WHC-11/35.COM/INF.8B2

IUCN World Heritage Evaluations 2011

IUCN Evaluations of Nominations of Natural and Mixed Properties to the World Heritage List

IUCN Report for the World Heritage Committee, 35th Session, Paris, France, June 2011

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

IUCN Evaluations of Nominations of Natural and Mixed Properties to the World Heritage List

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EXECUTIVE SUMMARY TABLE OF IUCN EVALUATIONS TO THE WORLD HERITAGE COMMITTEE

State Party	Name of the property (ID number)	Note	OUTSTANDING UNIVERSAL VALUE											Further mission required	IUCN Recommendation
			Meets one or more natural criteria				Meets conditions of integrity				Meets protection and management requirements				
			Criterion (vii)	Criterion (viii)	Criterion (ix)	Criterion (x)	Integrity	Boundaries	Threats addressed	Justification of serial approach	Protection status	Management	Buffer zone / Protection in surrounding area		
Paragraphs of the Operational Guidelines for the Implementation of the World Heritage Convention			77	77	77	77	78, 87-95	99-102	78, 98	137	78, 132.4	78, 108-118, 132.4, 135	103-107		
Australia	Ningaloo Coast (1369)		yes	no	–	yes	yes	yes	yes	–	(yes)	(yes)	(yes)	N	I+R
Benin	Pendjari National Park (749 Bis)	Extension	–	–	–	(yes)	no	no	yes	(yes)	yes	yes	no	Y	D
China	Wudalianchi National Park (1365)		no	no	no	–	yes	yes	yes	–	yes	yes	yes	N	N
Congo Cameroon CAR	Sangha Trinational (1380)		(yes)	–	(yes)	(yes)	no	no	no	–	yes	no	yes	Y	D
Germany	Ancient Beech Forests (1133 Bis)	Extension	–	–	no	–	yes	yes	yes	(yes)	yes	yes	yes	Y	D
India	Western Ghats (1342)		(yes)	–	–	(yes)	no	no	no	(yes)	no	no	–	Y	D
Iran	Harra Protected Area (1373)		no	–	no	no	no	yes	no	–	yes	no	–	N	NI

State Party	Name of the property (ID number)	Note	OUTSTANDING UNIVERSAL VALUE												Further mission required	IUCN Recommendation
			Meets one or more natural criteria				Meets conditions of integrity				Meets protection and management requirements					
			Criterion (vii)	Criterion (viii)	Criterion (ix)	Criterion (x)	Integrity	Boundaries	Threats addressed	Justification of serial approach	Protection status	Management	Buffer zone / Protection in surrounding area			
Paragraphs of the Operational Guidelines for the Implementation of the World Heritage Convention			**77**	**77**	**77**	**77**	**78, 87-95**	**99-102**	**78, 98**	**137**	**78, 132.4**	**78, 108-118, 132.4, 135**	**103-107**			
Jamaica	Blue and John Crow mountain National Park (1356)	Mixed site	–	–	no	no	no	yes	no	–	no	no	yes		?	N
Japan	Ogasawara Islands (1362)		–	no	yes	no	yes	yes	yes	yes	yes	yes	yes		N	I
Jordan	Wadi Rum Protected Area (1377)	Mixed site	yes	(yes)	–	–	yes	yes	no	–	yes	no	no		N	R
Kenya	Kenya Lake System in the Great Rift Valley (1060 Rev)		yes	–	yes	yes	yes	yes	yes	yes	yes	yes	yes		N	I
Senegal	Saloum Delta (1359)	Mixed site	no	–	–	no	no	yes	no	–	no	no	yes		N	N
Viet Nam	Phong Nha - Ke Bang National Park (951 Bis)	Renomi-nation	–	–	–	(yes)	no	no	no	–	no	no	yes		Y	D

KEYS

yes	met	I	inscribe
(yes)	partially met	NI	non inscribe
no	not met	R	refer
–	not applicable	D	defer

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China	1334	West Lake Cultural Landscape of Hangzhou	191
China	1365	Wudalianchi National Park	27
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IUCN FIELD EVALUATORS

Site	Name
Sangha Trinational	Charles Doumenge and Gérard Collin
Harra Protected Area	Tarek Abul Hawa and Tilman Jaeger
Ningaloo Coast	Rainer von Brandis and Ameer Abdulla
Wudalianchi National Park	Harald Plachter
Western Ghats	Wendy Strahm and Brian Furze
Phong Nha-Ke Bang National Park	Cristi Nozawa and Bastian Bomhard
Ogasawara Islands	Naomi Doak and Peter Shadie
Kenya Lakes System in the Great Rift Valley	Geoffroy Mauvais
Pendjari National Park	Pierre Galland and Mamadou Sidibe
Ancient Beech Forests of Germany	David A. Mihalic
Saloum Delta	Wendy Strahm
Wadi Rum Protected Area	Zoe Wilkinson and Kyung Sik Woo
Blue and John Crow Mountains National Park	Joerg Elbers
Colombia Coffee Cultural Landscape	Doris Cordero

It should be noted that the IUCN field evaluators are part of a broader evaluation approach detailed in the introduction of this report.

THE WORLD HERITAGE CONVENTION
IUCN TECHNICAL EVALUATION REPORT OF WORLD HERITAGE NOMINATIONS
MAY 2011

1. INTRODUCTION

This technical evaluation report of natural and mixed properties nominated for inclusion on the World Heritage List has been conducted by the World Heritage Programme of IUCN (International Union for Conservation of Nature). In close cooperation with IUCN Global Protected Areas Programme (GPAP) and other units of IUCN both at headquarters and in the regions, the World Heritage Programme co-ordinates IUCN's input to the World Heritage Convention. It also works closely with IUCN's World Commission on Protected Areas (WCPA), the world's leading expert network of protected area managers and specialists, and other Commissions, members and partners of IUCN.

IUCN's evaluations are conducted according to the Operational Guidelines that the World Heritage Committee has agreed, and are the essential framework for the application of the evaluation process. In carrying out its function under the World Heritage Convention, IUCN has been guided by four principles:

(i) ensuring the highest standards of quality control and institutional memory in relation to technical evaluation, monitoring and other associated activities;

(ii) increasing the use of specialist networks of IUCN, especially WCPA, but also other relevant IUCN Commissions and specialist networks;

(iii) working in support of the UNESCO World Heritage Centre and States Parties to examine how IUCN can creatively and effectively support the World Heritage Convention and individual properties as "flagships" for conservation; and

(iv) increasing the level of effective partnership between IUCN and the World Heritage Centre, ICOMOS and ICCROM.

Members of the expert network of WCPA carry out the majority of technical evaluation missions, supported by other specialists where appropriate. The WCPA network now totals more than 1500 protected area managers and specialists from 140 countries. In addition, the World Heritage Programme calls on experts from IUCN's other five Commissions (Species Survival, Environmental Law, Education and Communication, Ecosystem Management, and Environmental, Economic and Social Policy) as relevant, from international earth science unions, nongovernmental organizations and scientific contacts in universities and other international agencies. This highlights the considerable "added value" from investing in the use of the extensive networks of IUCN and partner institutions.

