

# A GLOBAL OVERVIEW OF WETLAND AND MARINE PROTECTED AREAS ON THE WORLD HERITAGE LIST



## A Contribution to the Global Theme Study of World Heritage Natural Sites

Prepared by Jim Thorsell, Renée Ferster Levy and Todd Sigaty

Natural Heritage Programme

IUCN

Gland, Switzerland

September 1997



**IUCN**  
The World Conservation Union



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**Working Paper 1: Earth's Geological History - A Contextual Framework  
Assessment of World Heritage Fossil Site Nominations**

**Working Paper 2: A Global Overview of Wetland and Marine Protected Areas  
on the World Heritage List**

**Working Paper 3: A Global Overview of Forest Protected Areas  
on the World Heritage List**

**Further volumes (in preparation) on biodiversity, mountains, deserts and  
grasslands, and geological features.**

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## EXECUTIVE SUMMARY

This working paper provides a global overview of the current coverage of existing World Heritage sites with wetland and marine values and suggests potential wetland areas which may merit future nomination to the World Heritage List. Wetlands are among the most productive natural environments on earth. They provide substantial social and economic benefits to humans as well as habitat for numerous species. With only an estimated 5.7 million sq. km of wetlands remaining in the world, they continue to be one of the most threatened biomes.

In 1996, IUCN's Natural Heritage Program began a project to prepare a global strategy for natural World Heritage sites. As part of this project, this working paper on wetlands is the second in a series of global overviews of the various biomes of the world (e.g. wetlands, forests, mountains, grasslands, etc.). These theme studies involve close co-operation with the World Conservation Monitoring Centre (WCMC) and have benefitted from the support of Australia's Department of Environment. This paper also benefitted from consultations with the professional staff based at the Ramsar Convention Secretariat.

The sites described in this inventory were divided into two lists: those that have **major** wetland and marine values and those where wetland and marine values are **secondary** to other natural values based on the criteria mentioned in the nomination for World Heritage designation. Currently, 39 World Heritage natural sites contain **major** wetland values whilst an additional 38 sites have **secondary** wetland values. The 77 total sites in this inventory represent 50 countries and range from a 19ha nature reserve in the Seychelles Islands to a 9 million ha boreal lake in the Russian Siberia to the 35 million ha Great Barrier Reef in Australia.

The annex includes a summary description of all 77 World Heritage wetland sites cross referenced with their relations with other international programs and conventions (e.g. Ramsar, Biosphere Reserves and WWF Global 200 Ecoregions). Gap analysis of the sites listed indicates that a low number of World Heritage sites with significant wetland values currently exist within Central Asia, the Middle East, the Polar regions, and the South Pacific.

It is hoped that this overview will assist IUCN in making comparative evaluations and provide the World Heritage Committee with a firmer scientific basis for making decisions on new World Heritage nominations. It will also provide State Parties with a global perspective which is useful when identifying potential World Heritage properties in their territories.





## RESUME

Ce document de travail présente un bilan au niveau planétaire des sites faisant partie du patrimoine mondial qui comprennent des zones humides et des caractéristiques marines. Des zones humides qui pourraient mériter d'être nommées pour la liste du patrimoine mondial y sont proposées.

Les zones humides sont parmi les environnements naturels les plus productifs sur terre. Elles rendent des services sociaux et économiques considérables aux êtres humains et servent d'habitat à de nombreuses espèces. Il ne reste au monde plus que 5.7 millions de km<sup>2</sup> de zones humides et elles demeurent l'un des biomes les plus menacés.

En 1996, le Programme pour le patrimoine naturel de l'UICN a entrepris un projet dont le but est d'élaborer une stratégie mondiale pour les sites naturels du patrimoine mondial. Produit dans le cadre de ce projet, ce tome sur les zones humides est le second d'une série de bilans mondiaux relatifs aux biomes de la planète (par exemple, zones humides, forêts, montagnes, prairies). Ces études thématiques sont réalisées en étroite coopération avec le "World Conservation Monitoring Centre" (WCMC) et à l'aide du soutien généreux du Département de l'environnement d'Australie. Ce tome a aussi profité de consultations avec le personnel technique du Secrétariat de la Convention de Ramsar.

Les 77 sites examinés dans cet inventaire représentent 50 pays et vont d'une réserve de 19 hectares aux Seychelles au grand récif corallien de 35 millions d'hectares en Australie, en passant par un lac boréal de 9 millions d'hectares dans la Sibérie russe. Ces 77 sites ont été regroupés en deux catégories: les sites qui comprennent des zones humides ou des caractéristiques marines **d'importance majeure** et les sites qui, selon les critères de désignation pour le patrimoine mondial, comprennent des zones humides dont l'importance est **secondaire** par rapport à l'importance de leurs autres caractéristiques naturelles. Actuellement, 39 sites naturels du patrimoine mondial comprennent des zones humides d'importance majeure. Leur importance est secondaire dans les 38 autres sites. L'analyse des sites listés signale que peu de sites du patrimoine mondial d'Asie centrale, du Moyen-Orient, des régions polaires et du Pacific Sud comprennent des zones humides d'importance considérable.

Une brève description des 77 zones humides du patrimoine mondial se trouve en annexe et met en évidence leur relation avec d'autres programmes et conventions (par exemple, Convention de Ramsar, Réserves mondiales de la Biosphère, Ecorégions mondiales 200 de WWF).

Cet inventaire devrait assister l'UICN à effectuer des évaluations comparatives et devrait fournir au Comité du patrimoine mondial une base scientifique plus solide pour ses prises de décisions relatives aux nominations à venir pour le patrimoine mondial. Les Etats Parties auront aussi à leur disposition une perspective mondiale qui les assistera à identifier des sites potentiels pour le patrimoine mondial au sein de leur territoire.



# A GLOBAL OVERVIEW OF WORLD HERITAGE WETLAND AND MARINE SITES

“What would the world be, once bereft  
Of wet and of wildness? Let them be left,  
O let them be left, wildness and wet;  
Long live the weeds and the wilderness yet.”

(From the poem *Inversnaid*, by Gerard Manley Hopkins, 1844-1889).

## I. Introduction

In 1996, IUCN's Natural Heritage Program initiated a project to prepare a global strategy for natural World Heritage sites. It was foreseen to prepare global overviews on World Heritage site coverage in the various biomes of the world (e.g. forests, wetlands and marine areas, mountains, grasslands, etc.) and an overview of biodiversity values of World Heritage sites. The project would involve close co-operation with the World Conservation Monitoring Centre (WCMC) where the world's major biodiversity and protected area database is located. Support for the conduct of these theme studies was generously provided by Australia's Department of Environment.

The first in this series of working papers was the global theme study on “Earth's Geological History - A Contextual Framework for Assessments of World Heritage Fossil Site Nominations.” This report was prepared over the course of a year by Professor Rod Wells of Flinders University and was made available to the World Heritage Committee in December, 1996. It provides a temporal view of where fossil records best display the record of life on earth (natural heritage criteria i).

This working paper is the second in the series and focuses on wetland and marine sites on the World Heritage List. Although marine areas (e.g. coral reefs, open ocean, island systems, etc.) comprise different biomes than inland and coastal wetlands, they have been included together in this inventory to offer a broader view of World Heritage protection. Wetlands and marine areas are among the most productive natural environments on earth providing substantial socio-economic benefits to humans as well as habitat for numerous species. Some of the most notable values for wetlands include: maintaining water tables for agriculture, flood control, shoreline stabilisation, storm protection, reducing sediment, increasing nutrients (wetlands provide eight times as much plant life as wheat fields), providing an energy source, and harbouring biological diversity, among numerous other values. Marine systems comprise nearly two-thirds of the earth's surface and play a vital role in climate control, weather patterns, the food-chain, and habitat for an abundance of aquatic species. Island systems also provide habitat for numerous endemic flora and fauna species (one in three of all known threatened plants occur on islands) as well as for a portion of the human population.

Despite their importance to the ecological process and livelihood of humans, wetlands and marine areas remain among the world's most threatened habitats. Threats to wetlands are numerous and vary depending on location. Some of the most common threats to wetlands include: drainage for agricultural land; illegal or over fishing; overgrazing; commercial logging; industrial waste; sewage effluent; pesticides; gold mining, dams, institutional weaknesses, and human encroachment and resource needs. Marine areas are victims of over fishing and pollution, whilst

coastal wetlands and island systems face threats from sewage effluent, human pressure for development and tourism, and depredations of invasive plants and animals. As a result of many of these threats, six of the 77 World Heritage natural sites with wetland and marine values have been placed on the List of World Heritage Sites in Danger (Table 10) indicating that inscription on the World Heritage List does not necessarily guarantee effective stewardship.

Protection for wetlands and marine areas can come in many forms, from local practices, to national legislation, to international recognition through inscription on the Ramsar and/or the World Heritage List or other mechanisms. Over the past few years there have been many achievements in protecting these areas (including 39 of the world's most prestigious wetlands and marine areas being inscribed on the World Heritage List - Table 1), but the situation facing the earth's wetlands and marine areas remains a global conservation concern.

The purpose of this working paper is to inventory existing World Heritage sites with wetlands and marine values. The reason for this is twofold: first, to provide an overview of the current "coverage" and second, to locate potential wetland and marine areas from different global regions for future inscription on the World Heritage List (gap areas). The overview will assist IUCN in making comparative evaluations and provide the World Heritage Committee with a firmer scientific basis for making decisions. It will also be of interest to State Parties as it will provide them with a global perspective which is useful when identifying potential World Heritage properties in their territories.

## **II. What are Wetlands?**

Wetlands constitute a resource of great economic, cultural, scientific and recreational value to human life and are essential habitat for numerous threatened and endangered species of flora and fauna. Despite their importance, wetlands are often difficult to define since they occupy the transitional zone between permanently wet and generally dry environments and contain an enormous variety of types. For this reason, categories for wetlands can be vague and inconsistent with other attempts, therefore, this overview has adopted a broad view of wetlands and includes more than a mere list of World Heritage sites which satisfy criteria for Ramsar designation. It further includes World Heritage sites with other significant wetland values which may be ecological, botanical, zoological, limnological or hydrological, including such phenomena as thermal features and underground rivers. This overview further includes World Heritage natural sites with a marine, coral reef, open ocean/sea and island component which may not be considered typical wetlands values.

There are more than 50 definitions of wetlands used throughout the world, but the broadest and most international is provided by the Ramsar Convention, which defines wetlands as "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres." (Article 1.1). Ramsar further incorporates into its consideration for listing "riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands." (Article 2.1). Ramsar categorises wetlands into the following: a) estuaries, mangroves and tidal flats; b) floodplains and deltas; c) freshwater marshes; d) lakes; e) peatlands;

and f) forested wetlands. This overview contains World Heritage natural and mixed sites which qualify as Ramsar sites in addition to sites with significant inland wetlands (subterranean rivers and lakes), a coastal/marine component (coral reefs and islands), mangroves, and other sites with unique wetland and marine values. In fact, almost all natural World Heritage sites contain some wetland component, however only those considered highly significant have been included in this document.

Although the World Heritage and Ramsar conventions both protect natural sites through inscription on a protected list, they have differences which should be clarified. Ramsar only protects significant wetlands, which are inscribed on the List of Wetlands of International Importance once nominated by the respective State Party. Under the World Heritage Convention, natural sites which contain various geological, biodiversity and/or aesthetic values are nominated by State Parties, but are not inscribed on the World Heritage List until approved by the World Heritage Committee. Therefore, the two conventions overlap in the protection of wetlands and wetland related values (migratory waterfowl, floodplains, etc.), evident by the 77 World Heritage sites with wetland and marine values described in this overview, but the World Heritage Convention protects sites with a broader range of biome values.

### III. Criteria

The sites described in this overview were divided into two lists: those that have **major** wetland and marine values and those where wetland and marine values are **secondary** to other natural values contained within the site. The decision whether a site had **major** or **secondary** wetland and marine values was based upon whether or not the values were one of the most important characteristics of the site and whether or not it was part of the criteria mentioned by the State Party in the nomination for World Heritage designation. Since World Heritage sites often contain a large area of land (Figures 1 and 2) and/or more than one ecological value, a site may contain a significant wetland, but after comparison with characteristics of the entire site, the wetland/marine portion was categorised as a **secondary** value. For example, the Virgin Komi Forests contain significant lakes and marshes, floodplains, lakes, bogs and rivers, but it was categorised as a site with secondary wetland and marine value, since the site was nominated and inscribed on the World Heritage List primarily for its predominant ecological value, namely expansive Siberian pine and boreal forest.

On the other hand, if the wetland and marine value comprises a significant portion of the site or was a primary reason why the site was nominated for the World Heritage List, then it was categorised as a site with a **major** wetland and marine value. For example, the Sundarbans was categorised as a site with major wetland and marine values since one of the primary reasons for its nomination and inscription on the World Heritage List was because it is the world's largest region of mangrove forest. Twelve of the 77 World Heritage sites included in this overview are also Ramsar sites and each of them were categorised as World Heritage sites with **major** wetland and marine values (Table 1). World Heritage Operational Guidelines, # 43-45 (annex 3) and Ramsar qualifications for wetland values were the main criteria used in compiling the list of sites with significant wetland and marine values which may merit future nomination for the World Heritage List. (Table 11).

IUCN welcomes comments on the World Heritage wetland and marine sites included in this working paper or other sites which may contain significant wetland and marine values. Such comments and information will be useful in preparation of future revisions of this working paper. In an era of the transformation of many wetland and marine areas for economic development and agricultural production, the need to protect wetland and marine areas is more important than ever. The Ramsar Convention and the World Heritage Convention have been successful tools for conserving a considerable part of the earth's biological diversity represented by wetland and marine areas, but much remains to be done to protect the remaining wetlands (17% of the total area of the tropics) and marine areas of the world.

#### **IV. Format of the Overview**

The Overview is divided into three sections:

##### **1. Natural World Heritage sites with major wetland and marine values (39 sites)**

These 39 sites were categorised as sites containing **major** wetland and marine values if the respective State Party mentioned the wetland/marine values in the site nomination as a primary reason for inscription on the World Heritage List and/or because the site contains a previously listed Ramsar site. This decision was inferred from the formal nomination prepared by each State Party. Although many sites were inscribed on the World Heritage List for meeting several criteria, the wetland and/or marine value(s) for these sites was listed in the site nomination by the respective State Party as a major reason for inscription on the World Heritage List.

##### **2. Natural World Heritage sites with secondary wetland and marine values (38 sites)**

These 38 sites share the same significant wetland and marine values as the sites above, based on the same criteria, but were not among the major reasons for nomination as World Heritage sites. For example, Rio Abiseo contains an extensive river basin of wetland significance, but the site was nominated for inscription on the World Heritage List primarily for its biodiversity and other values, therefore, it was categorised in this overview as a site with secondary wetland and marine values. In the nominations for the remaining sites in this category, the respective State Party may not have mentioned the wetland/marine value as a major reason for inscription on the World Heritage List, therefore, the wetland/marine value of the site was noted as secondary.

##### **3. Analysis of World Heritage wetland sites - summary tables, figures and maps**

To assist in analysing the annex text, the following tables are attached:

- Table 1 Natural World Heritage sites with major wetland and marine values
- Table 2 Natural World Heritage sites with secondary wetland and marine values
- Table 3 Natural World Heritage sites with major freshwater wetland values
- Table 4 Natural World Heritage sites with secondary freshwater wetland values
- Table 5 Natural World Heritage sites with a coastal/marine component
- Table 6 Natural World Heritage sites containing mangroves

- Table 7 Island World Heritage sites
- Table 8 Natural World Heritage sites containing coral reef
- Table 9 Natural World Heritage sites with subterranean rivers or lakes
- Table 10 Natural World Heritage sites with wetland and marine values included in the List of World Heritage in Danger
- Table 11 Regions with significant wetland and marine values that contain areas which may merit consideration for World Heritage nomination
- Figure 1 Distribution by biogeographic realm of World Heritage sites with major and secondary wetland and marine values
- Figure 2 Distribution by size of World Heritage sites with major and secondary wetland and marine values

Attached are also several maps which identify World Heritage natural sites with wetland and marine values. The larger global map shows the location of current World Heritage natural sites with both major and secondary wetland and marine values (colour coded). The following smaller maps are divided into global realms (Udvardy, 1975) and identify the World Heritage wetland and marine sites located in each region. The smaller realm maps identify the sites with major and secondary wetland and marine values by using two different types of symbols.

## V. Data Sources

Decisions regarding which World Heritage sites to include in the overview were primarily based on information extracted from the WCMC database. The database contains a record for each World Heritage site and includes discussion on the physical features, vegetation, flora and fauna, and conservation value of each site. WCMC drafts and updates the Data Sheets on the database based on materials received from the State Party and the conservation community. Reference was also made to *Global Biodiversity: Status of the Earth's Living Resources* (1992), a WCMC publication. In compiling this overview several IUCN publications were used, including *Review of the Protected Areas System in the Indomalayan and Afrotropical Realms* (1986); *Coral Reefs of the World*, vols. I-III (IUCN-UNEP, 1988); *Wetland Conservation: A Review of Current Issues and Required Action* (1990); *Protected Areas of the World: A review of national systems*, vols. I-IV (IUCN-UNEP, 1992); *Wetlands In Danger* (1993); *The World Heritage Convention, Twenty Years Later* (1993); *Paradise on Earth* (1995), *A Global Representative System of Marine Protected Areas*, vols. I-IV, (IUCN-World Bank, 1995); as well as articles, conference proceedings and secondary sources. Ramsar publications were used, namely the *Ramsar Convention Manual* and the texts for *Wetlands of International Importance* from various global regions. The International Waterfowl and Wetlands Research Bureau publication, "Wetlands" (1991) was also a valuable resource material. Other materials used were "Great Reefs of the World," (1993) by Carl Roesler; "Putting Biodiversity on the Map: Priority Areas for Global conservation," (1992) by the International Council for Bird Preservation; and "Nordic World Heritage," (1996) by the Nordic Council of Ministers and UNESCO.

## VI. Observations and Future Suggestions

Wetlands and marine areas occur in every country, from the tundra to the tropics, from islands to the deep ocean. With nearly 70% of the world's population living near sea coasts, river valleys or lake shores, humans depend on the preservation of these areas as much as ever, especially in the developing world.

This reliance is increasingly important since much of the world's wetlands have been lost and many marine areas degraded during this century, due to social and economic decisions. Uncertainty exists over the actual percentage of wetlands that remain today, but WCMC estimates that 570 million ha (6% of earth's surface) are presently composed of wetlands of which 30% are bogs, 26% fens, 20% swamps, 15% floodplains, and 2% lakes. WCMC further suggests that 24 million ha of mangroves and 60 million ha of coral reefs remain in the world.

