approximately six out of ten people inhabiting coastal areas and the many oceans being exploited for food, energy, minerals and natural resources. The importance of this ecosystem cannot be underestimated.

The majority of World Heritage Sites are terrestrial based, however, a few, such as the Great Barrier Reef, Australia and the Belize Barrier-Reef Reserve System are entirely marine. Many sites have coastal borders and extensions into the oceans such as Río Plátano Biosphere Reserve, Honduras and Aldabra Atoll, Seychelles.

It should be noted that a workshop on marine World Heritage sites is planned for in 2001, co-ordinated by the WCPA Marine Theme Programme. This workshop is likely to greatly assist with the identification of future priorities for marine World Heritage nomination.

9.3 Coral Reefs and Mangroves

Marine sites containing coral and mangrove ecosystems are also in danger of degradation, primarily due to overexploitation.

Coral reefs have been compared to terrestrial rainforest ecosystems in the amount of diversity that exists and productivity. Coral itself is a living structure of the phylum Cnidaria and can be split into reef building and non-reef building groups. Coral reefs are the calcium carbonate structures produced by those reef-building corals. Geographical spread of these structures is essentially confined to between 30ºN and 30ºS. In recent years coral reefs have been declining mainly due to human impacts such as coastal development, dredging and destructive fishing practises including the uses of dynamite and cyanide.

The current marine World Heritage sites are based on large coral reef systems. The Great Barrier Reef and the Belize Barrier Reef are the two largest barrier reefs in the world. The reef and associated fauna is also protected at Tubbataha Reef Marine Park in the Philippines. The Philippines is host to around 1,500 species of fish and 400 species of coral and the Great Barrier Reef around 1,500 species of fish and 350 species of coral. Other sites include coral reefs within the boundaries of more terrestrial parks such as Aldabra Atoll in the Seychelles.

Coral reefs can be found globally but the reefs surrounding 6 countries account for more than 50% of the total cover. In Australia this is represented by the Great Barrier Reef and to a smaller extent, the Lord Howe Island Group. Important sites in Indonesia are represented by Ujung Kulon National Park and Komodo National Park. There are no natural World Heritage Sites in Papua New Guinea, Fiji or the Maldives.

Mangroves are shrubs and trees that live in the intertidal zone. These are represented by 69 taxa, which although have a wider distribution than the coral reefs, share similar latitudinal limits. They are generally restricted to 30ºN and 38ºS. Mangrove communities are less diverse than reef systems, but are unique in their ability to provide habitat for marine and terrestrial species alike. In addition, they are important in the stabilisation of shorelines and their protection from coastal storms. It has been estimated that over 50% of the world's mangrove

forests have already been lost, due to natural and human causes, such as the clearance trees for shrimp farms.

The most species rich mangrove communities are distributed in the Indo-Pacific. This diversity can be seen in World Heritage sites such as, Kakadu National Park, Komodo National Park, Indonesia. The Sundarbans, in India and Bangladesh are an important remaining site of mangrove diversity. Mangroves in these later areas are of differing quality to those in Kakadu National Park; they are largely within well-defined forests. There are no sites containing mangroves in Papua New Guinea, the Philippines or Malaysia.

A map (Map 18) illustrating the distribution of mangroves and coral reefs within World Heritage sites accompanies this report.

10. 0 Key Findings

There are currently 150 natural and mixed (cultural and natural) properties inscribed on the World Heritage list. Using these identified criteria, a coarse GIS analysis was undertaken to determine those natural and mixed World Heritage sites that are of particular importance for biodiversity. Table 1 summarises this information on a site-by-site basis. Further breakdown of this information at criteria level is contained in the "Tables" section of this report.

In summary a total of 141 sites have been identified as being of particular importance for biodiversity in this study. These are represented within 64 countries and extend over 142 million ha of protected areas.

- Criterion (iv) – 95 sites

- Udvardy Biogeographical Provinces

96 provinces currently contain 1 or more natural or mixed World Heritage sites. Provinces best represented include the following:

Mediterranean Sclerophyll – 9 sites
Oriental Deciduous Forest – 7 sites
East African Woodland/Savannah – 7 sites
West African Woodland/Savannah – 6 sites

- WWF Global 200

104 sites located in terrestrial ecoregions
35 sites located in marine ecoregions
54 located in freshwater ecoregions

It should be noted that some World Heritage sites occur in more than one of these ecoregions

- Centre of Plant Diversity - 74 sites

- Conservation International biodiversity hotspot – 57 sites

- Vavilov Centre of Plant Genetic Diversity - 40

- Endemic Bird Areas - 71 sites (ordered by a priority rating dependent on a combination of biological importance and current threat level).

- Contains "critically endangered" vertebrate taxa – 60 sites

- Ramsar site – 16 sites (note: Ramsar sites do also fall within cultural World Heritage sites e.g. Hortobagy (Hungary) and Sintra (Portugal))

- An area of marine importance (classed as one indicator):
  Contains coral reefs – 14 sites
  Contains mangroves – 18 sites
  Contains turtle nesting beaches – 15 sites

In total 6 out of 141 sites contained 8 of the 9 criteria listed above. No natural or mixed World Heritage properties contained all 9 of these indicators. Additionally, all sites were located in within at least one of the key global prioritisation tools. This is not altogether surprising given the broad coverage many of these programmes exhibit.

The use of Biogeographical and key global prioritisation tools (such as Udvardy Biogeographical Provinces and WWF Ecoregions), suggest that terrestrial ecosystems are better represented within the World Heritage List as compared to marine and wetland environments.

11. 0 Possible Future World Heritage Sites

Using the indicators that have been used to identify natural and mixed World Heritage properties of biodiversity importance, "gaps" in coverage have been identified. At an indicator-by-indicator level these can be summarised as:

- **Centres of Plant Diversity**
  421 Regional CPDs have been identified as not currently containing World Heritage Sites (Table 7).

- **Conservation International biodiversity hotspots**
  5 hotspot areas currently contain no natural World Heritage Sites. These are:
  New Caledonia
  Succulent Karoo
  Brazilian Cerrado
  Central Chile
  Cape Floristic Region

  It should be noted that the Cape Floristic Region will be reconsidered for inscription onto the World Heritage List after 2000.

- **Vavilov Centres of Plant Genetic Diversity**
  There are 4 principal areas currently containing no natural World Heritage Sites. These areas do not have names, however the countries in which they occur and the principal crops originating in these areas are summarised below:

  Chile - potato
  Brazil – cassava, cocoa, yam
  Turkey Iraq Iran – barley, wheat, rye, cabbage
  Mexico Guatemala – beans, cotton seed, maize, cassava

- **Endemic Bird Areas**
  153 Endemic Bird Areas have been identified as not containing World Heritage Sites (Table 10). These sites are ranked according to priority. 56 EBAs are considered to be Critical, and thus could have even greater priority of future nomination (Table 11).

Using the same approach as that used to determine World Heritage sites of particular importance for biodiversity, a method of identifying existing protected areas that are of significant biodiversity value and thus could be nominated for future inclusion in the World Heritage list, was undertaken. Protected areas were ranked according to the number of biologically important indicator categories they fell within, in an attempt to prioritise possible future sites. A total of 93 sites were identified (Table 14).

Criteria used included: WWF Global 200 ecoregions, Centres of Plant Diversity, Vavilov centres, the occurrence of "Critically Endangered" vertebrate taxa, or sites of marine importance. Sites with the highest rank (5) are shown in Table 12. Interestingly, Mount Kinabalu National Park (Malaysia) was nominated for inscription onto the list in January 2000.

In an attempt to take this approach a step further, a coarse GIS analysis was undertaken to identify existing Ramsar sites, which are not currently World Heritage sites and are considered important for biodiversity (Table 15). These sites are biologically significant and are well established protected areas, they could therefore potentially be considered even more appropriate for future World Heritage nomination.

To prioritise these sites still further they were ranked according to the number of biodiversity indicator categories they occurred in. The two sites with the highest ranking (falling within 4 out of 6 categories) were:

- Cobourg Peninsula (Australia)
- Ord River floodplain (Australia)

These two sites are suggestions of future nominations that could be considered. It is recognised that formal assessment procedures and collaboration with national biodiversity institutes and other organisations and experts would need to be carried out. This is required to ensure site validity and integrity. The proposal of these two sites should be seen as an illustrative example of how such a methodology could be applied.

12.0 Limitations of the Study

This study should be seen as a preliminary overview or example of a methodology that could be applied to identify future natural World Heritage sites. It should not be used as a complete basis for decision making, rather should act as a support tool, that may be useful for evaluators and the World Heritage Committee. Biodiversity is an extremely broad subject area that should not be considered in isolation.

It is recognised that the use of broad global ecosystem datasets such as WWF Global 200, CPD, CI Biodiversity Hotspots and Vavilov Centres is a relatively broadbrush approach to take, and that such datasets may also have limitations. However, including other more specific biodiversity criteria has added additional strength and depth to the identification of World Heritage sites of significant biodiversity value.

It is also acknowledged that the methodology used for the analysis is relatively coarse, however it is one method of identifying and prioritising sites of high biodiversity value, that are or could merit inscription on the World Heritage List.

Cross checking the occurrence of biologically important and threatened species within existing World Heritage sites with management authorities and field staff, would enable

greater accuracy in determining whether the approach used is indeed valid. However this was not within the scope of the project.

13.0 Conclusions and Recommendations for Future Work

This global overview of World Heritage sites that are of particular importance for biodiversity suggests that while terrestrial ecosystems are well represented, wetland and marine ecosystems are not. It should be highlighted that the study is a starting point / approach for further work, especially for a more comprehensive identification of potential marine and wetland sites, that may merit future inscription to the World Heritage List. Future work should proceed from a scientific basis, if possible.

Proposed activities for a future report include:

- The integration of Conservation International (CI) biodiversity 'hotspot' data, to aid prioritisation of potential natural World Heritage sites still further.

- The integration of detailed information regarding the distribution of natural World Heritage properties, within WWF Global 200 Ecoregions. This would highlight those WWF Global 200 Ecoregions that are currently not represented by World Heritage properties and aid in the process of prioritising future nominations.

- Use new IUCN 2000 Red List data for threatened species analysis.

- The extension of the threatened taxa dataset to those species considered "Endangered".

- Further analysis of the distribution of current natural and mixed World Heritage sites by Udvardy Biogeographical Province and Bailey's Ecoregion, including their proportional representation (km^2 or ha).

- Additional case studies illustrating World Heritage sites of specific biodiversity value. Existing and future case studies could also be accompanied by maps of each site.

- Provide an updated, detailed table on biodiversity values of all World Heritage properties on a site-by-site basis.

- The identification of which types of biodiversity richness are currently missing from World Heritage sites.

- The provision of additional text and analysis to be made on the use of marine data, as a separate document.

There is great scope for the strengthening and development of this work. Continuing input from the wider scientific and decision-making community will greatly aid in this process, and provide a more rigorous approach to World Heritage site nominations.

REFERENCES

Anon. 1994. *The Bwindi-Impenetrable National Park, Uganda.* Gorilla Conservation News 8: 19-20

Arinaitwe, H., Pomeroy, D., Tushabe, H. 2000. *The State of Uganda's Biodiversity.* National Biodiversity Data Bank.

Bailey, R.G. 1983. Delineation of Ecosystem Regions. *Environmental Management* 7: 365-373

Bailey, R.G. 1998. *Ecoregions.* Springer-Verlag, New York. 176+ix

Bailey, R.G and Hogg, H.C. 1986. A World Ecoregions Map for Resource Reporting. *Environmental Conservation* 13: 195-202

Elder, D., Pernetta, J. (Eds). 1991. *Oceans*. Mitchell Beazley.

European Commission Phare Programme. 1999. *Conservation and Sustainable Management of Forests in Central and Eastern European Countries.* European Commission Phare Programme, Brussels. 79pp

Esping, L.E. 1998. *Potential Natural World Heritage Sites in Europe.* Stockholm, Sweden. 78pp

Gaston, K.J. (Ed). 1996. Biodiversity: A Biology of Numbers and Difference. Blackwell Science, Oxford. 396pp

Groombridge, B. and Jenkins, M.D. 2000. *Global Biodiversity: Earth's living resources in the 21st century*. World Conservation Press, Cambridge, UK.

Hilton-Taylor, C. (Compiler). 2000. *2000 IUCN Red List of Threatened Species.* IUCN, Gland, Switzerland and Cambridge, UK. 61 pp.

Hagedorn, M and Keller, C. 1997. Species Diversity of Gymnotiform Fishes in Manú Bioreserve, Pakitza, Perú. In: Wilson, D and Sandoval, A. (Eds) *Biodiversity of Manú Park*.

IUCN. 1996. *1996 IUCN Red List of Threatened Animals.* IUCN, Gland, Switzerland.

IUCN. 1997. *A Global Overview of Forest Protected Areas on the World Heritage List.* Gland, Switzerland.

Saavedra, C and Suarez de Freitas, G. 1989. *Manú – two decades later*. WWF Report June/July. WWF, Gland, Switzerland. 6-9pp

Serra-Vega, J. 1990. *La Reserva de la Biosfera del Manú* . Unpublished.

Spalding, M.D., Blasco, F. and Field, C.D. (Eds). 1997. *World Mangrove Atlas.* The International Society for Mangrove Ecosystems, Okinawa, Japan. 178pp

Stattersfield, A.J., Crosby, M.J., Long, A.J. and D.L.Wege. 1998. *Endemic Bird Areas of the World: Priorities for their conservation.* BirdLife Conservation Series No. 7. BirdLife International, Cambridge, UK. 846pp

World Conservation Monitoring Centre. 1992. *Global Biodiversity: Status of the Earth's living resources. Chapman & Hall, London*. 594pp

World Conservation Monitoring Centre. (Comp.), Groombridge, B. (Ed). 1994. *Biodiversity Data Sourcebook.* World Conservation Press, Cambridge, UK. 155pp

World Conservation Monitoring Centre. 1996. The Diversity of the Seas: a regional approach. Groombridge, B. and Jenkins, M.D. (Eds). World Conservation Press, Cambridge, UK. 132pp.

World Conservation Monitoring Centre. 2000. *Global Biodiversity - Earth's Living Resources in the 21st century*. By: Groombridge, B. and Jenkins, M.D. World Conservation Press, Cambridge, UK.

WCMC/IUCN. 1998. *A Global Overview of Protected Areas on the World Heritage List of Particular Importance for Biodiversity.*

World Heritage Website: http://www.unesco.org/whc/nwhc/pages/sites/main.htm

WWF and IUCN. 1994. *Centres of Plant Diversity. A Guide and Strategy for their Conservation.* 3 volumes. IUCN Publications Unit, Cambridge, UK.

Udvardy, M.D.F. 1975. *A Classification of the Biogeographical Provinces of the World.* IUCN Occasional Paper No. 18. IUCN, Morges, Switzerland. 41pp.

TABLES

The tables that follow provide a summary of World Heritage sites of particular biodiversity importance.

Table 1. Natural and mixed World Heritage sites of particular importance for biodiversity

Key to table

Code	Description
WWF	WWF Global 200 Ecoregion
CPD	Centre of Plant Diversity
CI	Conservation International Biodiversity Hotspot
EBA	Endemic Bird Area
IV	Listed under natural criterion iv on the WH List
Vavilov	Falls within one of the 12 Vavilov centres of plant genetic diversity

Code	Description
No. of Critically Endangered Taxa	Critically endangered on the IUCN Red List (1996)
Ramsar	Ramsar Convention site
Coral	Coral reef site
Mangrove	Mangroves
Turtle	Sea turtle nesting site

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turtl
Nearctic	Gros Morne National Park	Canada	1987	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Nearctic	Miguasha Park	Canada	1999	YES	YES	NO	NO	NO	NO	0	NO	NO	NO	NO
Nearctic	Nahanni National Park	Canada	1978	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Nearctic	Wood Buffalo National Park	Canada	1983	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Nearctic	Tatshenshini-Alsek/Kluane/Wrangell-St Elias/Glacier Bay	Canada/USA	1979	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Nearctic	Carlsbad Caverns	USA	1995	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Nearctic	Everglades National Park	USA	1979	YES	YES	YES	NO	YES	NO	1	YES	YES	YES	YES
Nearctic	Grand Canyon National Park	USA	1979	YES	NO	NO	NO	YES	NO	1	NO	NO	NO	NO
Nearctic	Great Smoky Mountains National Park	USA	1983	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Nearctic	Mammoth Cave National Park	USA	1981	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turtl
Nearctic	Redwood National Park	USA	1980	YES	YES	YES	YES	NO	NO	0	NO	NO	NO	NO
Nearctic	Yellowstone	USA	1979	NO	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Nearctic	Yosemite National Park	USA	1984	YES	YES	YES	NO	NO	NO	0	NO	NO	NO	NO
Palearctic	Pirin National Park	Bulgaria	1983	YES	YES	NO	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Srebarna Nature Reserve	Bulgaria	1983	NO	NO	NO	NO	YES	NO	0	YES	NO	NO	NO
Palearctic	Huanglong Scenic and Historic Interest Area	China	1992	YES	YES	YES	YES	NO	YES	0	NO	NO	NO	NO
Palearctic	Jiuzhaigou Valley Scenic and Historic Interest Area	China	1992	YES	YES	YES	YES	NO	YES	0	NO	NO	NO	NO
Palearctic	Mount Emei and Leshan Giant Buddha	China	1996	YES	NO	NO	YES	YES	YES	1	NO	NO	NO	NO
Palearctic	Mount Huangshan	China	1990	YES	NO	NO	YES	YES	YES	0	NO	NO	NO	NO
Palearctic	Mount Taishan	China	1987	NO	NO	NO	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Mount Wyui	China	1999	YES	YES	NO	NO	YES	YES	1	NO	NO	NO	NO
Palearctic	Wulingyuan Scenic and Historic Interest Area	China	1992	YES	NO	NO	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Plitvice Lakes National Park	Croatia	1979	YES	NO	NO	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Cape Girolata, Cape Porto & Scandola Nature Reserves in Corsica	France	1983	YES	YES	YES	NO	YES	YES	0	NO	NO	NO	NO
Palearctic	Pyrénées - Mont Perdu	France/Spain	1997	YES	YES	NO	NO	NO	YES	1	NO	NO	NO	NO
Palearctic	Ohrid Region with its Cultural and Historical Aspect and its Natural Environment	FYRM	1979	YES	NO	NO	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Meteora	Greece	1988	YES	NO	YES	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Mount Athos	Greece	1988	YES	NO	YES	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Yakushima	Japan	1993	YES	YES	NO	YES	NO	NO	0	NO	NO	NO	YES
Palearctic	Royal Chitwan National Park	Nepal	1984	YES	NO	YES	NO	YES	YES	0	NO	NO	NO	NO

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turtl
Palearctic	Laurisilva of Madeira	Portugal	1999	YES	YES	YES	YES	YES	NO	2	NO	NO	NO	NO
Palearctic	Danube Delta	Romania	1991	YES	NO	NO	NO	YES	NO	2	YES	NO	NO	NO
Palearctic	Golden Mountains of Altai	Russia	1998	YES	YES	NO	NO	YES	NO	0	NO	NO	NO	NO
Palearctic	Lake Baikal	Russia	1996	YES	YES	NO	NO	YES	NO	0	YES	NO	NO	NO
Palearctic	Virgin Komi Forests	Russia	1995	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Palearctic	Volcanoes of Kamchatka	Russia	1996	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Palearctic	Western Caucasus	Russia	1999	YES	YES	YES	NO	YES	NO	0	NO	NO	NO	NO
Palearctic	Caves of Aggtelek and Slovak Karst	Slovakia	1995	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Palearctic	Skocjan Caves	Slovenia	1986	YES	NO	NO	NO	NO	YES	0	YES	NO	NO	NO
Palearctic	Doñana National Park	Spain	1994	YES	YES	YES	NO	YES	YES	0	YES	NO	NO	NO
Palearctic	Garajonay National Park	Spain	1986	YES	YES	YES	YES	NO	NO	0	NO	NO	NO	NO
Palearctic	Ibiza, Biodiversity and Culture	Spain	1999	YES	YES	YES	NO	YES	YES	0	NO	NO	NO	NO
Palearctic	Arabian Oryx Sanctuary	Sultanate of Oman	1994	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Palearctic	The Lapponian Area	Sweden	1996	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Palearctic	Ichkeul National Park	Tunisia	1980	YES	NO	YES	NO	YES	YES	1	YES	NO	NO	NO
Palearctic	Göreme National Park and the Rock Sites of Cappodicia	Turkey	1985	NO	YES	NO	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Hierapolis-Pamukkale	Turkey	1988	YES	YES	YES	NO	NO	YES	0	NO	NO	NO	NO
Palearctic	Giant's Causeway and Causeway Coast	UK	1986	YES	NO	NO	NO	NO	NO	1	NO	NO	NO	NO
Palearctic	Gough Island Wildlife Reserve	UK	1995	NO	NO	NO	YES	YES	NO	0	NO	NO	NO	NO
Palearctic	St. Kilda	UK	1986	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Palearctic	Durmitor National Park	Yugoslavia	1980	YES	NO	NO	NO	YES	YES	0	NO	NO	NO	NO
Afrotropical	Dja Faunal Reserve	Cameroon	1984	YES	YES	NO	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Parc National de Manovo-Gounda-St Floris	Central African Republic	1988	YES	NO	NO	NO	YES	NO	1	NO	NO	NO	NO

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turt
Afrotropical	Taï National Park	Côte d'Ivoire	1982	YES	YES	YES	YES	YES	NO	0	NO	NO	NO	NO
Afrotropical	Mount Nimba Reserves	Côte d'Ivoire /Guinea	1982	YES	YES	YES	YES	YES	NO	0	NO	NO	NO	NO
Afrotropical	Garamba National Park	Dem. Rep. of Congo	1980	YES	YES	NO	NO	YES	NO	1	NO	NO	NO	NO
Afrotropical	Kahuzi-Biega National Park	Dem. Rep. of Congo	1980	YES	YES	NO	YES	YES	NO	0	NO	NO	NO	NO
Afrotropical	Okapi Faunal Reserve	Dem. Rep. of Congo	1996	YES	NO	NO	YES	YES	NO	0	NO	NO	NO	NO
Afrotropical	Salonga National Park	Dem. Rep. of Congo	1984	YES	YES	NO	NO	NO	NO	0	NO	NO	NO	NO
Afrotropical	Virunga National Park	Dem. Rep. of Congo	1979	YES	YES	NO	YES	YES	NO	1	YES	NO	NO	NO
Afrotropical	Simien National Park	Ethiopia	1978	YES	YES	NO	YES	YES	NO	2	NO	NO	NO	NO
Afrotropical	Mount Nimba Reserves (Guinea section)	Guinea	1981	YES	YES	YES	YES	YES	NO	0	NO	NO	NO	NO
Afrotropical	Mount Kenya National Park/Natural Forest	Kenya	1997	YES	YES	NO	YES	NO	YES	1	NO	NO	NO	NO
Afrotropical	Sibiloi/Central Island National Parks	Kenya	1997	YES	NO	NO	NO	YES	YES	0	NO	NO	NO	NO
Afrotropical	Tsingy de Bemaraha Strict Nature Reserve	Madagascar	1990	YES	YES	YES	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Lake Malawi National Park	Malawi	1984	YES	NO	NO	NO	YES	NO	0	NO	NO	NO	NO
Afrotropical	Banc d'Arguin National Park	Mauritania	1989	YES	NO	NO	NO	YES	NO	2	YES	NO	YES	YES
Afrotropical	Air and Ténéré Natural Reserves	Niger	1991	NO	YES	NO	NO	YES	NO	0	No	NO	NO	NO
Afrotropical	'W' National Park	Niger	1996	NO	NO	NO	NO	YES	NO	1	YES	NO	NO	NO
Afrotropical	Djoudj National Bird Sanctuary	Senegal	1981	NO	NO	NO	NO	NO	NO	0	YES	NO	NO	NO
Afrotropical	Niokolo-Koba National Park	Senegal	1981	NO	NO	NO	NO	YES	NO	0	NO	NO	NO	NO