These networks allow for the increasing involvement of regional natural heritage experts and broaden the capacity of IUCN with regard to its work under the World Heritage Convention. Reports from field missions and comments from a large number of external reviewers are comprehensively examined by the IUCN World Heritage Panel. The IUCN World Heritage Programme then prepares the final technical evaluation reports which are presented in this document and represent the corporate position of IUCN on World Heritage evaluations. IUCN has also placed emphasis on providing input and support to ICOMOS in relation to those cultural landscapes which have important natural values. Since 2009 IUCN has extended its cooperation with ICOMOS, including coordination in relation to the evaluation of mixed sites and cultural landscapes. IUCN and ICOMOS have also enhanced the coordination of their panel processes as requested by the World Heritage Committee.

In 2005, IUCN commissioned an external review of its work on World Heritage evaluations, which was carried out by Professor Christina Cameron and resulted in a number of recommendations to improve IUCN's work. The review and the IUCN management response are available on IUCN's World Heritage website. IUCN is considering undertaking a further review of its work on World Heritage Evaluations in 2012, and this will also consider the results of current reflections by the World Heritage Committee regarding the scope to improve the support provided to nominations prior to their submission. IUCN welcomes this initiative and notes that many nominations encounter significant problems in meeting the requirements of the Conventions Operational Guidelines as a result of the lack of such processes. IUCN will provide a full input to this process and welcomes the opportunity to take part in pilot exercises to explore this issue.

IUCN has continued to progress in the implementation of all proposed recommendations and the regional representation and gender balance of the selected evaluators and on the IUCN World Heritage Panel have been further enhanced during 2010-11. IUCN has invested significantly since 2007 with its own resources in strengthening its work on World Heritage, with a strong financial contribution towards the position of head of the newly created World Heritage Programme. Further

enhancements to IUCN work on World Heritage require significant additional funding, both from the World Heritage Fund and other partners and agencies.

2. EVALUATION PROCESS

In carrying out the technical evaluation of nominations IUCN is guided by the Operational Guidelines to the World Heritage Convention. The evaluation process is carried out over the period of one year, from the receipt of nominations at IUCN in March or April and the submission of the IUCN evaluation report to the World Heritage Centre in May of the following year. The process outlined at the end of this introduction involves the following steps:

1. **External Review.** The nomination is sent to independent experts knowledgeable about the property or its natural values, including members of WCPA, other IUCN specialist commissions and scientific networks or NGOs working in the region. IUCN received over 70 external reviews in relation to the properties examined in 2010 / 2011.

2. **Field Mission.** Missions involving one or more IUCN and external experts evaluate the nominated property on the ground and discuss the nomination with the relevant national and local authorities, local communities, NGOs and other stakeholders. Missions usually take place between May and November. In the case of mixed properties and certain cultural landscapes, missions are jointly implemented with ICOMOS.

3. **IUCN World Heritage Panel Review.** The Panel intensively reviews the nomination dossiers, field mission reports, comments from external reviewers, the UNEP-WCMC data sheets and other relevant reference material, and provides its technical advice to IUCN on recommendations for each nomination. A final report is prepared and forwarded to the World Heritage Centre in May for distribution to the members of the World Heritage Committee.

4. **Final Recommendations.** IUCN presents, with the support of images and maps, the results and recommendations of its evaluation process to the World Heritage Committee at its annual session in June or July, and responds to any questions. The World Heritage Committee makes the final decision on whether or not to inscribe the property on the World Heritage List.

It should be noted that IUCN seeks to develop and maintain a dialogue with the State Party throughout the evaluation process to allow the State Party every opportunity to supply all the necessary information and to clarify any questions or issues that may arise. For this reason, there are three occasions at which IUCN may request further information from the State Party. These are:

- **Before the field mission.** IUCN sends the State Party, usually directly to the person organizing the mission in the host country, a briefing on the mission, in many cases raising specific questions and issues that should be discussed during the mission. This allows the State Party to prepare properly in advance;

- **Directly after the field mission.** Based on discussions during the field mission, IUCN may send an official letter requesting supplementary information before the IUCN World Heritage Panel meets in December, to ensure that the Panel has all the information necessary to make a recommendation on the nomination; and

- **After the IUCN World Heritage Panel.** If the Panel finds some questions are still unanswered or further issues need to be clarified, a final letter will be sent to the State Party requesting supplementary information by a specific deadline. That deadline must be adhered to strictly in order to allow IUCN to complete its evaluation.

If the information provided by the State Party at the time of nomination and during the mission is adequate, IUCN does not request supplementary information. It is expected that supplementary information will be in response to specific questions or issues and should not include completely revised nominations or substantial amounts of new information.

In the technical evaluation of nominated properties, the Udvardy Biogeographic Province concept is used for comparison of nominations with other similar properties. This method makes comparisons of natural properties more objective and provides a practical means of assessing similarity at the global level. At the same time, World Heritage properties are expected to contain special features, habitats and faunistic or floristic peculiarities that can also be compared on a broader biome basis. It is stressed that the Biogeographical Province concept is used as a basis for comparison only and does not imply that World Heritage properties are to be selected on this criterion. In addition, global classification systems and priority-setting exercises, such as Conservation International Biodiversity Hotspots, WWF Ecoregions, Birdlife International Endemic Bird Areas, IUCN/WWF Centres of Plant

Diversity and the IUCN/SSC Habitat Classification, and the 2004 IUCN/UNEP-WCMC Review of the World Heritage Network provide useful guidance. The decisive principle is that World Heritage properties are only those areas of outstanding universal value.

Finally, the evaluation process is aided by the publication of a series of reference volumes and thematic studies. During 2011 a resource manual on the preparation of World Heritage Nominations has also been prepared, under joint lead authorship of IUCN and ICOMOS, which provides further details on best practices, including the key resources that are available to support nominations.

3. THE IUCN WORLD HERITAGE PANEL

Purpose: The Panel advises IUCN on its work on World Heritage, particularly in relation to the evaluation of World Heritage nominations. The Panel normally meets once a year for a week in December. Depending on the progress made with evaluations, and the requirement for follow up action, a second meeting or conference call in the following March may be required. Additionally, the Panel operates by email and/or conference call, as required.

Functions: A core role of the Panel is to provide a technical peer review process for the consideration of nominations, leading to the formal adoption of advice to IUCN on the recommendations it should make to the World Heritage Committee. In doing this, the Panel examines each available nomination document, the field mission report, comments from external reviewers and other material, and uses this to help prepare IUCN's advice, including IUCN recommendations relating to inscription under specified criteria, to the World Heritage Committee (and, in the case of some cultural landscapes, advice to ICOMOS). It may also advise IUCN on other matters concerning World Heritage, including the State of Conservation of World Heritage properties and on policy matters relating to the Convention. Though it takes account of the policy context of IUCN's work under the Convention, its primary role is to deliver high quality scientific and technical advice to IUCN, which has the final responsibility for corporate recommendations made to the World Heritage Committee.