At the current time, statistics on the amount of global wetlands are mere estimates, but Ramsar is in the process of compiling more precise global data. More accurate sources of information are available regarding the amount/percentage of wetlands remaining within individual countries or for specific wetland types. As humans continue to learn more about their demands on the environment, there is an increasing need to inventory the wetland and marine areas that have received international protection through the World Heritage Convention. Furthermore, it is important to identify regions of the world with wetland and marine values that have minimal World Heritage protection (gap areas) and list sites which may potentially be nominated for World Heritage protection due to significant wetland and marine values.

Upon review of the World Heritage natural sites with major and secondary wetland and marine values (Tables and Figures 1 and 2) a gap analysis shows that there are only a small number of World Heritage sites with significant wetland/marine values within Central Asia, the Middle East, the Polar regions, and the South Pacific (see global map). Tables 1 and 2 indicate that 20 of the 77 sites (nearly 25%) are located in the Palearctic Realm and a total of 32 (over 40%) within the Palearctic or Nearctic Realm, compared to only two sites in each the Oceanian and Antarctic Realm. A total of 14 sites, including nine with major wetland/marine values, are located in the Afrotropical Realm and 12 sites are included from the Neotropical Realm, with eight containing major wetland/marine values. The Indomalayan Realm, is well represented with ten sites, but six of them are located in India and Indonesia alone, which does not indicate a diverse representation of sites with wetland/marine values in this region. On the other hand, a diverse distribution is evident in the Neotropical Realm where 10 South American countries are represented by the 10 sites. The Afrotropical Realm also has a diverse distribution of sites with 11 nations containing World Heritage sites with significant wetland/marine values (Tables and Figures 1 and 2).

From this overview of 77 World Heritage wetland and marine sites, it is clear that other important wetland and marine areas exist which may be merit consideration for World Heritage-nomination. A preliminary list of prospective wetland and marine areas with potential for World Heritage inscription is described in Table 11. This is not an exhaustive list, but merely an example of sites located in some of the gap areas currently not protected by World Heritage. Emphasis was placed on suggesting potential wetland sites in areas without current World Heritage protection (gap areas). Omissions of potential sites (Table 11) may not have been because of the lack of wetland or marine values, but rather because there were already other World Heritage wetland/marine sites located in that particular region.

Table 5 shows that the majority of sites have a coastline/marine component which is usually a good indicator of wetland potential. There can be obstacles in protecting such coastal areas due to the desire for coastline development and



transport access. Despite these pressures, there has been success in protecting these regions of the world under the World Heritage Convention indicated by Table 5 which shows that 37 of the World Heritage sites with significant wetland values (nearly 50%) have a coastal component.

Mangroves are a component of 15 of the sites (nearly 20%) on the World Heritage List (Table 6). In addition, the portion of the Sundarbans located in Bangladesh, which contains mangroves, was nominated for inscription as a natural site on the World Heritage List by Bangladesh at the June, 1997 World Heritage Bureau meeting in Paris. If approved by the December, 1997 Committee, this site would be included in Table 6.

Islands are well represented on the natural World Heritage List with 17 sites (Table 7), not including the three additional sites (Cocos Island Marine and Terrestrial Conservation Area in Costa Rica; Morne Trois Pitons National Park in Dominica; and Heard and McDonald Islands in Australia) which were nominated by the respective State Parties and recommended for inscription by the World Heritage Bureau at the June, 1997 meeting in Paris.

Coral reefs should also be another area of focus in future World Heritage inscription. Eleven existing sites contain coral reefs (Table 8) with 5 of them located in Australia and Indonesia. Other priority coral reefs are highlighted in the four volume IUCN/World Bank study on "A Global Representative System of Marine Protected Areas."

The size distribution of World Heritage sites in this overview (Figures 1 and 2) are disparate with an expansive range from Vallée de Mai, the smallest at 19.5ha, to Lake Baikal, at 8,800,000ha, to the Great Barrier Reef, the largest at 35 million ha. The majority of sites (47 of 77) are between 10,000 and a 1,000,000ha with 27 being between 100,000 and a 1,000,000ha. Although wetland areas may be smaller than World Heritage sites on the average, 17 of the sites in this overview with significant wetland/marine values are over one million ha in size, whereas only 5 sites were less than 1000ha. It is important to protect an area larger than the actual wetland area by including a buffer zone around the site. For this reason, World Heritage, which attempts to protect a larger area within often various natural values, has been a valuable mechanism for protecting wetland and marine areas.

## **VII. Acknowledgements**

IUCN would like to acknowledge the assistance of Ramsar, especially Montserrat Carbonell, Rebecca D'Cruz, Tim Jones and Tom Kabii for assistance on potential wetland sites and Maryse Mahy for translation of the executive summary into French. We also acknowledge Jeff McNeely and Jean-Yves Pirot (IUCN), Natarajan Ishwaran (UNESCO World Heritage Centre), Simon Blyth and Jim Paine (WCMC), Sue Wells (WWF), and the Australian Department of Environment for their generous support towards the production of this document.



## **TABLES AND FIGURES**



# TABLE 1

## WORLD HERITAGE SITES WITH MAJOR WETLAND AND MARINE VALUES

### NEARCTIC REALM

CANADA	Wood Buffalo National Park
MEXICO	Whale Sanctuary of El Vizcaino
USA	*Everglades National Park
USA	Olympic National Park
USA	*Yellowstone National Park

### PALEARCTIC REALM

BULGARIA	Srëbarna Nature Reserve
FRANCE	Cape Girolata, Cape Porto, Scandola Nature Reserve and the Piano Calanches in Corsica
ROMANIA	Danube Delta
RUSSIAN FEDERATION	Lake Baikal
RUSSIAN FEDERATION	Volcanoes of Kamchatka
SPAIN	Doñana National Park
TUNISIA	*Ichkeul National Park
UK	St. Kilda

### AFROTROPICAL REALM

MALAWI	Lake Malawi National Park
MAURITANIA	Banc D'Arguin National Park
SENEGAL	Djoudj National Bird Sanctuary
SEYCHELLES	Aldabra Atoll
DEM. REPUBLIC OF CONGO	*Virunga National Park

### INDOMALAYAN REALM

INDIA	Kaziranga National Park
INDIA	Keoladeo National Park
INDIA	*Manas National Park
INDIA	Sundarbans National Park
INDONESIA	Komodo National Park
INDONESIA	Ujung Kulon National Park
PHILIPPINES	Tubbataha Reef Marine Park

### OCEANIAN REALM

UK	Henderson Island
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### AUSTRALIAN REALM

AUSTRALIA	Fraser Island
AUSTRALIA	Great Barrier Reef
AUSTRALIA	Kakadu National Park
AUSTRALIA	Lord Howe Island Group
AUSTRALIA	Shark Bay

### ANTARCTIC REALM

NEW ZEALAND	Te Wahipounamu - South West New Zealand
UK	Gough Island Wildlife Reserve

### NEOTROPICAL REALM

BELIZE	Belize Barrier-Reef Reserve System
ECUADOR	Galapagos National Park
HONDURAS	*Río Platano Biosphere Reserve
MEXICO	Sian Ka'an Biosphere Reserve
PANAMA /COLOMBIA	Darien and Los Katios National Parks
PERU	Manu National Park

\* These sites are also inscribed on the List of World Heritage in Danger (Table 10).

**TABLE 2****NATURAL WORLD HERITAGE SITES WITH SECONDARY WETLAND AND MARINE VALUES****NEARCTIC REALM**

CANADA	Gros Morne National Park
CANADA	Nahanni National Park
CANADA & USA	Tatshenshini-Alesek/ Kluane National Park/ Wrangell-St. Elias National Park and Reserve and Glacier Bay National Park
CANADA & USA	Waterton Glacier International Peace Park
USA	Great Smoky Mountains National Park
USA	Mammoth Cave National Park
USA	Redwood National Park

**PALEARCTIC REALM**

CHINA	Huanglong Scenic and Historic Interest Area
CHINA	Jiuzhaigou Valley Scenic and Historic Interest Area
CHINA	Wulingyuan Scenic and Historic Interest Area
CROATIA	*Plitvice Lakes National Park
HUNGARY & SLOVAKIA	Caves of Aggtelek and Slovak Karst
JAPAN	Yakushima (Yaku-Island)
OMAN	Arabian Oryx Sanctuary
RUSSIAN FEDERATION	Virgin Komi Forests
SLOVENIA	Skocjan Caves
SWEDEN	The Lapponian Area
UK	The Giant's Causeway and Causeway Coast
YUGOSLAVIA	Durmitor National Park

**AFROTROPICAL REALM**

CAMEROON	Dja Faunal Reserve
CENTRAL AFRICAN REPUBLIC	Parc National du Manovo-Gounda St. Floris
COTE D'IVOIRE	Comoé National Park
SENEGAL	Niokolo-Koba National Park
SEYCHELLES	Vallée de Mai Nature Reserve
TANZANIA	Selous Game Reserve
DEM. REPUBLIC OF CONGO	Salonga National Park
ZAMBIA/ZIMBABWE	Victoria Falls / Mosi-oa-Tunya
ZIMBABWE	Mana Pools National Park, Sapi and Chewore Safari Areas

**INDOMALAYAN REALM**

NEPAL	Royal Chitwan National Park
THAILAND	Thungyai - Huai Kha Khaeng Wildlife Sanctuaries
VIET NAM	Ha Long Bay

**OCEANIAN REALM**

USA	Hawaii Volcanoes National Park
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**AUSTRALIAN REALM**

AUSTRALIA	Tasmanian Wilderness
AUSTRALIA	Wet Tropics of Queensland

**NEOTROPICAL REALM**

ARGENTINA	Los Glaciares National Park
ARGENTINA/BRAZIL	Iguazú and Iguazu National Parks
PERU	*Rio Abiseo National Park
VENEZUELA	Canaima National Park

\* This site is also inscribed on the List of World Heritage in Danger (Table 10).

**TABLE 3****Natural World Heritage sites containing major  
freshwater wetland values (see annex 1)**

Site numbers are listed for ease of reference to detailed information in annex 1 and 2 and global map

AUSTRALIA	27. Fraser Island
AUSTRALIA	29. Kakadu National Park
BULGARIA	6. Srébarna Nature Reserve
CANADA	1. Wood Buffalo National Park
HONDURAS	36. Río Platano Biosphere Reserve
INDIA	19. Kaziranga National Park
INDIA	20. Keoladeo National Park
INDIA	21. Manas National Park
MALAWI	14. Lake Malawi National Park
MEXICO	37. Sian Ka'an
NEW ZEALAND	32. Te Wahipounamu - South West New Zealand
PANAMA/COLOMBIA	38. Darien and Los Katios National Parks
PERU	39. Manu National Park
ROMANIA	8. Danube Delta
RUSSIAN FEDERATION	9. Lake Baikal
RUSSIAN FEDERATION	10. Volcanoes of Kamchatka
SENEGAL	16. Djoudj National Bird Sanctuary
SPAIN	11. Doñana National Park
TUNISIA	12. Ichkeul National Park
USA	3. Everglades National Park
USA	4. Olympic National Park
USA	5. Yellowstone National Park
DEM. REPUBLIC OF CONGO	18. Virunga National Park

**TABLE 4****Natural World Heritage sites with secondary freshwater wetland values (see annex 2)**

Site numbers are listed for ease of reference to detailed information in annex 2 and global map

ARGENTINA	74. Los Glaciares National Park
ARGENTINA/BRAZIL	75. Iguazu and Iguacu National Parks
AUSTRALIA	72. Tasmanian Wilderness
AUSTRALIA	73. Wet Tropics of Queensland
CAMEROON	59. Dja Faunal Reserve
CANADA	40. Gros Morne National Park
CANADA	41. Nahanni National Park
CANADA AND THE USA	42. Tatshenshini-Alese/ Kluane National Park/ Wrangell-St. Elias National Park and Reserve and Glacier Bay National Park
CANADA AND THE USA	43. Waterton Glacier International Peace Park
CENTRAL AFRICAN REPUBLIC	60. Parc National du Manovo-Gounda St. Floris
CHINA	47. Huanglong Scenic and Historic Interest Area
CHINA	48. Jiuzhaigou Valley Scenic and Historic Interest Area
CHINA	49. Wulingyuan Scenic and Historic Interest Area
COTE D'IVOIRE	61. Comoé National Park
CROATIA	50. Plitvice Lakes National Park
HUNGARY AND SLOVAKIA	51. Caves of Aggtelek and Slovak Karst
NEPAL	67. Royal Chitwan National Park
OMAN	53. Arabian Oryx Sanctuary
PERU	76. Rio Abiseo National Park
RUSSIAN FEDERATION	54. Virgin Komi Forests
SENEGAL	62. Niokolo-Koba National Park
SLOVENIA	55. Skocjan Caves
SWEDEN	56. The Lapponian Area
TANZANIA	63. Selous Game Reserve
THAILAND	69. Thungyai - Huai Kha Khaeng Wildlife Sanctuaries
USA	46. Mammoth Cave National Park
USA	44. Great Smoky Mountains National Park
VENEZUELA	77. Canaima National Park
YUGOSLAVIA	58. Durmitor National Park
DEM. REPUBLIC OF CONGO	64. Salonga National Park
ZAMBIA/ZIMBABWE	65. Victoria Falls / Mosi-oa-Tunya
ZIMBABWE	66. Mana Pools National Park, Sapi and Chewore Safari Areas

In addition to these sites, there are others which protect extensive regions and watersheds. Examples are:

- Canadian Rocky Mountain Parks
- Talamanca Range-La Amistad Reserves/La Amistad National Park
- Sangay National Park
- Nanda Devi National Park
- Sagarmatha National Park
- Huascaran National Park
- Okapi Faunal Reserve
- Rwenzori Mountains National Park



**TABLE 5****Natural World Heritage sites with a coastal/marine component**

Site numbers are listed for ease of reference to detailed information in annex 1 and 2 and global map

AUSTRALIA	27. Fraser Island
AUSTRALIA	28. Great Barrier Reef
AUSTRALIA	29. Kakadu National Park
AUSTRALIA	30. Lord Howe Island Group
AUSTRALIA	31. Shark Bay
AUSTRALIA	72. Tasmanian Wilderness
AUSTRALIA	73. Wet Tropics of Queensland
BELIZE	34. Belize Barrier-Reef Reserve System
CANADA	40. Gros Morne National Park
CANADA & THE USA	42. Tatshenshini-Alsek/ Kluane National Park/ Wrangell-St. Elias National Park and Reserve/ Glacier Bay National Park
ECUADOR	35. Galapagos National Park
FRANCE	7. Cape Girolata, Cape Porto, Scandola Natural Reserve, and the Piano Calanches in Corsica
HONDURAS	36. Rio Platano Biosphere Reserve
INDIA	22. Sundarbans National Park
INDONESIA	23. Komodo National Park
INDONESIA	24. Ujung Kulon National Park
JAPAN	52. Yakushima
MAURITANIA	15. Banc D'Arguin National Park
MEXICO	37. Sian Ka'an
MEXICO	2. Whale Sanctuary of El Vizcaino
NEW ZEALAND	32. Te Wahipounamu - South West New Zealand
OMAN	53. Arabian Oryx Sanctuary
PANAMA/COLOMBIA	38. Darien/ Los Katios National Parks
PHILIPPINES	25. Tubbataha Reef Marine Park
RUSSIAN FEDERATION	10. Volcanoes of Kamchatka
SENEGAL	16. Djoudj National Bird Sanctuary
SEYCHELLES	17. Aldabra Atoll
SPAIN	11. Doñana National Park
UNITED KINGDOM	33. Gough Island Wildlife Reserve
UNITED KINGDOM	26. Henderson Island
UNITED KINGDOM	13. St. Kilda
UNITED KINGDOM	57. The Giant's Causeway and Causeway Coast
USA	3. Everglades National Park
USA	71. Hawaii Volcanoes National Park
USA	4. Olympic National Park
USA	46. Redwood National Park
VIET NAM	70. Ha Long Bay

**TABLE 6**

**Natural World Heritage sites containing mangroves**

Site numbers are listed for ease of reference to detailed information in annex 1 and 2 and global map

AUSTRALIA	27. Fraser Island
AUSTRALIA	29. Kakadu National Park
AUSTRALIA	31. Shark Bay
AUSTRALIA	73. Wet Tropics of Queensland
BELIZE	34. Belize Barrier-Reef Reserve System
ECUADOR	35. Galapagos National Park
HONDURAS	36. Río Platano Biosphere Reserve
INDIA	22. Sundarbans National Park
INDONESIA	23. Komodo National Park
MAURITANIA	15. Banc D'Arguin National Park
MEXICO	37. Sian Ka'an
MEXICO	2. Whale Sanctuary of El Vizcaino
PANAMA/COLOMBIA	38. Darien and Los Katios National Parks
SEYCHELLES	17. Aldabra Atoll
USA	3. Everglades National Park

The portion of the Sundarbans located in Bangladesh, which contains mangroves, was nominated for inscription as a natural site on the World Heritage List by Bangladesh at the June, 1997 World Heritage Bureau meeting in Paris. If approved by the December, 1997, Committee this site would be included in Table 6.

## TABLE 7

### Island World Heritage sites

Site numbers are listed for ease of reference to detailed information in annex 1 and 2 and global map

AUSTRALIA	27. Fraser Island
AUSTRALIA	28. Great Barrier Reef
AUSTRALIA	30. Lord Howe Island Group
BELIZE	34. Belize Barrier-Reef Reserve System
ECUADOR	35. Galapagos National Park
FRANCE	7. Cape Girolata, Cape Porto, Scandola Natural Reserve, and the Piano Calanches in Corsica
INDONESIA	23. Komodo National Park
INDONESIA	24. Ujung Kulon National Park
JAPAN	52. Yakushima
PHILIPPINES	25. Tubbataha Reef Marine Park
SEYCHELLES	68. Vallée de Mai Nature Reserve
SEYCHELLES	17. Aldabra Atoll
UNITED KINGDOM	33. Gough Island Wildlife Reserve
UNITED KINGDOM	26. Henderson Island
UNITED KINGDOM	13. St. Kilda
USA	71. Hawaii Volcanoes National Park
VIET NAM	70. Ha Long Bay

Cocos Island Marine and Terrestrial Conservation Area (Costa Rica), Morne Trois Pitons National Park (Dominica) and Heard and McDonald Islands (Australia) were nominated, then recommended by the World Heritage Bureau at the June 1997 meeting in Paris for inscription as natural sites on the World Heritage List. If approved by the December, 1997, Committee these three sites would be included in Table 7 as island natural World Heritage Sites.