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turt
Afrotropical	Vallée de Mai Nature Reserve	Seychelles	1983	NO	YES	YES	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Greater St. Lucia Wetland Park	South Africa	1999	YES	YES	NO	YES	YES	NO	1	NO	YES	YES	YES
Afrotropical	Kilimanjaro National Park	Tanzania	1989	YES	YES	NO	YES	NO	NO	1	NO	NO	NO	NO
Afrotropical	Ngorongoro Conservation Area	Tanzania	1979	YES	NO	NO	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Selous Game Reserve	Tanzania	1982	YES	NO	YES	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Serengeti National Park	Tanzania	1981	YES	NO	NO	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Bwindi Impenetrable National Park	Uganda	1994	YES	YES	NO	YES	YES	NO	1	NO	NO	NO	NO
Afrotropical	Rwenzori Mountains National Park	Uganda	1994	YES	YES	NO	YES	YES	NO	1	YES	NO	NO	NO
Afrotropical	Mana Pools National Park, Sapi and Chewore Safari Areas	Zimbabwe	1984	YES	NO	NO	NO	YES	NO	1	NO	NO	NO	NO
Afrotropical	Victoria Falls/Mosi-oa-Tunya	Zimbabwe/ Zambia	1989	YES	NO	NO	NO	NO	NO	0	NO	NO	NO	NO
Indomalayan	The Sundarbans	Bangladesh	1997	YES	YES	NO	NO	YES	YES	1	YES	NO	YES	YES
Indomalayan	Kaziranga National Park	India	1985	NO	NO	YES	YES	YES	YES	1	NO	NO	NO	NO
Indomalayan	Keoladeo National Park	India	1985	NO	NO	NO	NO	YES	YES	0	NO	NO	NO	NO
Indomalayan	Manas Wildlife Sanctuary	India	1985	NO	NO	YES	YES	YES	YES	1	NO	NO	NO	NO
Indomalayan	Nanda Devi National Park	India	1988	NO	YES	NO	YES	YES	YES	0	NO	NO	NO	NO
Indomalayan	Sundarbans National Park	India	1987	YES	NO	NO	NO	YES	YES	1	NO	NO	YES	NO
Indomalayan	Komodo National Park	Indonesia	1991	YES	NO	YES	YES	YES	YES	1	NO	YES	NO	YES
Indomalayan	Lorentz National Park	Indonesia	1999	YES	YES	NO	YES	YES	YES	0	NO	NO	YES	NO
Indomalayan	Ujung Kulon National Park	Indonesia	1991	YES	YES	YES	YES	YES	YES	3	NO	NO	YES	YES
Indomalayan	Puerto-Princesa Subterranean River National Park	Philippines	1999	YES	YES	YES	YES	YES	NO	1	NO	NO	NO	NO
Indomalayan	Tubbataha Reef Marine Park	Philippines	1993	YES	NO	YES	NO	YES	NO	1	YES	NO	NO	NO
Indomalayan	Thung Yai - Huai Kha Kaeng Wildlife Sanctuaries	Thailand	1991	YES	YES	YES	NO	YES	YES	1	NO	NO	NO	NO
Indomalayan	Ha Long Bay	Viet Nam	1994	YES	NO	YES	NO	NO	YES	0	NO	NO	NO	NO

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turt
Oceania	Lord Howe Island Group	Australia	1982	YES	YES	NO	YES	YES	NO	1	NO	YES	NO	NO
Oceania	East Rennell	Solomon Islands	1998	YES	NO	NO	YES	NO	NO	0	NO	YES	NO	NO
Oceania	Henderson Island	Pitcairn Islands/UK	1988	NO	NO	YES	YES	YES	NO	0	NO	YES	NO	NO
Oceania	Hawaii Volcanoes National Park	USA	1987	YES	NO	YES	YES	NO	NO	1	NO	NO	NO	YES
Australian	Australian Fossil Mammal Sites	Australia	1994	YES	YES	NO	YES	NO	NO	0	NO	NO	NO	NO
Australian	Central Eastern Australian Rainforest	Australia	1986	YES	YES	NO	YES	YES	NO	0	NO	NO	NO	NO
Australian	Fraser Island	Australia	1992	YES	NO	NO	YES	NO	NO	0	NO	NO	YES	NO
Australian	Great Barrier Reef	Australia	1981	YES	YES	NO	NO	YES	NO	1	NO	YES	YES	YES
Australian	Kakadu National Park	Australia	1981	YES	YES	NO	YES	YES	NO	1	YES	NO	YES	NO
Australian	Macquarie Island	Australia	1997	YES	YES	NO	NO	NO	NO	0	NO	NO	NO	NO
Australian	Shark Bay	Australia	1991	YES	YES	YES	NO	YES	NO	1	NO	YES	YES	YES
Australian	Tasmanian Wilderness	Australia	1982	YES	YES	NO	YES	YES	NO	1	NO	NO	NO	NO
Australian	Uluru-Kata Tjuta National Park	Australia	1987	YES	YES	NO	NO	NO	NO	0	NO	NO	NO	NO
Australian	Wet Tropics of Queensland	Australia	1988	YES	YES	NO	YES	YES	NO	4	NO	YES	YES	NO
Australian	Willandra Lakes Region	Australia	1981	YES	NO	NO	YES	NO	NO	0	NO	NO	NO	NO
Antarctic	New Zealand Sub-Antarctic Islands	New Zealand	1998	YES	YES	NO	YES	YES	NO	0	NO	NO	NO	NO
Antarctic	Te Wahipounamu-South West New Zealand	New Zealand	1990	YES	NO	YES	YES	YES	NO	1	NO	NO	NO	NO
Antarctic	Tongariro National Park	New Zealand	1988	YES	NO	YES	YES	NO	NO	0	NO	NO	NO	NO

Realm	World Heritage Site	Country	Year	WWF	CPD	CI	EBA	IV	Vavilov	No. of Critically Endangered Taxa	Ramsar	Coral	Mangrove	Turt
Neotropical	Los Glaciares	Argentina	1981	YES	YES	NO	YES	NO	NO	0	NO	NO	NO	NO
Neotropical	Península Valdés	Argentina	1999	YES	YES	NO	NO	YES	NO	0	NO	NO	NO	NO
Neotropical	Belize Barrier Reef Reserve system	Belize	1996	YES	NO	YES	NO	YES	NO	1	NO	YES	YES	YES
Neotropical	Discovery Coast Atlantic Forest Reserves	Brazil	1999	YES	YES	YES	YES	YES	NO	4	NO	NO	NO	NO
Neotropical	Iguaçu National Park	Brazil	1984	YES	NO	YES	YES	YES	NO	2	NO	NO	NO	NO
Neotropical	Southeast Atlantic Forest Reserves	Brazil	1999	YES	YES	YES	YES	YES	NO	1	NO	NO	NO	NO
Neotropical	Los Katios National Park	Colombia	1994	YES	YES	YES	YES	YES	NO	3	NO	NO	NO	NO
Neotropical	Area de Conservación Guanacaste	Costa Rica	1999	YES	NO	YES	YES	NO	NO	1	NO	YES	NO	NO
Neotropical	Cocos Island National Park	Costa Rica	1997	NO	NO	NO	YES	YES	NO	1	YES	YES	NO	NO
Neotropical	Talamanca Range-La Amistad Reserves	Costa Rica/Panama	1983	YES	YES	YES	YES	YES	NO	2	NO	NO	NO	NO
Neotropical	Desembarco del Granma National Park	Cuba	1999	YES	YES	YES	YES	NO	NO	1	NO	YES	YES	NO
Neotropical	Morne Trois Pitons National Park	Dominica	1997	NO	YES	YES	YES	YES	NO	0	NO	NO	NO	NO
Neotropical	Galápagos Islands	Ecuador	1978	YES	NO	NO	YES	YES	NO	4	NO	YES	NO	YES
Neotropical	Sangay National Park	Ecuador	1983	YES	YES	YES	YES	YES	NO	0	NO	NO	NO	NO
Neotropical	Tikal National Park	Guatamala	1979	NO	YES	YES	NO	YES	NO	0	NO	NO	NO	NO
Neotropical	Río Plátano Biosphere Reserve	Honduras	1982	YES	YES	YES	YES	YES	NO	2	NO	NO	YES	YES
Neotropical	Sian Ka'an	Mexico	1987	YES	NO	YES	NO	YES	NO	1	NO	NO	YES	YES
Neotropical	Whale Sanctuary of El Vizcaino	Mexico	1993	YES	YES	NO	NO	YES	NO	3	NO	NO	YES	NO
Neotropical	Darién National Park	Panama	1981	YES	YES	YES	YES	YES	NO	3	NO	NO	NO	NO
Neotropical	Historic Sanctuary of Macchu Picchu	Peru	1983	YES	YES	YES	YES	NO	YES	0	NO	NO	NO	NO
Neotropical	Huascarán National Park	Peru	1985	YES	YES	YES	YES	NO	YES	0	NO	NO	NO	NO
Neotropical	Río Abiseo National Park	Peru	1990	YES	YES	YES	YES	YES	YES	1	NO	NO	NO	NO
Neotropical	Canaima National Park	Venezuela	1994	YES	YES	NO	YES	YES	NO	0	NO	NO	NO	NO

Table 2. Natural World Heritage Sites listed under Criterion iv

(important and significant natuarl habitats for in-situ conservation of biological diversity)

Site	Country	Description
Península Valdés	Argentina	PenínsulaValdés contains very important and significant natural habitats for the in-situ conservation of several threatened species of outstanding universal value. It is a site of global significance for the conservation of marine mammals. It shelters an important breeding population of the endangered southern right whale as well as breeding populations of southern elephant seals and southern sea lions.
Central Eastern Australian Rainforest	Australia	This site, comprising several protected areas, is located predominantly along the Great Escarpment on Australia's East Coast. The outstanding geological features displayed around shield volcanic craters and the high number of rare and threatened rainforest species are of international significance for science and conservation.
Great Barrier Reef	Australia	A site of remarkable variety and beauty on the northeastern coast of Australia, the Great Barrier Reef contains the world's largest collection of coral reefs, with 400 types of coral, 1,500 species of fish, and 4,000 types of mollusc. It also holds great scientific interest, as the habitat of species, such as the dugong and the green turtle, which are threatened with extinction.
Kakadu	Australia	A unique example of a complex of ecosystems, including tidal flats, floodplains, lowlands and plateau, providing habitat for a wide range of rare or endemic species of plants and animals.
Lord Howe Island Group	Australia	A remarkable example of isolated oceanic islands, born of volcanic activity more than 2,000 metres under the sea. These islands boast a spectacular topography and protect numerous endemic species, especially birds.
Shark Bay, Western Australia	Australia	Shark Bay, with its islands and surrounding land has three exceptional natural features: its vast marine herbariums, which are the largest (4,800 square kilometres) and richest in the world, its dugong ('sea cow') population, and its stromatolites (colonies of algae which grow up alongside the mounds are among the oldest forms of life on earth). Shark Bay also shelters five species of endangered mammals.
Tasmanian Wilderness	Australia	Covering an area of over 1 million ha, the site constitutes one of the last expanses of temperate rainforest in the world.
Wet tropics of Queensland	Australia	The area, located in the far northeast of Australia, is made up largely of tropical humid forests. This biotope offers a particularly extensive and varied array of plants, as well as marsupials and singing birds, along with other rare and endangered animals and plant species.
The Sundarbans	Bangladesh	The Sundarbans mangrove forest, one of the largest such forests in the world, is formed at the delta of the Ganges, Bramaputra and Meghna rivers on the Bay of Bengal. The site is composed of three sanctuaries (Sundarbans West, South, and East) with a total area of 140,000 hectares. The three sanctuaries, intersected by a complex network of tidal waterways, mud flats and small islands of salt-tolerant mangrove forests, present an excellent example of on- going ecological processes, displaying the effects of monsoon rains, delta formation, tidal influence and plant colonization. The area is known for its wide range of fauna including 260 bird species, the Royal Bengal tiger and other threatened species, such as the estuarine crocodile and the Indian python.

Site	Country	Description
Belize Barrier-Reef Reserve System	Belize	The coastal area of Belize is an outstanding natural system consisting of the largest barrier reef in the northern hemisphere, offshore atolls, several hundred sand cays, mangrove forests, coastal lagoons, and estuaries. The seven sites included in this nomination illustrate the evolutionary history of reef development, provide spectacular underwater scenery, and are a significant habitat for threatened species, including marine turtles, manatee, and the American marine crocodile.
Discovery Coast Atlantic Forest Reserves	Brazil	The site contains a distinct range of species with a high level of endemism and reveals a pattern of evolution of great interest to science and of importance for conservation. The site displays the biological richness and evolutionary history of the few remaining areas of Atlantic forest of north-east Brazil. The fact that only these few scattered remnants of a once vast forest remain, make them an irreplaceable part of the world's forest heritage.
Iguazú National Park	Brazil	Some 80m high and 2,700m in diameter, on a basaltic line spanning the border between Argentina and Brazil, the waterfall located in the heart of this site is one of the most spectacular in the world. Made up of many cascades producing vast sprays of water and surrounded by sub-tropical rainforest with over 2,000 species of vascular plants, it is home to typical wildlife of the region: tapirs, giant anteaters, howling monkeys, ocelots, jaguars, caymans.
The Atlantic Forests South-East Reserves	Brazil	The Atlantic Forests (Southeast) contain the best and largest remaining examples of Atlantic forest in the south-east region of Brazil. The 25 protected areas that make up the site display the biological richness and evolutionary history of the few remaining areas of Atlantic forest of south-east Brazil. The area is also exceptionally diverse with high numbers of rare and endemic species.
Srebarna Nature Reserve	Bulgaria	The Srebarna Nature Reserve is a fresh-water lake supplied by the Danube river, extending over 600 ha. The site is the breeding ground of approximately 100 bird species, many of which are internationally threatened. Some 80 other bird species migrate here annually.
Dja Faunal Reserve	Cameroon	This is one of the largest and best protected humid forests in Africa. Almost completely surrounded by the Dja River, which forms its natural boundary, the reserve is especially noted for its biodiversity and a wide variety of primates.
Wood Buffalo National Park	Canada	Located in the plains in the north-central region of Canada, this park houses the largest population of wild bison in North America and is the natural nesting place of the whooping crane. The largest inland delta in the world, the one of the rivers Peace and Athabasca, is one of the natural attractions of the park.
Tatshenshini-Alsek/Kluane/Wrangell-St Elias/Glacier Bay	Canada/USA	These parks comprise an impressive complex of glaciers and high peaks on either side of the frontier between Canada and the United States of America (Alaska). These spectacular natural landscapes are home to many grizzly bears, caribou and Dall sheep.
Manovo-Gounda St Floris National Park	Central African Republic	The importance of this park rests with its wealth of flora and fauna. Its vast savannahs provide shelter for a wide variety of species: black rhinoceroses, elephants, cheetahs, leopards, wild dogs, red- fronted gazelles and buffaloes, while different types of waterfowl are to be found in the northern flood-plains.

Site	Country	Description
Mount Emei Scenic Area, including Leshan Giant Buddha Scenic Area	China	Biologically, the area supports a high diversity of plant and animal species including a number of endemic and globally threatened species. 3,200 plant species in 242 families have been recorded, of which 31 are under national protection, representing approximately one third of the total number of plants in the Sichuan province and one tenth of those found in China. 2,300 animal species have been recorded of which 29 are under national protection, 157 species being threatened or endemic animals to China.
Mount Wuyi	China	The area has what is probably the largest and best-preserved area humid subtropical native forest in the world. Of particular importance is the very high levels of biodiversity and the significant number of threatened species
Los Katios	Colombia	Extending over 72,000 hectares in north-western Colombia, Los Katios National Park comprises low hills, forests and humid plains. An exceptional biological diversity can be found in the park, which is home to many threatened animal species, as well as many endemic plants.
Cocos Island National Park	Costa Rica	Cocos Island National Park, located 550 km off the Pacific Coast of Costa Rica, is the only island in the tropical eastern Pacific with a humid tropical forest. Its position as the first point of contact with the northern equatorial counter current and the of interactions between the island and the surrounding marine ecosystem make the area an ideal laboratory for the study of biological processes. Marine area of the national park is one of the best places in the world to view large pelagic species such as sharks, rays, tuna and dolphins.
The Area de Conservación Guanacaste	Costa Rica	The Area de Conservación Guanacaste contains important natural habitats for the conservation of biological diversity, including the best dry forest habitats and communities from Central America to northern Mexico and key habitat for threatened or rare plant and animal species. The site demonstrates significant ecological processes in both its terrestrial and marine-coastal environments. These processes include: the evolution, succession and restoration of Pacific Tropical Dry Forest; altitudinal migration and other interactive biogeographic and ecological processes and major upwelling and the development of coral colonies and reefs.
Comoé National Park	Cote d'Ivoire	One of the largest protected areas in West Africa, this park is characterised by very great plant diversity. Due to the presence of the Comoé River, it contains plants that are normally only found much farther south, such as shrub savannahs and patches of thick rain forest.
Taï National Park	Côte d'Ivoire	This park is one of the last important remnants of the primary tropical forest of West Africa. Its rich natural flora, and threatened mammal species, such as the pygmy hippopotamus and eleven species of monkey, are of great scientific interest.
Mount Nimba Reserves	Côte d'Ivoire /Guinea	Located between Guinea and Côte d'Ivoire, Mount Nimba rises above the surrounding savannah. Its slopes, covered by dense forest at the foot of grassy mountain pastures, harbour an especially rich flora and fauna, with endemic species such as the viviparous toad and chimpanzees that use stones as tools.
Garamba National Park	Democratic Rep. Of Congo	Immense savannahs, grasslands or woodlands, interspersed with gallery forests along the river banks and swampy depressions, protect four large mammals: the elephant, giraffe, hippopotamus and white rhinoceros of which some 30 individuals remain.

Site	Country	Description
Kahuzi-Biega National Park	Democratic Rep. Of Congo	A vast area of primary tropical forest dominated bytwo spectacular extinct volcanoes, Kahuzi and Biega, the park is populated with a diverse and abundant fauna. One of the last groups of mountain gorillas lives between 2,100 and 2,400 metres above sea level.
Okapi Faunal Reserve	Democratic Rep. Of Congo	The Okapi Wildlife Reserve occupies one fifth of the Ituri Forest in the north-east of the Democratic Republic of Congo. The Zaïre River basin, of which the reserve and forest are a part, is one of the largest drainage systems in Africa and has yielded a large number of major evolutionary discoveries. The wildlife reserve contains threatened species of primates and birds and about 5,000 of the estimated 30,000 okapi surviving in the wild. The reserve also contains dramatic scenic values including waterfalls on the Ituri and Epulu rivers.
Virunga National Park	Democratic Rep. of Congo	The park of Virunga offers within its 790,000 ha an incomparable diversity of habitats: from swamps and steppes to the snowfields of Rwenzori at an altitude of over 5,000 m, and from the lava plains to the savannahs on the slopes of the volcanoes. Some 20,000 hippopotamuses live in its rivers, mountain gorillas refuge there and birds from Siberia winter there.
Morne Trois Pitons National Park	Dominica	Luxuriant natural tropical forest blends with volcanic features of high scenic appeal and scientific interest in this national park centered on the 1,342 m high volcano bearing the name of Morne Trois Pitons. With its precipitous slopes and deeply-incised valleys, fifty fumaroles and hot springs, freshwater lakes, a "boiling lake" and five volcanoes, located on the nearly 7,000-hectare park, together with the richest biodiversity in the Lesser Antilles, Morne Trois Pitons National Park presents a rare combination of natural features of World Heritage value.
Galápagos Islands	Ecuador	These volcanic islands have been called a unique "living museum and showcase of evolution". One-third of the island chain's vascular land plants are endemic, while endemic fauna includes invertebrate, reptile and bird species. The presence of unusual animal life - such as the land iguana, the giant tortoise, and the many types of finches - inspired Charles Darwin in his theory of evolution, following his visit there in 1835.
Sangay National Park	Ecuador	Sangay National Park is considered to have an extremely complex ecological composition and has received the highest resource analysis rating of any park in Ecuador. Its natural regions, terrestrial and aquatic ecosystems, physiographic formations, geology, history and other unique characteristics make it the most outstanding protected area in mainland Ecuador. Important indigenous species occurring in the park include the mountain tapir and the Andean condor.
Simien National Park	Eithiopia	The park is valued particularly for its flora and fauna, which, due to extreme topography and altitudinal range, remain relatively intact. The park is the refuge for threatened animals such as gelada baboon, Simen fox and Walia ibex, a goat species endemic to the Simien Mountains.
Cape Girolata, Cape Porto & Scandola Nature Reserves in Corsica	France	The nature reserve, part of the Regional Natural Park of Corsica, occupies the Scandola peninsula, an impressive porphyritic rock mass. Its vegetation is a good 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.