Membership: Membership of the Panel is at the invitation of the IUCN Director General (or Deputy Director General under delegated authority) through the Director of the World Heritage Programme. The members of the Panel comprise IUCN staff with responsibility for IUCN's World Heritage work, other relevant IUCN staff, Commission members and external experts selected for their high level of experience with the World Heritage Convention. The membership of the Panel comprises:

- The Director, IUCN World Heritage Programme (Chair)
- At least one and a maximum of two staff of the IUCN Global Protected Areas Programme
- Senior Advisor(s) appointed by the IUCN Director General or delegate to advise the organisation on World Heritage
- The IUCN World Commission on Protected Areas (WCPA) Vice Chair for World Heritage
- The Head of the UNEP-World Conservation Monitoring Centre Protected Areas Programme
- Up to five technical advisors, invited by IUCN and serving in a personal capacity, with recognised leading expertise and knowledge relevant to IUCN's work on World Heritage, including particular thematic and/or regional perspectives.

The Panel's preparations and its meetings are facilitated through the work of the World Heritage Programme Officer, who serves as the Executive Officer for the Panel.

The Deputy Director General, or another senior manager, is delegated by the Director General to provide oversight at senior level on World Heritage, including with the responsibility to ensure that the Panel functions within its TOR and mandate. This senior manager is not a member of the Panel, but is briefed during the Panel meeting on the Panel's conclusions. The Panel may also be attended by other IUCN staff, Commission members (including the WCPA Chair) and external experts for specific items at the invitation of the Chair.

4. EVALUATION REPORTS

Each technical evaluation report presents a concise summary of the nominated property, a comparison with other similar properties, a review of management and integrity issues and concludes with the assessment of the applicability of the criteria and a clear recommendation to the World Heritage Committee. IUCN also submits separately to the World Heritage Centre its recommendation in the form of a draft decision, and a draft Statement of Outstanding Universal Value for all properties it recommends for inscription. In addition, IUCN carries out field missions and/or external reviews for cultural landscapes containing important natural values, and provides its comments to ICOMOS. This report contains a short summary of these comments on each cultural landscape nomination reviewed.

5. NOMINATIONS EXAMINED IN 2010 / 2011

19 nomination dossiers and 4 minor boundary modifications were examined by IUCN in the 2010 / 2011 cycle, involving 14 field missions. These comprised:

- 10 natural property nominations (including 6 new nominations, 1 deferred nomination and 3 extensions/renominations),
- 3 mixed property nominations (all new nominations), where joint missions were undertaken with ICOMOS,
- 8 cultural landscape nominations (all new nominations), for one of which a joint mission was undertaken with ICOMOS,
- 5 were commented on by IUCN based on internal and external desktop reviews and 3 were not commented on,
- 4 minor boundary modifications.

6. COLLABORATION WITH INTERNATIONAL EARTH SCIENCE UNIONS

IUCN implements its consideration of earth science values within the World Heritage Convention through a global theme study on Geological Heritage published in 2005. It concluded collaboration agreements with the International Union of Geological Sciences (IUGS) and the International Association of Geomorphologists (IAG) in 2006. These agreements are focused on strengthening the evaluation process by providing access to the global networks of earth scientists coordinated through IUGS and IAG.

It is also anticipated that the collaboration agreements will lead to increased support to States Parties more generally through the preparation of targeted theme studies that provide further guidance on earth science sites. Theme studies on caves and karst and volcanoes were completed in 2008 and 2009, respectively, and a study on deserts has been published in March 2011. IUCN would like to record its gratitude to IUGS and IAG for their willingness to provide support for its advisory role to the World Heritage Convention, and will continue to inform the World Heritage Committee on the implementation of the collaboration agreements with IUGS and IAG.

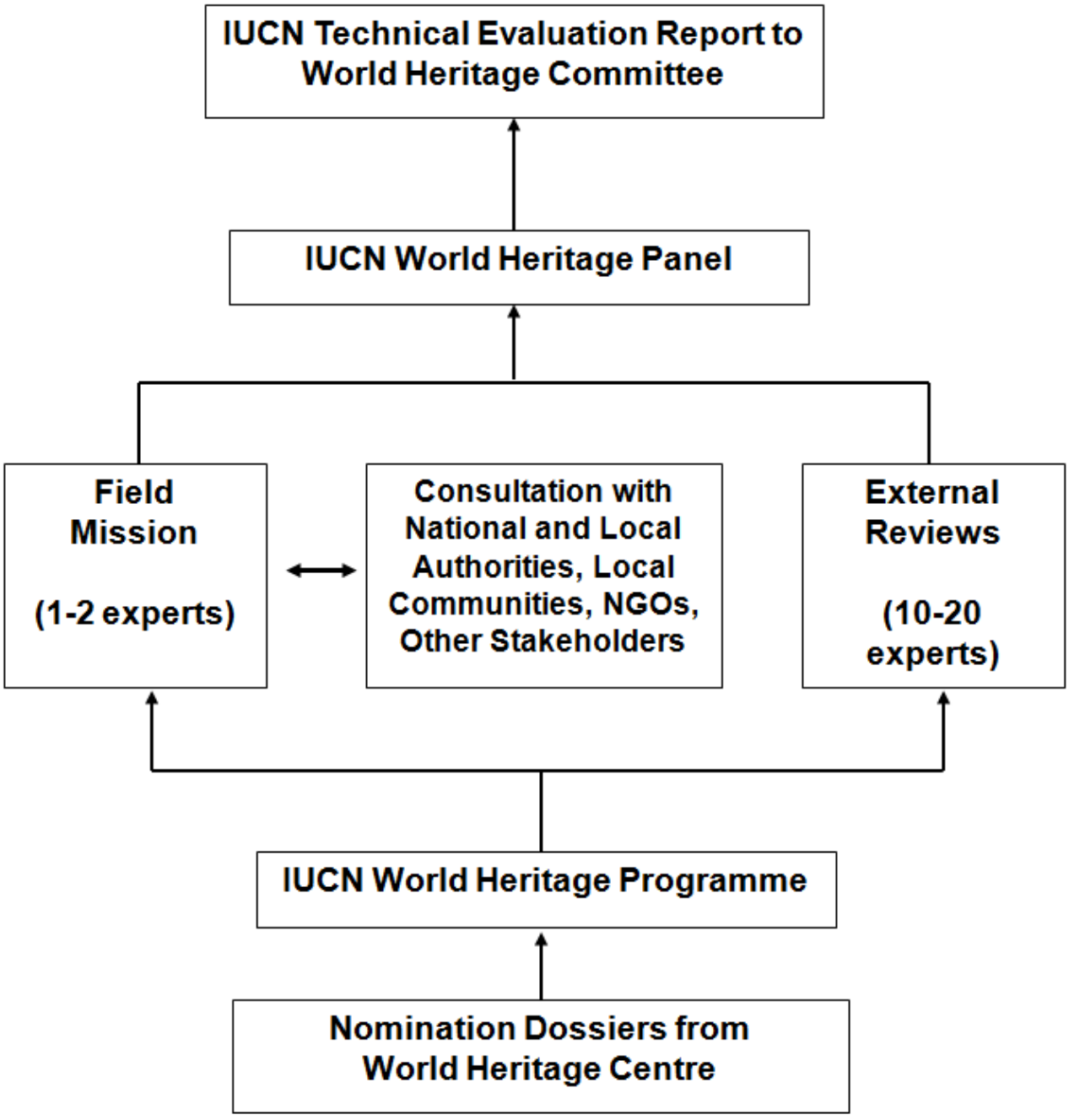
7. RECOMMENDATIONS TO THE WORLD HERITAGE COMMITTEE