**TABLE 8**

**Natural World Heritage sites containing coral reef**

Site numbers are listed for ease of reference to detailed information in annex 1 and 2 and global map

AUSTRALIA	73. Wet Tropics of Queensland
AUSTRALIA	28. Great Barrier Reef
AUSTRALIA	30. Lord Howe Island Group
BELIZE	34. Belize Barrier-Reef Reserve System
INDONESIA	23. Komodo National Park
INDONESIA	24. Ujung Kulon National Park
MEXICO	37. Sian Ka'an
PHILIPPINES	25. Tubbataha Reef Marine Park
SEYCHELLES	17. Aldabra Atoll
UNITED KINGDOM	26. Henderson Island
USA	3. Everglades National Park

**TABLE 9**

**Natural World Heritage sites with subterranean rivers or lakes**

Site numbers are listed for ease of reference to detailed information in annex 1 and 2 and global map

CANADA	41. Nahanni National Park
CHINA	49. Wulingyuan Scenic and Historic Interest Area
CROATIA	50. Plitvice Lakes National Park
HUNGARY AND SLOVAKIA	51. Caves of Aggtelek and Slovak Karst
SLOVENIA	55. Skocjan Caves
USA	45. Mammoth Cave National Park

**TABLE 10**

**NATURAL WORLD HERITAGE SITES WITH WETLAND VALUES INCLUDED IN THE LIST OF WORLD HERITAGE IN DANGER**

SITE	COUNTRY	DANGER LIST	WETLAND AND MARINE VALUES	THREATS
1. Plitvice Lakes	Croatia	1991	lakes, waterfalls, caves	military occupation, civil unrest
2. Srebarna	Bulgaria	1992	lake, Danube floodplain, rare marsh plants, bird breeding area, migratory bird species, only Bulgarian Dalmation pelican colony, one pair white-tailed eagle	dam construction and interference, agricultural drainage, residential use, flood control measures, habitat loss
3. Manas	India	1992	rivers, turtles, threatened water fowl & mammals	civil unrest, commercial poaching, political instability, habitat destruction, limited resources, management restricted
4. Everglades	USA	1993	mangroves, aquifer (Miami water source), important habitat for wading birds and fourteen endangered species	Drainage for agriculture, nutrient pollution, chemical runoff (fertiliser, (mercury, pesticides), urban growth, flood control operations
5. Virunga	Democratic Rep. Congo	1994	lakes, deltas, marshes, hot springs, peat bogs, river, hippos, pelicans, endemic bird area	civil unrest, refugee impact, commercial poaching, human encroachment and demand for food and fuel, donors suspended aid, restrictions on management
6. Yellowstone	USA	1995	geysers, thermals, volcanic record, lakes, waterfalls, bald eagles	mining operations, water pollution, sewage leakage, waste contamination, disease impact on bison, tourism
7. Rio Platano	Honduras	1996	watershed, rivers, lakes, threatened turtles, manatee and crocodiles, endemic bird area	agricultural expansion, human encroachment, commercial poaching, introduced species, over fishing, social conflict, poor infrastructure, inadequate management
8. Ichkeul	Tunisia	1996	lake, marshes, swamps, wintering waterfowl, bird and flamingo nesting	building of two dams, increased salinity, drain of freshwater flow, agriculture, grazing, fishing, quarry excavation, institutional structure

**TABLE 11**

**REGIONS WITH SIGNIFICANT WETLAND AND/OR MARINE VALUES THAT CONTAIN AREAS WHICH MAY MERIT CONSIDERATION FOR WORLD HERITAGE NOMINATION**

\* This is not an exhaustive list, but an illustration of areas with significant wetland and/or marine values and protected status which may merit consideration for nomination on the World Heritage natural list.

<b>AREA</b>	<b>COUNTRY</b>	<b>MAIN WETLAND AND MARINE VALUES</b>
<b>AFROTROPICAL</b>		
1. Okavango Delta	Botswana	World's largest delta (over 1 million ha), saltpan and red lechwe group (20,000); swamp, floodplain, major source of food for local tribes, over 400 bird and 65 fish species, 390,000ha wildlife refuge, rated urgent area for endemic bird protection.
2. Chad Basin	Chad	Floodplains, grasslands, lakes (90% of country drains to Lake Chad), swamps, forest, fish & endemic bird species, protected areas, Ramsar site (Lake Fitri).
3. The Red Sea	Egypt, Eritrea Saudi Arabia, Sudan	Famous dive site due to coral diversity, deep vertical drops, islands, numerous colours and pelagic species (turtles, sharks, barracudas, mantas); some protection through national decrees and regional convention.
4. Guinea Bissau coastal wetlands & Bijagos Archipelago	Guinea	88 islands, mangroves, swamp forest, estuaries, mudflats, intact palm groves, hippos, green turtle breeding site, manatee, dolphins, winter ground for wading birds, key resource for local population.
5. Inner Niger River Delta	Mali	One of world's largest deltas, floodplain, rivers, swamps, over 100 fish and 350 bird species, threatened hippos, resource for local tribes.
6. Lake St. Lucia System	South Africa	Largest estuarine wetland in Africa (155,000ha), mud flats, swamps, forest, wildlife significance with over 350 bird species, hippos, crocodiles, Ramsar site.
7. The Sudd	Sudan	One of world's largest wetlands (5 million ha), swamps, floodplain, over 100 bird and mammal species, molluscs, food and papyrus production.
8. Lake George	Uganda	15,000ha, swamp, marsh, endemic bird area (Yellow swamp warbler), elephants, hippos, antelopes, food-building resource for local people, Ramsar & BR site
9. Kafue flats	Zambia	566,600ha floodplain, grassland, Zambezi tributary, biomass production, largest population <i>Kobus lechwe</i> (50,000), 67 fish species, rated urgent area for endemic bird protection, contains two national parks.
<b>PALEARCTIC</b>		
10. Arctic Coastal Plain - ANWR and Old Crow Flats	USA and Canada	Arctic Plain is tundra coastal region important for caribou migration and resources for indigenous population; wildlife refuge protection; Old Crow Flats is sub-arctic boreal region, vast peat resources, migratory water birds, mammals, wildlife.
11. The Wadden Sea	Holland, Denmark, Germany	1,000,000ha site stretching 500km including islands, deep-sea areas, tidal flats, and sandy beaches; high production of microscopical plants and animals, wintering area for aquatic bird species. Ramsar and BR site, protected within three countries and by the European Union.
12. Volga Delta	Russian Federation	One of largest deltas in world (1,900,000ha), over 1,000 channels, commercial fish (70% of world's sturgeon), up to 750,000 water birds, breeding ground for endangered pelican, Ramsar and BR site.

AREA	COUNTRY	MAIN WETLAND AND MARINE VALUES
13. Wrangell Island	Russian Federation	Remote island with tundra, high arctic wilderness, important snow geese migration site.
<b>Indomalay</b>		
14. The Great Lake, Tonle Sap	Cambodia	Largest lake in SE Asia (2,500,000ha), swamp forest, floodplain, rivers, endemic fish, waterfowl, migratory shorebirds, next to Angkor Wat (World Heritage site).
15. Andaman/Nicobar Islands	India	High island group forming emerging mountain chain in Indian Ocean, 3000m annual rainfall in areas, various reefs, over 100 coral species, mangroves, most abundant nest site for leatherback turtle in N. Indian Ocean, green turtle, saltwater crocodile, terns.
16. Teluk Cenderawasih Marine National Park	Indonesia Irian Jaya	Five major reef forms, over one million ha area (700,000ha proposed for wildlife reserve), over 130 coral species, mangroves, deep caves, tunnels, abundant fish, green turtles, giant clam, crocodile.
17. Taka Bone Rate Atoll	Indonesia Sulawesi	Largest atoll in Indonesia (530,765ha), patch and barrier reefs, low cays, lagoons, 150 coral species, reef invertebrates, green/hawksbill turtle, 121 species of molluscs, fish, squid, giant clams, mother of pearls.
18. Tanjung Putting	Kalimantan	Intact swamp, mangrove and peat forests, high endemic bird area, Water birds (breeding area), dolphin, Storm's stork, Orang-utan and Proboscis monkey, national park, BR, Ramsar site.
19. The Kinabatangan Floodplain	Malaysia	Swamp, mangrove, peat and riverine forests, lakes, high biodiversity, waterfowl, crocodiles, wildlife sanctuary, 3-year rural development project.
20. Dauria International Protected Area	Mongolia, China, and Russia	Vast intact wetland, open grassland, steppe, rivers, diversity of fish, habitat for Mongolian gazelle & other mammals, sacred Buddhist peak, protected by domestic law and 3 nation resolution agreement.
21. Irrawaddy River floodplain and delta	Myanmar	3,50,000ha coastal floodplain/delta, mudflats, rivers, islands, extensive mangroves, migratory birds/waterfowl, domestic forest & wildlife parks.
22. Chagos Archipelago	UK	The Great Chagos Bank (possibly world's largest reef and least disturbed in Indian Ocean), atolls, raised reefs, limestone caps, volcanic rock, hundreds of coral and mollusc species, turtle breeding ground.
<b>AUSTRALIAN/OCEANIAN</b>		
23. Cape York Peninsula	Australia	Entire Cape covers over 11 million ha and numerous wetlands (some protected), lakes, lagoons, sand dunes, river systems, swamps, mangroves, forest, turtle, crocodile, numerous fish species, endemic bird area, cultural significance to Aboriginal clans.
24. Great Astrolobe Reef	Fiji	Volcanic reef island group in S. Pacific, steep cliffs, lagoons, circular atoll barrier reef, diverse coral and fish species, giant clams, proposed marine reserve.
25. Farewell Spit	New Zealand	11,388ha of quartz sand, sandflats, salt marsh, winter shorebirds (black swan, red-knot, godwit, turnstone).
26. Thousand Islands of Palau	Palau	One of the world's most aesthetic marine areas and popular diving spots; undersea caves, 1500m vertical drop, sharks, barracudas and other pelagic species, rated urgent area for endemic bird protection.
27. Sepik & Ramu floodplains	Papua New Guinea	Over 1,200,000ha of floodplain, lakes (Chambri 21,000ha), largest river system in PNG, mangroves, swamps, waterfowl, endemic bird area, crocodiles.
28. Rennell Island	Solomon Islands	86 km raised atoll, fringe and barrier reefs, cliff depression, largest lake in Pacific (Lake Te Nggano), scrub rainforest, over 20 fish species, algae, molluscs.

AREA	COUNTRY	MAIN WETLAND VALUES
<b>NEOTROPICAL</b>		
29. Patagonia wetland lagoons	Argentina	Unspoiled area, geologically unique, hundreds of lakes, birds, waterfowl, endemic Hooded grebe.
30. Andros Island Barrier Reef	Bahamas	High geological and marine value, considered one of finest barrier reefs in Caribbean and is third largest reef system in world, 1.6km rock platform in Caribbean, low cays, massive coral, lagoons, coastal estuaries, famous "blue hole" karsts which support diverse fauna and flora - turtle nesting, abundant seabird colonies, terns, white-crown pigeon, ecotourism, local fishing, proposed nature reserve.
31. The Pantanal	Brazil, Bolivia Paraguay	One of largest floodplains in world (20 million ha), breeding for waterbirds, lakes, marshes, mammals (jaguar, camain, tapir, giant otter), prevents downstream flooding; two protected areas in Brazil.
32. Laguna Merim & Bandanos Del Este	Brazil and Uruguay	1.2 million ha of lakes, marshes, peat swamps, threatened palm groves, important for commercial fishing and irrigation, contains 35% of freshwater birds, 47% of amphibians, 58% of reptiles, and 51% of mammals in Uruguay), Ramsar and BR site.
33. Chilean Fjordlands	Chile	Over 900 miles of beaches, fjord coastline, estuaries, mudflats, rivers, meadows, swamp forest, tundra, bogs, glaciers, high aesthetic value and very remote.
34. Zapata Swamp	Cuba	Caribbean's largest wetland (340,000ha), lagoons, mangrove swamps, mudflats, salt pans, 70 waterfowl species, rated critical endemic bird area, endangered species (Sandhill crane, Bachman's warbler, croc).
35. Jardines de la Reina	Cuba	75,000ha chain of cays, mangroves, coral reefs, mudflats, marshes, lagoons, waterfowl, rated critical area for endemic bird protection, value of area is relatively unknown to much of world.
36. El Tigre Wetlands	Guatemala	Upper catchment delta for Usumacinta delta, lakes, swamp forest, marshes, flooded grassland, endemic bird area, high species diversity, Ramsar and BR site.
37. Gulf de Fonseca	Honduras, Nicaragua, El Salvador	Extensive system of mangroves, estuaries, mudflats, local commercial fishing, migratory site for shoreline birds.
38. Usumacinta Delta and Tabasco Lagoons	Mexico	Mexican gulf coast largest wetland (1,000,000ha), 250,000 birds, mangroves, endangered crocodile, commercial shrimp area, Ramsar site.
39. Miskitia coast and lowlands	Nicaragua	Miskito indians (little western influence), reef islands, lobster, lowland areas important biodiversity and critical habitat for millions of migratory birds.
40. Lake Titicaca	Peru and Bolivia	Largest lake in S. America (829,000ha) and world's highest (3812m), cultural significance for Uro people, habitat for high Andes water birds, endemic bird and fish area, two protected areas in Peru side including one Ramsar site.
41. The Llanos	Venezuela	Among largest wetlands in S. America (4,000,000ha), swamp forest, marshes, lakes, grasslands, endemic bird area, over 100 colonies of herons, storks, ibises and other wading birds, camain, Capibara and crocodile habitat.



FIGURE 1

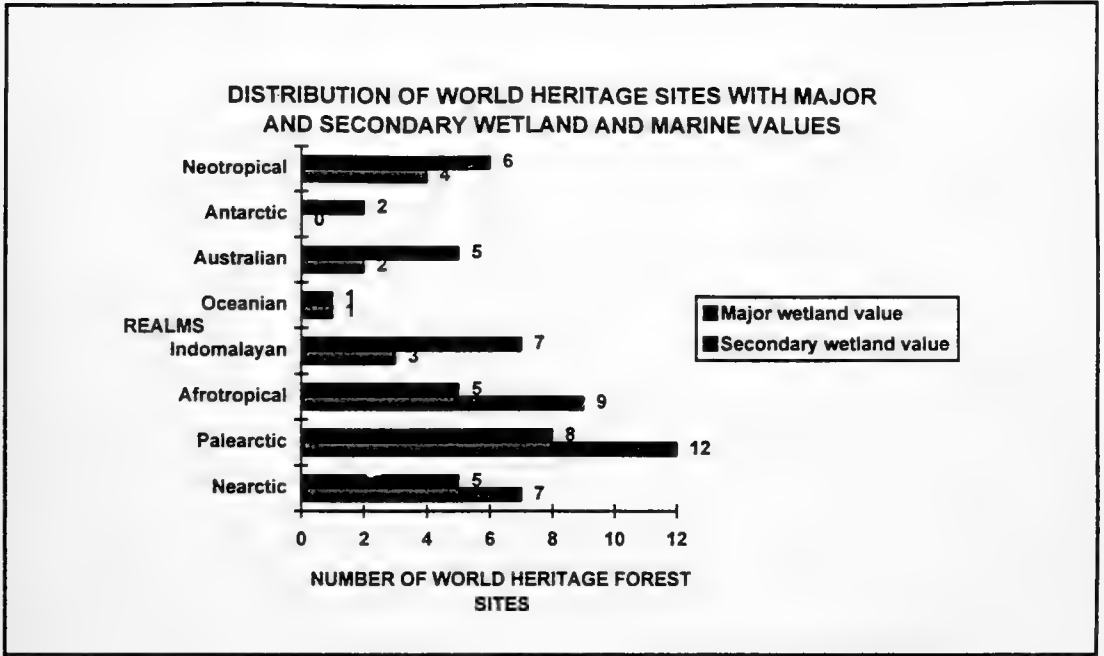
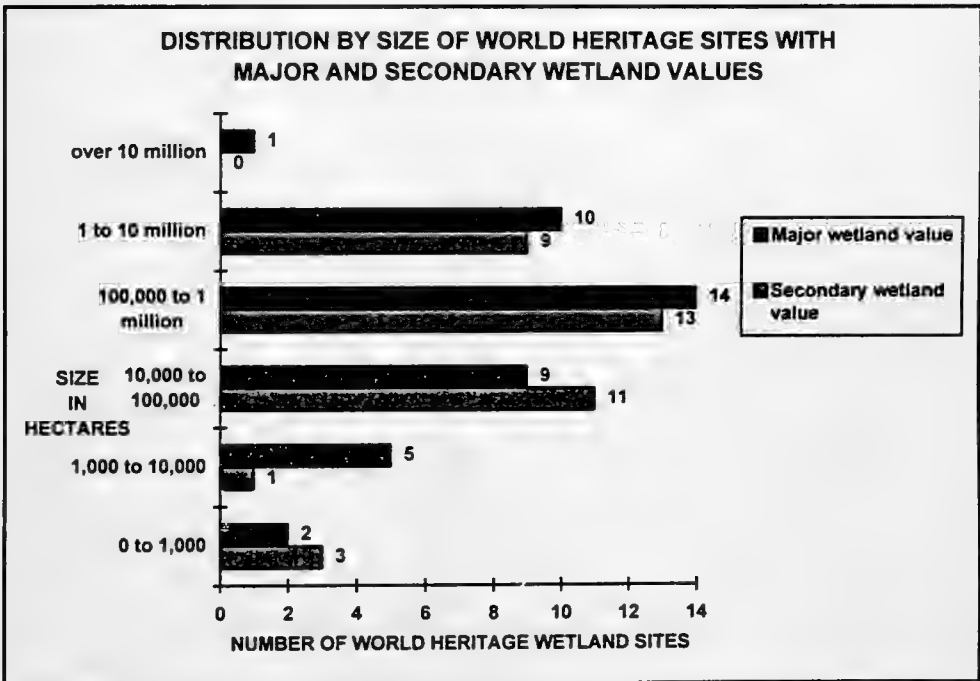


FIGURE 2



\* Note that the area of the Caves of Aggtelek and Slovak Karst is unknown, as it comprises the underground portion only of the 712 caves. The surface area is 55,873 ha.