Site	Country	Description
Tikal National Park	Guatemala	Together with Sierra de las Minas Biosphere Reserve, Tika is the most important reserve in the country, because of its archaeological and bio/ecological interest. Rivers, lakes, swamps and flooding savanna ecosystems are important for biodiversity and migratory birds. The reserve contains the largest area of tropical rain forest in Guatemala and Central America, with a wide range of unspoilt natural habitats. A considerable number of threatened and CITES listed species are also found within the reserve.
Río Plátano Biosphere Reserve	Hondouras	Located in the watershed of the Río Plátano , the mountainous reserve, is one of the few remains of a humid tropical forest in Central America and contains abundant and varied plant- and wildlife.
Kaziranga National Park	India	In the heart of the Assam, this park is one of the last areas in northern India undisturbed by man. It harbours largest population of one-horned rhinoceroses in the world, as well many mammals, including tigers, elephants, panthers, bears, and thousands of bird species.
Keoladeo National Park	India	A former duck-hunting reserve of the Maharajas, this site remains one of the major wintering areas for large numbers of aquatic birds from Afghanistan, Turkmenistan, China and Siberia. Some 364 species of birds, including the rare Siberian crane, have been recorded in the park.
Manas Wildlife Sanctuary	India	On a gentle slope in the foothills of the Himalayas, where wooded hills give way to alluvial grasslands and tropical forests, the Manas sanctuary is home to a great variety of wildlife, including many endangered species, such as the tiger, the pygmy hog, and the Indian rhinoceros and elephant.
Nanda Devi National Park	India	The Nanda Devi National Park is one of the most spectacular wilderness areas in the Himalayas, and is dominated by the peak of Nanda Devi, which reaches over 7,800 metres. No humans live in the park, which has remained more or less intact because of its inaccessibility. It is the habitat of several endangered mammals, including the snow leopard, Himalayan musk deer and bharal.
The Sundarbans	India	The Sundarbans cover 10,000 km^2 of land and water in the Ganges delta. Occurring in India and Bangladesh, the site contains the world's largest region of mangrove forests, with 36 true mangrove, 28 associated and seven obligatory mangrove species representing 29 families and 49 genera. Apart from being the only mangrove forest in the world inhabited by the tiger, the Sundarbans contains a rich and unique biota, with a notable number of threatened reptiles.
Komodo National Park	Indonesia	These volcanic islands are inhabited by a population of around 5,700 giant lizards, whose appearance and aggressive behaviour have led them to be called "Komodo dragons". They exist nowhere else and are of great interest for scientists studying the theory of evolution. The rugged hillsides of dry savannah and pockets of thorny green vegetation contrast starkly with the brilliant white sandy beaches and blue waters surging over coral.
Lorentz National Park	Indonesia	The largest protected area in Southeast Asia (2.5 million ha). It is the only protected area in the world which incorporates a continuous, intact transect from snow cap to tropical marine environment, including extensive lowland wetlands. The area supports the highest level of biodiversity in the region. It also contains fossil sites which record the evolution of life on New Guinea.

Site	Country	Description
Ujung Kulon National Park and Krakatan National Reserve	Indonesia	This national park, located in the extreme south-west tip of Java on the Sunda Shelf, includes the Ujung Kulon peninsula and several offshore islands, and encompasses the natural reserve of Krakatoa. In addition to its natural beauty and geological interest - especially for the study of inland volcanoes - it contains the largest remaining area of lowland rainforests in the Java plain.
Mount Kenya	Kenya	Mount Kenya, 5,199 m, is the second highest peak in Africa. It is an ancient extinct volcano, during whose period of activity (3.1 - 2.6 million years ago) it is thought to have risen to 6,500m. There are twelve remnant glaciers on the mountain, all receding rapidly, and four secondary peaks that sit at the head of the U-shaped glacial valleys. The area inscribed includes the upper slopes of the mountain, and two salients which make up the National Park and surrounding Forest Reserve. With its rugged glacier-clad summits and forested middle slopes, Mount Kenya is one of the most impressive landscapes in Eastern Africa. The evolution and ecology of its afro-alpine flora also provide an outstanding example of ecological processes.
Sibiloi/Central Island National Parks	Kenya	Sibiloi National Park is situated on the east shore of Lake Turkana in northern Kenya. Lake Turkana's ecosystem with its diverse bird life and desert environment offers an exceptional laboratory for studies of plant and animal communities. The lake is also one of Africa's most important breeding areas for the Nile crocodile.
Tsingy de Bemaraha Strict Nature Reserve	Madagascar	Tsingy de Bemaraha Strict Nature Reserve is made up of karstic landscapes and limestone uplands cut into impressive "tsingy" peaks and a "forest" of limestone needles, the spectacular canyon of the Manambolo River, rolling hills and high peaks. The undisturbed forests, lakes and mangrove swamps are the habitat for rare and endangered lemurs and birds.
Lake Malawi National Park	Malawi	Located at the southern end of the immense Lake Malawi, with its deep and clear waters and background of mountains, Lake Malawi National Park protects many hundreds of cichlid fish species, nearly all endemic. Its importance in the study of evolution is comparable to that of the finches of the Galápagos Islands.
Banc d'Arguin National Park	Mauritania	Fringing the Atlantic coast, the park is made up of sand dunes, coastal swamps, small islands and shallow coastal waters. The austerity of the desert and the biodiversity of the marine zone result in a land and seascape of exceptional contrasting natural value. A wide variety of migrating birds spend the winter there. Several species of sea turtle and dolphin, which fishermen use to attract shoals of fish, can also be found.
Sian Ka'an	Mexico	Located on the east coast of the Yucatan peninsula, this biosphere reserve contains tropical forests, mangroves and marshes, a large marine section intersected by a barrier reef, and provides a habitat for an abundance of fauna and flora.
Whale Sanctuary of El Vizcaino	Mexico	Located in the central part of the peninsula of Baja California, the sanctuary contains exceptionally interesting ecosystems. The coastal lagoons of Ojo de Liebre and San Ignacio are very important reproduction and wintering sites for the grey whale, harbour seal, California sea-lion, northern elephant-seal and blue whale. The lagoons also offer shelter to four species of the endangered marine turtle.

Site	Country	Description
Royal Chitwan National Park	Nepal	One of the last populations of single-horned Asiatic rhinoceros lives in the park, which is also among the last refuges for the Bengal tiger.
New Zealand Sub-Antarctic Islands	New Zealand	The New Zealand Sub-Antarctic Islands are remarkable for their high level of biodiversity, population densities and for endemism in birds, plants and invertebrates. The bird and plant life, especially the endemic albatrosses, cormorants, landbirds and "megaherbs" are unique to the islands
Te Wahipounamu-South West New Zealand	New Zealand	Two-thirds of the park is covered with southern beech and podocarps, some of which are over 800 years old. The kea, the only alpine parrot in the world, lives in the park, as does the rare and endangered takahe, a large flightless bird.
Air and Ténéré Natural Reserves	Niger	This is the largest protected area in Africa, covering some 7.7 million hectares. The area considered as a protected sanctuary is only one- sixth of the total area. It includes the volcanic rock massif of the Air, a small Sahelian pocket, isolated as regards its climate and flora and fauna in the Saharan desert of Ténéré. The reserve boasts an outstanding variety of landscapes, plant species and wild animals.
'W' National Park	Niger	The portion of the "W" National Park in Niger is in a transition zone between savanna and forest lands and represents important ecosystem characteristics of the West Africa Woodlands/Savannah Biogeographical Province. The site reflects the interaction between natural resources and humans since Neolithic times. This interaction has produced characteristic landscapes and plant species and illustrates the evolution of biodiversity in this zone. The Niger River bordering the site is one of the largest rivers of Africa and an important wetland for the survival of bird species.
Darién National Park	Panama	Forming a bridge between the two continents of the New World, Darién National Park offers an exceptional variety of habitats - sandy beaches, rocky coasts, mangroves, swamps and lowland and upland tropical forests containing remarkable wildlife.
Talamanca Range-La Amistad Reserves	Panama/Costa Rica	The entire protected area comprises the single largest natural forest unit in Central America, containing several hundred endemic plant species and one of the last major refuges for threatened fauna. No other protected area complex in Central America contains as many viable populations, species, life zones, or as much altitudinal variation. The Talamanca range is estimated to harbour almost four percent of the varieties of all terrestrial species on earth.
Manú National Park	Peru	This immense 1.5 million-hectare park has successive tiers of vegetation rising from 150 to 4,200m above sea-level. The tropical forest in the lower tiers contains an unrivalled variety of animal and plant species. Some 850 species of birds have been identified and rare species such as the giant otter and the giant armadillo can also be found there. Jaguars are often sighted in the park.
Río Abiseo National Park	Peru	The National Park is covered by humid forests characteristic of this part of the Andes. There is a high level of endemism among the fauna and flora species of this park. The yellow-tailed woolly monkey, previously thought extinct, is found only in this area.
Puerto-Princesa Subterranean River National Park	Philippines	The park represents a significant habitat for biodiversity conservation. It contains a full mountain to sea ecosystem and protects the most significant forest area within the Palawan Biogeographic Province.

Site	Country	Description
Tubbataha Reef Marine Park	Philippines	Covering 33,200 hectares, including the North and South Reefs, this is a unique example of an atoll reef with a very high density of marine species. The North Islet serves as a nesting site for birds and marine turtles. The site is an excellent example of a pristine coral reef with a spectacular 100-metre perpendicular wall, extensive lagoons and two coral islands.
Laurisilva of Madeira	Portugal (Madeira)	The Laurisilva of Madeira is an outstanding relict of a previously widespread laurel forest type. It is the largest area of laurel forest surviving and is believed to be 90% primary forest, containing a unique suite of plants and animals including many endemic species such as the Madeiran long-toed pigeon. The greatest natural value of the laurisilva is its biological diversity. Nearly all its plants and animals are unique to the laurel forest. The Madeiran laurisilva is not only larger but has differences biologically from laurel forest elsewhere.
Danube Delta	Romania	The waters of the Danube, which flow into the Black Sea, form one of the largest and best preserved European deltas. The Danube Delta hosts over 300 species of birds as well as 45 freshwater fish species in its numerous lakes and marshes.
Golden Mountains of Altai	Russian Federation	The Altai region represents an important and original centre of biodiversity of montane plant and animal species in northern Asia, a number of which are rare and endemic.
Lake Baikal	Russian Federation	Situated in south-east Siberia, Lake Baikal is the oldest (25 million years) and deepest (1,637 m) of the world's lakes. It contains 20% of the world's surface unfrozen freshwater reserve. Known as the "Galápagos of Russia", its age and isolation have produced one of the world's richest and most unusual freshwater faunas which is of exceptional value to evolutionary science. With its outstanding variety of endemic animals and plants Lake Baikal is one of the most biologically diverse lakes on earth.
Western Caucasus	Russian Federation	One of the global centres of plant diversity, the site has a great diversity of ecosystems with important endemic plant and wildlife species. It is also the place of origin and reintroduction of the mountain sub-species of the European bison.
Djoudj Bird Sanctuary	Senegal	Located in the Senegal River delta, this site is a wetland of 16,000 hectares, comprised of a large lake surrounded by streams, ponds and backwaters which form a living but fragile sanctuary for 1.5 million birds, such as the white pelican, the purple heron, the African spoonbill, the great egret and the cormorant.
Niokolo-Koba National Park	Senegal	Located in a well-watered area, along the banks of the Gambia River, the gallery forests and savannahs of Niokolo-Koba National Park protect a very rich fauna, among them the Derby eland (largest of the antelopes), chimpanzees, lions, leopards, a large population of elephants as well as many birds, reptiles and amphibians.
Aldabra Atoll	Seychelles	The site is comprised of four large coral islands which enclose a shallow lagoon; the group of islands is itself surrounded by a coral reef. Due to difficulties of access and the atoll's isolation, Aldabra has been protected from human influence and has as such become a refuge for some 152,000 giant tortoises, the world's largest population of this reptile.
Vallée de Mai Nature Reserve	Seychelles	The reserve shelters the vestiges of a natural palm forest preserved in close to its original state.

Site	Country	Description
Greater St. Lucia Wetland Park	South Africa	The five ecosystems in this National Park provide habitat for a significant diversity of African fauna and flora.
Doñana National Park	Spain	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 waterfowl each year.
Ibiza, biodiversity and culture	Spain	The well-preserved Posidonia, threatened in most Mediterranean locations, contains and supports a diversity of marine life.
Sinharaja Forest Reserve	Sri Lanka	Sinharaja is the last viable area of primary tropical rainforest in the country. More than 60 per cent of the trees are endemic and many of them are considered rare. There is much endemic wildlife, especially birds, the reserve is also home to 50% of the endemic species of mammals and butterflies, as well as many insects, reptiles and rare amphibians.
Arabian Oryx Sanctuary	Sultanate of Oman	This site is noted for its viable population of Arabian Gazelle as well as being a habitat for several species, such as the endangered houbara bustard, a species of wader, as a part of its highly diverse avifauna. It is one of the largest protected areas in the region and includes the only free-ranging herd of Arabian oryx in the world. The successful re-introduction of the oryx has been part of a process to rehabilitate a diverse and unique desert ecosystem.
Ngorongoro Conservation Area	Tanzania	Ngorongoro is one of the largest inactive, unbroken and unflooded calderas in the world. The conservation area has one of Africa'a largest wildlife conglomerations. Species include: wildebeest, buffalo, African elephant, hartebeest, spotted hyena, mountain reedbuck and leopard. The crater also has the densest known population of lion. Serengeti migrants including 1.7 million wildebeest, 260,00 zebra and 470,000 gazelles.
Selous Game Reserve	Tanzania	The park has a variety of relatively undisturbed vegetation zones, ranging from woodland to open grasslands. These habitats support populations of threatened animal species including elephants, black rhinoceroses, cheetahs, giraffes, hippopotamuses, crocodiles and wild dogs.
Serengeti National Park	Tanzania	Serengeti National Park, with its herds of ungulates and their associated predators, is the last remnant of a Pleistocene large mammal ecosystem in all its complexity. The park, in combination with the contiguous Ngorongoro Conservation Area and Maasai Mara National Park, is sufficiently large to ensure the survival of this savanna ecosystem.
Thungyai - Huai Kha Khaeng Wildlife Sanctuaries	Thailand	Stretching over more than 600,000 hectares along the Myanmar border, the sanctuary, which is relatively intact, contains examples of almost all the forest types of continental South-East Asia. It is home to a very diverse array of animals, including 77% of the large mammals, 50% of the large birds and 33% of the land vertebrates to be found in this region.
Ichkeul National Park	Tunisia	Lake Ichkeul and wetland are a stopover point for hundreds of thousands of migrating birds, such as geese, ducks, storks, pink flamingoes, who come to feed and nest here. The lake is one of the last remaining in a chain of lakes that once extended across northern Africa.
Bwindi Impenetrable National Park	Uganda	The park is known for its exceptional biodiversity, with more than 160 species of trees and more than 100 species of ferns. Many types of birds and butterflies can also be found there, as well as many endangered taxa, including the mountain gorilla.

Site	Country	Description
Rwenzori Mountains National Park	Uganda	Covering nearly 100,000 hectares in western Uganda, the park comprises the main part of the Rwenzori mountain chain, which includes Africa's third highest peak (Mount Margherita at 5,109 metres). The region's glaciers, waterfalls and lakes make it one of Africa's most beautiful alpine areas. The park protects many natural habitats, endangered species and an unusual flora, including the giant heather.
Gough Island Wildlife Reserve	United Kingdom	Gough Island, in the South Atlantic, is one of the least disrupted island and marine ecosystems in the cool temperate zone. One of the largest colonies of sea birds in the world lives there, amidst spectacular scenery of cliffs towering above the ocean. The island is also home to two endemic species of land birds, the galinulle and the Gough rowettie, as well as twelve endemic plant species.
Henderson Island	United Kingdom	In the eastern South Pacific, Henderson Island is one the few atolls in the world with its ecology almost unaltered by man. Its isolated location permits the study of the dynamics of insular evolution and natural selection. It is particularly notable for ten plants and four land birds, endemic to the island.
St. Kilda	United Kingdom	This archipelago includes some of the highest cliffs in Europe which provide a refuge for colonies of rare and endangered bird species, especially puffins and gannets. It is an outstanding example of remote island ecological colonisation and isolation of small species populations, and is of national importance for its geology, flora and fauna.
Everglades National Park	USA	This National Park is often called "a river of grass flowing imperceptibly from the sea". The exceptional variety of its water habitats has made it a sanctuary for a considerable number of birds and reptiles, as well as for threatened species such as the manatee.
Grand Canyon National Park	USA	Carved out by the Colorado River, the Grand Canyon, nearly 1,500 metres deep, is the most spectacular gorge in the world. Located in Arizona, it cuts across the Grand Canyon National Park. Its horizontal strata retrace the geological history of the past 2 billion years. Several species of endemic and threatened animals, birds and plants can be found in the park.
Great Smoky Mountains National Park	USA	Home to more than 3,500 plant species, almost as many trees (130 natural species) as in all of Europe. Many endangered animal species can also be found there, including what is probably the greatest variety of salamanders in the world.
Mammoth Cave National Park	USA	Recognised as an internationally important karst area, this site contains the longest cave system in the world. Over 200 species of animal are indigenous to the cave system including several endangered species of blind fish, shrimp, bat and freshwater mussel. Surface features are also important and Big Woods, a temperate deciduous oak-hickory dominated forest, that is reputed to be one of the largest and best remaining examples of the ancient forest of eastern North America.
Yellowstone	USA	Covering more than 9,000 km^2, Yellowstone National Park contains an impressive collection of geothermal phenomena, including more than 3,000 geysers, fumaroles and hot springs. Established in 1872, the park also contains a vast natural forest ecosystem that harbours grizzly bear, wolf, bison and wapiti populations.
Durmitor National Park	Yugoslavia	Mixed forests of spruce, fir and beech are interspersed with clear lakes and harbour a wide range of endemic flora.

Site	Country	Description
Canaima National Park	Venezuela	Canaima National Park exhibits an exceptional geomorphology produced by weathering processes. The distinctive tepui formations give rise to numerous waterfalls, including Angel Falls, the world's highest. The high level of endemism found on the summits of the tepuis has led to the recognition of Pantepui as a unique biogeographical entity.
Mana Pools National Park, Sapi and Chewore Safari Areas	Zimbabwe	On the banks of the Zambezi River, great cliffs overhang the river and flood-plains where a remarkable concentration of wild animals can be found, including elephants, buffaloes, leopards and cheetahs.

Table 3. Natural World Heritage Sites of particular importance for Biodiversity included in the list of World Heritage in danger (November 1999)

Site	Country	Date of Inclusion	Criterion IV	Threat to Site
Iguaçu National Park	Brazil	1999	Yes	Road construction, helicopter flights and dams on the Iguaçu River.
Srebarna Nature Reserve	Bulgaria	1992	Yes	Destruction of the fresh-water habitat of bird populations. Dam construction upstream in Romania has permanently altered the hydrology of this site. Seasonal flooding is being prevented causing a significant decline in the biological productivity of the site. Agricultural and residential use of the surrounding land have affected the wetlands, leading to the decline of water bird populations.
Manovo-Gounda St. Floris National Park	Central African Republic	1997	Yes	Uncontrolled poaching by heavily armed groups, from within and outside of CAR has resulted in security problems, leading to the deaths of 4 Park staff in early 1997. According to IUCN, 80% of the Park's wildlife has been illegally harvested for commercial purposes.
Mount Nimba Nature Reserve	Côte d'Ivoire/ Guinea	1992	Yes	There are two main factors: a proposed iron-ore mining concession to an international consortium and the arrival of a large number of refugees to areas in and around the Guinean part of the site. The granting of the concession was announced in 1992 and included portions of the WH site.
Virunga National Park	Democratic Republic of Congo	1994	Yes	War in neighbouring Rwanda and the subsequent massive influx of refugees has led to massive deforestation and poaching.
Garamba National Park	Democratic Republic of Congo	1996	Yes	Civil unrest in the eastern part of the country has led to widespread attacks on the Park's infrastructure. Equipment has been looted and several staff have deserted the park.
Kahuzi-Biega National Park	Democratic Republic of Congo	1997	Yes	Armed conflict in the eastern part of the country has meant the site has been significantly impacted by the influx of refugees. There are reports of a large presence of militia groups and illegal settlers in the park, which has led to fires, increased poaching and illegal removal and burning of timber.
Okapi Wildlife Reserve	Democratic Republic of the Congo	1997	Yes	Equipment and facilities have been looted and wildlife poached due to armed conflict in the eastern part of the country. There are reports of illegal gold mining in the park occupied by the militia, and the staff have neither the facilities nor resources to manage the park.

Site	Country	Date of Inclusion	Criterion IV	Threat to Site
Salonga National Park	Democratic Republic of the Congo	1997	No	Heightened levels of threats due to poaching.
Sangay National Park	Ecuador	1992	Yes	Management plan needs to be implemented and damage created by road construction needs to be restored.
Simien National Park	Eithiopia	1996	Yes	Evidence of recent deterioration of the population of the Walia ibex. Other large mammals characteristic of the site (e.g. the bushbuck and the bushpig) have become extremely rare. Road construction and human population increase within the site are other threats.
Río Plátano Biosphere Reserve	Honduras	1996	Yes	This park is threatened by planned construction of a hydro-electric plant, illegal logging, grazing, agricultural encroachment, the introduction of exotic species, the absence of a management plan and a lack of park staff.
Manas Wildlife Sanctuary	India	1992	Yes	Site invaded by militants of the Bodo tribe in Assam. Damage to the sanctuary was estimated at more than US $2 million. Infrastructure damage during 1992-93 and poaching (particularly the greater one-horned rhino). Although security conditions in and around Manas have improved, the threat of insurgency still prevails.
Air and Ténéré Natural Reserves	Niger	1992	Yes	Military conflict and civil disturbance has affected the area in recent times. Flora and fauna populations are recovering but some species (e.g. ostrich) continue to be seriously threatened by poaching and international trade in live animals and its by-products. The site may be considered for removal from the List of World Heritage in Danger in 1999.
Ichkeul National Park	Tunisia	1996	Yes	The construction of three dams on rivers supplying Lake Ichkeul and its marshes has cut off almost all inflow of fresh water, increasing the salinity of the lake and marshes. Many fresh-water plant species have been replaced by halophytic plants, reducing the populations of reed-dependent migratory bird species such as purple heron, purple gallinule and reed warblers.
Ruwenzori Mountains National Park	Uganda	1999	Yes	A lack of resources, suspension of projects and serious security issues at the Park.

Site	Country	Date of Inclusion	Criterion IV	Threat to Site
Everglades National Park	USA	1993	Yes	Park Superintendent informed the Committee of extensive damage to Everglades' ecology due to: nearby urban growth; pollution from fertilisers; mercury poisoning of fish and wildlife and a fall in water levels caused by flood protection measures. In 1992, Hurricane Andrew altered much of Florida Bay and its ecological systems and destroyed the park's visitor centre. The site may be removed fron the sites in danger list shortly.
Yellowstone National Park	USA	1995	Yes	There were concerns that adjacent mining operations might compromise the values of the park, and threaten the watershed ecology of the Yellowstone River. Other current pressures include: sewage leakage and waste contamination; the unconsidered and illegal introduction of non-native lake trout which are competing with the endemic Yellowstone cut-throat trout; road construction; and year-round visitor pressures.

Table 4. World Heritage Site by Udvardy Biogeographic Province.