In the 2010 / 2011 cycle, IUCN has sought to ensure that States Parties have the opportunity to provide all the necessary information on their nominated properties through the process outlined in section 2 above. As per Decision 30 COM 13 of the World Heritage Committee (Vilnius, 2006), IUCN has not taken into consideration or included any information submitted by States Parties after 28 February 2011, as evidenced by the postmark. IUCN has previously noted a number of points for improvement in the evaluation process, and especially to clarify the timelines involved.

8. ACKNOWLEDGEMENTS

As in previous years, this report is a group product to which a vast number of people have contributed. Acknowledgements for advice received are due to the external evaluators and reviewers, many of them from IUCN's members, Commissions and Networks, and numerous IUCN staff at Headquarters and in IUCN's Regional and Country Offices. Many others contributed inputs during field missions. This support is acknowledged with deep gratitude.

Figure 1: IUCN Evaluation Process



A. NATURAL PROPERTIES

A1. NEW NOMINATIONS OF NATURAL PROPERTIES

AFRICA

SANGHA TRINATIONAL

CONGO, CAMEROON AND CENTRAL AFRICAN REPUBLIC

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SANGHA TRINATIONAL (CONGO, CAMEROON, CENTRAL AFRICAN REPUBLIC) – ID No. 1380

IUCN RECOMMENDATION TO 35th SESSION: Defer the nomination of the property

Key paragraphs of Operational Guidelines:
78 Property does not meet conditions of integrity or protection and management requirements set out in the Operational Guidelines**.**

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: Supplementary information was requested from the State Party on 04 January 2011. The Republic of Congo submitted the requested information on 24 February 2011 on behalf of the three States Parties.

c) Additional Literature Consulted: Cassidy R., Watkins B., Cassidy T. (2010). **First record of Rey-necked Picathartes Picathartes oreas for Central African Republic**. Bull. ABC, 17 (2) : 216-217; Endamana D., Klintuni Boedhihartono A., Bokoto B., Defo L., Eyebe A., Ndikumagenge C., Nzooh Z., Ruiz-Perez M., Sayer J.A. (2010). **A framework for assessing conservation and development in a Congo Basin forest landscape**. Trop. Conserv. Sci., 3 (3): 262-281. Sandker M., Campbell B.M., Nzooh Z., Sunderland T., Amougou V., Defo L., Sayer J.A. (2009). **Exploring the effectiveness of integrated conservation and development interventions in a Central African forest landscape**. Biodivers. Conserv. UNESCO. (2010). Le patrimoine mondial dans le bassin du Congo. Unesco, Paris : 63 p. White, L., J.P. Vande weghe. (2009). **Patrimoine mondial naturel d'Afrique centrale: Bien existants – Bien potentiels**. Rapport de l'atelier de Brazzaville du 12-14 mars 2008. UNESCO Centre du Patrimoine Mondial, Paris, France. Yanggen, D., Angu, K., Tchamou, N. (2010). **Conservation à l'échelle du Paysage dans le Bassin du Congo : Leçons tirées du Programme régional pour l'environnement en Afrique centrale (CARPE)**. IUCN / USAID.

d) Consultations: Three external reviewers were consulted. The technical evaluation mission met with senior representatives of the States Parties, administrators and traditional leaders of local communities. Furthermore, representatives of forestry enterprises were met, as well as technical and scientific park staff. International non-governmental organisations were also met and consulted with, namely WCS and WWF.

e) Field Visit: Gérard Collin and Charles Doumenge, November 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

Sangha Trinational (TNS) is a transboundary conservation complex in the North-western Congo Basin where Cameroon, the Republic of Congo and the Central African Republic meet. TNS encompasses three contiguous national parks totalling 754,300 hectares (based on GIS measurements; 726,446 ha according to the legislation). These are Lobéké National Park in Cameroon, Nouabalé-Ndoki National Park in Congo and Dzanga-Ndoki National Park in the Central African Republic. The latter is comprised of two distinct units. The parks are embedded in a much larger forest landscape, sometimes referred to as the "TNS Landscape".

Natural values and features include the existence of intact, mostly pristine forest landscapes at a large scale, unique habitats, such as numerous and diverse forest clearings, and viable populations of rare and endangered species. The size, biogeographic location at the junction between the Congo Basin and the Lower Guinea floristic domains and very limited man-made disturbance are factors that have contributed to the development of a remarkable biodiversity. Unlike many other parts of the Congo Basin, TNS comprises large tracts of ecologically and functionally intact tropical lowland forests which have never been commercially exploited or deprived of ecologically important mammals and birds by excessive hunting and poaching. The impacts of the traditional semi-nomadic inhabitants living from hunting, gathering and fishing have remained very limited. An estimated 30% of TNS has been selectively logged during the second half of the 20th century but has since been left to naturally regenerate.

In its majority the nominated property is dominated by tropical forests comprised of deciduous and evergreen species and dominated by Limbali. There is a great diversity of wetland types, including swamp forests and

periodically flooded forests as well as Raffia Palm groves.

The Sangha River constitutes the major water course of the watershed and transverses TNS from North to South. A largely undisturbed major tributary to the Congo River, the Sangha continues to host populations of the Nile Crocodile (*Crocodylus niloticus*), as well as the Goliath Tigerfish (*Hydrocynus goliath*), a large predator.

The nominated property and the broader landscape contain a network of extremely diverse natural forest clearings on hydromorphic soil. The clearings can be broadly differentiated into clearings along water courses, locally referred to by the indigenous term "baïs", whereas others are depressions locally known as "yangas". They are known to have an important role for wildlife as salt licks providing mineral salts which many species depend on. 138 clearings are known but many remain to be documented and studied. The variability in size, soil and hydrological conditions and seed dispersion mechanisms has given rise to diverse habitat and species assemblages. Not only does the flora differ, the clearings also attract very different animal species. Within the large forest matrix the clearings have an important ecological role for many taxonomic groups including mammals and birds. Species regularly visiting the forest clearings include Forest Elephants, Gorillas, Chimpanzees, several antelope species, such as the Sitatunga and the emblematic Bongo, as well as different species of wild pig.