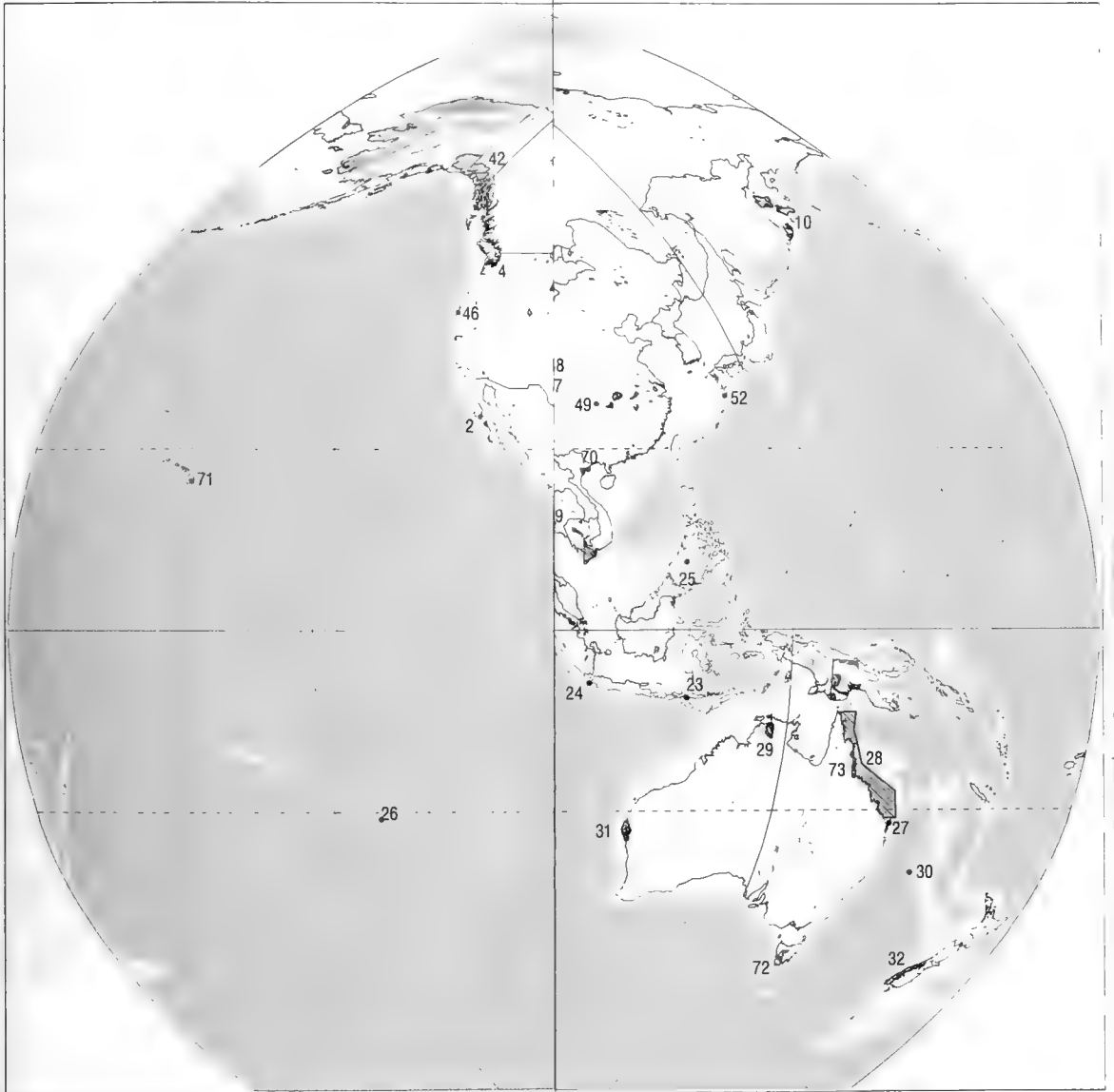


## **MAPS**



## World Heritage Sites

- Major Sites ( 1 - 39 )
- Secondary Sites ( 40 - 77 )



### NEARCTIC REALM

1. Wood Buffalo National Park
  2. Whale Sanctuary of El Vizcaino
  3. Everglades National Park
  4. Olympic National Park
  5. Yellowstone National Park
- ### PALEARCTIC REALM
6. Srebrna Nature Reserve
  7. Cape Girolata, Cape Porto, Scandola Nature Reserve and the Piano Calanches in Corsica
  8. Danube Delta
  9. Lake Baikal
  10. Volcanoes of Kamchatka
  11. Doñana National Park
  12. Ichkeul National Park

### AFROTROPICAL REALM

13. St. Kilda
  14. Lake Malawi National Park
  15. Banc D'Arguin National Park
  16. Djoudj National Bird Sanctuary
  17. Aldabra Atoll
  18. Virunga National Park
- ### INDOMALAYAN REALM
19. Kaziranga National Park
  20. Keoladeo National Park
  21. Manas National Park
  22. Sundarbans National Park and Wildlife Sanctuary
  23. Komodo National Park
  24. Ujung Kulon National Park
  25. Tubbataha Reef Marine

### AUSTRALIAN REALM

72. Tasmanian Wilderness
73. Wet Tropics of Queensland

### NEOTROPICAL REALM

74. Los Glaciares National Park
75. Iguazú and Iguazú National Parks
76. Rio Abiseo National Park
77. Canaima National Park

Nominated sites pending approval of World Heritage Committee in December, 1997:

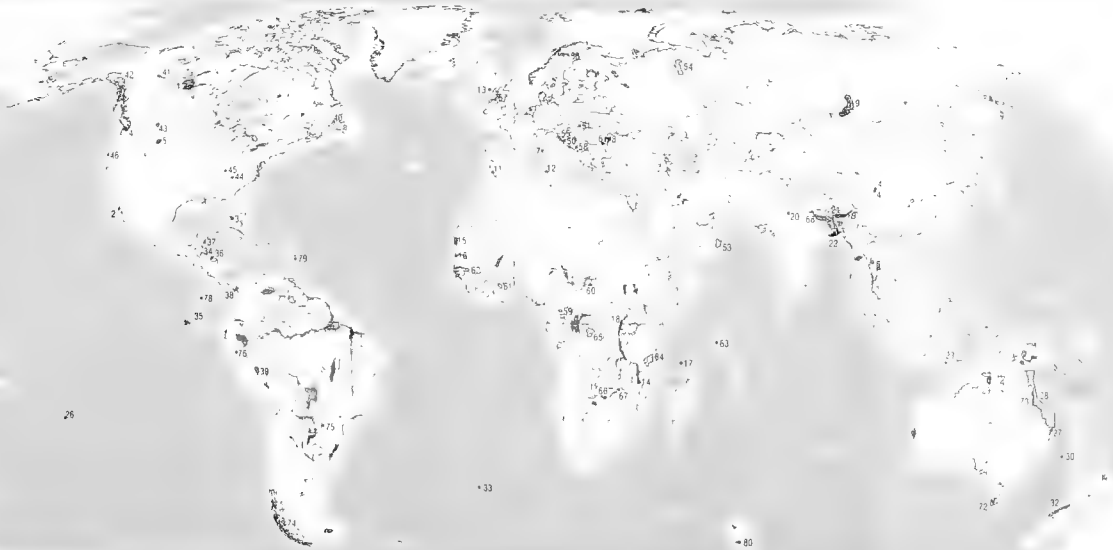
78. Cocos Island Marine Terrestrial Conservation Area
79. Morne Trois Pitons National Park
80. Heard and McDonald Islands

# A Global Overview of World Heritage Wetland and Marine Sites

## World Heritage Sites

- Major Sites (1 - 39)
- Secondary Sites (40 - 77)

- 20 50% wetlands (North America only)
- 50-100% wetlands (North America only)
- Fresh water marsh
- Mangrove
- Occasional wetlands
- Seasonally flooded wetlands
- Salt lake
- Tidal wetlands/estuary/mud flats
- Alkaline/saline lake
- Delta
- Lake
- Peatlands
- General wetlands
- Impoundment
- Lagoon
- Poolis
- Semi permanent lake
- Swamp forest
- Salt pan
- Seasonal salt pan
- Tank region
- Complex wetlands
- Coral reef



### HEMISPHERIC REALM

- 1 Wood Buffalo National Park
- 2 Wingspread National Park
- 3 Everglades National Park
- 4 Olympic National Park
- 5 Yellowstone National Park
- 6 Sotkama Nature Reserve
- 7 Cape Orobou, Cape Poro, Sotkama Nature Reserve and the Pano Chanashan Corsica
- 8 Dniepr Delta
- 9 Lake Baikal
- 10 The canyons of Kinshasa
- 11 Dolomites National Park
- 12 Ichnia National Park

### 13. St. Kitts

- ### AFROTROPICAL REALM
- 14 Lake Malawi National Park
  - 15 Banc D'Argin National Park
  - 16 Djoudi National Park of Senegal
  - 17 Atbara Aspi
  - 18 Victoria National Park
  - 19 Kasaruga National Park
  - 20 Ricadon National Park
  - 21 Manas National Park
  - 22 Sundarbans National Park and Wildlife Sanctuaries
  - 23 Komodo National Park
  - 24 Luang Prabang National Park
  - 25 Touboula Reef Marine Park

### OCEANIC REALM

- 26 Henderson Island
- 27 Fraser Island
- 28 Great Barrier Reef
- 29 Kakadu National Park
- 30 Lord Howe Island Group
- 31 Shark Bay
- 32 Te Angra-Ngauru - South West New Zealand
- 33 Gough Island Wildlife Reserve
- 34 Belize Barrier Reef Reserve System
- 35 Galapagos National Park
- 36 Rio Platano Biosphere Reserve

### 37 San Kaiz Biosphere Reserve

- 38 Dniepr and the Kuban National Parks
- 39 Manu National Park
- 40 Gros Morne National Park
- 41 Iwahahi National Park
- 42 Taphenim-Aseel/Khuair National Park
- 43 Hosterin Glacier/Hemagional Peace Park
- 44 Great Smoky Mountains National Park
- 45 Mammoth Cave National Park
- 46 Redwood National Park

### PALEARCTIC REALM

- 47 Mt. Qinghai Scenic and Historic Interest Area
- 48 Jialing River Valley Scenic and Historic Interest Area
- 49 Wuyangyan Scenic and Historic Interest Area
- 50 Pivotal Lakes National Park
- 51 Caves of Aguzbek and Sovok Karst
- 52 You-shan Island
- 53 Arabian Oryx Sanctuary
- 54 Wuyangyan Forests
- 55 Shouren Caves
- 56 The Lagoon on Area
- 57 The Giant's Causeway and Causeway Coast
- 58 Dunrobin National Park
- 59 Dniepr Faunal Reserve

### 60 Parc National du Manovo-Gourou St. Pons

- 61 Comel National Park
- 62 Niokolo Koba National Park
- 63 Iles de May Nature Reserve
- 64 Sotkama Game Reserve
- 65 Salonga National Park
- 66 Victoria Falls/Mosaoa-Tunya
- 67 Manu Pools National Park, Sap and Diewere Salton Areas
- 68 Rhyas Chhuan National Park
- 69 Thungya-Hua Kha Khaeng Wildlife Sanctuaries
- 70 Ha Long Bay
- 71 Hawaii Volcanoes National Park

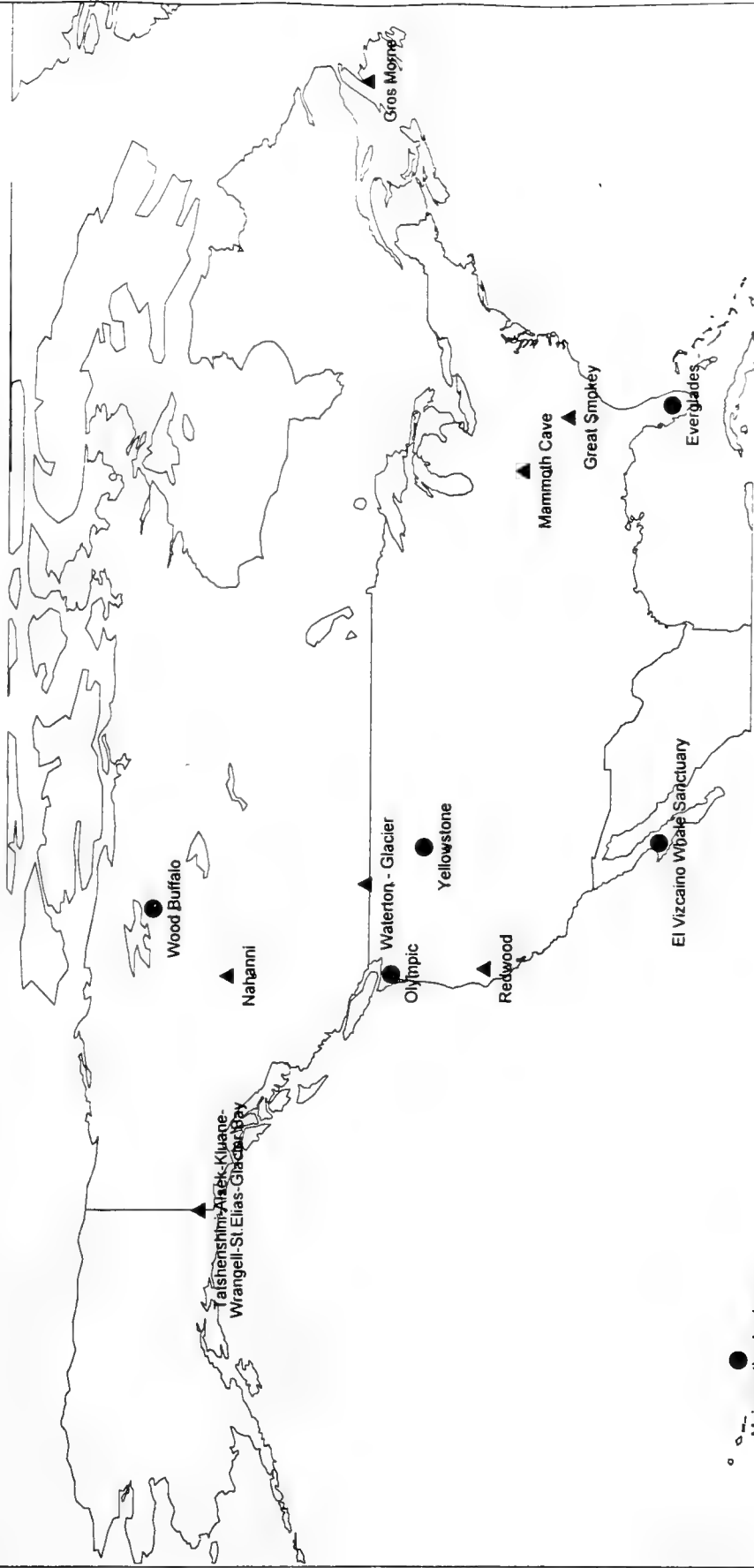
### AUSTRALIAN REALM

- 72 Tasmanian Wilderness
- 73 Wet Tropics of Queensland
- 74 Los Gaitanes National Park
- 75 Iguazu and Iguazu National Parks
- 76 Rio Negro National Park
- 77 Canyons National Park
- 78 Cross Island Marine Terrestrial Conservation Area
- 79 Monaro-Trossachs National Park
- 80 Heard and McDonald Islands