World Heritage Site	Country	Udvardy Province	Total No.
Golden Mountains of Altai	Russian Federation	Altai Highlands	1
Göreme National Park and the Rock Sites of Cappodocia	Turkey	Anatolian-Iranian Desert	1
Arabian Oryx Sanctuary	Sultanate of Oman	Arabian Desert	1
Messel Pit Fossil Site Pyrénées – Mont Perdu	Germany Spain/France	Atlantic	2
Everglades National Park	USA	Austroriparian	1
Durmitor National Park Ohrid Region with its Cultural and Historical Aspect and its Natural Environment	Yugoslavia Former Yugoslav Republic of Macedonia	Balkan Highlands	2
The Sundarbans The Sundarbans	Bangladesh India	Bengalian Rainforest	2
Belovezhskaya Pushcha/Bialowieza Forest	Belarus/Poland	Boreonemoral	1
Iguazú National Park Iguaçu National Park	Argentina Brazil	Brazilian Rain Forest	2
The Giant's Causeway and Causeway Coast	United Kingdom	British Islands	1
Kaziranga National Park Manas National Park	India India	Burma Monsoon Forest	2
Yosemite National Park	USA	Californian	1
Tikal National Park Sian Ka'an Belize Barrier-Reef Reserve System	Guatemala Mexico Belize	Campechean	3
Canaima National Park	Venezuela	Campos Limpos	1
Nahanni National Park Wood Buffalo National Park Gros Morne National Park Miguasha Park	Canada Canada Canada Canada	Canadian Taiga	4
Western Caucasus	Russian Federation	Caucaso-Iranian Highlands	1
Kahuzi-Biéga National Park Okapi Wildlife Reserve	Dem. Rep. of Congo Dem. Rep. of Congo	Central African Highlands	2
Area de Conservación Gaunacaste Talamanca Range-La Amistad Reserves Río Plátano Biosphere	Costa Rica Costa Rica/Panama Honduras	Central American	3
Uluru-Kata Tjuta National Park	Australia	Central Desert	1
Sinharaja Forest Reserve	Sri Lanka	Ceylonese Rainforest	1
Carlsbad Caverns National Park	USA	Chihuahuan	1
Los Glaciares	Argentina	Chilean Nothofagus	1
Mt. Emei including Leshan Giant Buddha Scenic Area	China	Chinese Subtropical Forest	1
Cocos Island National Park	Costa Rica	Cocos Island	1
Los Katios National Park	Colombia	Colombian Coastal	1
Aldabra Atoll	Seychelles	Comores Islands and Aldabra	1
Dja Faunal Reserve Okapi Faunal Reserve Salonga National Park	Cameroon Dem. Rep. of Congo Dem. Rep. of Congo	Congo Rain Forest	3

World Heritage Site	Country	Udvardy Province	Total No.
Desembarco del Granma National Park	Cuba	Cuban	1
Mount Kenya National Park/Natural Forest	Kenya	East African Highlands	1
Manovo-Gounda St Floris National Park Garamba National Park Virunga National Park Kahuzi-Biega National Park Serengeti National Park Bwindi Impenetrable National Park Rwenzori Mountains National Park	Central African Republic Dem. Rep. of Congo Dem. Rep of Congo Dem. Rep. of Congo Tanzania Uganda Uganda	East African Woodland/Savanna	7
Mammoth Cave National Park Great Smoky Mountains National Park	USA USA	Eastern Forest	2
Willandra Lakes Region Australian Mammal Fossil Sites	Australia Australia	Eastern Grasslands and Savannas	2
Central Eastern Australian Rainforest Reserves	Australia	Eastern Sclerophyll	1
Simien National Park	Ethiopia	Ethiopian Highlands	1
Everglades National Park	USA	Everglades	1
Galápagos Islands	Ecuador	Galápagos Islands	1
Dinosaur Provincial Park	Canada	Grasslands	1
Taï National Park Mount Nimba Strict nature Reserve	Côte d'Ivoire Côte d'Ivoire /Guinea	Guinean Rain Forest	2
Canaima National Park	Venezuela	Guyanan	1
Hawaii Volcanoes National Park	USA	Hawaiian	1
Nanda Devi National Park Manas Wildlife Sanctuary Sagarmatha National Park Royal Chitwan National Park	India India Nepal Nepal	Himalayan Highlands	4
Pyrénées – Mont Perdu	Spain/France	Iberian Highlands	1
Thungyai – Huai Kha Khaeng Wildlife Sanctuaries	Thailand	Indochinese Rainforest	1
Keoladeo National Park	India	Indus-Ganges Monsoon Forest	2
Heard and McDonald Islands Macquarie Island New Zealand Sub-Antarctic Islands Gough Island Wildlife Reserve	Australia Australia New Zealand United Kingdom	Insulantarctica	4
Yakushima	Japan	Japanese Evergreen Forest	1
Ujung Kulon National Park	Indonesia	Java	1
Volcanoes of Kamchatka	Russian Federation	Kamchatkan	1
Lake Baikal	Russian Federation	Lake Baikal	1
Lake Malawi National Park	Malawi	Lake Malawi (Nyasa)	1
Sibiloi/Central Island National Parks	Kenya	Lake Rudolf	1
Morne Trois Pitons National Park	Dominica	Lesser Antillean	1

World Heritage Site	Country	Udvardy Province	Total No.
Komodo National Park	Indonesia	Lesser Sunda Islands	1
The Laurisilva of Madeira Garajonay National Park	Portugal Spain	Macaronesian Islands	2
Tsingy de Bemaraha Strict Nature Reserve	Madagascar	Malagasy Woodland/Savanna	1
Pirin National Park Plitvice Lakes National Park, Cape Girolata, Cape Porto, Scandola Nature Reserve and the Piana Calanches in Corsica Mount Athos Meteora Skocjan Caves Doñana National Park Ichkeul National Park Hieropolis-Pamukkale	Bulgaria Croatia France Greece Greece Slovenia Spain Tunisia Turkey	Mediterranean Sclerophyll	9
Srebarna Nature Reserve Messel Pit Fossil Site Caves of the Aggtelek Karst and Slovac Karst	Bulgaria Germany Hungary/Slovakia	Middle European Forest	3
Selous Game Reserve Mosi-Oa-Tunya/Victoria Falls Mana Pools National Park Sapi and Chewore Safari Areas	Tanzania Zambia/Zimbabwe Zimbabwe	Miombo Woodland/Savanna	3
Península Valdés	Argentina	Monte	1
New Zealand Sub-Antarctic Islands Te Wahipounamu – South West New Zealand Tongariro National Park	New Zealand New Zealand New Zealand	Neozealandia	3
Sangay National Park	Ecuador	Northern Andean	1
Kakadu National Park	Australia	Northern Coastal	1
Kakadu National Park	Australia	Northern Savanna	1
Redwood National Park Olympic National Park	USA USA	Oregonian	2
Jiuzhaigou Valley Scenic and Historic Interest Area Huanglong Scenic and Historic Interest Area Mount Taishan Mount Wuyi Mount Huangshan Wulingyuan Scenic and Historic Interest Area Shirakami-Sanchi	China China China China China China Japan	Oriental Deciduous Forest	7
Huascarán National Park	Peru	Pacific Desert	1
Darién National Park	Panama	Panamanian	1
Lorentz National Park East Rennell	Indonesia Solomon Islands	Papuan	2
Puerto-Princesa Subterranean River National Park	Philippines	Philippines	2
Danube Delta	Romania	Pontian Steppe	1
Manú National Park	Peru	Puna	1

World Heritage Site	Country	Udvardy Province	Total No.
Great Barrier Reef Wet Tropics of Queensland Fraser Island	Australia Australia Australia	Queensland Coastal	3
Canadian Rocky Mountain Parks Waterton Glacier Interational Peace Park Yellowstone National Park Grand Canyon National Park	Canada Canada/USA USA USA	Rocky Mountains	4
Tassili N'Ajjer Aïr and Ténéré Natural Reserves	Algeria Niger	Sahara	2
St Kilda	United Kingdom	Scottish Highlands	1
Atlantic Forest South East Reserves Discovery Coast Atlantic Forest Reserves	Brazil Brazil	Serro Do Mar	2
Vallée de Mai Nature Reserve	Seychelles	Seychelles and Amirantes Islands	1
Yosemite National Park	USA	Sierra-Cascade	1
Tatshenshini-Alsek/Kluane National Park/Wrangell-St.Elias National Park and Reserve and Glacier Bay National Park	Canada/USA	Sitkan	1
Simien national Park Sibiloi /Central Island National Park Kilimanjaro National Park Ngorongoro Conservation Area	Ethiopia Kenya Tanzania Tanzania	Somalian	4
Whale Sanctuary of El Vizcaino	Mexico	Sonoran	1
Greater St. Lucia Wetland Park	South Africa	South African Woodland/Savanna	1
Ha Long Bay	Viet Nam	South Chinese Rainforest	1
Henderson Island	United Kingdom	Southeastern Polynesian	1
Los Glaciares Huascarán National Park Río Abiseo	Argentina Peru Peru	Southern Andean	3
Australian Fossil Mammal Sites	Australia	Southern Sclerophyll	1
The Laponian Area	Sweden	Subarctic Birchwoods	1
Tasmanian Wilderness	Australia	Tasmanian	1
Dja Faunal Reserve Manovo-Gounda St. Floris National Park Comoé National Park Cliffs of Bandiagra (Land of the Dogons) 'W' National Park of Niger Niokolo-Koba National Park	Cameroon Central African Republic Côte d'Ivoire Mali Niger Senegal	West African Woodland/Savanna	6
Virgin Komi Forests The Laponian Area	Russian Federation Sweden	West Eurasian Taiga	2
Shark Bay, Western Australia	Auatralia	Western Mulga	1
Banc d'Arguin National Park Air and Ténéré Natural Reserves Djoudj National Bird Sanctuary	Mauritania Niger Senegal	Western Sahel	3

World Heritage Site	Country	Udvardy Province	Total No.
Shark Bay, Western Australia	Australia	Western Sclerophyll	1
Sian Ka'an	Mexico	Yucatetan	1
Tatshenshini-Alsek/ Kluane National Park/ Wrangell-St Elias National Park and Reserve and Glacier Bay National Park	Canada/USA	Yukon Taiga	1
Historic Sanctuary of Machu Picchu, Manú National Park	Peru Peru	Yungas	2

Table 5. Udvardy Biogeographical Provinces not represented by World Heritage Sites

Udvardy Province
Alaskan Tundra
Aleutian Islands
Amazonian
Andaman and Nicobar Islands
Aral Sea
Arctic Archipelago
Arctic Desert
Arctic Desert and Icecap
Argentinian Pampas
Ascension and St Helena Islands
Atlas Steppe
Babacu
Bahamas-Bermudean
Borneo
Brazilian Planalto
Brigalow
Burman Rainforest
Caatinga
Campos Cerrados
Canadian Tundra
Central European Highlands
Central Polynesian
Ceylonese Monsoon Forest
Chilean Araucaria Forest
Chilean Sclerophyll
Cocos-Keeling&Christmas Islands
Colombian Montane
Congo Woodland/Savanna
Coromandel
Deccan Thorn Forest
East Melanesian
East Siberian Taiga
Eastern Sahel
Equadorian Dry Forest
Fernando De Noronja Island
Gran Chaco
Great Basin
Great Lakes
Greater Antillean
Greenland Tundra
Guerreran
Guinean Highlands
Higharctic Tundra
Hindu Kush Highlands
Icelandian
Iranian Desert
Kalahari
Karroo
Laccadives Islands

Udvardy Province
Lake Ladoga
Lake Tanganyika
Lake Titicaca
Lake Ukerewe (Victoria)
Llanos
Lowarctic Tundra
Madeiran
Madrean-Cordilleran
Mahanadian
Malabar Rainforest
Malagasy Rain Forest
Malagasy Thorn Forest
Malayan Rainforest
Maldives and Chagos Islands
Manchu-Japanese Mixed Forest
Marielandia
Mascarene Islands
Maudlandia
Micronesian
Mongolian-Manchurian Steppe
Namib
Northern Grasslands
Pamir-Tian-Shan Highlands
Pannonian
Patagonian
Revilla Gigedo Island
Sinaloan
South African Highlands
South Trinidade Island
Southern Mulga/Saltbush
Sulawesi (Celebes)
Szechwan Highlands
Sumatra
Taiwan
Takla-Makan-Gobi Desert
Tamaulipan
Thailandian Monsoon Forest
Thar Desert
Tibetan
Turanian
Uruguayan Pampas
Valdivian Forest
Venezuelan Deciduous Forest
Venezuelan Dry Forest
West Anatolian

Table 6. World Heritage Sites within Centres of Plant Diversity (CPD)

Site Name	Country
Tassili n'Ajjer	Algeria
Los Glaciares	Argentina
Península Valdés	Argentina
Australian Fossil Mammal Sites	Australia
Central Eastern Australian Rainforest	Australia
Great Barrier Reef	Australia
Kakadu National Park	Australia
Lord Howe Island Group	Australia
Macquarie Island	Australia
Shark Bay Western Australia	Australia
Tasmanian Wilderness	Australia
Uluru-Kata Tjuta National Park	Australia
Wet Tropics of Queensland	Australia
The Sundarbans	Bangladesh
Discovery Coast Atlantic Forest Reserves	Brazil
South East Forest Reserves	Brazil
Pirin National Park	Bulgaria
Dja Faunal Reserve	Cameroon
Miguasha Park	Canada
Huanglong Scenic and Historic Interest Area	China
Jiuzhaigou Valley Scenic and Historic Interest Area	China
Mount Wuyi	China
Los Katios National Park	Colombia
Taï National Park	Côte d'Ivoire
Desembarco del Granma National Park	Cuba
Garamba National Park	Dem. Rep. of Congo
Kahuzi-Biega National Park	Dem. Rep. of Congo
Salonga National Park	Dem. Rep. of Congo
Virunga National Park	Dem. Rep. of Congo
Morne Trois Pitons National Park	Dominica
Sangay National Park	Ecuador
Simien National Park	Ethiopia
Cape Girolata, Cape Porto, Scandola Natural Reserve and the Piana Calanches in Corsica	France
Pyrénées – Mont Perdu	France/Spain
Tikal National Park	Guatamala
Mount Nimba Reserves	Guinea/Côte d'Ivoire
Río Plátano Biosphere Reserve	Honduras
Nanda Devi National Park	India
The Sundarbans	India
Lorentz National Park	Indonesia
Ujung Kulon National Park	Indonesia
Yakushima	Japan
Mount Kenya National Park/Natural Forest	Kenya
Tsingy de Bemaraha Strict Nature Reserve	Madagascar
Whale Sanctuary of El Vizcaino	Mexico

Site Name	Country
New Zealand Sub-Antarctic Islands	New Zealand
Air and Ténéré Natural Reserves	Niger
Darién National Park	Panama
Talamanca Range-La Amistad Reserves	Panama/Costa Rica
Historic Sanctuary of Macchu Picchu	Peru
Huascarán National Park	Peru
Manú National Park	Peru
Río Abiseo National Park	Peru
Puerto-Princesa Subterranean River National Park	Philippines
Laurisilva of Madeira	Portugal
Golden Mountains of Altai	Russian Federation
Lake Baikal	Russiaan Federation
Western Caucasus	Russian Federation
Vallée de Mai Nature Reserve	Seychelles
Greater Santa Lucia Wetland Park	South Africa
Doñana National Park	Spain
Garajonay National Park	Spain
Ibiza, Biodiversity and Culture	Spain
Sinharaja Forest Reserve	Sri Lanka
Kilimanjaro National Park	Tanzania
Thung Yai – Huai Kha Kaeng Wildlife Sanctuaries	Thailand
Göreme National Park and the Rock Sites of Cappodicia	Turkey
Hierapolis-Pamukkale	Turkey
Bwindi Impenetrable National Park	Uganda
Rwenzori Mountains National Park	Uganda
Everglades National Park	USA
Redwood National Park	USA
Yosemite National Park	USA
Canaima National Park	Venezuela

Table 7. Regional Centres of Plant Diversity not represented in the current World Heritage List

Region	Country	Area Name
Africa	Algeria	Babor Mountains in Petit Kabylie
Africa	Angola	Benguela and Bié Districts
Africa	Angola/Namibia	The Kaokoveld
Africa	Cameroon	Adamaova area
Africa	Cameroon	Campo-Kribi
Africa	Cameroon	Korup National Park
Africa	Cameroon	Mount Cameroon
Africa	Chad	Tibesti
Africa	Congo	Tsiama or Grand Bangou Forest
Africa	Congo	Odzala National Park and Biosphere Reserve
Africa	Congo/Democratic republic of Congo	Mayombe
Africa	Congo/Gabon	Massif ae Chaillu
Africa	Côte d'Ivoire	Odienné area
Africa	Côte d'Ivoire	South-east forest remnants
Africa	Democratic Republic of Congo	Haut Shaba
Africa	Democratic Republic of Congo	Itombwe
Africa	Democratic Republic of Congo	Kundelungu
Africa	Democratic Republic of Congo	Maiko National Park
Africa	Democratic Republic of Congo	Marungu highlands
Africa	Democratic Republic of Congo	Upemba National Park
Africa	Democratic Republic of Sáo Tomé and Príncipe	Mount Malabo
Africa	Democratic Republic of Sáo Tomé and Príncipe	Príncipe
Africa	Democratic Republic of Sáo Tomé and Príncipe	Sâo Tomé
Africa	Egypt/Sudan	Jebel Elba
Africa	Ethiopia	Bale Mountains
Africa	Ethiopia/Kenya/Somalia	Limestone bush / woodland
Africa	Gabon	Bélinga area and Ipassa-Mukokou Forest
Africa	Gabon	Cristal Mountains
Africa	Gabon	Massif de Doudou
Africa	Ghana	South west Ghana
Africa	Guinea	Fouta Djallon
Africa	Kenya	Shimba hills
Africa	Kenya/Uganda	Mount Elgon
Africa	Liberia	Cestos - Senkwen River area
Africa	Liberia	Loffa - Mano
Africa	Liberia	Sapo National Park
Africa	Libya	Al Jabal al Akhdar
Africa	Malawi	Mount Mulanje
Africa	Malawi/Zambia	Nyika Plateau
Africa	Mauritania	Atar area
Africa	Morocco	Coastal area near Agadir and to south
Africa	Morocco	High Atlas
Africa	Namibia/South Africa	Western Cape Domain (Succulent Karoo)
Africa	Nigeria	Oban Hills and Cross River National Park

Region	Country	Area Name
Africa	Rwanda	Nyungwe Forest Reserve
Africa	Sierra Leone	Gola High Forest
Africa	Sierra Leone	Loma
Africa	Somalia	Cal Madow
Africa	Somalia	Hobyo/Obbia area
Africa	Somalia	Nugual Valley
Africa	South Africa	Albany centre
Africa	South Africa	Cape Floristic Region
Africa	South Africa	Drakensberg Afromontane regional system
Africa	South Africa	Drakensberg Alpine Region
Africa	Sudan	Imatong Mountains
Africa	Sudan	Jebel Marra
Africa	Tanzania	Itigi Thicket
Africa	Tanzania	Msumbugwe
Africa	Tanzania	Pugu hills and Kazimzumbwi Forest Reserves
Africa	Tanzania	Rondo Plateau
Africa	Tanzania	East Usambaras Mountains
Africa	Tanzania	Mahle-Karobwa Hills
Africa	Tanzania/Kenya	Kitulo Plateau / Kipengere Mountains
Africa	Tanzania/Kenya	Nguru Mountains
Africa	Tanzania/Kenya	Taita hills
Africa	Tanzania/Kenya	Uluguru Mountains
Africa	Tanzania/Kenya	Uzungwa Mountains
Africa	Tanzania/Mozambique	Middle Ruvuma River area
Africa	Zambia	Lwangwa Valley
Africa	Zambia	Zambezi source area
Africa	Zimbabwe	Chimanimani Mountains
Africa	Zimbabwe	Great Dyke
Africa	Zimbabwe	Nyanga
Atlantic Ocean Islands	Cape Verde	Cape Verde Islands
Atlantic Ocean Islands	Portugal	Azores
Atlantic Ocean Islands	United Kingdom	Saint Helena
Australia and New Zealand	Australia	Australian Alps
Australia and New Zealand	Australia	Christmas Island
Australia and New Zealand	Australia	McIlwraith Range and Iron Range
Australia and New Zealand	Australia	North Kimberley Region
Australia and New Zealand	Australia	Sclerophyll forests of Far South-east New South Wales
Australia and New Zealand	Australia	Sydney Sandstone Region
Australia and New Zealand	New Zealand	Chatham Islands
Australia and New Zealand	New Zealand	Northland
Australia and New Zealand	New Zealand	North-west Nelson

Region	Country	Area Name
Caribbean Islands	Cuba	Cajalbana Tableland and Preluda Mountain Region
Caribbean Islands	Cuba	Coast from Juragoa to Casilda Peninsula; Trinidad Mountains; Sierra del Escambray
Caribbean Islands	Cuba	Pinar del Río
Caribbean Islands	Dominican Republic	Cordillera Central
Caribbean Islands	Dominican Republic	Los Haitises
Caribbean Islands	Dominican Republic	Sierra de Neiba
Caribbean Islands	Haiti	Morne la Viste
Caribbean Islands	Haiti	Pic Macaya
Caribbean Islands	Jamaica	Aripo Savannas Scientific Reserve
Caribbean Islands	Jamaica	Blue and John Crow Mountains
Caribbean Islands	Jamaica	Cockpit County
Central and North Asia	Kazakhstan/Kyrgystan/Tajikistan/Turkmenistan/Uzbekistan	Mountains of Middle Asia
Central and North Asia	Russian Federation	Chukotskiy Peninsula
Central and North Asia	Russian Federation	Primorye
Central and North Asia	Tajikistan/Uzbekistan	Zehraushan River basin and the Smarkand Mountains
China and East Asia	Cambodia	Cardamom Mountains
China and East Asia	China	Ailao Shan
China and East Asia	China	Chang Guancai Mountain Range
China and East Asia	China	Changbai Mountain region
China and East Asia	China	Da Tuzi Mountain Range
China and East Asia	China	Daba Mountains
China and East Asia	China	Dabie and Guniu Mountains
China and East Asia	China	Fanjing Mountains
China and East Asia	China	Funiu Mountains
China and East Asia	China	Gao Tai Mountain Range
China and East Asia	China	Gaoligong Mountains, Nu Jiang River and Biluo Snow Mountains
China and East Asia	China	Haba Snow Mountains
China and East Asia	China	Helan Mountains
China and East Asia	China	High Mt & Deep Gorge Reg.-Gaoligong Mt/Nu Jiang R/
China and East Asia	China	Jiulong Mountains
China and East Asia	China	Kunyu Mountains
China and East Asia	China	Lao Mountains
China and East Asia	China	Limestone region, south-west Zhuang Autonomous Reg
China and East Asia	China	Lingwu Mountains
China and East Asia	China	Mazui Mountain
China and East Asia	China	Mountains of Wisichuan
China and East Asia	China	Nanling Mountain Range
China and East Asia	China	Shennongjia
China and East Asia	China	South Yulong Mountains
China and East Asia	China	Southern Guangxi Province (Shiwanda Mountains and Nonggang Nature Reserves)
China and East Asia	China	Southern part of Taihang Mountains
China and East Asia	China	Tacheng basin and Ili Valley
China and East Asia	China	Taibai Mountain region