Beyond their ecological importance, the clearings facilitate unusual opportunities for scientific and touristic observations otherwise unavailable in most tropical lowland rainforests. In addition to the clearings there are numerous lakes, likewise of wildlife importance. It is important to note that there are large numbers of forest clearings and lakes located outside of the nominated area, in particular in Congolese forest concessions, south of the nominated property.

The biodiversity of TNS represents the full spectrum of humid tropical forest ecosystems in Africa but the flora is enriched by additional herbaceous species occurring exclusively in the forest clearings. Endemic species and subspecies have been identified in the Sangha River corridor and in particular in the nominated property, such as the Sangha Forest Robin (*Stiphrornis sanghensis*). TNS protects a large number of heavily exploited tree species which are Vulnerable (e.g. numerous Meliaceae), Critically Endangered (e.g. *Autranella congolensis*), at Risk of Extinction (e.g. various species commercially traded as "ebony").

The populations of forest elephants (*Loxodonta Africana cyclotis*) are considerable and healthy as indicated by males bearing large tusks and a balanced sex ratio. Two hominoids, the Critically Endangered Western Lowland Gorilla and the Endangered Chimpanzee, have important populations in and around the nominated property. Both are believed to reach among their highest population densities anywhere. Some populations have never had encounters with human beings.

Remarkably, certain species are restricted to one side of the Sangha River, such as some small arboreal primates. Others, including the Western Lowland Gorilla show different behaviour on different sides of the river, re-affirming the need to manage and conserve at the landscape level to cover the diversity of TNS.

3. COMPARISONS WITH OTHER AREAS

Sangha Trinational has been nominated under natural criteria (vii), (ix) and (x). The nomination includes a comprehensive analysis comparing TNS to over 40 tropical forest World Heritage properties in terms of size, number and density of selected species, species diversity (plants, mammals and birds), habitat diversity, and wildlife aggregations. The comparative analysis uses a wide range of data from UNESCO, UNEP-WCMC and IUCN.

The case for criterion (vii) has a focus on the forest clearings, in particular the Dzangha clearing, which is presented on its own as a globally outstanding phenomenon. While clearly an important element and of major wildlife importance, there is no strong case for considering an individual clearing as a justification for criterion (vii) in the presented form. There is, however, potential for further considering the broader phenomenon and values of the diverse clearings spread over a large landscape.

Although the comparative analysis presented appears sound, there are some claims in the nomination that need clarification. Central Africa already has multiple natural World Heritage properties, and the Udvardy province is already included in the World Heritage List (Dja Faunal Reserve, Cameroon). TNS has not been recognized as part of a biodiversity hotspot or an Endemic Bird Area. TNS is part of WWF Global 200 terrestrial and freshwater ecoregions that are already represented on the World Heritage List. In terms of habitat and species diversity, TNS – as other lowland rainforest sites in Central Africa – does not reach the levels of the richest natural World Heritage properties. TNS is one of seven exceptional priority areas for great ape conservation in equatorial Africa, and others (Ecosystem and Relict Cultural Landscape of Lopé-Okanda, Gabon and Dja Faunal Reserve, Cameroon) are inscribed on the World Heritage List.

TNS supports as many species and threatened species as many other natural World Heritage properties, even though it is not one of the most diverse natural World Heritage properties. TNS does have major importance for great ape conservation in Western Equatorial Africa for its scale, remoteness and for so far being free of the devastating Ebola virus. TNS supports over 4,000, maybe over 8,000 Critically Endangered Western

Lowland Gorillas and Endangered Chimpanzees, plus at least 4,000 forest elephants.

TNS is among the few remaining large-scale priority areas for other taxa, including forest elephants, even though two other priority areas in the region are already on the World Heritage List, the Dja Conservation Complex and the Lopé National Park (LNP). However, TNS is larger than the LNP and has by far greater ape populations, and TNS is larger and more important for other taxa than the Dja Conservation Complex.

In terms of size, TNS is not as large as Salonga National Park or Okapi Wildlife Reserve in the Democratic Republic of Congo; it is as large as Virunga National Park; and exceeds Kahuzi-Biega National Park (Democratic Republic of Congo), the Ecosystem and Relict Cultural Landscape of Lopé-Okanda (Gabon) and Dja Faunal Reserve (Cameroon).

While it could be argued that other existing World Heritage properties support a higher diversity, the size, existence of large pristine tracts, relative remoteness and intactness of the property, as well as the still mostly forested surrounding landscape support the case for an Outstanding Universal Value of TNS. Even though it appears as though for all individual features more "superlative" examples can be found elsewhere, the combination and scale of the numerous values and phenomena is exceptional.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is comprised of three national parks: Lobéké National Park in Cameroon, Nouabalé-Ndoki National Park in Congo and Dzanga-Ndoki National Park in the Central African Republic.

Lobéké National Park, created in 2001, extends across 217,854 ha. While hunting, fishing, gathering of forest products, mining and logging are not permitted, a zone for community hunting has been designated in the Western part of the park.

Dzanga-Ndoki National Park was created as early as 1990 as the first formal conservation area in the subregion. The park consists of two distinct parts. The Northern part, Dzanga, covers 49,500 ha while the Southern part, Ndoki, extends across 72,500 ha, thus totalling 122,000 ha. The two parts are connected by Dzanga-Sangha Special Forest Reserve established in the same year with a surface of 335,900 ha. A two-kilometre wide "pre-park" zone buffers both parts of the National Park. Both parts are also connected through Nouabalé-Ndoki National Park which is located contiguous to both in the neighbouring Republic of Congo.

The national park is also legally based on the Forest Law of 1990 defining the national forest code. Hunting, gathering and fishing, as well as mineral and timber exploitation, are not permitted. In contrast, the Special Forest Reserve proposed as a formal buffer zone, is a multiple use area with the stated objectives to conserve the fauna and regional ecosystems but to also meet the needs of local communities. The reserve is subdivided into five zones: commercial hunting zone (concessions); community hunting zone; timber extraction zone; rural development zone; bush meat production zone.

The 386,592 ha Nouabalé-Ndoki National Park was established in 1993 and completed in 2002 when 19,863 ha, part of a former logging concession (Unité Forestière d'Aménagement or UFA), and today known as the Goualougo Triangle were added. The National Park is based on the Forest Law of 2000 and the Law on Fauna of 2008 which deals with protected areas.

In 2000, the first ministerial meeting of the Central African Forests Commission (COMIFAC) took place. The ministers of Cameroon, the Central African Republic and the Republic of Congo signed a cooperation agreement to establish TNS. This agreement documented the vision to coordinate conservation, management and research efforts in the three national parks, but also refers to sustainable development, tourism and anti-poaching. The TNS Foundation was created in 2007 to contribute to the financing of the park but also sustainable use in the broader landscape.