Numbered sites pending approval of World Heritage Committee in December, 1997

# NEARCTIC REALM

WORLD HERITAGE SITES WITH MAJOR AND SECONDARY WETLAND VALUES

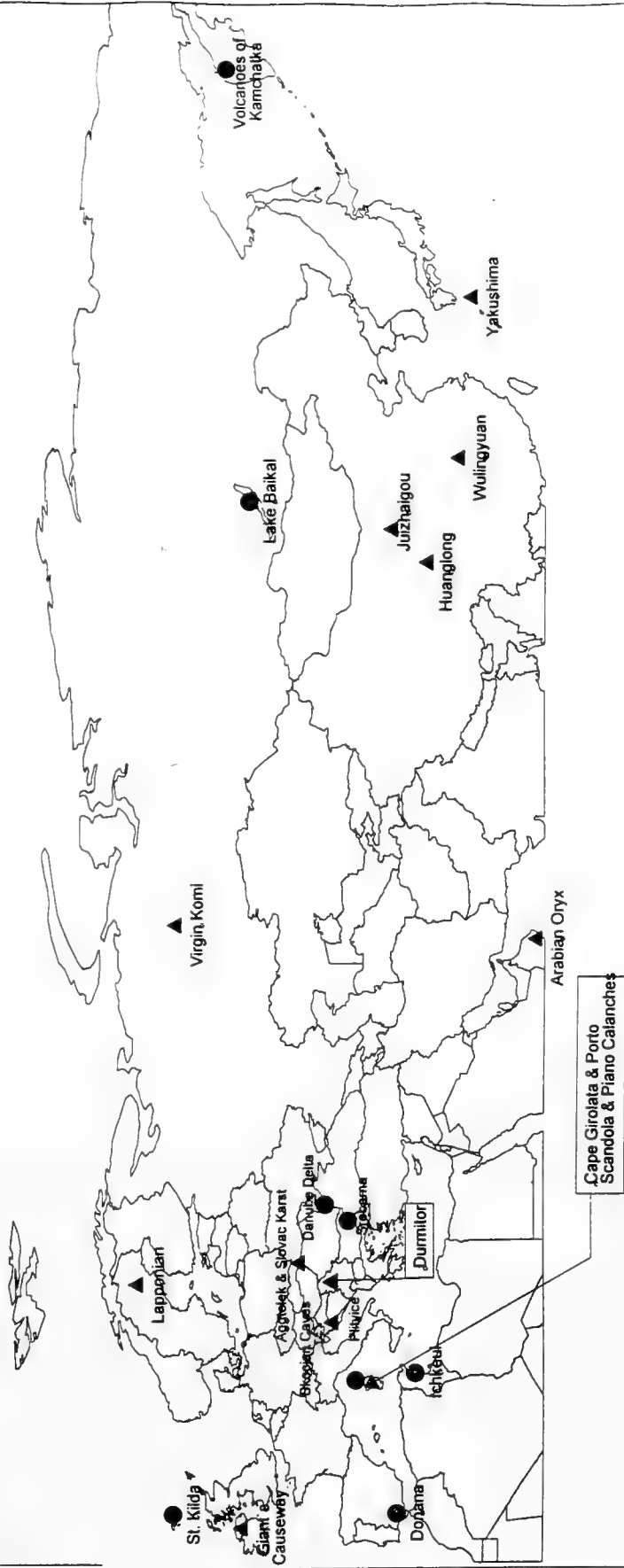






# PALEARCTIC REALM

WORLD HERITAGE SITES WITH MAJOR AND SECONDARY WETLAND VALUES



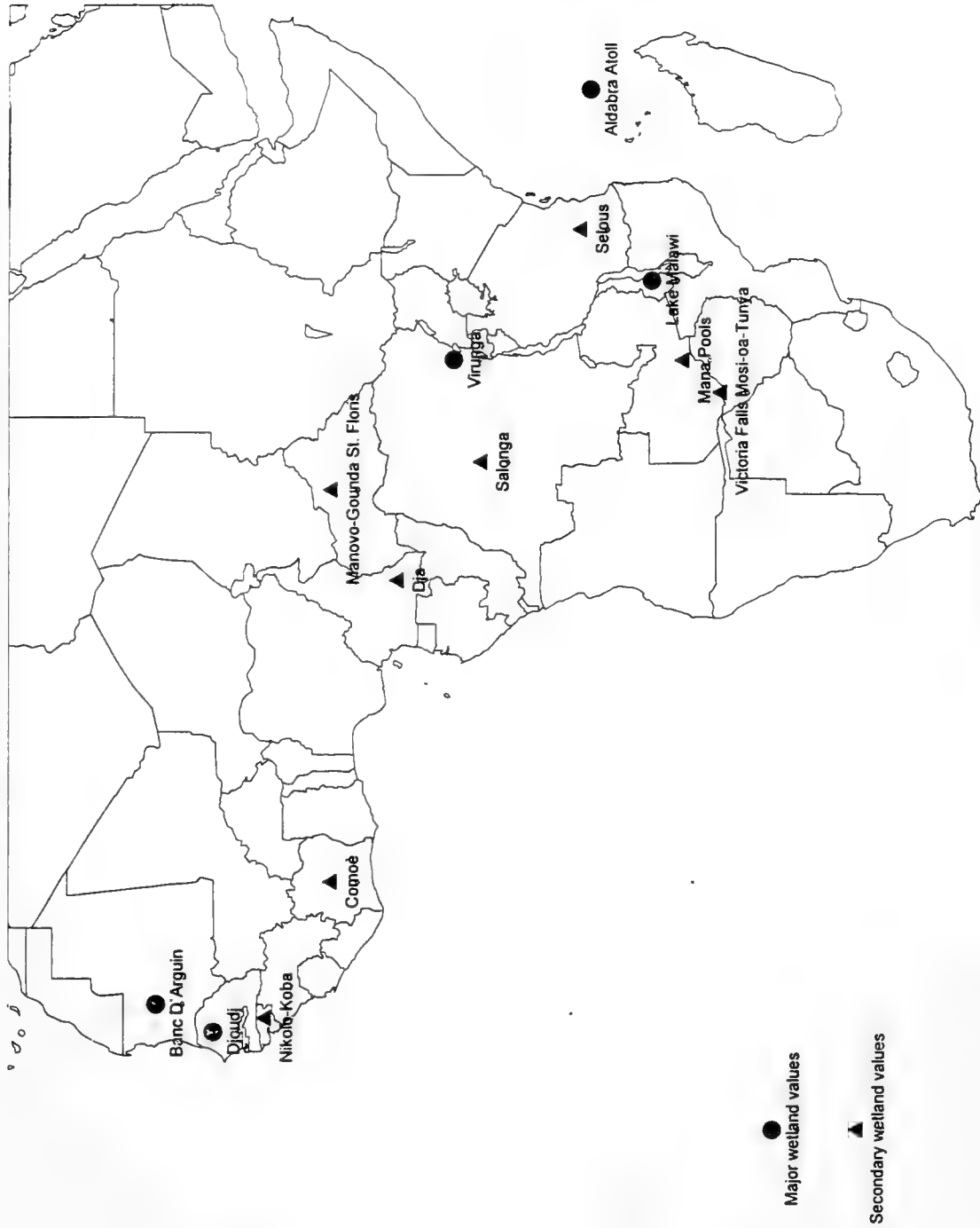
● Major wetland values

▲ Secondary wetland values



# AFROTROPICAL REALM

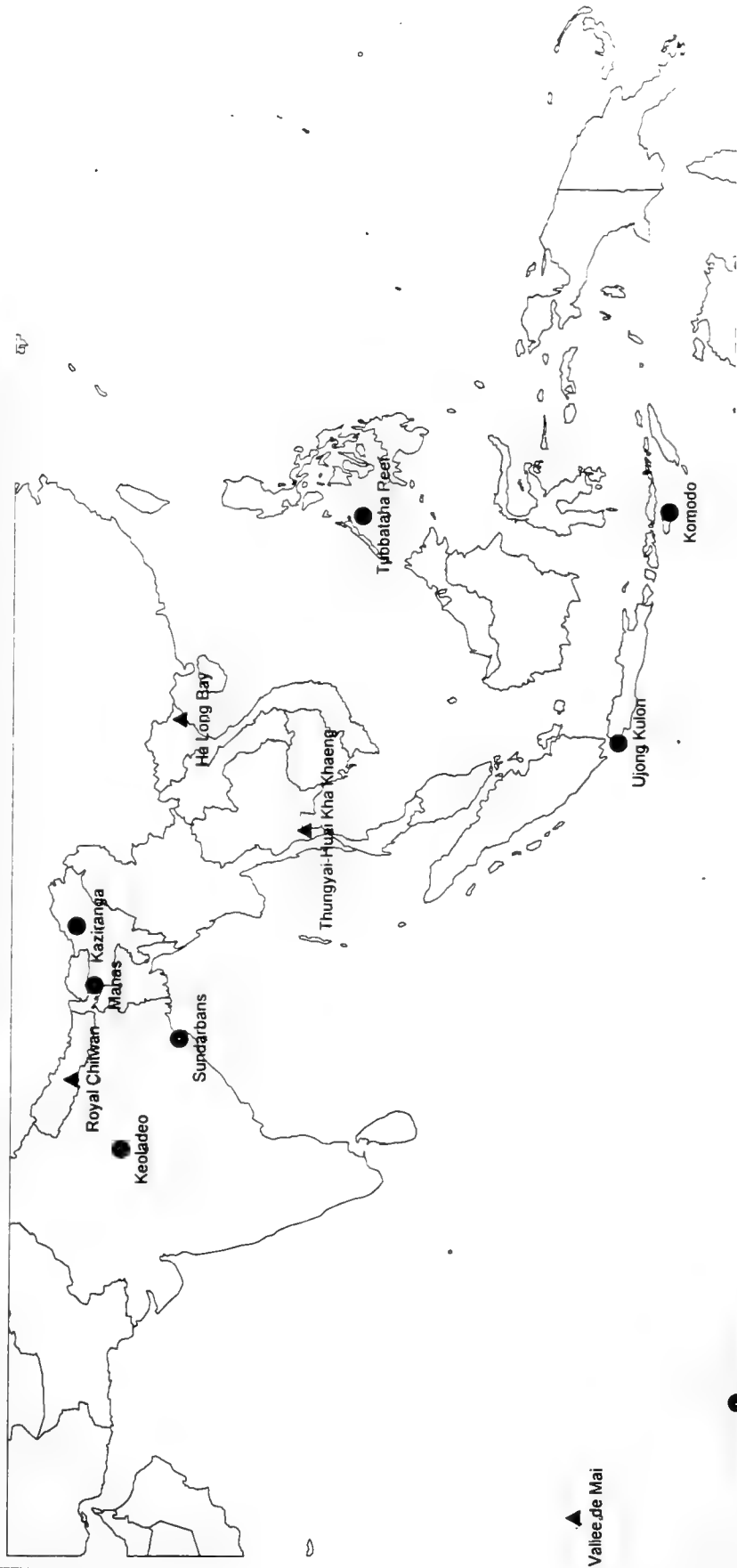
WORLD HERITAGE SITES WITH MAJOR AND SECONDARY WETLAND VALUES





# INDOMALAYAN REALM

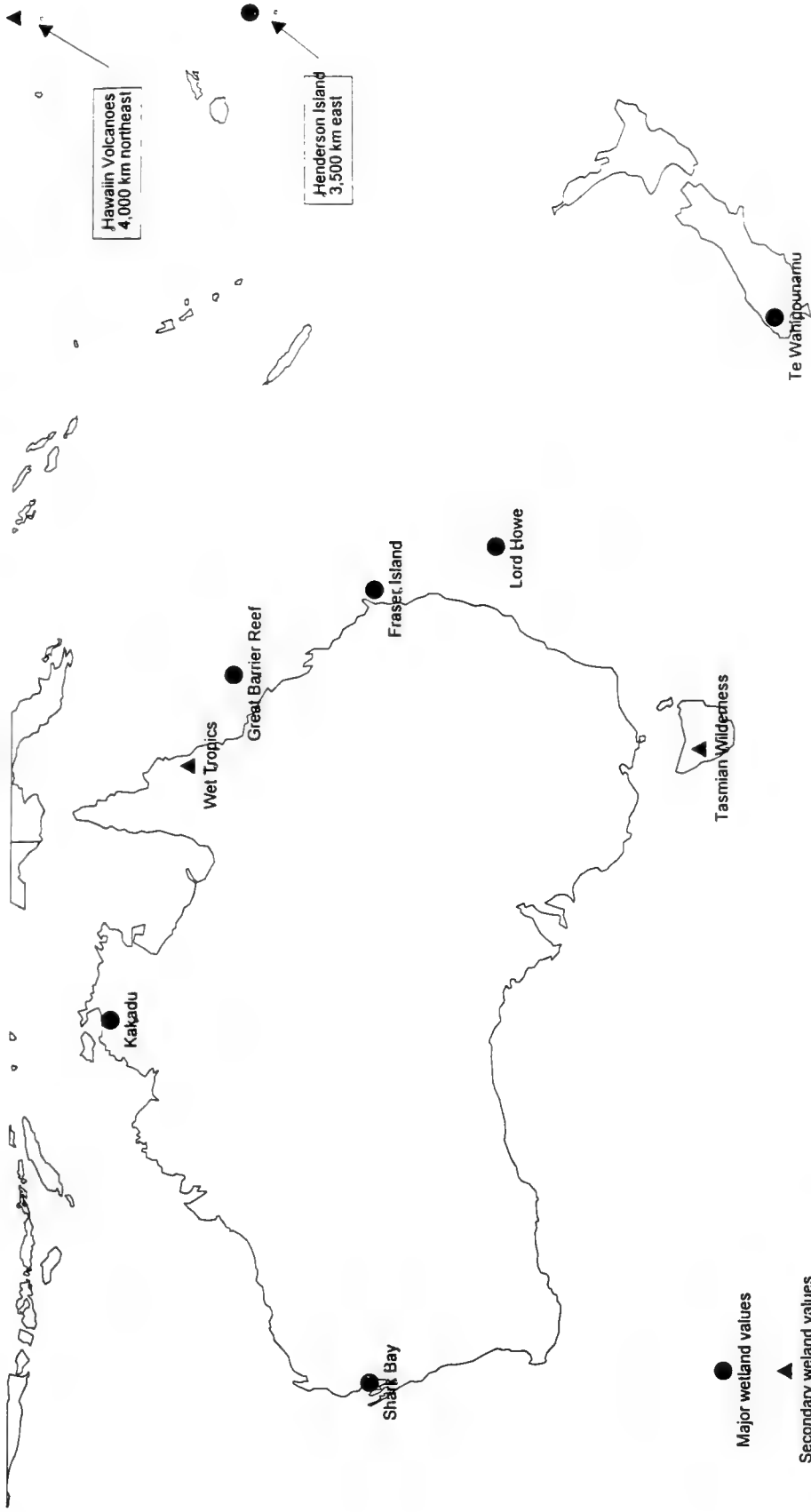
WORLD HERITAGE SITES WITH MAJOR AND SECONDARY WETLAND VALUES





# AUSTRALIAN, OCEANIAN AND ANTARCTIC REALMS

## WORLD HERITAGE SITES WITH MAJOR AND SECONDARY VALUES



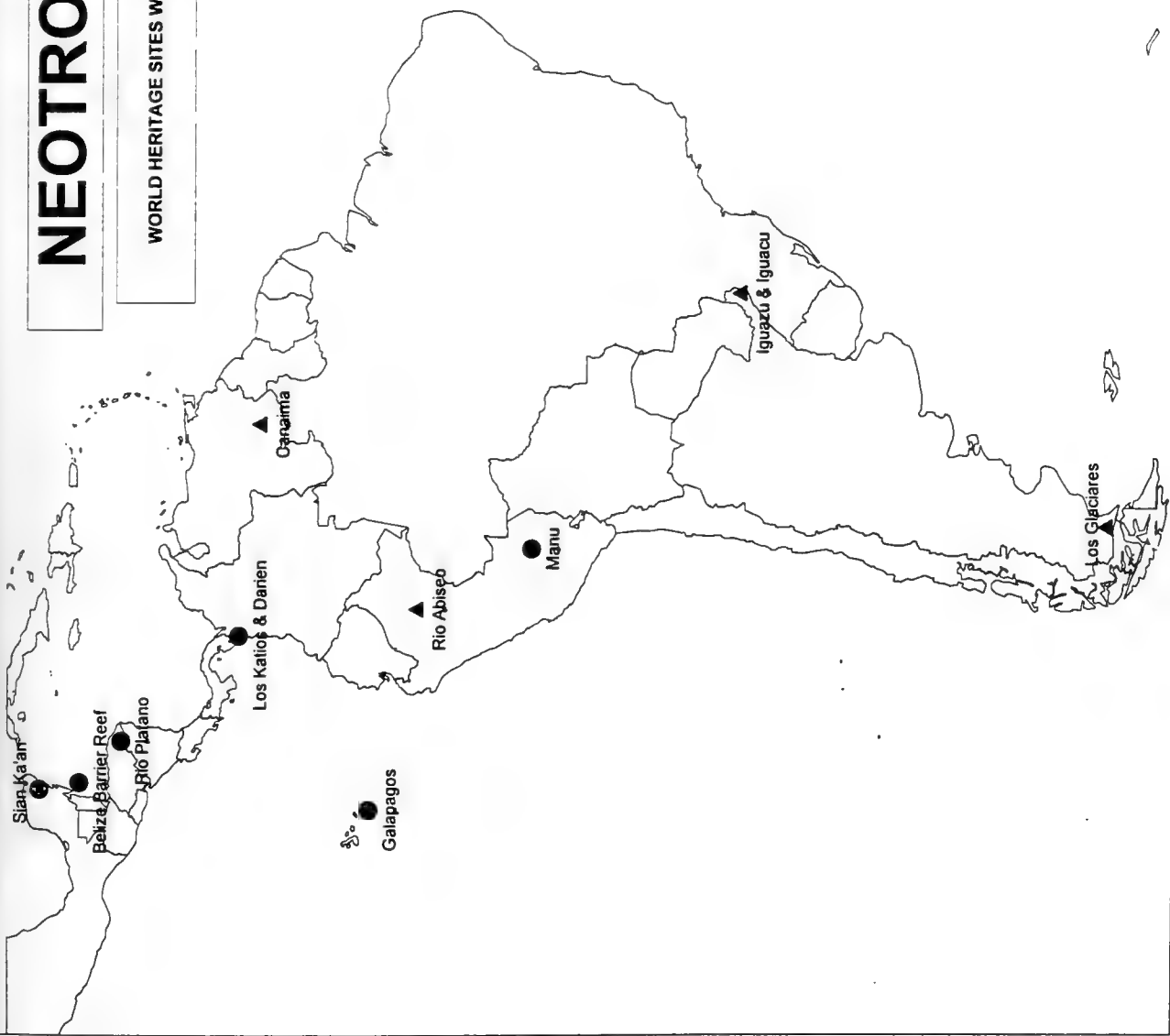
Gough Island - see Neotropical Realm map





# NEOTROPICAL REALM

WORLD HERITAGE SITES WITH MAJOR AND SECONDARY WETLAND VALUES



● Major wetland values

▲ Secondary wetland values



# ANNEX

## SITE INVENTORY DESCRIPTIONS

The following annex is divided into an inventory of World Heritage sites with **major** wetland and marine values (39 sites) and an inventory of World Heritage sites with **secondary** wetland and marine values (38 sites). A key/legend is located at the top of each inventory describing other relevant international environmental treaties and designations. The year each site was inscribed as a World Heritage site (WH) along with the criteria (natural heritage criteria i- iv) for which the selection was based is included. Criteria for World Heritage sites is defined into four categories which are described in detail in the Operational Guidelines for the Implementation of the World Heritage Convention #43-45. Special note is made if the site is designated on the World Heritage Site in Danger List (WD) including the year it was placed on the Danger List. Special note is also made for sites designated under the Ramsar Convention (Ramsar); included in the Montreux Record for Ramsar sites requiring priority attention (MR); listed as a UNESCO Man and Biosphere Reserve (BR); and/or included in World Wildlife Fund for Nature's (WWF) Global 200 Ecoregions: The Living Planet Campaign (WWF - ecoregion #). WWF Global 200 Ecoregions (1995) is a broader and more recent overview of global biodiversity than the Udvardy system (1975). The WWF ecoregions attempt to identify the most biologically outstanding areas that deserve conservation attention. It is helpful to compare these ecoregions with current World Heritage wetland and marine sites and to locate regions with minimal World Heritage protection (gap areas) at the present, in order to establish a list of wetland and marine sites which may merit consideration for future World Heritage nomination (Table 11). Of the 77 World Heritage sites with wetland and marine values listed in this overview, 59 are located within a WWF Global Ecoregion.

In the inventory text, World Heritage sites with wetland and marine values are listed in rows and categorised by Biogeographic Realm (Udvardy, 1975), which divides the world into the following realms: Nearctic, Palearctic, Afrotropical, Indomalayan, Oceanian, Australian, Antarctic, and Neotropical. In the inventory text, the columns include the country name, the World Heritage site name, the physical area of the World Heritage site in hectares (may differ from the size of the national park or other international designation) as stated in each site's nomination, and the wetland and marine values of the site. Wetland-dependant fauna which are endemic or threatened have been mentioned in the table with the IUCN Red List Categories given in brackets. For World Heritage sites listed years ago, the database cites the IUCN categories current at that time (E, C, R, and I). These are defined in Appendix I. In 1994, the categories were redefined and the new ones (CR, EN, VU, LR) are explained in Appendix II. There may be omissions in the case of a wetland-dependent species which is now classified as threatened, but was not on the former list. IUCN welcomes comments regarding the wetland and marine values of any of the included sites which will be useful in preparation of future revisions of this working paper. Attached are the World Heritage Operational Guidelines #43-45 which cover the criteria for inscription of natural sites on the World Heritage List (Annex 3).