Region	Country	Area Name
China and East Asia	China	Tropical forests of Hainan
China and East Asia	China	Western slope of Do Hinggan Mountains, Horquin and Xilin Gol
China and East Asia	China	Wolong Mountains, Da and Xiao Liang Shan Mountains
China and East Asia	China	Wutai Mountains
China and East Asia	China	Xishuangbanna region
China and East Asia	China	Xizo Hinggan Mountain Range
China and East Asia	China	Yushan National Park
China and East Asia	China	Zayu, Medog, Yadon and Nyalam
China and East Asia	China	Zhongtiao Mountains
China and East Asia	Japan	Bonin (Ogasawara) Islands
China and East Asia	Japan	Mount Hakusan
China and East Asia	Japan	Mount Hyachine
China and East Asia	Japan	Rebun Island
China and East Asia	Japan	Shiroum Mountains
China and East Asia	Laos	Bolovens Plateau
China and East Asia	North Korea	Mount Chilbo Nature Reserve
China and East Asia	South Korea	Mount Chiri National Park
China and East Asia	South Korea	Mount Halla
China and East Asia	South Korea	Mount Sorak National Park and Biosphere Reserve
China and East Asia	Taiwan	Kenting National Park
China and East Asia	Taiwan	Yushon National Park
China and East Asia	Thailand	Doi Chiang Dao Wildlife Sanctuary
China and East Asia	Thailand	Doi Inthanon
China and East Asia	Thailand	Doi Suthep-pui National Park
China and East Asia	Thailand	Khao Soi Dao Wildlife Sanctuary
China and East Asia	Thailand	Khao Yai National Park
China and East Asia	Thailand	Limestone Flora
China and East Asia	Thailand	Tarutao National Park
China and East Asia	Thailand	Wet Seasonal Evergreen forests of south east Thailand
China and East Asia	Viet Nam	Bach Ma-Hai Van National Park
China and East Asia	Viet Nam	Cat Tien Biosphere Reserve
China and East Asia	Viet Nam	Cuc Phuong National Park
China and East Asia	Viet Nam	Langbian-Dalat Highland
China and East Asia	Viet Nam	Mount Fan Si Pan
China and East Asia	Viet Nam	Phu Khan
China and East Asia	Viet Nam	Yok Don Nature Reserve
Europe	Austria/France/Germany/Italy/Liechenstein/Slovenia/Switzerland	Alps
Europe	Belarus/Poland	Bialowieza Forest
Europe	Cyprus	Troodos Mountains
Europe	Czech Republic/Slovakia/Hungary/Poland/Romania/Ukraine	Carpathians
Europe	Greece	Crete
Europe	Greece	Mount Olympus
Europe	Greece	Mountains of Southern and Central Greece
Europe	Ireland	Burren
Europe	Portugal	Algarve

Region	Country	Area Name
Europe	Portugal	Peneda - Gêres
Europe	Portugal	Serra da Estrêla
Europe	Russian Federation/Ukraine	South Crimean Mountains and Novorossia
Europe	Spain	Baetic and Sub-Baetic Mountains
Europe	Spain	Massifs of Gudar and Javalambre
Europe	Spain	Picos de Europa
Europe	Spain	Sierra de Gredos and Sierra de Guadarrama
Europe	Sweden	Öland and Gotland
Indian Ocean Islands	Comoros Islands	Comoros Islands
Indian Ocean Islands	Mauritius/France	Mascarene Islands including Mauritius, Rodrigues and Réunion
Indian Sub-Continent	India	Andaman and Nicobar Islands
Indian Sub-Continent	India	Nallamalais
Indian Sub-Continent	India	Namdapha National Park
Indian Sub-Continent	India	Nilgiri Biosphere Reserve
Indian Sub-Continent	India	Agastyamalai Hills
Indian Sub-Continent	India/Nepal	Northern Sikkim and East Nepal
Indian Sub-Continent	Myanmar	Bago Yoma
Indian Sub-Continent	Myanmar	North Myanma
Indian Sub-Continent	Myanmar	Rongklang Range
Indian Sub-Continent	Myanmar	Shan Plateau
Indian Sub-Continent	Pakistan/India	Kashmir Himalaya
Indian Sub-Continent	Sri Lanka	Knuckles
Indian Sub-Continent	Sri Lanka	Peak Wilderness and Horton Plains
Middle America	Costa Rica	Braulio Carrillo-La Selva Region
Middle America	Costa Rica	Osa Peninsula and Corcovado National Park
Middle America	Guatamala	Sierra de las Minas Region and Biosphere Reserve
Middle America	Mexico	Canyon of the Zopilote Region
Middle America	Mexico	Cuatro Cienagas Region
Middle America	Mexico	Gómez Farías Region and El Cielo Biosphere Reserve
Middle America	Mexico	Lacandon Rain Forest/Montes Azules Biosphere Reser
Middle America	Mexico	Pacific Lowlands/Jalisco/Chamela Biol Stn/Cumbres
Middle America	Mexico	Sierra de Juarez, Oaxaca
Middle America	Mexico	Sierra de Mantantlan Biosphere Reserve
Middle America	Mexico	Tehuacan-Cuicatlan Region
Middle America	Mexico	Upper Mezquital River Region, Sierra Madre Occiden
Middle America	Mexico	Uxpanapa-Chimalapa Region
Middle America	Mexico/USA	Apachian-Madrean Region
Middle America	Panama	Cerro Azul-Cerro Jefe (in Chagres National Park)
North America	Canada	Ellesmere Island
North America	Canada	Gulf of St Lawrence
North America	Canada	Lake Athabasca, Saskatchewan, sand-dune region
North America	Canada	Mackenzie Mountains

Region	Country	Area Name
North America	Canada	Southern British Columbia, primarily the Queen Charlotte Islands
North America	Canada	The Arctic Islands
North America	Canada	The Queen Charlotte Islands
North America	Canada	Torngat Mountains
North America	Canada/USA	Central Yukon Plateau
North America	USA	Apalachicola River drainage of north western Florida (panhandle) and adjacent Georgia
North America	USA	Atlantic Coastal Plain
North America	USA	Canyon Lands Section
North America	USA	Cedar Glades
North America	USA	Central highlands of Florida
North America	USA	Central Rocky Mountains
North America	USA	Death Valley
North America	USA	Edwards Plateau
North America	USA	Great Basin Desert
North America	USA	Gulf or coastal prairie
North America	USA	Inyo region of California and Nevada
North America	USA	Mesic savannas of north and South Carolina
North America	USA	Mojave Desert
North America	USA	Owhee region, Oregon to Idaho
North America	USA	Piedmont rock outcrops in Georgia, South Carolina and Alabama
North America	USA	Shale barrens
North America	USA	Utah Plateaux section
North America	USA	Wenatchee Mountains, Washington
North America	USA	White Mountains
North America	USA	Trans-Pecos region, including Big Bend National Park
North America	USA/Mexico	Chihuahuan Desert
Pacific Ocean Islands	Chile	Juan Fernandez islands
Pacific Ocean Islands	Fiji	Fiji
Pacific Ocean Islands	French Polynesia	Marquesas
Pacific Ocean Islands	New Caledonia, France	Grande Terre, New Caledonia
Pacific Ocean Islands	Western Samoa/American Samoa	Samoan Islands
South America	Argentina	Anconquija Region
South America	Argentina	Patagonia
South America	Argentina/Paraguay/Brazil/Bolivia	Gran Chaco Region
South America	Bolivia	Apolo-Madidi Region
South America	Bolivia	Llanos de Mojos
South America	Bolivia	South-eastern Santa Cruz
South America	Brazil	Caatinga of North-easter Brazil
South America	Brazil	Distrito Federal
South America	Brazil	Espinhaço Range region
South America	Brazil	Mountain Ridges of Rio de Janeiro
South America	Brazil	Semi-deciduous Forests of Southern Brazil
South America	Brazil	Serra do Japi
South America	Brazil	Cabo Frio region
South America	Brazil	Manaus Region
South America	Brazil/Colombia/Venezuela	Upper Negro River Region

Region	Country	Area Name
South America	Brazil/Guyana/Surinam	Transverse dry belt
South America	Chile	Atacama Desert
South America	Chile	Mediterranean Region
South America	Chile/Argentina	Temperate Rain Forest
South America	Colombia	Central Colombian Massif
South America	Colombia	Chiribiquete-Araracuara-Cahuinari Region
South America	Colombia	Los Nevados National Park
South America	Colombia	Paramo de Sumapuz Region
South America	Colombia	Sierra Nevada de Santa Marta
South America	Colombia	Sierra Nevada del Cocuy-Guanriva
South America	Colombia/Ecuador	Volcanoes of the Narinense Plateau
South America	Ecuador	Gran Sumaco and Upper Napo Region
South America	Ecuador	Yasuni National Park and Waorani Ethnic Reserve
South America	French Guiana	Saul Region
South America	Paraguay	Mbaracayu Region
South America	Peru	Cerros de Amotape National Park
South America	Peru	Huancabamba Region
South America	Peru	Peruvian Desert: Lomas Formation
South America	Peru	Tambopata Region
South America	Peru/Colombia	Iquitos Region
South America	Venezuela	Coastal Cordillera
South East Asia	Bismark Archipelago, Papua new Guinea	Central Manas - Mount Dremsel
South East Asia	Bismark Archipelago, Papua new Guinea	Hans Meyer Range
South East Asia	Bismark Archipelago, Papua new Guinea	Mounts Sinewit and Burringa
South East Asia	Bismark Archipelago, Papua new Guinea	Nakanai Mountains
South East Asia	Bismark Archipelago, Papua new Guinea	Schleinitz Range-Lelet Plateau
South East Asia	Bismark Archipelago, Papua new Guinea	Southern Namatanai
South East Asia	Bismark Archipelago, Papua new Guinea	Whiteman Range to southern coast of New Britain
South East Asia	Bismark Archipelago, Papua new Guinea	Willaumez Peninsula-Lake Dakataua
South East Asia	Bougainville, Papua New Guinea	Mount Balbi to southern coast
South East Asia	Bougainville, Papua New Guinea	Mount Takuan-Tonolei Harbour
South East Asia	Brunei Darussalam	Andulau Forest Reserve
South East Asia	Brunei Darussalam	Batu Apoi Forest Reserve, Ulu Temburong
South East Asia	Brunei Darussalam	Labi Hills, including Bukit Teraja and Ulu Ingei, Batu Patam - Sungei Ingei
South East Asia	D'Entrecasteaux Islands, Papua new Guinea	D'Entrecasteaux Islands
South East Asia	D'Entrecasteaux Islands, Papua new Guinea	Louisade Archipelago
South East Asia	Irian Jaya, Indonesia	Arfak Mountains
South East Asia	Irian Jaya, Indonesia	Cagar Alam Pegunungan Cyclops
South East Asia	Irian Jaya, Indonesia	Cagar Alam Pulau Salawati Utara (North Sulawesi Island Nature Reserve)

Region	Country	Area Name
South East Asia	Irian Jaya, Indonesia	Cagar Alam Pulau Supiori, Cagar Alam Pulau Numfor, Cagar Alam Pulau Biak Utara
South East Asia	Irian Jaya, Indonesia	Cagar Alam Pulau Yapen Tenggah
South East Asia	Irian Jaya, Indonesia	Gunung Wagura - Kote
South East Asia	Irian Jaya, Indonesia	Pegunungan Kumawa
South East Asia	Irian Jaya, Indonesia	Pegunungan Latimojong
South East Asia	Irian Jaya, Indonesia	Pegunungan Tamraw Selatan (Southern Tamrau Mountains)
South East Asia	Irian Jaya, Indonesia	Pegunungan Tamraw Utara (Northern Tamraw Mountains)
South East Asia	Irian Jaya, Indonesia	Pegunungan Wandamen - Wondiwoi (Wandamen - Wandiwoi Mountains, Wandamen Peninsula)
South East Asia	Irian Jaya, Indonesia	Pengunungan Weyland
South East Asia	Irian Jaya, Indonesia	Waigeo
South East Asia	Java, Indonesia	Baluran National Park
South East Asia	Java, Indonesia	Gede-Pangrango National Park
South East Asia	Java, Indonesia	Gunung Halimun Nature Reserve
South East Asia	Kalimantan, Indonesia	Bukit Raya,Bukit Baka
South East Asia	Kalimantan, Indonesia	Gunung Bentuang dan Karimun/Lanjak Entimau/Batang
South East Asia	Kalimantan, Indonesia	Ulu Sembakung
South East Asia	Kalimantan, Indonesia	Sungai Kayan-Sungai Mentarang
South East Asia	Kalimantan, Indonesia/Sabah and Sarawak, Malaysia	Limestone flora of Borneo
South East Asia	Moluccas, Indonesia	Mansuela National Park
South East Asia	Papua New Guinea	Adelbert Ranges
South East Asia	Papua New Guinea	Bismarck Falls-Mt Wilhelm-Mt Otto-Schrader Range-M
South East Asia	Papua new Guinea	Cloud Mountains
South East Asia	Papua New Guinea	Finisterre Ranges
South East Asia	Papua New Guinea	Galley reach
South East Asia	Papua New Guinea	Gogol - Sogeron Headwaters
South East Asia	Papua new Guinea	Gulf - Ihu
South East Asia	Papua New Guinea	Hunstein Range - Burgers Mountains - Schatterburg
South East Asia	Papua New Guinea	Huon Penin-Mt Bangeta-Rawlinson Ranges; Cromwell R
South East Asia	Papua new Guinea	Kiunga - Palmer River - Victor Emmanuel Range
South East Asia	Papua new Guinea	Kubor Ranges
South East Asia	Papua New Guinea	Lake Wanum-Red Hill Swamp-Oomsis Ridge
South East Asia	Papua New Guinea	Lower Watut
South East Asia	Papua New Guinea	Mamberamo-Peg Jayawijaya
South East Asia	Papua New Guinea	Menyamya-Aseki- Mt Amungwiwa-Bowutu Mts-Lasanga Island
South East Asia	Papua New Guinea	Milne Bay-Collinwood Bay to southern coast
South East Asia	Papua New Guinea	Mount Bosavi - Nomad River
South East Asia	Papua New Guinea	Mount Giluwe - Tari Gap - Doma Peaks
South East Asia	Papua New Guinea	Mount Michael-Okapa-Crater Mountain
South East Asia	Papua New Guinea	Owen Stanley Mountains

Region	Country	Area Name
South East Asia	Papua New Guinea	Porgera Peaks
South East Asia	Papua New Guinea	S Fly Ptf:L Daviumbu-Oriomo-Wassi Kussa-Tonda WMA
South East Asia	Papua New Guinea	Safia Savanna
South East Asia	Papua new Guinea	Star mountains – Telfomin – Tifalmin – Strickland Gorge
South East Asia	Papua New Guinea	Topographers Range
South East Asia	Papua new Guinea	Torricelli Mountains – Bewani Mountains – Prince Alexander Range
South East Asia	Papua New Guinea	Tower Limestone Region: Leonard Murray Mountains – Darai Hills – Great Papuan Plateau
South East Asia	Papua New Guinea	Varirata and Astrolabe Ranges
South East Asia	Peninsula Malaysia	Endau-Rompin State Parks (proposed)
South East Asia	Peninsula Malaysia	Limestone flora of Peninsular Malaysia
South East Asia	Peninsula Malaysia	Montane flora of Peninsula Malaysia
South East Asia	Peninsula Malaysia	Pulau Tioman
South East Asia	Peninsula Malaysia	Sedili Kecil Swamp Forest
South East Asia	Peninsula Malaysia	South East Pahang Swamp Forests
South East Asia	Peninsula Malaysia	Taman Negara
South East Asia	Peninsula Malaysia	Tasek Berah Forest Reserve
South East Asia	Peninsula Malaysia	Trengganu Hills
South East Asia	Peninsula Malaysia	Ulu Belum
South East Asia	Peninsular Malaysia	Dindings, Seguri Melintang and Larut Hills
South East Asia	Philippines	Batanes
South East Asia	Philippines	Gunung Palung
South East Asia	Philippines	Mount Apo
South East Asia	Philippines	Mount Baloy
South East Asia	Philippines	Mount Isarog
South East Asia	Philippines	Mount Kitanglad
South East Asia	Philippines	Mount Makiling and Mount Banashaw
South East Asia	Philippines	Mount Talines and Lake Balin Sasayao
South East Asia	Philippines	Mt Pulog/Mt Tabayoc
South East Asia	Philippines	Palanan Wilderness Area
South East Asia	Philippines	Sibuyan Island
South East Asia	Philippines	Southern Samar
South East Asia	Sabah, Malaysia	Crocker Range/Mount Trus Madi
South East Asia	Sabah, Malaysia	East Sabah Lowland and Hill Dipterocarp Forest
South East Asia	Sabah, Malaysia	Gunung Lotung/Maliau Basin
South East Asia	Sabah, Malaysia	Kinabalu Park
South East Asia	Sabah, Malaysia	North east Borneo Ultramafic Flora
South East Asia	Sabah, Malaysia	Ulu Meligan/Ulu Long Basin
South East Asia	Sarawak, Malaysia	Bako National Park
South East Asia	Sarawak, Malaysia	Batu aga, Linau Balui Plateau
South East Asia	Sarawak, Malaysia	Bukit Mersing, Anap, Tarau Region
South East Asia	Sarawak, Malaysia	Gunong Gaharu, Gunong Apeng and Gunong Silentek, Sabal Forest Reserve
South East Asia	Sarawak, Malaysia	Gunung Gading National Park
South East Asia	Sarawak, Malaysia	Gunung Mulu NP/Labi Hills/Batu Patam/Sungei Ingei
South East Asia	Sarawak, Malaysia	Lambir Hills

Region	Country	Area Name
South East Asia	Sarawak, Malaysia	Mixed Dipterocarp Forests on Humult Ultisols on Coastal Hills
South East Asia	Sarawak, Malaysia	Nieuwenhuis Mountains
South East Asia	Sarawak, Malaysia	Puen Range (Gunung Pueh, Bukit Kanyi, Bukit Berumput to Berpayong)
South East Asia	Sarawak, Malaysia	Pulong Tau, Gunung Murud
South East Asia	Sarawak, Malaysia	Usun Apau Plateau
South East Asia	Sulawesi, Indonesia	Dumoga-Bone National Park (proposed)
South East Asia	Sulawesi, Indonesia	Limestone flora of Sulawesi
South East Asia	Sulawesi, Indonesia	Lore Lindu National Park
South East Asia	Sulawesi, Indonesia	Ultramafic flora of Sulawesi: Morowali Nature Res
South East Asia	Sumatra, Indonesia	Barisan Seletan National Park
South East Asia	Sumatra, Indonesia	Berbak Game Reserve
South East Asia	Sumatra, Indonesia	Gunung Leuser National Park (proposed)
South East Asia	Sumatra, Indonesia	Kerinci-Seblat
South East Asia	Sumatra, Indonesia	Limestone Flora of Sumatra
South East Asia	Sumatra, Indonesia	Tigapuluh Mountains
SW Asia and the Middle East	Afghanistan	Bamian Ghorat
SW Asia and the Middle East	Afghanistan	North-eastern Afghanistan
SW Asia and the Middle East	Afghanistan	Safed Koh
SW Asia and the Middle East	Afghanistan	Touran Biosphere Reserve
SW Asia and the Middle East	Egypt/Saudi Arabia	Southern Sinai and Northern Hijaz
SW Asia and the Middle East	Iran	Zagros Mountains
SW Asia and the Middle East	Iran/Azerbaijan	Hyrcanian forests
SW Asia and the Middle East	Oman/Yemen	Dhofar Fog Oasis
SW Asia and the Middle East	Saudi Arabia	Harrat Al-Harrah
SW Asia and the Middle East	Saudi Arabia/Yemen	Highlands of South-western Arabia
SW Asia and the Middle East	Turkey	Isaurian, Lycaonian and Cilician Taurus
SW Asia and the Middle East	Turkey	Tuz Gölü
SW Asia and the Middle East	Turkey	Ulu Dag
SW Asia and the Middle East	Turkey/Iran/Iraq	Mountains of SE Turkey, NW Iran and Northern Iraq
SW Asia and the Middle East	Turkey/Syria/Lebanon/Israel/Jordan	Levantine Uplands
SW Asia and the Middle East	Yemen	Hadramaut
SW Asia and the Middle East	Yemen	Jebel Areys
SW Asia and the Middle East	Yemen	Socotra

Table 8. World Heritage sites within Vavilov Centres of Plant Genetic Diversity

Site Name	Country
The Sundarbans	Bangladesh
Pirin National Park	Bulgaria
Huanglong Scenic and Historic Interest Area	China
Jiuzhaigou Valley Scenic and Historic Interest Area	China
Mount Emei and Leshan Giant Buddha	China
Mount Huangshan	China
Mount Taishan	China
Mount Wyui	China
Wulingyuan Scenic and Historic Interest Area	China
Plitvice Lakes National Park	Croatia
Cape Girolata, Cape Porto & Scandola Nature Reserves in Corsica	France
Pyrénées – Mont Perdu	France/Spain
Ohrid Region with its Cultural and Historical Aspect and its Natural Environment	FYRM
Meteora	Greece
Mount Athos	Greece
Kaziranga National Park	India
Keoladeo National Park	India
Manas Wildlife Sanctuary	India
Nanda Devi National Park	India
Sundarbans National Park	India
Komodo National Park	Indonesia
Lorentz National Park	Indonesia
Ujung Kulon National Park and Krakatan National Reserve	Indonesia
Mount Kenya National Park/Natural Forest	Kenya
Sibiloi/Central Island National Parks	Kenya
Royal Chitwan National Park	Nepal
Sagarmatha National Park	Nepal
Historic Sanctuary of Macchu Picchu	Peru
Huascarán National Park	Peru
Manú National Park	Peru
Río Abiseo National Park	Peru
Skocjan Caves	Slovenia
Doñana National Park	Spain
Ibiza, Biodiversity and Culture	Spain
Thung Yai – Huai Kha Kaeng Wildlife Sanctuaries	Thailand
Ichkeul National Park	Tunisia
Göreme National Park and the Rock Sites of Cappodicia	Turkey
Hierapolis-Pamukkale	Turkey
Ha Long Bay	Viet Nam
Durmitor National Park	Yugoslavia