The establishment of the transboundary complex and of the TNS Foundation provides an excellent framework and is showing positive results.

Overall, TNS is an encouraging example of transboundary cooperation and conservation in the region. The protection status is appropriate but there remain questions about the broader landscape and its relationships with the nominated property as detailed in the below section on boundaries.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The limits of the nominated property are defined by the legal limits of the three national parks. In the case of Lobéké National Park they follow water courses or dirt roads. As for Nouabaké-Ndoki and Dzanga-Ndoki National Parks, in some case administrative or geographical limits have been selected.

A formal buffer zone for the nominated property has only been designated in the Central African Republic in the form of the Dzanga-Sangha Special Forest Reserve. In the other two countries, the nominated property is adjacent to concessions which are committed to regulated logging, and many adhere to the standards

established by Forest Stewardship Council (FSC), which includes social standards. While these concessions are of vital importance for the long term integrity and conservation value of the nominated property, they are not formally proposed as buffer zones to the property. The nominated property would clearly benefit from a closer and more clearly defined relationship between the conservation areas and land and resource use in the broader landscape, namely logging concessions which surround most of the nominated area. IUCN also notes that some of the important values that are noted in the nomination, such as the rich natural forest clearings and associated wetlands, are mainly located in these adjoining concessions, and thus they could also be considered for inclusion in whole, or in part, in a revised boundary of the property.

IUCN concludes that, in order to meet integrity conditions, the concessions bordering the various national parks should be integrated as formal buffer zones or as part of the property while ensuring that timber extraction, as secondary effects, does not compromise the natural and cultural values of the nominated property.

Libongo, a small area in Cameroon across the Sangha River opposite Dzanga-Ndoki National Park and Dzanga-Sangha Special Reserve, respectively, deserves special consideration, as it is not formally protected and not under concession.

IUCN considers that the boundaries of the nominated property do not meet the requirements set out in the Operational Guidelines.

4.3 Management

The three parks all have management and administrative staff provided or supported by both governments and international cooperation agencies. Lobéké National has a staff of 26 of which 25 are "ecoguards". The team is completed by several technical and scientific staff provided through an agreement with the Djengi project (WWF, GIZ). Dzanga-Ndoki National Park has 59 staff of which 33 are "ecoguards". The team has additional 101 technical and scientific staff through a comparable arrangement with the Dzanga-Sangha Project (WWF, GIZ). In Nouabalé-Ndoki National Park there are 18 staff, including 12 "ecoguards". The WCS Congo Programme supports 56 technical and scientific staff. Consequently, around 300 are involved in the management of TNS at various levels.

The national budgets of the parks are modest, contributing only a small percentage to the overall budget, leaving the bulk of funding to international cooperation and concessionaries near TNS. The latter finance the salaries of the "ecoguards" whose tasks include anti-poaching activities.

TNS Foundation, established in 2007, is a private entity under British law with its executive headquarters in Central Africa. It is managed by a Board of Directors, consisting of 11 members who are representatives of the governments of Cameroon, Republic of Congo, Central Africa Republic, as well as WWF, the Wildlife Conservation Society, Rainforest Foundation, KfW, AFD (observer), the park managers and civil society. Set up as a conservation trust, it has the objective to secure long term funding through contributions from various donors. Currently, there is a capital of about €12m. There are four areas representing the three countries involved and a fourth dedicated specifically to transboundary efforts.

The management and conservation efforts, as well as research are well coordinated across the national boundaries. There is a Trinational Monitoring and Action Committee (Comité Tri-national de Suivi et d'Action); bringing together the three countries at the ministerial level. A Trinational Monitoring Committee unites the three countries at the level of regional administrations.

Regular trilateral meetings take place at the management and implementation level (Comité Tri-national de Planification et d'Exécution) and between park managers. A scientific Committee (CST) has been declared but at the time of the technical evaluation had not been operational.

The efforts are laudable and constitute a promising operational set-up for communication and cooperation in a complex transboundary setting across three countries. The management is expected to benefit from operationalizing the intended scientific committee.

Supported by international agencies and NGOs, all three parks consider socio-economic community concerns. The protected areas administrations are involved in setting up schools and drilling wells. Literacy programmes, including for indigenous peoples, have been established, and support has been provided to local farmers.

The traditional livelihoods of the indigenous peoples, such as the BaAkas, are to an extent considered. There are policies for local resource users in the protected areas. In Lobéké National Park (Cameroon) there are community hunting zones within the park. In the Central African Republic, the buffer zone permits local resource use, including indigenous hunting and gathering. In the case of Congo, community hunting zones have been designated within logging concessions. However, the fact remains that in two of the three nominating countries, indigenous resource use is entirely banned in the nominated property, while in the remaining country resource use is partially permitted raising questions of the involvement of local residents.

Given that regulated hunting by indigenous peoples is permitted in part of the national park in Cameroon, nominated as part of the property, the case could be made for inclusion of the other community hunting areas as part of the nominated area under a different

management regime. Otherwise, there would be a complete dissociation of indigenous use and World Heritage in two of the three countries. In practice, the recommendation could be to enlarge the nominated area while maintaining the current management in order to convey the message of an integrated approach and to acknowledge indigenous resource use as compatible with World Heritage status, with clearly defined and enforced rights and obligations. Park management would have a stronger say in what is now located outside the nominated area but doubtlessly decisive for the future of a possible World Heritage property. A similar logic applies to non-indigenous local communities. Integrating used areas would facilitate addressing human-wildlife conflict and relationships. IUCN also notes a range of different commitments of the States Parties exist regarding the rights of local and indigenous people, which should be fully integrated in a revised nomination.

The importance of local knowledge does not feature prominently in the nomination but might deserve more consideration in wildlife management and the definition of boundaries of community hunting areas.

The remote location and limited infrastructure sets certain limits to tourism development. Several lodges and infrastructure to receive visitors, such as Mambélé in Lobéké National Park, the Sangha Lodge, in Dzanga-Ndoki National Park, as well as Bomassa et Mbéli in Nouabalé-Ndoki National Park. Some of the better known forest clearings offer visits and guides (Sangha Baï, Central African Republic; Mbéli Baï, Republic of Congo; Bolo Baï, Cameroon).

The development of touristic infrastructure is adequate for such a remote area and seems appropriate to deal with the currently very low numbers of visitors. In the medium term TNS would benefit from a comprehensive tourism planning.

Overall, the management of the property is progressing in a positive direction. However, and most importantly, the question of local resource use, which is related to the question of boundaries both of the nominated property and its buffer zones, requires further consideration.