# 1. NATURAL WORLD HERITAGE SITES WITH MAJOR WETLAND AND MARINE VALUES

**Key:**

World Heritage List (Date of Inscription) and criteria categories

WH World Heritage in Danger

Ramsar A Wetland of International Importance

(MR) Montreux Record (register of Wetlands of International Importance requiring priority attention)

BR UNESCO Man and the Biosphere Reserve

WWF- 200 Included in the WWF- 200 Global Ecoregions system. (1995). The Ecoregion number is given in brackets.

COUNTRY	SITE NAME	AREA	WETLAND VALUES
<b>NEARCTIC REALM</b>			
CANADA	1. Wood Buffalo National Park WH (1983) ii, iii, iv Two Ramsar sites WWF- (84)	4,480,000ha	Wood Buffalo National Park comprises a vast wilderness area of the Northern Boreal Plains and includes a section of the Peace-Athabasca Delta and most of the Whooping Crane Summer Range, both of which were designated as Ramsar sites in 1982. This is the only breeding site of whooping crane (E), with 40 breeding pairs out of 140 individuals which summer in the park. The site has a major freshwater delta formed by three major rivers; and alluvial river lowlands. The Peace-Athabasca Delta is the largest inland delta in the world, and is an important area for migrant waterfowl including snow geese, white-fronted geese Canada geese, whistling swan, divers, all seven species of North American grebe and 25 species of duck. Other features present are oxbow lakes, birds-foot delta, saline plains (unique in Canada), sinkholes, submerged rivers and a complex recharge-discharge hydrology featuring swallow holes and cold springs, some with mineralised water, and vast areas of muskeg with shallow lakes and meandering creeks. The park contains the largest undisturbed grass and sedge meadows in North America.
MEXICO	2. Whale Sanctuary of El Vizcaino WH (1993) iv WWF- (176)	370,950ha	Consists of two lagoons: Laguna Ojo de Liebre and Laguna San Ignacio. These lagoons are an important wintering site for grey whales and birds, and a significant nesting area for three of the world's seven marine turtle species: green turtle (E), hawksbill turtle (E), and olive ridley turtle (E). The mangrove forest is at its northern limit in the North Pacific.
USA	3. Everglades National Park WH (1979) i, ii, iv WHD (1993) Ramsar (MR) BR WWF - (110)	592,920ha	Everglades National Park is an area of exceptional conservation value as it includes the largers mangrove ecosystem in the Western Hemisphere; the most significant breeding grounds for tropical wading birds in North America; the only subtropical preserve in North America; and the habitat for some 14 endangered species, including manatee (V), and the federally endangered bald eagle. The wetland-dependant Everglades mink is also present. The park serves as a vital recharge are for the Biscayne Aquifer, a major source of freshwater for Miami and south-east Florida.
USA	4. Olympic National Park WH (1981) ii, iii BR WWF- (68)	369,660ha	Olympic National Park is an area of outstanding natural beauty combining Pacific Ocean coastline and numerous offshore islands with forested mountain slopes, alpine parklands and glacier capped mountains. Nearly 1,000km of streams and rivers in the park are inhabited by some 20 native fish species, including seven species of anadromous salmon and trout. Endemic Olympic fauna includes Beardslee trout and Crescent trout.

COUNTRY	SITE NAME	AREA	WETLAND VALUES
USA	5. Yellowstone National Park WH (1978) I, II, III, IV WHD (1995) BR	898,349ha	Yellowstone provides a clear record of volcanic eruptions which have occurred over the past 55 million years and contains over 3,000 geysers (more than the total of the rest of the world) and almost 10,000 thermal features, which contain unique assemblages of thermal algae and bacteria. The park lies at the headwaters of three major rivers, including the Yellowstone which is a major tributary of the Missouri River that flows via the Mississippi to the Gulf of Mexico. Yellowstone Lake (37,127ha) with a known depth of 119m, is North America's largest high elevation lake (2,357m). Other notable features are the endangered bald eagle and trumpeter swan as well as over 40 named waterfalls, the highest being Lower Yellowstone Falls (94m).
<b>PALEARCTIC REALM</b>			
BULGARIA	6. Strébarna Nature Reserve WH (1983) IV WHD (1992) Ramsar (MR) BR	600ha	Located within the nature reserve, Strébarna is freshwater lake situated on the flood plain of the River Danube, to which it was connected until 1949. The disconnection prevented annual flooding and the level of the lake fell one metre per year. However, the lake was reconnected by canal in 1978. The reserve was set up primarily to protect the rich avifauna; nearly 180 bird species (half of the total Bulgarian avifauna). 80 of the bird species are migratory and 99 are breeding species, including the only pair of white-tailed eagle (V) and the only colony of the Bulgarian Dalmatian pelican (V)(50-100 pairs) with 50 to 100 pairs. A number of rare marsh plants are present.
FRANCE	7. Cape Girolata, Cape Porto, Scandola Natural Reserve, and the Piano Calanches in Corsica WH (1983) II, III, IV WWF- (220)	12,000ha	The site has a typical marine fauna for the Mediterranean and contains a diverse pelagic, sedentary and migrant fauna including several dozen pairs of shag and three or four pairs of osprey, with Cory's shearwater and Audouin's gull (R) occurring in the littoral zone. Mediterranean monk seal (E) once had a colony in this area but has now disappeared.
ROMANIA	8. Danube Delta WH (1991) III, IV Ramsar BR WWF- (182)	679,222ha	The Delta is the meeting point of Palaearctic and Mediterranean biogeographic zones and represents an unique dynamic wetland ecosystem in Europe (the second largest delta) containing a rich biodiversity of wetland habitats. It is the largest continuous marshland in Europe with probably the greatest stretch of reedbeds in the world. It is also a vitally important buffer system between the hydrographical basin of the River Danube and the Black Sea. The site is internationally significant for birds, both breeding and migratory, including a number of globally-threatened species. Pygmy cormorant (K) (2,500 pairs - 61% of the world's population), white pelican (2,500 pairs - 50% of the Palaearctic breeding population), Dalmatian pelican (E) (estimated at 150 pairs, perhaps now only 25-40 pairs, on the floating islands on lake Hrečisca - 5% of the world population). There are large numbers of wintering waterfowl, including red-breasted goose (a globally threatened species with almost 95% of the world wintering population present here), and there are 30-40 white-tailed eagles (R) in winter. The fish include threatened representatives of the Acipenseridae.
RUSSIAN FEDERATION	9. Lake Baikal WH (1996) I, II, III, IV Ramsar Two BR sites WWF- (165)	8,800,000ha	Lake Baikal, 3.15 million ha, which is the focal point of the nominated property, is the deepest lake in the world, has the greatest volume of any freshwater lake in the world (23,000 km <sup>3</sup> - equivalent to approx. 20% of all running fresh water in the world) and is the sixth largest in terms of open water area. It is the oldest major lake in the world at 25 million years and has exceptionally clear water (up to 40m visibility), and a mineral content 25-50% lower than most

COUNTRY	SITE NAME	AREA	WETLAND VALUES
RUSSIAN FEDERATION	10. Volcanoes of Kamchatka WH (1996) i, ii, iii BR WWF- (87)	3,300,000ha	other freshwater lakes. There are 365 rivers flowing into the Lake, and only one, the Angara River, flowing out. Ongoing tectonic activity is evidenced by the presence of thermal vents in the depths of the Lake. Lake Baikal is one of the most diverse in the world with 1,500 aquatic species, 80% being endemic, including 255 amphipod species and 80 species of flatworm. Particularly noteworthy is the unique freshwater Baikal seal. The Selenga Delta Ramsar site is within the World Heritage area. Lake Baikal is surrounded by 5 large reserves containing bog and riverine habitats. The property is one of the most highly active volcanic zones in the world. The five units that make up the property are characterised by a diverse set of volcanic phenomena: geysers, mineral and hot springs. Kronotsky and Kurilskoe, two major lakes in the area, are highly scenic and important fish spawning habitat. There are several nationally threatened bird species, including emperor goose, brent goose, osprey, Steller's sea-eagle and solitary snipe. There are numerous seabird colonies and 50% of the global population of Aleutian Tern nest on the Peninsula. The rivers support great numbers of four nationally threatened species of salmon.
SPAIN	11. Doñana National Park WH( 1994) ii, iii, iv Ramsar (MR) BR WWF- (135,rr)	50,720ha	The site is one of the largest and best-known wetlands in Europe. It represents the last tract of relatively undisturbed marsh in the Guadalquivir delta, contains a large stretch of undeveloped coastline, and protects one of the few mobile dune systems found on the Iberian peninsula. The marsh lies on the west Europe to west Africa migration route and is indispensable as a winter habitat for species such as the greylag goose (flocks of up to 70,000), teal (200,000), wigeon (100,000) and avocet (10,000). It is also a spring nesting area for Mediterranean and African birds including spoonbill. The Marismas (swamps on flat clay soil filled with muddy sediments) comprise almost half of the reserve and are used as a feeding area by almost 20,000 greater flamingo. During periods of high rainfall, this species also nested in the area.
TUNISIA	12. Ichkeul National Park WH (1980) iv WHD (1996) Ramsar (MR) BR WWF- (220)	12,600ha	Lake Ichkeul and the marshland are a stopover point for up to 300,000-400,000 wintering Palaearctic waterfowl at one time, including geese, ducks, storks and pink flamingoes, which come to feed and nest here. Up to 600 of the threatened white-headed duck (K), 4% of the known world population, have been recorded. Mammals include the otter (V). The lake is one of the last remaining in a chain of large freshwater lakes which once extended across northern Africa.
UK	13. St. Kilda WH (1986) iii, iv BR	853ha	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. The world's largest colony of gannet breeds here (60,428 pairs in 1994, some 25% of the North Atlantic population), as well as the largest and oldest British colony of fulmar (30,000 pairs) and about half of the British population of puffin.
AFROTROPICAL REALM			
MALAWI	14. Lake Malawi National Park WH (1984) ii, iii, iv WWF- (164)	9,400ha	Lake Malawi is estimated to be one or two million years old and its importance in the study of evolution is comparable to the finches of the Galapagos Islands. The protected area comprises the only lacustrine park in Africa, protecting hundreds of fish species, most of which are endemic. Lake Malawi contains the most fish species of any lake in the world, probably over

COUNTRY	SITE NAME	AREA	WETLAND VALUES
MAURITANIA	15. Banc D'Arguin National Park WH (1989) ii, iv Ramsar WWF- (k)	1,200,000ha	500 from ten families, perhaps half occurring in the park area. Endemism is high (thought to exceed 90%) and adaptive radiation and speciation within the lake is remarkable. The lake contains over 400 species of Cichlidae (30% of all known cichlid species), of which all but five are endemic to Lake Malawi and 28 other fish species endemic to the lake. The islands are important nesting areas for several thousand white-breasted cormorant. The park's area is half marine and half terrestrial. The park's vast expanses of mudflats provide a winter home for over two million migrant shorebirds from northern Europe, Siberia and Greenland. The region's mild climate and absence of human disturbance make the park one of the most important sites in the world for these species. The nesting bird population is also noted for its great numbers and diversity: between 25,000 and 40,000 pairs belonging to 15 species, making these the largest colonies of waterbirds in West Africa. Imraguen tribesmen still maintain their age-old life styles, based almost exclusively on harvesting the migratory fish populations using traditional sailing boats, and in unique symbiotic collaboration with wild dolphins.
SENEGAL	16. Djoudj National Bird Sanctuary WH (1981) iii, iv Ramsar (MR) WWF- (177)	16,000ha	The park was mainly established for its importance an endemic bird area, supporting three million waterfowl, and is one of the main West African sanctuaries for Palaearctic migrants, including garganey, shoveler, pintail, ruff, and black-tailed godwit. It is one of the first fresh water sources they reach after crossing 200km of the Sahara. Thousands of flamingo can be found here. About 5,000 white pelican nest here regularly, as well as white-faced tree duck, fulvus tree duck, spur-winged goose, purple heron, night heron, various egrets, spoonbill, African darter, common cormorant, and white-breasted cormorant. African manatee (V) are also present.
SEYCHELLES	17. Aldabra Atoll WH (1982) ii, iii, iv WWF- (19)	35,000ha	The atoll constitutes a refuge for the giant tortoise and flightless bird populations of the western Indian Ocean, as well as a substantial marine turtle breeding population and large seabird colonies. Mangrove swamp grows around the edge of the lagoon and inshore waters support sea-grass meadows. Aldabra is the main breeding site in the Indian Ocean for red-tailed tropic bird, red-footed booby, greater frigatebird and lesser frigatebird. It is an endemic bird area.
DEMOCRATIC REPUBLIC OF CONGO	18. Virunga National Park WH (1979) ii, iii, iv WHD (1994) Ramsar WWF- (17)	790,000ha	The park offers an incomparable diversity of habitats including lakes at various altitudes, marshy deltas, peat bogs and hot springs. The park includes part of Lake Edward (Idi Amin), part of the Semliki River valley and Lake Kivu. Over 20,000 hippopotamus are present, and large numbers of pelicans occur on the lower Rutshuru.
<b>INDOMALAYAN REALM</b>			
INDIA	19. Kaziranga National Park WH (1985) ii, iv	42,996ha	Kaziranga lies in the flood plains of the Brahmaputra River. The riverine habitat consists primarily of tall, dense grasslands interspersed with open forests, interconnecting streams and numerous small lakes or 'bheels'. Up to 75% of the area is submerged annually by the flood waters of the Brahmaputra. Threatened species include Ganges dolphin (EN) and water buffalo (EN). The numerous water bodies are rich reservoirs of food and thousands of migratory birds, representing over 100 species, visit the park seasonally from as far afield as Siberia.



COUNTRY	SITE NAME	AREA	WETLAND VALUES
INDIA	20. Keoladeo National Park WH (1985) ii, iv Ramsar (MR) WWF- (V)	2,873ha	The area consists of a flat patchwork of marshes in the Gangetic plain, artificially created in the 1850s and maintained ever since by a system of canals, sluices and dykes. An estimated 65 million fish-fry are carried into the park's water impoundments by river flooding every year during the monsoon season, which provide the food base for large numbers of wading and fish-eating birds. The park is an unrivalled breeding site for herons, storks and cormorants and an important wintering ground for large numbers of migrant ducks. The park was the last known wintering ground in India of the western population of Siberian crane (V). Other threatened avifauna species occur, including Dalmatian pelican (V), spot-billed pelican (I), greater adjutant (E), lesser adjutant (V), marbled teal (V), Baikal teal (V), Baer's pochard (V) and Pallas' sea-eagle (R). Threatened mammals include the fishing cat (K) and smooth-coated otter (VU).
INDIA	21. Manas National Park WH (1985) ii, iii, iv WWF- (105)	50,000ha	This park's wetlands are of international importance. The Manas River flows through the western portion of the park, where it splits into three separate rivers, and joins the Brahmaputra 64km further south. These and other rivers running through the tiger reserve carry an enormous amount of silt and rock debris from the foothills (from heavy rainfall), along with fragile debris from the rock and steep gradients of the catchments. Threatened mammals include the fishing cat (K), only pure strain of this species of water buffalo (V) in India, swamp deer (V) and Ganges dolphin (E). Rare waterfowl species include spot-billed pelican (I), lesser adjutant (V) and greater adjutant (E). Reptiles include gharial (E) (possibly introduced from neighbouring Bhutan or as a result of a captive breeding programme) and Assam roofed turtle (K).
INDIA	22. Sundarbans National Park WH (1987) ii, iv WWF- (185.g)	133,010ha	Sundarbans 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. The Sundarbans, apart from being the only mangrove forest in the world inhabited by the tiger, contains a rich and unique biota, with a large number of threatened species including numerous fishing cat (K). Threatened avifauna includes the greater adjutant (E) and Asian dowitcher (R), a rare winter migrant, and birds of prey include osprey, Pallas's sea-eagle (R), white-bellied sea-eagle and grey-headed fishing eagle. Aquatic mammals that frequent the tidal waters include the Ganges dolphin, Indo-Pacific hump-backed dolphin (K), Irrawaddy dolphin (K) and finless porpoise (K). The Sundarbans provide important habitat for a variety of reptiles including river terrapin (E), olive ridley (E), which nest there, hawksbill (E) and estuarine crocodile (E).
INDONESIA	23. Komodo National Park WH (1991) iii, iv BR WWF- (60)	219,322ha	Seas around these islands reportedly are the most productive in the world due to upwelling and a high degree of oxygenation from strong tidal currents flowing through the Sape Straits. Anthropogenic disturbance has left only isolated patches of the rich reef ecosystem. Mangroves occur in sheltered bays and extensive seagrass beds. The rich marine environment provides the basis for the local fishing industry. Marine mammals include blue whale (E) and sperm whale, dugong (V) and 10 species of dolphin. Marine reptiles include five species of turtle.
INDONESIA	24. Ujung Kulon National Park WH (1991) iii, iv	123,051ha	The coastal coral reef environment ranks among the richest in Indonesia. Threatened species include fishing cat (K), false gharial (E), estuarine crocodile (V), and green turtle (E), which nests within the park. Over 270 species of avifauna have been recorded, including osprey, Brahminy kite, white-bellied sea eagle, ruddy kingfisher, frigate bird and three species of Ciconiidae (storks). There are also numerous amphibian species.