Table 9. World Heritage sites within Endemic Bird Areas

World Heritage Site	Country	EBA	Priority	Biological importance	Current threat level
Los Glaciares	Argentina	Southern Patagonia	URGENT	3	1
Iguazú/Iguaçu National Park	Argentina and Brazil	Atlantic forest lowlands	CRITICAL	3	3
Australian Fossil Mammal Sites	Australia	South-east Australia	CRITICAL	3	2
Central Eastern Australian Rainforest	Australia	Eastern Australia	CRITICAL	3	2
Fraser Island	Australia	Eastern Australia	CRITICAL	3	2
Kakadu National Park	Australia	North-west Australia	URGENT	3	1
Lord Howe Island Group	Australia	Lord Howe Island	CRITICAL	2	3
Tasmanian Wilderness	Australia	Tasmania	URGENT	2	2
Wet Tropics of Queensland	Australia	Queensland wet tropics	URGENT	3	1
Wet Tropics of Queensland	Australia	Eastern Australia	CRITICAL	3	2
Willandra Lakes Region	Australia	South-east Australia	CRITICAL	2	3
Discovery Coast Atlantic Forest Reserves	Brazil	Atlantic forest lowlands	CRITICAL	3	3
Atlantic Forest Southeast Reserves	Brazil	Atlantic forest lowlands	CRITICAL	3	3
Dja Faunal Reserve	Cameroon	Cameroon and Gabon lowlands	HIGH	1	1
Huanglong Scenic and Historic Interest Area	China	Central Sichuan mountains	HIGH	2	1
Huanglong Scenic and Historic Interest Area	China	West Sichuan mountains	URGENT	1	2
Jiuzhaigou Valley Scenic and Historic Interest	China	Central Sichuan mountains	HIGH	2	1
Jiuzhaigou Valley Scenic and Historic Interest	China	West Sichuan mountains	URGENT	1	2
Mount Emei and Leshan Giant Buddha	China	Yunnan mountains	URGENT	1	2
Mount Huangshan	China	South-east Chinese mountains	CRITICAL	1	3
Los Katios National Park	Colombia	Darién lowlands	CRITICAL	3	2
Area de Conservación Guanacaste	Costa Rica	Costa Rica and Panama highlands	URGENT	3	1
Cocos Island National Park	Costa Rica	Cocos Island	URGENT	2	2
Taï National Park	Côte d'Ivoire	Upper Guinea forests	CRITICAL	3	3
Mount Nimba Reserves	Côte d'Ivoire and Guinea	Upper Guinea forests	CRITICAL	3	3

World Heritage Site	Country	EBA	Priority	Biological importance	Current threat level
Desembarco del Granma National Park	Cuba	Cuba	CRITICAL	1	3
Kahuzi-Biega National Park	Democratic Republic of Congo	Eastern Zaïre lowlands	HIGH	1	1
Okapi Faunal Reserve	Democratic Republic of Congo	Eastern Zaïre lowlands	HIGH	1	1
Virunga National Park	Democratic Republic of Congo	Eastern Zaïre lowlands	HIGH	1	1
Virunga National Park	Democratic Republic of Congo	Albertine Rift mountains	URGENT	3	1
Morne Trois Pitons National Park	Dominica	Lesser Antilles	CRITICAL	3	2
Galápagos Islands	Ecuador	Galápagos Islands	URGENT	2	2
Sangay National Park	Ecuador	Central Andean páramo	URGENT	2	2
Simien National Park	Ethiopia	Central Ethiopian highlands	CRITICAL	1	3
Río Plátano Biosphere Reserve	Honduras	Central American Caribbean slope	HIGH	2	1
Kaziranga National Park	India	Assam plains	URGENT	1	2
Manas Wildlife Sanctuary	India	Assam plains	URGENT	1	2
Nanda Devi National Park	India	West Himalayas	CRITICAL	3	2
Komodo National Park	Indonesia	North Nusa Tenggara	HIGH	1	1
Lorentz National Park	Indonesia	Central Papuan mountains	URGENT	3	1
Lorentz National Park	Indonesia	South Papuan lowlands	HIGH	1	1
Lorentz National Park	Indonesia	West Papuan lowlands	HIGH	1	1
Ujung Kulon National Park	Indonesia	Java and Bali forests	CRITICAL	3	2
Ujung Kulon National Park	Indonesia	Javan coastal zone	HIGH	1	1
Yakushima	Japan	Nansei Shoto	CRITICAL	1	3
Mount Kenya National Park/Natural Forest	Kenya	Kenyan mountains	URGENT	2	2
Tsingy de Bemaraha Strict Nature Reserve	Madagascar	West Malagasy dry forests	HIGH	1	1
Sagarmatha National Park	Nepal	Central Himalayas	HIGH	1	1
New Zealand Sub-Antarctic Islands	New Zealand	Aukland Islands	HIGH	1	1
Te Wahipounamu-South West New Zealand	New Zealand	South Island of New Zealand	URGENT	1	2
Tongariro National Park	New Zealand	North Island of New Zealand	CRITICAL	1	3
Darién National Park	Panama	Darién lowlands	CRITICAL	3	

World Heritage Site	Country	EBA	Priority	Biological importance	Current threat level
Talamanca Range - La Amistad International Park	Panama and Costa Rica	Costa Rica and Panama highlands	URGENT	3	1
Historic Sanctuary of Machu Picchu	Peru	Peruvian High Andes	CRITICAL	3	3
Huascarán National Park	Peru	Junín puna	CRITICAL	1	3
Huascarán National Park	Peru	Peruvian high Andes	CRITICAL	3	3
Manú National Park	Peru	Peruvian east Andean foothills	HIGH	2	1
Manú National Park	Peru	Southern Central Andes	URGENT	1	2
Río Abiseo National Park	Peru	North-east Peruvian corderilleras	URGENT	3	1
Puerto-Princesa Subterranean River National Park	Philippines	Palawan	URGENT	2	2
Laurisilva of Madeira	Portugal	Madeira and the Canary Islands	HIGH	1	1
Western Caucasus	Russian Federation	Caucasus	HIGH	1	1
Aldabra Atoll	Seychelles	Aldabra	HIGH	1	1
Vallée de Mai Nature Reserve	Seychelles	Granitic Syechelles	CRITICAL	2	3
East Rennell	Solomon Islands	Solomon group	CRITICAL	3	2
Greater St. Lucia Wetland Park	South Africa	South African forests	HIGH	1	1
Garajonay National Park	Spain	Madeira and the Canary Islands	HIGH	1	1
Sinharaja Forest Reserve	Sri Lanka	Sri Lanka	URGENT	1	2
Bwindi Impenetrable National Park	Uganda	Eastern Zaïre lowlands	HIGH	1	1
Bwindi Impenetrable National Park	Uganda	Albertine Rift mountains	URGENT	3	1
Rwenzori Mountains National Park	Uganda	Eastern Zaïre lowlands	HIGH	1	1
Gough Island Wildlife Reserve	United Kingdom	Gough Island	URGENT	1	2
Henderson Island	United Kingdom	Henderson Island	URGENT	1	2
Kilimanjaro National Park	United Republic of Tanzania	Kenyan mountains	URGENT	2	2
Ngorongoro Conservation Area	United Republic of Tanzania	Serengeti plains	HIGH	2	1
Ngorongoro Conservation Area	United Republic of Tanzania	Kenyan mountains	URGENT	2	2
Selous Game Reserve	United Republic of Tanzania	Tanzania-Malawi mountains	CRITICAL	3	2

World Heritage Site	Country	EBA	Priority	Biological importance	Current threat level
Serengeti National Park	United Republic of Tanzania	Serengeti plains	HIGH	2	1
Hawaii Volcanoes National Park	United States of America	Hawaii	CRITICAL	3	3
Redwood National Park	United States of America	California	HIGH	2	1
Canaima National Park	Venezuela	Tepuis	URGENT	3	1

Table 10. Endemic Bird Areas not containing Natural World Heritage Sites

Name	Country	Priority Level
Western Angola	Angola/Namibia	Critical
Sierras Centrales of Argentina	Argentina	High
Bolivian and Argentine yungas	Argentina/Bolivia	Urgent
Bolivian and Argentine high Andes	Argentina/Bolivia/Peru	Critical
Argentine Mesopotamian grasslands	Argentina/Brazil/Uruguay	Critical
Atlantic forest mountains	Argentina/Brazil/Uruguay	Urgent
Chilean temperate forests	Argentina/Chile	High
Cape York	Australia	Critical
Christmas Island	Australia	High
Norfolk Island	Australia	Critical
South-west Australia	Australia	Critical
Bahamas	Bahamas	High
Bolivian and Peruvian lower yungas	Bolivia/Peru	Urgent
Atlantic slope of Alagoas and Pernambuco	Brazil	Critical
Central Brazilian hills and tablelands	Brazil	Urgent
Deciduous forest of Bahía	Brazil	Urgent
Deciduous forests of Minas Gerais and Goias	Brazil	Critical
Amazon flooded forests	Brazil	High
Fernando de Noronha	Brazil	High
North-east Brazilian caatinga	Brazil	Critical
Upper Amazon-Napo lowlands	Brazil/Colombia/Ecuador/Peru	High
Orinoco-Negro white-sand forest	Brazil/Colombia/Venezuela	High
Rio Branco gallery forest	Brazil/Guyana	Urgent
Bornean mountains	Brunei/Indonesia/Malaysia	Urgent
Cameroon mountains	Cameroon/Equatorial Guinea/Nigeria	Critical
Cape Verde Islands	Cape Verde	Urgent
Juan Fernandez Islands	Chile	Critical
Central Chile	Chile	Urgent
Peru-Chile Pacific slope	Chile/Peru	High
Eastern Tibet	China	High
Hainan	China	Critical
Quinghai mountains	China	High
Shanxi mountains	China	Urgent
Taklimakan Desert	China	Urgent
Yunnan mountains	China	Urgent
Southern Tibet	China/India	High
Colombian inter-Andean slopes	Colombia	Critical
Colombian inter-Andean valleys	Colombia	High
Nechí lowlands	Colombia	Critical
Santa Marta Mountains	Colombia	Urgent
Chocó	Colombia/Ecuador	Urgent
Northern Central Andes	Colombia/Ecuador	Critical
Caribbean Columbia and Venezuela	Colombia/Venezuela	Urgent
Columbian East Andes	Colombia/Venezuela	Critical
South Central American Pacific slope	Costa Rica/Panama	High
Cyprus	Cyprus	High
Andean ridge-top forests	Ecuador/Peru	Urgent
Tumbesian region	Ecuador/Peru	Critical

Name	Country	Priority Level
Annobón	Equatorial Guinea	Urgent
South Ethiopian highlands	Ethiopia	Critical
Jubba and Shabeelle valleys	Ethiopia/Kenya/Somalia	Critical
Fiji	Fiji	High
Comoro Islands	France	Critical
Marquesas Islands	France	Critical
New Caledonia	France	Urgent
Reunion	France	Urgent
Rimatara	France	Critical
Society Islands	France	Urgent
Tuamotu archipelago	France	Critical
Hispaniola	Haiti/Dominican Republic	Urgent
Nicobar Islands	India	High
Western Ghats	India	High
Andaman Islands	India/Myanmar	High
Banda Sea Islands	Indonesia	High
Banggai and Sula Islands	Indonesia	High
Buru	Indonesia	High
Enggano	Indonesia	High
Geelvink Islands	Indonesia	High
Java and Bali forest	Indonesia	Critical
Northern Maluka	Indonesia	High
Sangihe and Talaud	Indonesia	Critical
Seram	Indonesia	High
Sulawesi	Indonesia	High
Sumba	Indonesia	High
Timor and Wetar	Indonesia	High
West Papuan highlands	Indonesia	High
Sumatra and Peninsular Malaysia	Indonesia/Malaysia	Urgent
North Papuan mountains	Indonesia/Papua New Guinea	High
Northern Papuan lowlands	Indonesia/Papua New Guinea	High
Trans-Fly	Indonesia/Papua New Guinea	High
Mesopotamian marshes	Iran/Iraq	High
Jamaica	Jamaica	Critical
Ogasawara Islands	Japan	Critical
East African coastal forests	Kenyan/Somalia/Tanzania	Urgent
Annamese lowlands	Laos/Viet Nam	Critical
Lesotho highlands	Lesotho/South Africa	High
Southern African grasslands	Lesotho/South Africa	Critical
East Malagasy wet forests	Madagascar	Critical
East Malagasy wetlands	Madagascar	Critical
South Malagasy spiny forests	Madagascar	Urgent
West Malagasy wetlands	Madagascar	Critical
Mauritius	Mauritius	Critical
Rodrigues	Mauritius	Critical
Baja California	Mexico	High
Balsas region and interior Oaxaca	Mexico	High
Central Mexican marshes	Mexico	Urgent
Cozumel Island	Mexico	Urgent
Guadalupe Island	Mexico	Critical
Isthmus of Tehuantepec	Mexico	High

Name	Country	Priority Level
Los Tuxtlas and Uxpanapa	Mexico	Critical
North Central American highlands	Mexico	Urgent
North Central American Pacific slope	Mexico	High
North-east Mexican Gulf slope	Mexico	Urgent
Northern Sierra Madre Oriental	Mexico	High
North-west Mexican Pacific slope	Mexico	High
Sierra Madre del Sur	Mexico	Critical
Sierra Madre Occidental and trans-Mexican range	Mexico	Critical
Socorro Island	Mexico	Critical
Southern Sierra Madre Oriental	Mexico	Critical
Yacatan peninsula coastal scrub	Mexico	High
East Caroline Islands	Micronesia	Critical
Yap Islands	Micronesia	High
South African forests	Mozambique/ South Africa/Swaziland	High
Eastern Zimbabwe mountains	Mozambique/Zimbabwe	High
Irrawaddy plains	Myanmar	High
Chatham Islands	New Zealand	Critical
Southern Cook Islands	New Zealand	Urgent
Palau	Palau	High
Adelbert and Huon ranges	Papua New Guinea	High
Admirality Islands	Papua New Guinea	High
D'Entrecasteaux and Trobriand Islands	Papua New Guinea	High
Louisiade archipelago	Papua New Guinea	Urgent
New Britain and New Ireland	Papua New Guinea	High
Solomon group	Papua New Guinea	Critical
St Matthias Island	Papua New Guinea	High
Maranón valley	Peru	Urgent
Cebu	Philippines	Critical
Luzon	Philippines	Critical
Mindanao and the Eastern Visayas	Philippines	Critical
Mindoro	Philippines	Critical
Negros and Panay	Philippines	Critical
Sulu archipelago	Philippines	Critical
Principe	São Tomé Príncipe	High
São Tomé	São Tomé Príncipe	Critical
South-west Arabian mountains	Saudi Arabia/Yemen	High
Vanuata and Temotu	Solomon Islands/Vanuatu	High
Central Somali coast	Somalia	Critical
North Somali mountains	Somalia	Critical
Cape fynbos	South Africa	High
Taiwan	Taiwan	High
Pemba	Tanzania	High
Tristan Islands	UK	Urgent
Central Hawaiian Islands	USA	Critical
Laysan Island	USA	Critical
Mariana Islands	USA	Urgent
Samoan Island	USA/ Western Samoa	Urgent
Puerto Rico and the Virgin Islands	USA/UK	Urgent
Caripe-Paria region	Venezuela	Critical
Cordillera de la Costa Central	Venezuela	High

Name	Country	Priority Level
Cordillera de Mérida	Venezuela	Urgent
Da Lat plateau	Viet Nam	Urgent
South Vietnamese lowlands	Viet Nam	Critical
Socotra	Yemen	High

Table 11. Endemic Bird Areas prioritised as "Critical" not containing Natural World Heritage Sites

Country	Name	Priority Level
Angola/Namibia	Western Angola	Critical
Argentina/Bolivia/Peru	Bolivian and Argentine high Andes	Critical
Argentina/Brazil/Uruguay	Argentine Mesopotamian grasslands	Critical
Australia	Cape York	Critical
Australia	Norfolk Island	Critical
Australia	South-west Australia	Critical
Brazil	Atlantic slope of Alagoas and Pernambuco	Critical
Brazil	Deciduous forests of Minas Gerais and Goias	Critical
Brazil	North-east Brazilian caatinga	Critical
Cameroon/Equatorial Guinea/Nigeria	Cameroon mountains	Critical
Chile	Juan Fernandez Islands	Critical
China	Hainan	Critical
Colombia	Colombian inter-Andean slopes	Critical
Colombia	Nechí lowlands	Critical
Colombia/Ecuador	Northern Central Andes	Critical
Colombia/Venezuela	Columbian East Andes	Critical
Ecuador/Peru	Tumbesian region	Critical
Ethiopia	South Ethiopian highlands	Critical
Ethiopia/Kenya/Somalia	Jubba and Shabeelle valleys	Critical
France	Comoro Islands	Critical
France	Marquesas Islands	Critical
France	Rimatara	Critical
France	Tuamotu archipelago	Critical
Indonesia	Java and Bali forest	Critical
Indonesia	Sangihe and Talaud	Critical
Jamaica	Jamaica	Critical
Japan	Ogasawara Islands	Critical
Laos/Viet Nam	Annamese lowlands	Critical
Lesotho/South Africa	Southern African grasslands	Critical
Madagascar	East Malagasy wet forests	Critical
Madagascar	East Malagasy wetlands	Critical
Madagascar	West Malagasy wetlands	Critical
Mauritius	Mauritius	Critical
Mauritius	Rodrigues	Critical
Mexico	Guadalupe Island	Critical
Mexico	Los Tuxtlas and Uxpanapa	Critical
Mexico	Sierra Madre del Sur	Critical
Mexico	Sierra Madre Occidental and trans-Mexican range	Critical
Mexico	Socorro Island	Critical
Mexico	Southern Sierra Madre Oriental	Critical
Micronesia	East Caroline Islands	Critical
New Zealand	Chatham Islands	Critical
Papua New Guinea	Solomon group	Critical
Philippines	Cebu	Critical
Philippines	Luzon	Critical
Philippines	Mindanao and the Eastern Visayas	Critical
Philippines	Mindoro	Critical

Country	Name	Priority Level
Philippines	Negros and Panay	Critical
Philippines	Sulu archipelago	Critical
São Tomé Príncipe	São Tomé	Critical
Somalia	Central Somali coast	Critical
Somalia	North Somali mountains	Critical
USA	Central Hawaiian Islands	Critical
USA	Laysan Island	Critical
Venezuela	Caripe-Paria region	Critical
Viet Nam	South Vietnamese lowlands	Critical

Table 12. World Heritage sites containing "Critically Endangered" taxa (IUCN 1996)

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Tassili N'Ajjer	Algeria	0		0		0
Iguazú National Park	Argentina	2	Mergus octosetaceus; Claravis godefrida	0		2
Los Glaciares	Argentina	0		0		0
Península Valdés	Argentina	0		0		0
Australian Fossil Mammal Sites	Australia	0		0		0
Central Eastern Rainforest Reserves (Australia)	Australia	0				0
Fraser Island	Australia	0		0		0
Great Barrier Reef	Australia	1	Eretmochelys imbricata	0		1
Heard and McDonald Islands	Australia	0		0		0
Kakadu National Park	Australia	1	Eretmochelys imbricata	0		1
Lord Howe Island Group	Australia	1	Eretmochelys imbricata	0		1
Macquarie Island	Australia	0		0		0
Shark Bay, Western Australia	Australia	1	Eretmochelys imbricata	0		1
Tasmanian Wilderness	Australia	1	Galaxias pedderensis	0		1
Uluru-Kata Tjuta National Park	Australia	0		0		0
Wet Tropics of Queensland	Australia	4	Litoria lorica; Taudactylus rheophilus; Taudactylus acutirostris; Litoria nyakalensis	0		4
Willandra Lakes Region	Australia	0		0		0
The Sundarbans	Bangladesh and India	1	Eretmochelys imbricata	0		1
Belovezhskaya Puscha	Belarus	0		0		0
Belize Barrier-Reef Reserve System	Belize	1	Eretmochelys imbricata	0		1
Iguaçu National Park	Brazil	2	Mergus octosetaceus; Claravis godefrida	0		2

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Atlantic Forest Southeast Reserves	Brazil	1	Leontopithecus caissara	0		1
Discovery Coast Atlantic Forest Reserves	Brazil	3	Claravis godefrida; Ramphodon dohrnii; Thoropa petropolitana	1	Alouatta fusca fusca	4
Pirin National Park	Bulgaria	0		0		0
Srebarna Nature Reserve	Bulgaria	0		0		0
Dja Faunal Reserve	Cameroon	1	Biceros bicornis	0		1
Canadian Rocky Moutain Parks	Canada	0		0		0
Dinosaur Provincial Park	Canada	0		0		0
Gros Morne National Park	Canada	0		0		0
Miguasha Park	Canada	0		0		0
Nahanni National Park	Canada	0		0		0
Wood Buffalo National Park	Canada	0		0		0
Glacier and Waterton Lakes National Park	Canada and USA	0		0		0
Tatshenshini-Alsek/Kluane National Park/Wrangell-Saint Elias National Park and Reserve and Glacier Bay National Park	Canada and USA	0		0		0
Manovo-Gounda St Floris National Park	Central African Republic	1	Diceros bicornis	0		1
Huanglong Scenic and Historic Interest Area	China	0		0		0
Jiuzhaigou Valley Scenic and Historic Interest Area	China	0		0		0
Mount Emei and Leshan Giant Buddha	China	1	Arborophila rufipectus	0		1
Mount Huangshan	China	0		0		0
Mount Taishan	China	0		0		0
Wulingyuan Scenic and Historic Interest Area	China	0		0		0
Mount Wyui	China	0		1	Panthera tigris amoyensis	1

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Los Katios National Park	Colombia	2	Eretmochelys imbricata Pristis perotteti	1	Lagothrix lagotricha lugens	3
Cocos Island National Park	Costa Rica	1	Eretmochelys imbricata	0		1
Area de Conservación Guanacaste	Costa Rica	1	Eretmochelys imbricata	0		1
Talamanca Range-La Amistad Reserves	Costa Rica and Panama	0		2	Saimiri oerstedii citrinellus; Sigmodontomys aphrastes	2
Taï National Park	Côte d'Ivoire	0		0		0
Comoé National Park	Côte d'Ivoire	0		0		0
Mount Nimba Strict Nature Reserve	Côte d'Ivoire and Guinea	0		0		0
Plitvice Lakes National Park	Croatia	0		0		0
Desembarco del Granma National Park	Cuba	1	Eretmochelys imbricata	1		1
Garamba National Park	Democratic Republic of Congo	0		1	Ceratotherium simum cottoni	1
Kahuzi-Biega National Park	Democratic Republic of Congo	0		0		0
Okapi National Park	Democratic Republic of Congo	0		0		0
Salonga National Park	Democratic Republic of Congo	0		0		0
Virunga National Park	Democratic Republic of Congo	0		1	Gorilla gorilla berengei	1
Morne Trois Ptions National Park	Dominica	0		0		0
Galápagos Islands	Ecuador	3	Oryzomys galapagoensis; Pterodroma phaeopygia; Eretmochelys imbricata	1	Geochelone nigra hoodensis	4
Sangay National Park	Ecuador	0		0		0
Simien National Park	Ethiopia	2	Capra walie; Canis simiensis	0		2