IUCN considers the management of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.4 Threats

Logging and secondary effects of logging
Illegal logging does not appear to constitute a major concern within the nominated property and the prospects for the parks in this regard appear positive. Given the local practices, remoteness, transport costs and rareness of commercially viable species, the concessions as such should not lead to deforestation. In terms of the broader landscape, logging does play a major role as the nominated property is surrounded by concessions almost in its entirety on the basis of long-term contracts. Only the concessions within the Dzanga-Sangha Special Forest Reserve have not been allocated so far. The type of highly selective logging and increasingly high forest management standards in line with or based on FSC are a positive development. Logging as such is not expected to lead to deforestation or major forest degradation.

The concern, however, are secondary effects of logging through the establishment of roads in otherwise inaccessible areas. The effects of this "door opener" are well documented and in Central Africa are often related to informal settlements, small-scale mining and poaching for bush meat and ivory. Countering these effects requires political willingness and full cooperation on the part of concessionaires. A stronger commitment to control of poaching should be encouraged. From a conservation perspective, it is of interest to develop options to consolidate a conservation role in the future of the forest concessions. A strategy to achieve this could be the partial inclusion of valuable and strategically important parts of logging concessions within revised boundaries of a property and/or revised buffer zones. This would also help to address the question of traditional resource use and its relationship to the World Heritage nomination.

Hunting and poaching
Hunting by local people is a traditional and legitimate resource use in the TNS landscape. Community hunting reserves have been established, with the exception of Cameroon, outside of the nominated property. It remains to be seen whether this is a sufficient measure. As detailed in the management section, a revision of boundaries might be considered so as to integrate additional use zones, thereby increasing the chances of an integrated management approach.

Excessive commercial poaching for bush meat and/or trophies may well constitute the single most important threat to TNS. Poaching for ivory remains a strong concern despite successful anti-poaching efforts, including across international boundaries. The balance of decisive action against poaching and permitted legal hunting is here to stay as a major challenge and implications for community livelihoods, relations, law enforcement efforts and investments, transboundary coordination, integrity and the local perception and acceptance of formal nature conservation.

Agriculture
Agriculture, including livestock keeping, is widespread around the villages in the area. Wildlife damage to crops, such as from elephants and gorillas, are a sensitive human-wildlife conflict which will continue to impact on the relationship between park staff and local communities and indeed the very perception of conservation. Mitigation and compensation measures are a requirement as part of the management of this issue.

Mining
No mining is known to occur within the parks nominated for World Heritage recognition. Small scale diamond exploitation is illegally developing in the Northern part Dzanga-Sangha Special Forest Reserve proposed as a buffer zone. The closest mining is only around five kilometres away from the Northern part of Dzanga-Ndoki National Park. Monitoring and, if needed, decisive action is in order to phase out the illegal mining in Dzanga-Sangha Special Forest Reserve and to prevent expansion into Dzanga-Ndoki National Park.

Epidemics
The Ebola virus has not been documented in the nominated area but poses a potential threat, including in the context of the habituation of Western Lowland Gorilla. Biosecurity considerations are therefore of the utmost importance in the management of the property.

In summary, IUCN considers the nominated property does not meet the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Consideration of local people and cultural values

IUCN notes that there is a rich cultural heritage associated with the nominated property, but this has not been strongly considered within the nomination and this has been noted as a concern regarding the appropriateness of the nomination. Indigenous people of the Congo Basin have a particularly strong musical tradition and forest-cult system. These cultural practices have already been acknowledged by UNESCO as valuable intangible heritage and masterpieces of oral and intangible culture. A number of observations received by IUCN on the nomination question why a mixed nomination has not been considered. Whilst such matters would be a subject for comment from ICOMOS, IUCN notes that the most recent inscription of a forest landscape in the region, Ecosystem and Relict Cultural Landscape of Lopé-Okanda, was a mixed nomination.

6. APPLICATION OF CRITERIA

Sangha Trinational has been nominated under criteria (vii), (ix), and (x).

Criterion (vii): Superlative natural phenomena or natural beauty
The nomination puts much emphasis on a major and well researched forest clearing in the Central African Republic known as Dzanga Baï. While indeed a place to observe otherwise elusive rainforest fauna, an isolated focus on this clearing does not make a convincing case for a globally outstanding phenomenon. The numerous and very diverse clearings ("baîes" and "yangas") serve as salt and mineral licks for major, easily observable aggregations of otherwise elusive forest species, including large and charismatic mammals, in their entirety and as a major phenomenon across a large landscape (including areas that lie outside the boundaries of the nominated property) may indeed have the potential to represent values of global importance.

IUCN considers that the nominated property does not meet this criterion as presented, but a reconsidered nomination may have the potential to meet criterion (vii).

Criterion (ix): Ecological processes
The nomination makes the case based on the large size, minimal disturbance over long periods and intactness thereby enabling the continuation of ecological processes. This includes the continuous presence of intact and natural population densities of wildlife. Unlike many other forest protected areas, the nominated property is not a remaining fragment but continues to be part of a much larger and still forested landscape. This is increasingly rare at a global scale. Protection of this value will not only depend on the future of the nominated property, but also on the future of the broader TNS landscape.

IUCN considers that the nominated property meets this criterion, however a revised and extended area is required to meet integrity requirements.

Criterion (x): Biodiversity and threatened species
The biodiversity of the nominated property represents a wide spectrum of humid tropical forest ecosystems in Central Africa. The flora is enriched by additional herbaceous species occurring exclusively in the many and diverse forest clearings. TNS protects a large number of heavily exploited commercial tree species, such as the Critically Endangered Mukulungu (*Autranella congolensis*) and various species commercially traded as "ebony "at risk of extinction.

In addition to important and healthy populations of forest elephants, the Critically Endangered Western Lowland Gorilla and the Endangered Chimpanzee have significant populations, both in and around the nominated property.

IUCN considers that the nominated property meets this criterion, however a revised and extended area is required to meet integrity requirements.

7. RECOMMENDATIONS

The World Heritage Committee

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Defers the examination of the **Trinational de la Sangha (Republic of Congo, Cameroon and Central African Republic)** on the World Heritage List under natural criteria (vii), (ix) and (x);

3. Recommends the State Party to:

a) enhance the justification for inscription of the property, including the conditions of integrity and comparative analysis in relation to each criterion, with the assistance of IUCN and the World Heritage Centre as required;

b) increase further the involvement and representation of local and indigenous communities in the nomination process and future management, in line with stated commitments, in order to fully recognize the rich tapestry of cultural and spiritual values associated with the property, and in recognition of contributions by local and indigenous communities, such as local knowledge and adapted resource use practices, with the advice of IUCN and the World Heritage Centre as required;

c) consider potential nomination of adjacent areas where traditional local resource use is permitted, in particular the Réserve spéciale de Dzanga-Sangha, and the concessions (Unités Forestières d'Aménagement) adjacent to Lobéké and Nouabalé-Ndoki National Parks, in either a revised boundary of the nomination and/or as recognised buffer zones as part of an integrated landscape approach, noting that important values are located outside the currently nominated area, that sustainable resource use is compatible with World Heritage status and also that the future integrity of Trinational de la Sangha will depend on the balance between resource use and conservation at the landscape level;

d) evaluate the potential application of cultural criteria to the nominated property (i.e. nomination as a mixed property), taking into account the rich indigenous cultural heritage of the area;

e) further harmonize objectives and guidelines for the various conservation initiatives and management planning, including tourism planning among the three State Parties;

f) further improve coordination between ministries and sectors to ensure adequate and consistent land use planning and law enforcement;

g) establish and implement clear policies for small-scale mining in order to prevent mining within or affecting the nominated area;