COUNTRY	SITE NAME	AREA	WETLAND VALUES
PHILIPPINES	25. Tubbataha Reef Marine Park WH (1993) ii, iii, iv BR WWF- (202)	33,200ha	Tubbataha is the most biologically diverse coral reef system in the Philippines comprising a near pristine coral reef with a 100m perpendicular wall, an almost undisturbed reef crest and reef edge, two coral islands, and extensive lagoons with seagrass and coral beds. Marine turtles nest on beaches, including hawksbill turtle (E) and green turtle (E). Despite being of importance for the sustenance of fisheries, a high diversity of fish remain including four species of threatened Tridacnid calms. Forty six bird species have been recorded, including a colony of brown boobies, red-footed boobies, common noddy, sooty tern and crested tern.
<b>OCEANIAN REALM</b>			
UK	26. Henderson Island WH (1988) iii, iv WWF- (210)	3,700ha	Henderson remains in an undisturbed state, largely as a result of its remoteness, and its inhospitable nature. There is a fringing reef at least 200m wide to the north, north-west and north-east sides of the island, backed by a wide beach. Green turtle (E) occasionally nests on the island. Nine seabird species are thought to breed there; Murphy's petrel, phoenix petrel, herald petrel, Kermadec petrel, shearwater, masked booby, red-tailed tropicbird, brown noddy, blue-grey noddy, and fairy tern.
<b>AUSTRALIAN REALM</b>			
AUSTRALIA	27. Fraser Island WH (1992) ii, iii WWF- (227)	166,283ha	Fraser Island is the largest sand island in the world. Notable hydrological features are the sandmass aquifers and the dune lakes. Water may be stored for up to 100 years. Groundwater is stored in massive reserves within the sandmass, of which almost 6 million of the 10 - 20 million total megalitres is above sea level. A further 400,000 megalitres may be retained in the perched aquifers. There exists an exceptional diversity and number of dune lakes whose range of ages shows evidence of dynamic stages of development. Some of the perched lakes are estimated to be up to 300,000 years old. The boundary of the region is set as 500m below high water mark, in order to include important areas of beaches, wetlands and mangroves, and part of the extensive seagrass beds in the Great Sandy Strait, which extend to more than 12,500ha. There are breeding colonies of loggerhead turtle (V) and green turtle (E). The island has nationally important populations of fish: honey blue-eye (V) and Oxleyan pygmy perch (V).
AUSTRALIA	28. Great Barrier Reef WH (1981) i, ii, iii, iv WWF- (209)	34,870,000ha	This site may provide the most spectacular marine scenery in the world with the world's most extensive stretch of coral reef, comprising 3,400 individual reefs, including 760 fringing reefs, ranging in size from under 1ha to over 10,000ha. About 5% of the total area is protected in IUCN category I and II reserves. There are approx. 300 coral cays (213 unvegetated, 43 vegetated and 44 low wooded islands) as well as 618 continental islands, once part of the mainland. Threatened species include dugong (V), humpback whale (E), Irrawaddy dolphin (K), and the reef contains significant nesting grounds for the green turtle (E) and loggerhead (V).
AUSTRALIA	29. Kakadu National Park WH (1981) ii, iii, iv Ramsar (Stages I and II) WWF- (108,ff)	1,980,400ha	The park covers almost the entire catchment of a major tropical monsoonal river system. Kakadu contains approximately 473 sq. km of coastal, intertidal and estuarine areas and two islands. The Alligator Rivers region, which encompasses the park, is considered to be the most floristically diverse area of monsoonal northern Australia. Mangroves are distributed extensively along the tidal reaches of all major coastal river systems in the park. The associated coastal riverine plains are recent landforms, still actively forming in the park. Paperbark swamp covers extensive areas of the seasonally inundated freshwater flood plains. The vegetation of these

COUNTRY	SITE NAME	AREA	WETLAND VALUES
AUSTRALIA	30. Lord Howe Island Group WH (1982) iii, iv WWF- (51)	1,176ha	plains changes more or less continuously throughout the wet-dry cycle, ranging from open water communities associated with permanent water bodies to transient communities of herbs, grasses and sedges associated with seasonally inundated, cracking clay soils that dry out completely in the dry season. Aquatic escarpment habitats are important as dry season refuges for freshwater fish, including several species with restricted distributions. Animals listed as globally threatened include dugong (V), estuarine crocodile (V), loggerhead turtle (V), green turtle (E) and hawksbill turtle (E).
AUSTRALIA	31. Shark Bay WH (1991) i, ii, iii, iv WWF- (199)	2,197,300ha	The Lord Howe Group has large populations of breeding seabirds: it is now the only known breeding ground for providence petrel; possibly half the world's population of fleshy-footed shearwater breeds on Lord Howe; and red-tailed tropic bird breeds here in greater concentrations than probably anywhere else in the world. The waters around Lord Howe Island provide an unusual mixture of temperate and tropical organisms, with 477 fish species having been recorded in 107 families.
AUSTRALIA	31. Shark Bay WH (1991) i, ii, iii, iv WWF- (199)	2,197,300ha	Shark Bay is a complete marine ecosystem containing numerous important features, including the Wooramel seagrass bank, the Faure sill, living fossil stromatolites, and ecosystems dominated by benthic microbial communities which flourish in the hypersaline embayments. Other features include a diversity of endemic and threatened plant and animal species and areas of great natural beauty. Modern examples of Proterozoic stromatolites include coccooid cyanobacterium which are thought to be descendants of a 1,900 million year old form, thus representing one of the longest continuing biological lineages known in the world. Shark Bay contains the largest reported seagrass meadows in the world (4,000 sq. km), supporting approximately 12.5% of the world population of dugong (V). Humpback whale (V) and southern right whales use the bay as a migratory staging post. Mangroves occur in small, relatively isolated areas.
<b>ANTARCTIC REALM</b>			
NEW ZEALAND	32. Te Wahipounamu - South West New Zealand WH (1990) i, ii, iii, iv WWF- (82)	2,600,000ha	Te Wahipounamu offers a landscape shaped by successive glaciations into fjords, rocky coasts, towering cliffs, lakes and waterfalls. The South-West contains the most extensive and least modified natural freshwater wetlands in New Zealand, including high fertility swamps and low fertility peat bogs, which are a particular feature of the South Westland coastal plain. Excluding the outlying Bounty Islands, the largest breeding congregations of New Zealand fur seal are found along the South-West coast. Although virtually annihilated last century, the fur seal population has recovered steadily, and now numbers in excess of 50,000 individuals. The South-West area is home to the endemic Victoria penguin, with some 1,000 to 2,000 pairs breeding annually.
UK	33. Gough Island Wildlife Reserve WH (1995) iii, iv	6,500ha	Gough Island is the least disturbed major cool-temperate island ecosystem in the South Atlantic Ocean, and has one of the most important seabird colonies in the world. The island is scenically beautiful and captivating with spectacular seacliffs around much of the coastline. Above 600m, peat bogs dominated by Sphagnum mosses are widespread, reaching depths of 5m. About 48% of the world's population of northern rockhopper penguin breed at Gough, and it contains a major breeding site of the great shearwater with up to three million pairs. Atlantic petrel is

COUNTRY	SITE NAME	AREA	WETLAND VALUES
<b>NEOTROPICAL REALM</b>			
BELIZE	34. Belize Barrier-Reef Reserve System WH (1996) ii, iii, iv WWF- (189)	96,300ha	The World Heritage site consists of 7 marine reserves which comprise 12% of the total area of the Belize Barrier Reef. This is the world's second largest barrier reef system and the largest reef complex in the Atlantic-Caribbean area. The reef ecosystem is of remarkable biological diversity and beauty. The approximately 450 sand and mangrove cays confined within the barrier and atolls range in size from small, ephemeral sand spits to larger, permanent islands. The Belize Barrier Reef is an area of great scientific value and provides habitat for many species of conservation concern. The area harbours probably the largest population of West Indian manatee (V) in the world (300-700 individuals). Three species of sea turtles nest in Belize: loggerhead (E), green (E), and hawksbill (E). The American crocodile (V) nests at several sites among the offshore cays and atolls. The site also contains major seabird and water bird colonies include those of red-footed booby (3,000-4,000 individuals), brown booby and common noddy.
ECUADOR	35. Galapagos National Park WH (1978) i, ii, iii, iv BR WWF- (225,123)	766,514ha	These volcanic islands have been called a unique "living museum and showcase of evolution." Endemic taxa include 4 species of mockingbird and 13 species of Darwin's finches, including the mangrove finch (I) and Galapagos marine iguana (V). Green turtle (E) and hawksbill turtle (E) which are common in surrounding waters, with the former nesting on sandy beaches. Some 298 fish species in 88 families have been recorded; mostly typical tropical eastern Pacific taxa, but with 23% endemism amongst shorefish. Galapagos has been rated as an urgent area for endemic bird protection with 75% of landbirds being endemic. There are extensive fringing reefs, and mangroves in sheltered bays. A decision on including the surrounding Galapagos Marine Reserve as part of the World Heritage site is under consideration.
HONDURAS	36. Rio Platano Biosphere Reserve WH (1982) i, ii, iii, iv WHD (1996) BR WWF- (173)	500,000ha	This reserve protects nearly the entire watershed of the 100km long Platano River, as well as major portions of the Paulaya, Guampu and Sicre Rivers. The rugged mountainous headwaters region, encompassing 75% of the reserve, is flanked by the Platano River and rises to Punta Piedra (1,326m). The river basin drains an area of some 130,000ha and meanders considerably in the lowland region, marooning several ox-bow lakes. Threatened species include manatee (V), American crocodile (V), green turtle (E), loggerhead turtle (V), and leatherback turtle (E).
MEXICO	37. Sian Ka'an Biosphere Reserve WH (1987) iii, iv BR WWF- (189,176)	528,000ha	Sian Ka'an lies in the Yucatan Peninsula on a partially emerged coastal limestone plain which forms part of the extensive barrier reef system along the eastern coast of Central America. There are dwarfed mangroves, fringing mangroves, freshwater and saltwater marshes and a large series of sink holes (cenotes). Each year during the dry season, about 20% of the terrestrial part of the reserve remains flooded, increasing to about 75% by the end of the rainy season. The area is habitat for endemic bird species.

COUNTRY	SITE NAME	AREA	WETLAND VALUES
PANAMA /COLOMBIA	38. Darien and Los Katios National Parks WH (1981) ii, iii, iv BR (1994) ii, iv WWF- (6)	669,000ha	The Atrato River floodplain makes up 47% of Los Katios and is the fastest river in the world, emptying 4900 cubic metres of water every second into the Caribbean. Wetland forest along the Chucunaque and Tuira rivers is covered by pure stands of "cativo" (I), which reach 50m and give its name to 'cátival' a formation found only in Colombia, south Central America and Jamaica. Five species of mangroves exist along the Pacific coast. The park also protects outstanding scenery, namely the Tendal (25m) and Tilupo (100m) waterfalls and the Ciénagas de Tumaradó swamp. In Darien, habitats include sandy beaches, rocky coasts, mangroves and swamps. Pacific tides (from 3.8m to 6.1m) influence the Chucunaque and Tuira rivers for many kilometres inland and is home to the Capybara, Cayman crocodile and American crocodile (V). The area is one of the most concentrated endemic bird areas in the world for restricted large species.
PERU	39. Manu National Park WH (1987) ii, iv WWF- (11)	1,532,806ha	The entire area is situated within the Amazon River basin and protects almost the entire watershed of the River Manu 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 adjacent reserved zone mainly comprises the flood plains of the lower Manu river, down 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. It is an endemic bird area. Species occurring in the park which are known to be globally threatened include giant otter (V), spectacled caiman (V), and black caiman (E).



## 2. NATURAL WORLD HERITAGE SITES WITH SECONDARY MARINE AND WETLAND VALUES

COUNTRY	SITE NAME	AREA	WETLAND VALUES
<b>NEARCTIC REALM</b>			
CANADA	40. Gros Morne National Park WH (1987) i, iii	180,500ha	The park's marine areas comprise the inner portion of St Paul's Inlet, inter-tidal zones and estuaries. The site contains meandering creeks, eutrophic bog lakes and oligotrophic lakes. It is a significant breeding site for harlequin duck, common tern, and arctic tern. It is a nesting site for bald eagle, and a stopover for migrating shore birds. Anadromous Atlantic salmon and arctic char are found in park waters and also in permanent freshwater in landlocked lakes.
CANADA	41. Nahanni National Park WH (1978) ii, iii WWF- (84)	476,560ha	Includes a major part of the Nahanni River, one of North America's finest wild rivers; also hot springs, falls and extensive karst terrain with a complex underground river system. Avifauna includes trumpeter swan (near threatened) and bald eagle. Arctic grayling and Dolly Varden trout occur in the streams that flow into the Nahanni and Flat Rivers.
CANADA & USA	42. Tatshenshini-Aisek/ Klwane National Park/ Wrangell-St. Elias National Park and Reserve and Glacier Bay National Park WH (1979; 92; 94) ii, iii, iv BR (Glacier Bay)	9,839,121ha	The Tatshenshini-Aisek river system, recognised as potential Canadian Heritage Rivers, contributes 95% of the chinook salmon, 90% of the sockeye salmon and 75% of the coho salmon for the commercial fishery in the Dry Bay area of the Gulf of Alaska. These fish stocks support a multi-million dollar industry. Further, this river system is one of only three major salmon-bearing rivers on the northern Pacific coast, with an important sustenance fishery for the people of the Champagne and Aishihik First Nations being found at Klukshu. Mammals include mink, river otter, beaver and muskrat. Glacier Bay includes significant marine components and their characteristic species.
CANADA & USA	43. Waterton Glacier International Peace Park WH (1995) ii, iii BR	52,525ha	The park is centred around a long, narrow glacier trough lake which straddles the 49th Parallel, effectively joining the two parks. The Waterton-Glacier Park complex is situated at the junction of three of the continent's major drainage systems. Headwater streams flow west into the Columbia drainage, east into the Missouri, and north into the Saskatchewan (Pacific Ocean, Gulf of Mexico, and Hudson Bay, respectively). Waterton is located on the margin of two major avian migratory routes; the Central and Pacific flyways overlap here, and the marsh and lake areas of the park are used extensively as staging areas. The pygmy whitefish is known only from Waterton Lake.
USA	44. Great Smoky Mountains National Park WH (1983) i, ii, iii, iv BR WWF- (70)	209,000ha	Many of the mountain ridges branch and subdivide from the central ridgeline, creating a complex of drainage systems with 3,057km of fast-flowing clear mountain streams. The park contains 45 watersheds and the water table is near the surface in almost all sections. Raccoon are present; beaver, apparently once common here, are beginning to reappear in several valleys, and river otter have been successfully reintroduced. Reptile species include seven turtles. Heavy precipitation and numerous streams make the mountains ideal for a wide variety of amphibian species including about 30 salamander, two toads and at least ten frogs. For its size, the park has one of the richest salamander faunas in the world with species that vary from the endemic pigmy salamander, to the aquatic hellbender. Over 40 species of native fish inhabit the streams, including eastern brook trout (the park's population may be a separate and threatened subspecies). Other threatened fish species include smoky madtom, yellow-fin madtom (V) and spotfin chub, which are currently being reintroduced into the park.

COUNTRY	SITE NAME	AREA	WETLAND VALUES
USA	45. Mammoth Cave National Park WH (1981) i, iii, iv BR	21,191ha	The Mammoth Cave area is an internationally important karst area. It contains the longest cave system in the world, with known passages extending for over 550km. Groundwater flows from the extensive recharge areas on the plateau, southwest through the park's cave system to springs that discharge into the Green River. Nowhere else do the two species of blind fish (V) and their spring cave-dwelling relative co-exist. Resident animal species listed as federally endangered include Kentucky cave shrimp (E), and five species of freshwater mussel. The federally endangered bald eagle has been observed wintering and may be nesting in the park.
USA	46. Redwood National Park WH (1980) ii, iii BR (portion) WWF- (68)	44,610ha	The park's 55km coastline consists of steep, rocky cliffs broken by rolling slopes and broad sandy beaches and is home to 15 of the 22 salamander species found in western North America of which 3 are Category 2 candidates for Federal and State listing, and 3 are species of special concern to the State of California. Nationally threatened species include Pacific fisher.
<b>PALEARCTIC REALM</b>			
CHINA	47. Huanglong Scenic and Historic Interest Area WH (1992) iii WWF- (78)	70,000ha	There are several large areas of travertine pools, notably along the 3.6km Huanglonggou (Yellow Dragon Gully) with extensive calcite deposition. Algae and bacteria proliferate in a number of these pools giving a wide range of colours from orange and yellow to green and blue. There are two important areas of hot springs in this site, whose waters have a high mineral content and are said to have important medicinal properties. Mouni Gully also contains a number of attractive lakes, and the Zhaga Waterfall.
CHINA	48. Jiuzhaigou Valley Scenic and Historic Interest Area WH (1992) iii WWF- (78)	72,000ha	The best known features are the large number of lakes in the area: many are classic ribbon lakes at the base of glacially formed valleys which have been dammed naturally, for example behind rockfalls from avalanches. Also of note are a number of large and spectacular waterfalls.
CHINA	49. Wulingyuan Scenic and Historic Interest Area WH (1992) iii WWF- (159)	26,400ha	The site covers the entire drainage basin of the Suoxi Brook which winds for 69km through the site. It also covers the headwaters of several other streams. Huanglong or Yellow Dragon Cave is said to be one of the ten largest caves in China; it is 11km long, and includes a waterfall 50m high. The site is popularly known to have '800 brooks and streams'; in reality, there are perhaps 60, several of which flow underground for long distances. One of the side branches of this river has been dammed, creating Baojeng Lake. This lake was created for water supply, flood control and to enhance the habitat for the threatened Chinese giant salamander (I) as well as to provide a boating resource. Another threatened species is the Chinese water deer (V).
CROATIA	50. Plitvice Lakes National Park WH (1979) ii, iii	19,200ha	The area is noted for its lakes, caves and waterfalls. The lakes were created by the deposition of calcium carbonate precipitated in water through the agency of moss, algae and aquatic bacteria. This resulted in the building of biodynamic travertine (tufa) barrier dams at about 1cm/year, creating smaller and larger lakes interlinked by cascades and waterfalls up to 80m in height.
HUNGARY & SLOVAKIA	51. Caves of Aggtelek and Slovak Karst WH (1995) I	see notes	The site is an underground one consisting of 712 caves. The size is unknown. Surficial area of the Aggtelek National Park and Protected Landscape Area Slovak Karst is 55,873ha. Of particular scientific interest are the 500 species of troglodyte fauna, with many aquatic species. The most notable primitive crab is the endemic species <i>Niphaigus aggtelekiensis</i> . Several mollusc species are associated with underground streams; one underground snail is endemic