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Cape Girolata, Cape Porto, Scandola Nature Reserve, and the Piana Calanches in Corsica	France	0		0		0
Ohrid Region with its Cultural and Historical Aspect and its Natural Environment	FYRM	0		0		0
Messel Pit Fossil Site	Germany	0		0		0
Meteora	Greece	0		0		0
Mount Athos	Greece	0		0		0
Tikal National Park	Guatemala	0		0		0
Rió Plátano Biosphere Reserve	Honduras	2	Eretmochelys imbricata; Pristis perotetti	0		2
Caves of Aggtelek and Slovak Karst	Hungary and Slovakia	0		0		0
Kaziranga National Park	India	0		1	Cervus duvaucelii ranjitsinhi	1
Keoladeo National Park	India	0		0		0
Manas Wildlife Sanctuary	India	1	Sus salvanius	0		1
Nanda Devi National Park	India	0		0		0
Komodo National Park	Indonesia	1	Eretmochelys imbricata	0		1
Lorentz National Park	Indonesia	0		0		0
Ujung Kulon National Park	Indonesia	3	Rhinoceros sondaicus; Hylobates moloch; Eretmochelys imbricata	0		3
Shirakami-Sanchi	Japan	0		0		0
Yakushima	Japan	0		0		0
Mount Kenya Natural Park/Natural Forest	Kenya	1 possible	Diceros bicornis	0		1
Sibiloi/Central Island National Parks	Kenya	0		0		0
Tsingy de Bemaraha Strict Nature Reserve	Madagascar	1	Rheocles wrightae	0		1
Lake Malawi National Park	Malawi	0		0		0

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Cliffs of Bandiagara (Land of the Dogons)	Mali	0		0		0
Banc d'Arguin National Park	Mauritania	1 1 possible	Eretmochelys imbricata; Geronticus eremita	0		1 possible
Sian Ka'an	Mexico	1	Eretmochelys imbricata	0		1
Whale Sanctuary of El Vizcaino	Mexico	1	Eretmochelys imbricata	2	Antilocapra americana peninsularis; Ovis canadensis weemsi	3
Royal Chitwan National Park	Nepal	0		0		0
Sagarmatha National Park	Nepal	0		0		0
New Zealand Sub-Antarctic Islands	New Zealand	0		0		0
Te Wahipounamu - South West New Zealand	New Zealand	1	Himantopus novaezelandiae	0		1
Tongariro National Park	New Zealand	0		0		0
Air and Ténéré Natural Reserves	Niger	0		0		0
"W" National Park of Niger	Niger	1	Addax nasomaculatus	0		1
Arabian Oryx Sanctuary	Oman	0		0		0
Darién National Park	Panama	2	Eretmochelys imbricata; Pristis perotetti	1	Ateles geoffroyi azuerensis	3
Historic Sanctuary of Machu Picchu	Peru	0		0		0
Huascarán National Park	Peru	0		0		0
Manú National Park	Peru	0		0		0
Río Abiseo National Park	Peru	1	Lagothrix flavicauda	0		1
Puerto-Princesa Subterranean River National Park	Philippines	1	Eretmochelys imbricata	0		1
Tubbatha Reef Marine Park	Philippines	1	Eretmochelys imbricata			1
Bialowieza National Park	Poland	0		0		0
The Laurisilva of Madeira	Portugal	2	Monachus monachus; Pterodroma madeira	0		2

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Danube Delta	Romania	2	Acipenser sturio; Numenius tenuirostris	0		2
Golden Mountains of Altai	Russian Federation	0		0		0
Lake Baikal	Russian Federation	0		0		0
Western Caucasus	Russian Federation	0		0		0
Virgin Komi Forests	Russian Federation	0		0		0
Volcanoes of Kamchatka	Russian Federation	0		0		0
Djoudj National Bird Sanctuary	Senegal	0		0		0
Niokolo-Koba National Park	Senegal	0		0		0
Aldabra Atoll	Seychelles	1	Eretmochelys imbricata	0		1
Vallée de Mai Nature Reserve	Seychelles	1	Coleura seychellensis	0		1
Skocjan Caves	Slovenia	0		0		0
East Rennell	Solomon Islands	0		0		0
Greater St. Lucia Wetland Park	South Africa	1	Diceros bicornis	0		1
Doñana National Park	Spain	0		0		0
Garajonay National Park	Spain	0		0		0
Ibiza, Biodiversity and Culture	Spain	0		0		0
Pyrénées – Mont Perdu	Spain and France	0		1 possible	Capra pyrenaica pyrenaica	1
Sinharaja Forest Reserve	Sri Lanka	0		0		0
The Lapponian Area	Sweden	0		0		0
Thungyai-Huai Kha Khaeng Wildlife Sanctuaries	Thailand	1	Diceros sumatrensis	0		1
Ichkeul National Park	Tunisia	1 possible	Numenius tenuirostris	0		1 possible
Göreme National Park and the Rock Sites of Cappadocia	Turkey	0		0		0
Heirapolis-Pamukkale	Turkey	0		0		0
Rwenzori Mountains National Park	Uganda	0		1	Gorilla gorilla berengei	1

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Bwindi Impenetrable National Park	Uganda	0		1	Gorilla gorilla berengei	1
Giant's Causeway and Causeway Coast	United Kingdom	1	Acipenser sturio	0		1
Gough Island Wildlife Reserve	United Kingdom	0		0		0
Henderson Island	United Kingdom	0		0		0
St Kilda	United Kingdom	0		0		0
Kilimanjaro National Park	Tanzania	1 possibla	Diceros bicornis	0		1
Ngorongoro Conservation Area	United Republic of Tanzania	1	Diceros bicornis	0		1
Selous Game Reserve	United Republic of Tanzania	1	Diceros bicornis	0		1
Serengeti National Park	United Republic of Tanzania	1	Diceros bicornis	0		1
Carlsbad Caverns	United States of America	0		0		0
Everglades National Park	United States of America	0		1	Puma concolor coryi	1
Grand Canyon National Park	United States of America	1	Gymnogyps californicus	0		1
Great Smoky Mountains National Park	United States of America	0		0		0
Hawaii Volcanoes National Park	United States of America	1	Eretmochelys imbricata	0		1
Mammoth Cave National Park	United States of America	0		0		0
Olympic National Park	United States of America	0		1 possible	Thomomys mazma louiei	1
Redwood National Park	United States of America	0		0		0
Yellowstone	United States of America	0		0		0
Yosemite National Park	United States of America	0		0		0
Canaima National Park	Venezuela	0		0		0

World Heritage Site	Country	Number of Critically Endangered species	Species	No. Critically Endangered subspecies	Subspecies	No. taxa
Ha Long Bay	Viet Nam	0		0		0
Durmitor National Park	Yugoslavia	0		0		0
Victoria Falls/Mosi-oa-Tunya	Zambia and Zimbabwe	0		0		0
Mana Pools National Park, Sapi and Chewore Safari Areas	Zimbabwe	1	Diceros bicornis	0		1

Table 13. World Heritage Sites that are also listed under the Ramsar Convention (Wetlands of International Importance).

World Heritage Site	Country	Ramsar Site Designation	Description of Site
Kakadu National Park	Australia	1980	Contiguous wetlands of catchments of two large river systems, associated floodplains, lagoons and seasonal creeks. Important for up to one million waterbirds of 60 species in autumn. Important for 8 fish species with narrowly restricted ranges, and breeding populations of two crocodile species. Uses include subsistence hunting and tourism.
Kakadu National Park (extension)	Australia	1989	Extensive seasonal floodplains, estuaries, tidal flats, mangrove forests and offshore islands. Vegetation includes 75% of Australian species of mangrove. Important in dry season for up to two million migratory waterbirds of 60 species. Uses include subsistence hunting, tourism and mining.
The Sundarbans	Bangladesh	1992	Extensive undisturbed mangrove forests and major river deltas. Important for breeding raptors, wintering and staging waders and two species of endangered sea turtle. Important for commercially exploited fish and prawn species. Uses include fishing and timber havesting.
Srebarna Nature Reserve	Bulgaria	1975	Freshwater lake and extensive reedbeds. Rare species include several scarce marshland plants. Important area for breeding, wintering and staging waterbirds. Economic, tourist and hunting activities are prohibited. Damage includes erosion of the river bed, nutrient-enrichment, accelerated vegetation succession and dike construction. Subject of a Ramsar Advisory Mission in 1992.
Cocos Island National Park	Costa Rica	1998	Extensive coral reefs, swampy coastal zone, cloud forest and mountinous areas. Rich in native species with up to 24,000 fish per square km. Large numbers of waterbirds nest in the area. Primary tourist activity is diving.
Virunga National Park	Democratic Republic of Congo	1996	Volcanoes recent in origin and still active and two large lakes. Important feeding and wintering ground for migratory birds. Threatened taxa include the mountain gorilla (*Gorilla gorilla bereingi*). Uses include tourism, fishing and hunting.
Banc d'Arguin National Park	Mauritania	1982	Shallow marine areas, scattered islands, intertidal sandbanks, mudflats, channels, creeks and relict mangroves. One of the richest fishing grounds in the world. Rich invertebrate fauna. Mudflats provide nursery habitat for commercially important deep sea fish. Important for shorebirds with 2 million wintering. Marine mammals and marine turtles also present.
'W' National Park	Niger	1987	Wooded savannah, Niger river. Vegetation consists of annual grasses, woody savannah and gallery forest. Rich avifauna with numerous species of wintering migratory waterbirds. Important numbers of threatened fauna including elephants, buffaloes, lions and antelope. Economically valuable fishery. The Niger River is a critically important source of domestic and irrigation water.
Tubbataha Reef Marine Park	Philippines	1999	Considered the largest coral reef atoll in the Philippines. Diversity of marine life is equal to or greater than any such area in the world. Important for more than 300 coral species and 379 species of fish, sea turtles, sharks, tuna and dolphins. No permanent human residents. Uses include bird egg collecting, scuba diving and sport fishing. Recent damage due to dynamite and cyanide fishing.

World Heritage Site	Country	Ramsar Site Designation	Description of Site
Danube Delta	Romania	1991	Sandy levees, densely vegetated lakes, a transitional zone of larger lakes, reed swamps, forested levees, and a marine zone. Important for a rich flora, fish fauna (75 species), and important populations of several mammal species. Internationally important for breeding, staging and wintering waterbirds. Uses include fishing, forestry and tourism.
Lake Baikal	Russian Federation	1994	Lake Baikal, streams and oxbow lakes. Vegetation consists of reedbeds, regularly flooded sedge-grass meadows, and willow shrub. Important for numerous threatened and endemic species of flora and fauna. Important for migrating, breeding and moulting waterbirds. Total breeding population of Anatidae (ducks, geese, swans) varies between 20,000 and 138,000 individuals. Up to five million birds pass through the delta in autumn, with 7,300 to 18,300 birds stopping at the site. Uses include hay harvesting, livestock grazing, fishing, hunting and recreation. Danger from river regulation damage.
Djoudj National Bird Sanctuary	Senegal	1977	Inland delta with seasonally inundated brakish lakes and pools linked by a network of channels. Water levels are artificially controlled. Internationally important numbers of various species of waterbirds breed, stage and winter here, with up to 400,000 individuals present in January. Uses include hunting, fishing and livestock rearing.
Skocjan Caves	Slovenia	1999	Karst underground water cave system. Endemic species include crustaceans and cave beetles. Threatened species include the bat *Miniopterus schreibersi*. A breeding site for the bird species *Bubo bubo* and *Emberiza hortulana*. Uses include tourism, agriculture and forestry.
Doñana National Park	Spain	1982	Coastal marshland complex. Vegetation includes aquatic species, salt-tolerant plants and *Pinus pinea* forest. Internationally important for breeding, staging and wintering waterbirds including several rare and endangered species. Uses include fishing, livestock grazing, charcoal gathering and nature conservation. Dangers include the impact of mass tourism and intensive irrigated agriculture.
Ichkeul National Park	Tunisia	1980	Lake and associated marshes with varying salinity. Vegetation consists of reedbeds, scrub, and halophytic (salt tolerant) plants. Important for 90,000 or more wintering waterbirds, including globally threatened species. Uses include fishing, tourism and livestock grazing.
Rwenzori Mountains National Park	Uganda	1988	Complex of rivers, Lake George. Vegetation consists of grassland, woodland and swamps. Important for large mammals such as the hippopotamus (*Hippopotamus amphibus*) and elephant (*Loxodonta africana*). Important for wintering waterbirds. Damage has been caused by water seepage, agricultural runoff and effluent input.
Everglades National Park	United States of America	1987	Shallow drainage basin consisting of freshwater, wet prairies, saltmarshes, mangrove forests, beach with dune complexes and brackish water estuaries. Important for nesting, staging and wintering birds. Includes rich flora and several threatened and endemic species of flora and fauna. Uses include water supply, flood protection and outdoor recreation.

Source: http://www.ramsar.org/

Table 14. Potential Natural World Heritage Sites
(Ordered by heirarchy – those sites falling within the most categories listed first)

Site Name	Country	CPD	EBA	G200	Marine	Vavilov	Critical Species	All
Bali Barat	Indonesia	0	1	1	1	1	1	5
Bukit Barisan Selatan	Indonesia	0	1	1	1	1	1	5
Gunung Gede Pangrango	Indonesia	1	1	1	0	1	1	5
Gunung Leuser	Indonesia	1	1	1	0	1	1	5
Kerinci Seblat	Indonesia	1	1	1	0	1	1	5
Teluk Laut Cendrawasih	Indonesia	1	1	1	1	1	0	5
Kinabalu	Malaysia	1	1	1	0	1	1	5
Taman Negara	Malaysia	1	1	1	0	1	1	5
Cañón de Río Blanco	Mexico	1	1	1	0	1	1	5
Bach Ma	Viet Nam	1	1	1	0	1	1	5
Nam Bai Cat Tien	Viet Nam	1	1	1	0	1	1	5
Iona	Angola	1	1	1	0	0	1	4
Nahuel Huapi	Argentina	1	1	1	0	1	0	4
Khosrov	Armenia	1	1	1	0	1	0	4
Sevan	Armenia	1	1	1	0	1	0	4
Shikahogh	Armenia	1	1	1	0	1	0	4
Cobourg Peninsula	Australia	1	1	1	1	0	0	4
Gurig	Australia	1	1	1	1	0	0	4
Ord River floodplain	Australia	1	1	1	1	0	0	4
Royal Manas	Bhutan	0	1	1	0	1	1	4
Isiboro Sécure	Bolivia	1	1	1	0	1	0	4
Pilón Lajas	Bolivia	1	1	1	0	1	0	4
Ulla Ulla	Bolivia	1	1	1	0	1	0	4
Desengano	Brazil	1	1	1	0	0	1	4
Itatiaia (RJ-MG)	Brazil	1	1	1	0	0	1	4
Serra dos Orgaos	Brazil	1	1	1	0	0	1	4
Ulu Temburong	Brunei Durassalam	1	1	1	0	1	0	4

Site Name	Country	CPD	EBA	G200	Marine	Vavilov	Critical Species	All
Bernardo O'Higgins	Chile	1	1	1	0	1	0	4
Chilé	Chile	1	1	1	0	1	0	4
Laguna San Rafael	Chile	1	1	1	0	1	0	4
Las Guaitecas	Chile	1	1	1	0	1	0	4
Bai Shui River	China	1	1	1	0	1	0	4
Fo Ping	China	1	1	1	0	1	0	4
Ma Bian Da Feng Ding	China	0	1	1	0	1	1	4
Mei Gu Da Feng Ding (Panda)	China	0	1	1	0	1	1	4
Tai Bai Mountain	China	1	1	1	0	1	0	4
Tang Jia River	China	1	1	1	0	1	0	4
Wang Lang	China	1	1	1	0	1	0	4
Wo Long	China	1	1	1	0	1	0	4
Zhou Zhi (Golden Monkey)	China	1	1	1	0	1	0	4
Chirripó	Costa Rica	1	1	1	0	0	1	4
Podocarpus	Ecuador	1	1	1	0	1	0	4
Bale Mountains	Ethiopia	1	0	1	0	1	1	4
Bandipur	India	1	1	1	0	1	0	4
Interview Island	India	1	1	1	1	0	0	4
Kudremukh	India	0	1	1	0	1	1	4
Marine (Wandur)	India	1	1	1	1	0	0	4
Mudumalai	India	1	1	1	0	1	0	4
Mundanthurai	India	1	1	1	0	1	0	4
Nagarahole	India	1	1	1	0	1	0	4
Neyyar	India	1	1	1	0	1	0	4
Shenduruny	India	1	1	1	0	1	0	4
Wynad	India	1	1	1	0	1	0	4
Banyuwangi	Indonesia	0	1	1	1	1	0	4
Bogani Nani Wartabone	Indonesia	1	1	1	0	1	0	4
Bukit Baka – Bukit Raya	Indonesia	1	1	1	0	1	0	4
Foja	Indonesia	1	1	1	0	1	0	4

Site Name	Country	CPD	EBA	G200	Marine	Vavilov	Critical Species	All
Gumai Pasemah	Indonesia	0	1	1	0	1	1	4
Gunung Bentuang	Indonesia	1	1	1	0	1	0	4
Gunung Halimun	Indonesia	0	1	1	0	1	1	4
Gunung Palung	Indonesia	1	1	1	0	1	0	4
Gunung Simpang	Indonesia	0	1	1	0	1	1	4
Kalakad	Indonesia	1	1	1	0	1	0	4
Morowali	Indonesia	1	1	1	0	1	0	4
Pegunungan Arfak	Indonesia	1	1	1	0	1	0	4
Pulau Dolok	Indonesia	0	1	1	1	1	0	4
Salawati Utara	Indonesia	1	1	1	0	0	1	4
Tanjung Peropa	Indonesia	1	1	1	0	1	0	4
Wasur	Indonesia	1	1	1	0	1	0	4
Kirishima-Yaku	Japan	1	1	1	1	0	0	4
Aberdare	Kenya	1	1	1	0	0	1	4
Mount Elgon	Kenya	1	1	1	0	1	0	4
Batang Ai	Malaysia	1	1	1	0	1	0	4
Bukit Tawau	Malaysia	1	1	1	0	1	0	4
Cameron Highlands	Malaysia	1	1	1	0	1	0	4
Crocker Range	Malaysia	1	1	1	0	1	0	4
Gunung Mulu	Malaysia	1	1	1	0	1	0	4
Krau	Malaysia	0	1	1	0	1	1	4
Lanjak-Entimau	Malaysia	1	1	1	0	1	0	4
Tabin	Malaysia	1	0	1	0	1	1	4
Maputo	Mozambique	1	1	1	1	0	0	4
Portobelo	Panama	1	1	1	1	0	0	4
Bahuaja-Sonene	Peru	1	1	1	0	1	0	4
Tabaconas-Namballe	Peru	1	1	1	0	1	0	4
Yanachaga Chemillén	Peru	1	1	1	0	1	0	4
Northern Sierra Madre	Phillipines	1	1	1	0	0	1	4
Itala	South Africa	1	1	1	0	0	1	4

Site Name	Country	CPD	EBA	G200	Marine	Vavilov	Critical Species	All
Kenting	Taiwan	1	1	1	1	0	0	4
Ventana	USA	1	1	1	0	0	1	4
El Guácharo	Venezuela	1	1	1	0	0	1	4
Península de Paria	Venezuela	1	1	1	0	0	1	4
Chu Yang Sinh	Viet Nam	0	1	1	0	1	1	4
Cuc Phuong	Viet Nam	0	1	1	0	1	1	4

Table 15. Ramsar Sites that could merit future World Heritage nomination (arranged in heirarchical order)

Site Name	Country	CPD	EBA	G200	Marine	Vavilov	Critical Species	ALL
Cobourg Peninsula	Australia	1	1	1	1	0	0	4
Ord River Floodplain	Australia	1	1	1	1	0	0	4
Reserva Costa Atlantica de Tierra del Fuego	Argentina	1	1	1	0	0	0	3
Lake Sevan	Armenia	1	1	1	0	0	0	3
Lakes Argyle and Kununurra	Australia	1	1	1	0	0	0	3
Peel-Yalgorup system	Australia	1	1	1	0	0	0	3
Machalilla	Ecuador	1	1	1	0	0	0	3
Grand Cul-de Sac Marin de la Guadeloupe	France	0	1	1	1	0	0	3
San San - Pond Sak	Panama	0	1	1	1	0	0	3
Tonda Wildlife Management Area	Papua New Guinea	1	1	1	0	0	0	3
Lago Titicaca (Peruvian sector)	Peru	1	1	1	0	0	0	3
Pacaya Samiria	Peru	1	1	1	0	0	0	3
Paracas	Peru	1	1	1	0	0	0	3
Reserva Nacional de Junín	Peru	1	1	1	0	0	0	3
Natal Drakensberg Park	South Africa	1	1	1	0	0	0	3
Gediz Delta	Turkey	1	0	1	0	1	0	3

MAPS

Annex 1: Current Natural and Mixed World Heritage Sites

There are 128 natural and 22 mixed (natural and cultural) properties that the World Heritage Committee has inscribed on the World Heritage List.