COUNTRY	SITE NAME	AREA	WETLAND VALUES
JAPAN	52. Yakushima (Yaku-Island) WH (1993) II, III BR WWF- (44)	10,747ha	Yakushima Island is almost 2,000m high and is the highest mountain in southern Japan. Topography from coastline to the mountainous summits is extremely steep. Yakushima occupies a strategic situation on the boundary between Holarctic and Palaearctic biogeographical regions.
OMAN	53. Arabian Oryx Sanctuary WH (1994) IV WWF- (106)	2,750,000ha	The coastal beaches and lagoons are habitat for flocks of resident and migrating waders including gulls, terns, flamingoes, herons and several species of ducks who winter on the lagoons. Saline and brackish springs act as vegetated oasis areas various birds, mammals and <i>Aphanius dispar</i> , an indigenous fish species.
RUSSIAN FEDERATION	54. Virgin Komi Forests WH (1995) II, III WWF- (86)	3,280,000ha	The western part comprises marshes and floodplain islands. Other features are tundra, lakes, bogs, fisheries and wild rivers. Low altitude wetter areas such as <i>Sphagnum</i> bogs support <i>Sphagnum</i> moss with cranberry, bilberries and cloudberries. Beaver (reintroduced)(E) and other (V) are found in the rivers. A number of waterfowl species including goldeneye, goosander, wigeon, teal and bean goose breed in the area. The 16 fish species include salmon, grayling and whitefish, and almost all rivers in the designated site provide salmon spawning grounds.
SLOVENIA	55. Skocjan Caves WH (1986) II, III	400ha	The grottos are the beginning of a system of underground passages from their source to Timavo on the Gulf of Trieste in Italy. The river enters Skocjan grotto in an underground passage 350m long, reappearing at the bottom of two 150m deep and 300m long chasms, before disappearing into a 2km long passage, which is one of the largest underground canyons in the world reaching 148m in height and widths of 100m. The ecosystems preserved in the dolinas and cave systems contain a number of internationally threatened species.
SWEDEN	56. The Lapponian Area WH (1996) I, II, III WWF- (92)	940,000ha	Lapponian contains entire protected river systems such as the Vuojatto, Rapa, Ino and Muddusjokk rivers, the Rapa River Delta in the Laitaure Lake, and extensive uninhabited taiga. Padjelanta consists of a plateau surrounding the large lakes Vastenjaure and Virihaure, the latter known as "Sweden's most beautiful lake". The bog surrounding the central lake in Muddus, Muddusjaure, supports a variety of birds and a large area has been set aside as a bird sanctuary, with entry prohibited. Globally threatened species include otter (V) and white-tailed eagle (V), which formally covered all of Sweden, but is now reduced to two populations. The population in the Lapponian Area is considered the only healthy one, containing 50-100 pairs.
UK	57. The Giant's Causeway and Causeway Coast WH (1986) I, III	70ha	Although the site was primarily listed for its geology, its 6km stretch of coastline comprises a series of headlands and bays, with cliffs averaging 100m high. The Royal Society for the Protection of Birds regards the site as one of importance within the United Kingdom based on the number of breeding species. Over 50 resident and 30 migrant species have been recorded.
YUGOSLAVIA	58. Durmitor National Park WH (1980) II, III, IV	32,000ha	The River Tara, one of the last wild rivers in Europe, has pure, clear waters, a gorge of 1,300m depth and notable floristic and faunistic diversity. There are 16 glacial lakes of the Durmitor and the canyons of the Tara, Susica and Draga rivers. The waters of the largest lake, Black Lake (Crno jezero), feed two separate river basins: the River Tara, and underground through the Durmitor Massif to the River Komarnica or Piva. The unusual hydrology of Black Lake and the virgin forest of Mlinski are the principle reasons for the area's special management status. There is also a 5ha peat bog (Barno Lake) at 1,450m with an interesting lacustrine flora. The Tara and its tributaries, as well as the lakes, contain a large number of salmonidae

COUNTRY	SITE NAME	AREA	WETLAND VALUES
<b>AFROTROPICAL REALM</b>			
CAMEROON	59. Dja Faunal Reserve WH (1987) ii, iv BR WWF- (23)	526,000ha	The Dja River encircles most of the reserve then flows west along its long northern boundary, then southern boundary, before flowing southeast as a tributary to the Congo. Cliffs run along the course of the river in the south for some 60km, and are associated with a section of the river broken up by rapids and waterfalls. The type locality of Dja River warbler (K) is near the reserve and there are few other records of this kind. Two threatened species of crocodile are present.
CENTRAL AFRICAN REPUBLIC	60. Parc National du Manovo-Gounda St. Floris WH (1988) ii, iv WWF- (103)	1,740,000ha	Five major rivers run down from the massif through the park to the Bahr Aouk and Bahr Kameur, and the park includes the complete basins of three of these. The site has extensive flood-plains in the north, with large seasonal populations of pelican and marabou stork. The threatened shoebill stork (K) occurs here, as well as shorebirds, many other waterbirds, and crocodile. There are at least 25 species of raptor including African fish eagle.
COTE D'IVOIRE	61. Comoé National Park WH (1983) ii, iv BR	1,149,250ha	The park comprises an interfluvial plain between the Comoé and Volta rivers. The wetlands attract an enormous number and range of birds, with some endemic. All three African crocodile species are found here; slender-snouted (V) (9%), Nile (90%), and dwarf crocodile (1%).
SENEGAL	62. Niokolo-Koba National Park WH (1981) iv BR	913,000ha	Contains wide floodplains, periodically-flooded sands, marshes (those on higher ground have reduced surface area and very acid and peaty soil) and ponds. All three African crocodiles are present; Nile, slender-snouted (V) and dwarf crocodile.
TANZANIA	63. Selous Game Reserve WH (1982) ii, iv WWF- (104)	5,000,000ha	A large area of the reserve is drained by the Rufiji River and tributaries which include the Luwegu, Kilombero, Great Ruaha, Luhombero and Mbarangardu (the only permanently flowing streams). Selous claims to have the largest concentration in the world of crocodile and hippopotamus. The rich birdlife includes knob-billed duck.
DEMOCRATIC REPUBLIC OF CONGO	64. Salonga National Park WH (1984) ii, iii WWF- (25)	3,600,000ha	Rivers in the west of the north sector are large and meandering with marshy banks. On the higher ground in the east, valleys are deeper, and rivers may run below cliffs up to 80m high. The south sector includes the watershed between the basin of the Lulika to the north and east, Likoro to the west, and Lukenje to the south. The principal forest types are swamp, riverine, and dry-land forests. Reptiles include African slender-snouted crocodile (I).
ZAMBIA/ZIMBABWE	65. Victoria Falls / Mosi-oa-Tunya WH (1989) ii, iii	6,860ha	The Mosi-Oa-Tunya/Victoria Falls National Park is one of the world's most spectacular waterfalls. The falls and gorges are an outstanding example of river capture and the erosive forces of the water continue to sculpture the hard basalts. The Falls form a geographical barrier between the distinct fish faunas of the upper and middle Zambezi River: 39 species of fish are found in the waters below the falls, including butter barbel, eastern bottlenose, chessa and nkupe; and 84 species above the falls, including African mottled eel, tigerfish, Kafue pike and silver barbel. The rich avifauna (400 species in the Victoria Falls region as a whole) includes a wide range of waterbirds along the river above the falls. Black stork breed in the gorges.
ZIMBABWE	66. Mana Pools National Park, Sapi and Chewore Safari Areas WH (1984) ii, iii, iv WWF- (102)	676,600ha	The areas (excluding Dande) have extensive frontages along the lower Zambezi River from the Kariba Dam to near the Mozambique border. Seasonal tributaries crossing the valley floor support extensive riparian communities. An important concentration of Nile crocodiles (V) is found here. Birdlife on the river and in the bush is prolific with over 380 species including white-collared pratincole and banded snake-eagle, generally found near streams. Common fish include tiger fish, bream, vundu, kupi, chessa, cornish Jack, and lungfish.

COUNTRY	SITE NAME	AREA	WETLAND VALUES
<b>INDOMALAYAN REALM</b>			
NEPAL	67. Royal Chitwan National Park WH (1984) ii, iii, iv WWF- (105)	93,200ha	Royal Chitwan National Park is situated in a river valley basin along the flood plains of the Rapti, Reu and Narayani rivers. The protected area contains populations of Ganges river dolphin (V), whose population may have declined following the construction of a dam towards the Indian border. Other threatened aquatic species are mugger (V) (declining from at least 200 in 1978 to 70 in 1986/1988) and gharial (E). The fishing cat (K), a species threatened by wetland destruction, is also present. Chitwan is the only protected area where the following bird species considered to be at risk in Nepal have been found: yellow bittern, lawny fish owl, and deep blue kingfisher.
SEYCHELLES	68. Vallée de Mai Nature Reserve WH (1983) i, ii, iii, iv WWF- (19)	19.5ha	Vallée de Mai Nature Reserve is part of the island of Praslin and remained untouched until the 1930's. Within the protected area are three streams, the Nouvelle De'Couverte, the Riviere Fond and the principal river in the park, the Fond B'Ofay, which flows westward into Baie Sainte Anne and is habitat for the endemic freshwater crab and the gourgeon, the only species of freshwater fish endemic to the Seychelles.
THAILAND	69. Thungyai - Huai Kha Khaeng Wildlife Sanctuaries WH (1991) ii, iii, iv WWF- (59)	577,464ha	The terrain is generally hilly with many permanent and seasonal streams. The sanctuary comprises the catchment area of the Huai Kha Khaeng, which flows through the middle of the sanctuary, and much of the upper catchment area of the Huai Thap Salao. Small lakes, ponds and swampy areas occur, some being seasonal whilst others are perennial; these are important wildlife habitats. Limestone sink holes are found; some more than two kilometres long, 250m wide and 30m deep. Some 24-40 wild water buffalo (E), the only herd in Thailand, are found in the south of the sanctuary, but there is doubt about whether or not there has been interbreeding with domestic animals. At least two species of otter have been identified, namely Oriental small-clawed and smooth-coated (VU). The giant Asiatic toad and Asiatic giant frog are nationally rare species. The site contains one of the last important areas of lowland riverine forest remaining in Thailand, which supports the last viable populations of several riparian bird species in the country. These include green peafowl (V), lesser fishing eagle, red-headed vulture and crested kingfisher. Other birds which are now rare in Thailand include white-winged wooduck.
VIET NAM	70. Ha Long Bay WH (1994) iii WWF- (38)	150,000ha	The unique features of Ha Long Bay include numerous limestone rocks from the Hon Gai sea, schistic islands from the Cam Pha sea and a limited number of earth islands formed from decayed lateric mountains. There are a total of 1,600 islands (1,000 named) and islets, some rising to 100-200m, with numerous caves and grottoes. The principal conservation values include biological diversity, especially in marine species. Preliminary surveys indicate the presence of about 1,000 fish species. To the east of the Bay medium size islands feature almost vertical slopes. Numerous caves and grottoes are found, with stalactites and stalagmites
<b>OCEANIAN REALM</b>			
USA	71. Hawaii Volcanoes National Park WH (1987) ii ER WWF- (63,210)	92,934ha	The park lies in the south-east part of Hawaii Island and extends from the southern coast to the summit calderas of Kilauea and Mauna Loa volcanoes. The erosion of lava flows into the sea produces beaches of black sand. Threatened species include the Hawaiian petrel (VU) The entire island of Hawaii has been noted as a critical area for protection of endemic bird species

COUNTRY	SITE NAME	AREA	WETLAND VALUES
<b>AUSTRALIAN REALM</b>			
AUSTRALIA	72. Tasmanian Wilderness WH (1982; 89) i, ii, iii, iv BR WWF- (81)	1,383,640ha	Of particular note is the wide range of lentic (still water) and lotic (flowing water) ecosystems. Owing to their unusual hydrological properties, Lake Sydney and Lake Timk have developed interesting marginal herbaceous communities, while the Snowy Range contains examples of dynamic string bog systems represented by bolster plants. Meromictic lakes and coastal lagoons, with their unusual micro-organisms, are also important wetlands. On a larger scale, the south-west coast has a wide range of plant communities peculiar to salt marsh and coastal areas. The property contains each of the eight Sphagnum peatland communities and 21 of the 33 coastal vegetation communities located in Tasmania. The endemic orange-bellied parrot (R), occurs here, one of Australia's rarest and most threatened birds, which is dependent upon wetlands for part of its lifecycle. There are four endemic fish species and two other native fish, swamp galaxias (V) and Lake Pedder galaxias (V), are largely restricted to the area.
AUSTRALIA	73. Wet Tropics of Queensland WH (1988) i, ii, iii, iv WWF- (47)	894,420ha	The main reasons for listing of this site were the tropical forest values, but there is also a significant coastal component. Fringing reefs occur in the northern section of the region and are most extensively developed between Daintree and Bloomfield rivers. The association between coastal rainforest and fringing coral reef to the extent it occurs off Cape Tribulation and environs appears to be undocumented elsewhere in the world. The reefs are part of the Great Barrier Reef World Heritage Site. The mangrove forests comprise some 30 species of trees and shrubs, comparable in diversity to those of New Guinea and South-east Asia which are acclaimed as being among the richest in the world. The region of highest diversity lies between Ingham and Innisfail. The most common genera are Rhizophora and Bruguiera, as well as Ceriops in some areas. There are about 47 species of frogs, of which the Australian distributions of 20 species are restricted to this area. Included are some species regarded as rare, such as Litoria lorica, Cophixalus neglectus, C. bombiens, C. hosmeri, C. infacetus and Northern Tinker-Frog (last seen 1991), a representative of a primitive endemic genus. In the freshwater streams, there are three species of blue crayfish which are restricted to the area. The highly restricted distribution of these 'temperate' relicts parallels similar distributions among plants and other fauna, reflecting a long history of isolation on these mountain summits. The site also contains Wallaman Falls, which has the longest single drop (278m) of any waterfall in Australia.
<b>NEOTROPICAL REALM</b>			
ARGENTINA	74. Los Glaciares National Park WH (1981) ii, iii WWF- (93)	445,900ha	The area includes extensive icefields and fresh water lakes, which play a key role in the region's hydrology. Although the site has a low biological diversity, it contains small populations of mammals and birds that are of particular conservation concern, such as the torrent duck.
ARGENTINA/BRAZIL	75. Iguazú and Iguazu National Parks WH (1984; 86) iii, iv WWF- (1)	225,000ha	These parks share one of the world's largest waterfalls where the River Iguacu falls off the steep edge of southern Brazilian plateau, at this point 1,200m wide and extends over 2,700m and drops 72m into a 80m wide canyon. The falls were probably initially located at the confluence of the Iguazú and Parana Rivers some 20,000 years ago, but erosion has caused them to recede 28km upstream to their present location. Threatened river fauna include giant otter (V), La Plata otter (V), Broad-nosed cayman (E) and Brazilian merganser (E).

COUNTRY	SITE NAME	AREA	WETLAND VALUES
PERU	76. Rio Abiseo National Park WH (1990); 920 ii, iii, iv WWF- (11)	274,520ha	The park encompasses the Abiseo River basin which is surrounded by an orographic system. The major rivers of Maranon and Huallaga, both tributaries of the Amazon, run on either side of the park. On the western border are the Chirimachay, Los Chocos, Manachaqui and Montecristo river valleys. Species considered to be in danger of extinction include South American pochard (I). The rich herpetological fauna includes 15 unique species of anurans which are highly site specific. Protection of the Abiseo River basin was the second stated objective in establishing this protected area (after protection of the pristine cloud forest). Due to its high biodiversity, Rio Abiseo is among the World Wide Fund for Nature's top Andean conservation priorities.
VENEZUELA	77. Canaima National Park WH (1994) i, ii, iii, iv WWF- (12)	3,000,000ha	The distinctive tepui formations (table mountains) give rise to numerous waterfalls, including Angel Falls, the world's highest at 1002m. The Rio Caroni, with its many tributaries arising within the park, supplies the Guri dam which provides electricity to large areas of the country. The threatened giant otter (V) is present, and there are high levels of endemism among the amphibian and fish fauna.





UNITED NATIONS EDUCATIONAL, SCIENTIFIC  
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INTERGOVERNMENTAL COMMITTEE FOR THE  
PROTECTION OF THE WORLD CULTURAL  
AND NATURAL HERITAGE



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

WHC-97/2  
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WHC-97/WS/1

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

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

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

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

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

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

- (a) (i) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of land forms, or significant geomorphic or physiographic features; or
- (ii) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; or
- (iii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; or
- (iv) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation;

and

(b) also fulfil the following conditions of integrity:

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



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

- (ii) The sites described in 44(a)(ii) should have sufficient size and contain the necessary elements to demonstrate the key aspects of processes that are essential for the long-term conservation of the ecosystems and the biological diversity they contain; for example, an area of tropical rain forest should include a certain amount of variation in elevation above sea-level, changes in topography and soil types, patch systems and naturally regenerating patches; similarly a coral reef should include, for example, seagrass, mangrove or other adjacent ecosystems that regulate nutrient and sediment inputs into the reef.
- (iii) The sites described in 44(a)(iii) should be of outstanding aesthetic value and include areas that are essential for maintaining the beauty of the site; for example, a site whose scenic values depend on a waterfall, should include adjacent catchment and downstream areas that are integrally linked to the maintenance of the aesthetic qualities of the site.
- (iv) The sites described in paragraph 44(a)(iv) should contain habitats for maintaining the most diverse fauna and flora characteristic of the biogeographic province and ecosystems under consideration; for example, a tropical savannah should include a complete assemblage of co-evolved herbivores and plants; an island ecosystem should include habitats for maintaining endemic biota; a site containing wide-ranging species should be large enough to include the most critical habitats essential to ensure the survival of viable populations of those species; for an area containing migratory species, seasonal breeding and nesting sites, and migratory routes, wherever they are located, should be adequately protected; international conventions, e.g. the Convention of Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), for ensuring the protection of habitats of migratory species of waterfowl, and other multi- and bilateral agreements could provide this assurance.
- (v) The sites described in paragraph 44(a) should have a management plan. When a site does not have a management plan at the time when it is nominated for the consideration of the World Heritage Committee, the State Party concerned should indicate when such a plan will become available and how it proposes to mobilize the resources required for the preparation and implementation of the plan. The State Party should also provide other document(s) (e.g. operational plans) which will guide the management of the site until such time when a management plan is finalized.

- (vi) A site described in paragraph 44(a) should have adequate long-term legislative, regulatory or institutional protection. The boundaries of that site should reflect the spatial requirements of habitats, species, processes or phenomena that provide the basis for its nomination for inscription on the World Heritage List. The boundaries should include sufficient areas immediately adjacent to the area of outstanding universal value in order to protect the site's heritage values from direct effects of human encroachment and impacts of resource use outside of the nominated area. The boundaries of the nominated site may coincide with one or more existing or proposed protected areas, such as national parks or biosphere reserves. While an existing or proposed protected area may contain several management zones, only some of those zones may satisfy criteria described in paragraph 44(a); other zones, although they may not meet the criteria set out in paragraph 44(a), may be essential for the management to ensure the integrity of the nominated site; for example, in the case of a biosphere reserve, only the core zone may meet the criteria and the conditions of integrity, although other zones, i.e. buffer and transitional zones, would be important for the conservation of the biosphere reserve in its totality.
- (vii) Sites described in paragraph 44(a) should be the most important sites for the conservation of biological diversity. Biological diversity, according to the new global Convention on Biological Diversity, means the variability among living organisms in terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and includes diversity within species, between species and of ecosystems. Only those sites which are the most biologically diverse are likely to meet criterion (iv) of paragraph 44 (a).

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

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

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

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



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