Algeria

1982 Tassili n'Ajjer

Argentina

1981 Los Glaciares
1984 Iguazú National Park
1999 Península Valdés

Australia

1981 Kakadu National Park
1981 Willandra Lakes Region
1981 Great Barrier Reef
1982 Lord Howe Island Group
1982 Tasmanian Wilderness
1986 Central Eastern Rainforest Reserves (Australia)
1987 Uluru-Kata Tjuta National Park
1988 Wet Tropics of Queensland
1991 Shark Bay, Western Australia
1992 Fraser Island
1994 Australian Fossil Mammal Sites (Riversleigh / Naracote)
1997 Macquarie Island
1997 Heard and McDonald Islands

Bangladesh

1997 The Sundarbans

Belarus/Poland

1979 Belovezhskaya Pushcha / Bialowieza Forest

Belize

1996 Belize Barrier-Reef Reserve System

Brazil

1986 Iguaçu National Park
1999 Atlantic Forest Southeast Reserves
1999 Discovery Coast Atlantic Forest Reserves

Bulgaria

1983 Srebarna Nature Reserve
1983 Pirin National Park

Cameroon

1987 Dja Faunal Reserve

Canada

1978 Nahanni National Park
1979 Dinosaur Provincial Park
1983 Wood Buffalo National Park
1984 Canadian Rocky Mountain Parks
1987 Gros Morne National Park
1999 Miguasha Park

Canada/United States of America

1979 Tatshenshini-Alsek/Kluane National Park/Wrangell-St.Elias National Park and Reserve and Glacier Bay National Park
1995 Waterton Glacier International Peace Park

Central African Republic

1988 Manovo-Gounda St Floris National Park

China

1987 Mount Taishan
1990 Mount Huangshan
1992 Huanglong Scenic and Historic Interest Area
1992 Jiuzhaigou Valley Scenic and Historic Interest Area
1992 Wulingyuan Scenic and Historic Interest Area
1996 Mount Emei Scenic Area including Leshan Giant Buddha Scenic Area
1999 Mount Wuyi

Colombia

1994 Los Katios National Park

Costa Rica

1997 Cocos Island National Park
1999 Area de Conservación Guanacaste

Costa Rica/Panama

1983 Talamanca Range-La Amistad Reserves / La Amistad National Park

Côte d'Ivoire

1982 Taï National Park
1983 Comoé National Park

Côte d'Ivoire/Guinea

1981 Mount Nimba Strict Nature Reserve

Croatia

1979 Plitvice Lakes National Park

Cuba

1999 Desembarco del Granma National Park

Democratic Rep. of the Congo

1979 Virunga National Park
1980 Garamba National Park
1980 Kahuzi-Biega National Park
1984 Salonga National Park
1996 Okapi Wildlife Reserve

Dominica

1997 Morne Trois Pitons National Park

Ecuador

1978 Galápagos Islands
1983 Sangay National Park

Ethiopia

1978 Simien National Park

Former Yugoslav Republic of Macedonia

1979 Ohrid Region with its Cultural and Historical Aspect and its Natural Environment

France (Corsica)

1983 Cape Girolata, Cape Porto, Scandola Nature Reserve and the Piana Calanches in Corsica

France/Spain

1997 Pyrénées - Mont Perdu

Germany

1995 Messel Pit Fossil Site

Greece

1988 Meteora
1988 Mount Athos

Guatemala

1979 Tikal National Park

Honduras

1982 Río Plátano Biosphere Reserve

Hungary/Slovakia

1995 Caves of the Aggtelek Karst and Slovak Karst

India

1985 Keoladeo National Park
1985 Kaziranga National Park
1985 Manas Wildlife Sanctuary
1987 Sundarbans National Park
1988 Nanda Devi National Park

Indonesia

1991 Ujung Kulon National Park
1991 Komodo National Park
1999 Lorentz National Park

Japan

1993 Yakushima
1993 Shirakami-Sanchi

Kenya

1997 Sibiloi / Central Island National Parks
1997 Mount Kenya National Park / Natural Forest

Madagascar

1990 Tsingy de Bemaraha Strict Nature Reserve

Mali

1989 Cliff of Bandiagara (Land of the Dogons)

Malawi

1984 Lake Malawi National Park

Mauritania

1989 Banc d'Arguin National Park

Mexico

1987 Sian Ka'an
1993 Whale Sanctuary of El Vizcaino

Nepal

1979 Sagarmatha National Park
1984 Royal Chitwan National Park

New Zealand

1990 Tongariro National Park
1990 Te Wahipounamu - South West New Zealand
1998 New Zealand Sub-Antarctic Islands

Niger

1991 Air and Ténéré Natural Reserves
1996 W National Park of Niger

Oman

1994 Arabian Oryx Sanctuary

Panama

1981 Darién National Park

Peru

1983 Historic Sanctuary of Machu Picchu
1985 Huascarán National Park
1987 Manú National Park
1990 Río Abiseo National Park

Philippines

1993 Tubbataha Reef Marine Park
1999 Puerto-Princesa Subterranean River National Park

Portugal

1999 Laurisilva of Madeira

Romania

1991 Danube Delta

Russian Federation

1995 Virgin Komi Forests
1996 Lake Baikal
1996 Volcanoes of Kamchatka
1998 Golden Mountains of Altai

1999 Western Caucasus

Senegal

1981 Djoudj National Bird Sanctuary
1981 Niokolo-Koba National Park

Seychelles

1982 Aldabra Atoll
1983 Vallée de Mai Nature Reserve

Slovenia

1986 Skocjan Caves

Solomon Islands

1998 East Rennell

South Africa

1999 Greater St. Lucia Wetland Park

Spain

1986 Garajonay National Park
1994 Doñana National Park
1999 Ibiza, biodiversity and culture

Sri Lanka

1988 Sinharaja Forest Reserve

Sweden

1996 Laponian Area

Thailand

1991 Thungyai - Huai Kha Khaeng Wildlife Sanctuaries

Turkey

1985 Göreme National Park and the Rock Sites of Cappadocia

1988 Hierapolis-Pamukkale

Tunisia

1980 Ichkeul National Park

Uganda

1994 Rwenzori Mountains National Park

1994 Bwindi Impenetrable National Park

United Kingdom of Great Britain and Northern Ireland

1986 St. Kilda
1986 Giant's Causeway and Causeway Coast
1988 Henderson Island
1995 Gough Island Wildlife Reserve

United Republic of Tanzania

1979 Ngorongoro Conservation Area
1981 Serengeti National Park
1982 Selous Game Reserve
1987 Kilimanjaro National Park

United States of America

1978 Yellowstone
1979 Grand Canyon National Park
1979 Everglades National Park
1980 Redwood National Park
1981 Olympic National Park
1981 Mammoth Cave National Park
1983 Great Smoky Mountains National Park
1984 Yosemite National Park
1987 Hawaii Volcanoes National Park
1995 Carlsbad Caverns National Park

Venezuela

1994 Canaima National Park

Viet Nam

1994 Ha Long Bay

Yugoslavia

1980 Durmitor National Park

Zambia/Zimbabwe

1989 Mosi-oa-Tunya / Victoria Falls

Zimbabwe

1984 Mana Pools National Park, Sapi and Chewore Safari Areas

ANNEX 2. Case Studies

Case Study: Galápagos Islands – High level of endemism and speciation

Description: The Galápagos Islands are an archipelago of approximately 130 islands situated some 1000km west of mainland Ecuador in the Pacific Ocean. There are 13 major islands within the group and the equator passes through the middle of Isabela Island. The volcanic islands erupted from the ocean floor between 3 and 5 million years ago from the Galápagos hotspot. The islands have never been attached to the South American mainland and the archipelago supports a wide range of endemic flora and fauna.

Administered by the Government of Ecuador, the Galápagos National Park was created on 14 May 1936. The boundaries have grown since inception and now contain 96% of the total land area of the archipelago. It was inscribed to the World Heritage List in 1978 fulfilling criteria i, ii, iii, iv and internationally recognised as a Biosphere Reserve in 1984. The Galápagos Marine Resources Reserve was created in 1986, protecting marine life up to 15 nautical miles from the outermost points of the island group. In 1996 the Reserve was upgraded to a Biological Reserve of Marine Resources.

Physical features: The larger islands typically comprise one or more gently sloping shield volcanoes, culminating in collapsed craters or calderas. The summits are studded with parasitic vents up to a few tens of metres high, and frequently flanked by lava flows. Long stretches of shoreline are only slightly eroded, but in many places faulting and marine erosion have produced steep cliffs and lava, coral or shell sand beaches. Other noteworthy landscape features include crater lakes, fumaroles and lava tubes. The terrain is generally composed of uplifted marine lava flows that form an uneven surface, strewn with a deep layer of rounded or angular boulders.

Freshwater is limited and among the inhabited islands, only San Cristobal has an adequate perennial supply for human consumption. Seasonal springs occur on Santa Cruz and Floreana, and brackish water is available on all islands. The marine environments are highly varied and are associated with water temperature regimes reflecting differences in nutrient and light levels. These range from warm temperate conditions brought on by vigorous upwelling (Equatorial Undercurrent) and a moderately cool, warm temperate-subtropical influence (Peru Flow). There is considerable variation in altitude, area and orientation between the islands which when combined with their physical separation, has contributed towards the species diversity and endemism on particular islands.

Biodiversity: The archipelago has a very unique flora and fauna**.** In keeping with the general pattern of island biodiversity the Galápagos have a low number of species however level of endemism is very high.

Endemism: The 625 species and subspecies of native flora contains 230 endemic taxa of plants, including *Scalesia* forests and the giant cacti, *Oputia echios* and *Jasminocereus thouarsi*. The main threats to plant life are introduced plants, the number of which has increased from 77 species in 1971 to more than 460 in 1997. The blackberry, *Rubus niveus*, is one such species. The invading plants out compete the native flora leaving no room for them to grow.

Fauna is also diverse with a high ratio of endemic species, only 2 of the resident species of reptile, the green and hawksbill sea turtles (*Chelonia mydas* and *Eretmochelys imbricata*) are not endemic. The remaining 29 reptile species are found only within the island group. These include the marine iguana (*Amblyrhynchus cristatus*), which is the only lizard to be found regularly at sea, grazing on the green and red algae growing on submerged rocks. Two species

of land iguana,*Conclophus subcristatus* and *Conolophus pallidus* are also endemic, as are the 14 subspecies of the Galápagos tortoise (*Geochelone nigra*).

There are few native mammal species but these include the Critically Endangered rice rat (*Oryzomys galapagoensis*). In addition, the smallest and only tropical species of a subantarctic genus, the Galápagos fur seal (*Arctocephalus galapogoensis*) can be found here.

The avifauna also has a high ratio of endemic species: out of 57 resident and 31 migrant native species 26 are endemic. These include the only flightless species of cormorant, *Nannopterum harrisi* and the only penguin species to live in the northern hemisphere, the Galápagos penguin (*Spheniscus mendiculus*). In addition the Galápagos dove (*Zenaida galapagoensis*) and lava gull (*Larus fuliginosus*) are found only on the islands.

The insect fauna of the islands is also very poor in variety, but includes endemic species such as the scorpion, *Centururoides exsul* which is found in arid zones on Santa Cruz, San Cristóbal, Pinta, Española and Floreana. An endemic centipede, *Scolopendra galapagensis*, also inhabiting the arid zones of most islands is infamous as the most feared Gálapagos animal on account of the strong venom it uses to capture prey, which is also painful to humans.

Speciation: The island is famous for the beginnings of Charles Darwin's theory of evolution, leading to the publication of "On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life" in 1859. His theory is widely accepted today and the Galápagos provides not only a "showcase for evolution" but also a perfect environment in which to study the process of evolution.

Darwin's finches: There are 13 species of Darwin's finches all evolved to occupy different environmental niches on the islands. Much of the speciation involved a change in beak size or shape to adapt to a different food source. For example, the large tree finch (*Camarhynchus psittacula*) has a strong, blunt beak with which to crunch twigs and branches to find insect food the large ground finch. Beak shape, however is not the only way the finches exploit different food sources. The woodpecker finch (*Cactospiza pallida*), uses a twig or cactus spine as a tool to pry their prey such as insect larvae out of dead tree branches and the mangrove finch (*Cactospiza heliobates*) has a similar niche within the mangrove environment. The sharp-billed ground-finch (*Geospiza difficilis*), usually feeds on birds eggs and seeds but has been known to peck at the base of the tail of boobies where the new feathers are developing and drink the blood this produces when food is in short supply.

Galápagos tortoises: Although there is much controversy over the nomenclature of these giant reptiles it is generally considered that there are 14 subspecies, most of which are restricted to a single island within the archipelago. The subspecies differ mainly in the shape and patterns of the shell or carapace. As another example of adaptive radiation the carapace of the tortoise is adapted to the eating habits of particular species. For example the domed carapace can be found on species from islands such as Santa Cruz and Isabela's Alcedo volcano as the subspecies found there browse on the relatively lush vegetation. The varieties of tortoise from Española and Pinta have carapaces of a more saddle-back shape, allowing them to stretch their necks to feed on the harder to reach vegetation of these islands. *Geochelone nigra* is classed as Vulnerable in the 1996 IUCN Red List**.** Of the recognised 14, four, from the islands of Floreana, Rábida, Santa Fé and San Cristóbal are extinct. The most famous of the tortoises is *G. nigra abigdoni* of which there is only one male specimen left, better known as "Lonesome George", kept in captivity at the Charles Darwin Research centre.

Science: In recognition of the scientific value of the islands, the Charles Darwin Research Station (CDRS) was inaugurated in 1964 jointly supported by the Government of Ecuador, IUCN and UNESCO. There have been over 700 scientific missions using CDRS and over

6,000 publications. Although evolution is a long-term process, it has been proven to be possible to study this in real time. Adaptive radiation has been studied by Rosemary and Peter Grant, looking at Darwin's finches on the island of Daphne Major for over 15 years. Other studies include the ecology of and conservation studies for fauna and flora; geomorphology and climate; and introduced plant and animal species.

Case Study: Manú National Park – High level of Biodiversity

Description: Manú National Park is situated in the Southeast corner of Peru, in the provinces of Manú and Paucartambo. It includes the entire Manú river basin and varies in altitude from 360 to 4000 metres. The 1,881,200 ha area is limited in the north by the watershed separating the catchment basins of Manú and de las Piedras rivers and to the south by the road from Paucartambo to the north-west to Tres cruces. To the east it is bounded by the region on the left margin of the Alto Madre de Dios river to the Pilcopata River and to the west the watershed separating the catchment basins of the Manú and Camisea rivers.

Manú National Park is the property of the Government of Peru and was created on 29 May 1973. International recognition as a Biosphere Reserve occurred in 1977 and the park was inscribed on the World Heritage List in 1987. Administration of the area is under the jurisdiction of the "Corpración Departmental de Desarollo de Madre de Dios" (CORDEMAD) and the "Diracción General Forestal y de Fauna" (DGFF).

Justification for inscription on the World Heritage List included; a level of biodiversity that surpasses any other protected area in the world, the pristine condition of the environment and the significance of this for more scientific study.

Physical Features: The National Park ranges in altitude from the Amazon lowlands at 400m to the highlands of the Peruvian Andes of 4,000m. The sharp decline from the mountainous top to the Amazonian lowpoint occurs in only a few miles. The entire area is situated within the Amazon River basin and protects almost the entire watershed of the River Manú and most of the tributaries of the River Alto Madre de Dios. Alluvial plains are found along the rivers where sediments may be deposited on a seasonal basis. The hills occupy the lowlands between the rivers and are relatively small with slopes between 15% and 50%, forming an undulating topography, which covers much of the park. The adjacent reserved zone mainly comprises the flood plains of the lower Manú river, to its confluence with the Rio Alto Madre de Dios, and over long periods of time the river has wandered over the plain leaving a number of ox-bow lakes.

Biodiversity: Manú National Park is probably the most biologically diverse protected area in the world. It covers a vast range of ecological formations, in turn giving rise to a huge number of niches providing habitat for a vast number of species of plants and animals. Almost all the ecological formations of eastern Peru are represented including tropical lowland forest, montane forest, cloud forest, stunted forest and Puna grasslands. Much of the work that had been conducted concerning species identification has pertained to the lowland forests, therefore, there is still much to be discovered concerning the fauna of the highlands.

Flora: Manú has an incredible diversity of plant life, claimed by some botanists to have more plant species than any other protected area on earth. The flora of the park is still poorly known, however, 1,147 species have been identified within a small area in the last ten years and the total figure is likely to be much higher. Over 200 species of tree have been reported from a one hectare plot of forest in Cocha Cashu making it one of the world's diverse forests. Species such as the wide *Ceiba pentandra* and *Poulsenia armata* occur and, due to the inaccessible nature of the park, timber species such as the *Cedrela* trees can still be seen in large stands. 43 species of lianas have been identified within a plot of only 100 m^2

Birds: Manú National Park represents 15% of all the bird species in the world with 850 species known to be found within its borders. Around 500 of these species have been found in the tropical lowland forest around the well studied area of Cocha Cashu Biological Station. One estimate as to the total number of bird species is as high as 1000. The park is contained within the Endemic Bird Area (EBA) "Peruvian East Andean foothills" with a priority rating of high, biological importance rating of 3/3 and current threat level of 1/3. This EBA contains

14 restricted range species. At least 18 species of macaws and parrots inhabit the lowland forests of Manú including the globally threatened Spix's macaw and the red-bellied macaw (*Ara manilata*). The king vulture (*Sacoramphus papa*), fasciated tiger-heron (*Tigrisoma fasciatum*) and the Peruvian cock-of the-rock (*Rupicola peruviana*) also inhabit the park.

Herpetofauna: It is thought that approximately 12 species of reptile including the black caiman (*Melanosuchus niger*) currently classed as Endangered on the IUCN Red List and the common caiman (*Caiman crocodilus*), occur in the park. The site also supports populations of the Vulnerable yellow spotted sideneck turtle (*Podocnemis inifilis*). Many species of venomous snake can be found including the bushmaster (*Laychesis muta*). Amphibian species identified number 77 species in the Cocha Cashu area.

Mammals: There is a huge diversity of mammalian fauna within Manú National Park with at least 200 species, over 50 % of all species known from Peru. The upper regions of Manú are much less studied than the lowlands and as a consequence the lowland mammals are better known. It is estimated there are 13 species of monkey, including the tiny pygmy marmoset (*Cebuella pigmea*) and over 100 species of bat. Also included are the world's largest otter, the giant river otter (*Pteronura brasilensis*) which is classed as Vulnerable on the IUCN Red List. The saki monkey (*Pithecia monachus*) and lowland tapir (*Tapirus pinachaque*), which is classed as Endangered, can also be found. Other threatened taxa in the park include the giant armadillo (*Priodontes maximus*), giant anteater (*Myrmecophaga tridactyla*), Andean cat (*Oreailurus jacobita*), bush dog (*Speothos venaticus*), and the spectacled bear (*Tremarctos ornatus*).

Fish: The Amazon drainage basin is inhabited by an estimated 2,500-3,000 fish species which is two or three times as many as the number for the next most species rich river system, the Congo. Over a five year period there was an attempt to complete an inventory of the fish species of Manú Bioreserve. Around 210 species were identified indicating a high biodiversity even relative to other parts of the Amazon system.

Invertebrates: It is estimated the approximately 500,000 species of arthropod exist in the park. On one tree alone, 43 species from 26 genera of ant were found.

Science: In recognition of the scientific value of Manú**,** the Cocha Cashu Biological Station was constructed in 1981 and can accommodate up to 30 research workers. As the human population rises it is necessary to study the rain forest environment that may be encroached upon. Scientific projects mainly concern primates and inventories of birds and butterflies.

Case study: Bwindi Impenetrable National Park – Key Threatened Species

Description: Bwindi Impenetrable National Park is located in the Kigezi highlands of south-west Uganda, on the edge of the western rift valley, within the Districts of Kabale, Kisoro and Rukungiri. The park borders the Democratic Republic of Congo to the west. The nearest main town is Kabale to the south-east (29km by road). Bwindi is a relatively small park covering 321 km^2 at between 1,190 and 2,606 m altitude, but has one of the richest biodiversity of all African forests. It also remains home to the mountain gorilla (*Gorilla gorilla berengei*)

The National Park is owned and administered by Uganda National Parks (UNP). Parts of the park have been protected since 1932 with the creation of Kasatora and Kayonza Crown Forest Reserves, but it was 1991 before Bwindi Impenetrable forest was considered a National Park in an effort to grant further protection for the mountain gorillas. In 1994 Bwindi was inscribed on the World Heritage List.

Justification for the inclusion of the Park on the World Heritage List included; the presence of the remaining habitat for the threatened mountain gorilla, additional threatened species such as the elephant and leopard, birds such as the Chapin's flycatcher and insects such as the giant swallowtail. The site is also an important part of the community conservation of the region.

Physical features: Bwindi is characterised by steep hills and narrow valleys, with a general incline from the north and western areas (below 1,750m), to the south-western corner (above 2,250m). Together with some remnant lowland forest outside the park boundary, the site constitutes an important water catchment area serving surrounding agricultural land. Three major tributaries of the Ishasha River drain into Lake Edward to the north, and the Ndego, Kanyamwabo and Shongi rivers flow southwards towards Lake Mutanda. Due to the steepness of slopes, the soils are very susceptible to erosion in areas where trees are cleared.

Biodiversity: Bwindi Impenetrable National Park is believed to hold the richest faunal community in East Africa, including over 336 bird species, 214 of them forest dwelling, 120 species of mammals (including 7 species of diurnal primate), and 202 species of butterfly, comprising 84% of the total for Uganda.

Flora: Several forest types are represented within the borders of Bwindi National Park categorised as medium altitude moist evergreen forest and high altitude forest. The IUCN Plant Programme selected Bwindi as one of the 29 forests in Africa of most importance for the conservation of plant diversity. The park area is the most diverse forest in East Africa for both tree and fern species. Over 200 tree species have been reported, representing around 47% of all Ugandan species. It is also diverse in fern species, represented by more than 104 species. It is known as impenetrable due to the presence of dense vegetation in the valleys. Plant life includes the nationally threatened *Newtonia buchananii* and endemic species such as *Brazzeia longipedicellata* and *Balthasaria schleiberii.*

Fauna: Bwindi is also rich in animals species providing habitat for at least 336 bird species, 70 of those representing Albertine rift valley species including Fraser's owl (*Bubo poensis*) and the dwarf honeyguide (*Indicator pumilio*). The park is also included within the Endemic Bird Area (EBA) of the Eastern Zaïre lowlands, which includes 6 restricted-range species and has a priority rating of high. In total the park contains 110 species of mammal and is the only place where both the gorilla (*gorilla gorilla berengei*) and the chimpanzee (*Pan troglodytes schweinfurthii*) can be found in the same area. The endangered African elephant (*Loxodonta africana*) and giant forest hog (*Hylochoerus meinertzhageni*) can also be found.

Mountain Gorillas: There are three subspecies of the gorilla, *Gorilla gorilla*, the mountain gorilla (*Gorilla gorilla berengei*) being the most threatened. Only found in Rwanda, Uganda and the Democratic Republic of Congo this species inhabits hagenia woodlands of the

Virunga volcanoes up to around 3,500 m in altitude. Similar to the other gorilla species the mountain gorillas prefer an open canopy that allows light to reach the forest floor. These large primates live in groups generally consisting of one mature silver-back male, one subadult, three adult females and two to three young of up to eight years of age. The species is mainly folivorous but will utilise other food sources such as fruit, roots and herbs.

This key species is still under threat in Uganda, due to rising human population levels and the complete deforestation of the land surrounding Bwindi Impenetrable National Park. There has been much pressure on the gorilla population from poaching. In addition, exploitation of forest resources include gold mining, cattle-grazing and removal of trees, have had an adverse effect on the populations of the gorilla. In recognition of this the Impenetrable Forest Conservation Project (IFCP) began studies in 1986. A recent census places the total population for Bwindi at just over 290 individuals, which appears to be stable. Conservation programmes have reduced the rate of exploitation within the park however the unpredictable political conditions of the countries in which the sub-species resides, mean efforts must continue.

Annex 3: Criteria for the inclusion of natural properties on 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 an asthaetic 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 criteriaand fulfills the conditions of integrety 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 landforms, 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 eocsystem 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 bilaterial 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 mobilise 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 finalised.

(vi) A site described in paragraph 44(a) should have adequate long-term legislative, regulatory, institutional or traditional 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 an elaborating nomination of sites within their own territories.