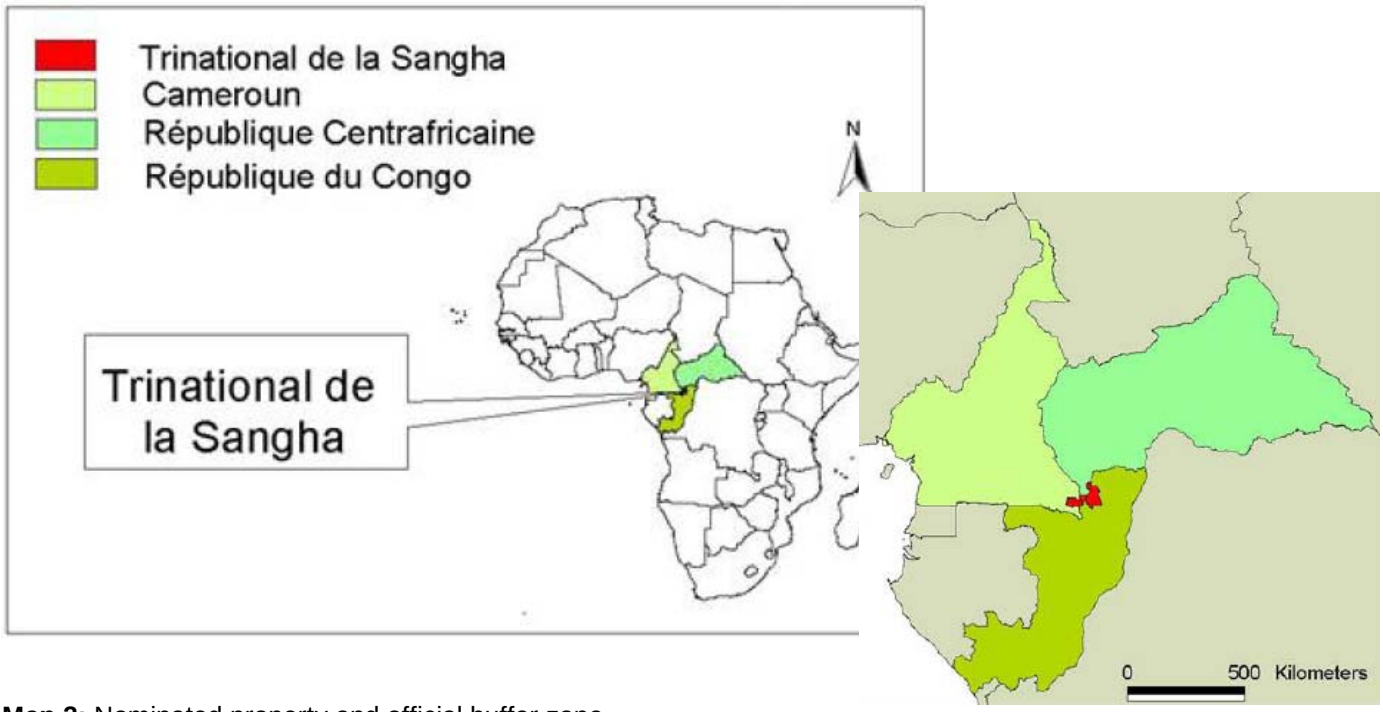
h) ensure high environmental and social standards for all adjacent concessions by integrating a corresponding commitment into the "cahier des charges" for timber concessionaires;

i) increase funding support for the property and ensure full support to the Trust Fund and to the retention of tourism revenues for conservation and community development purposes;

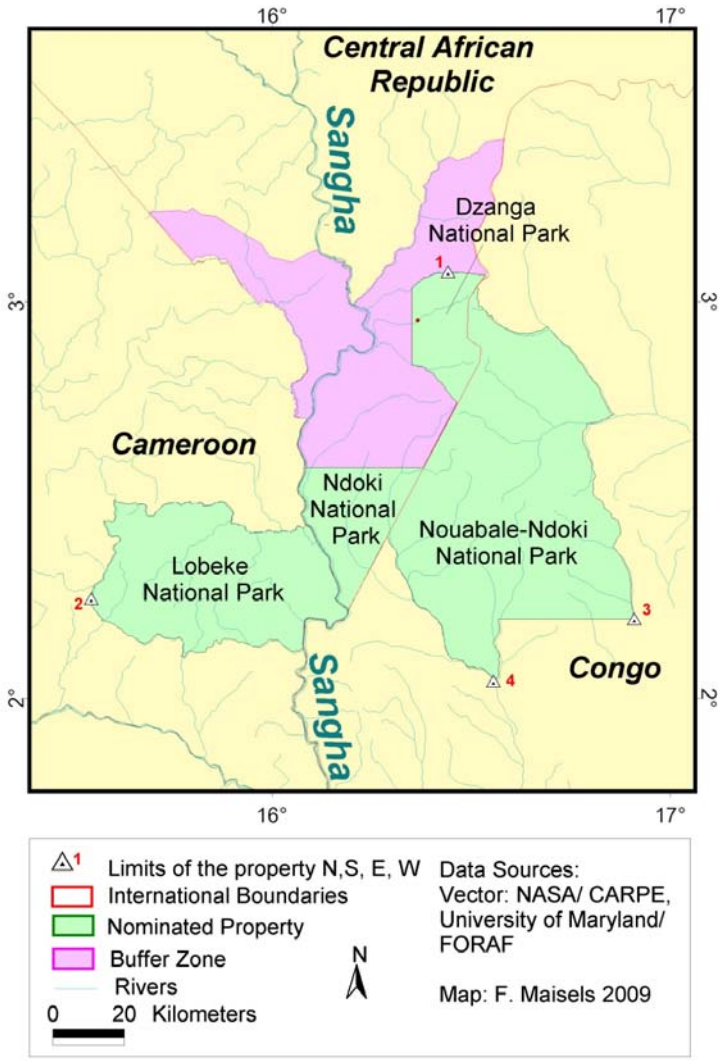
4. Commends the States Parties on their establishment of a network of functioning protected areas in the property and the surrounding landscape which appear to be providing a balanced approach to conservation and development, in particular the recognition of local and indigenous rights and need for access to natural resources;

5. Further commends the States Parties on their transboundary approach to conservation and management efforts.

Map 1: Nominated property location



Map 2: Nominated property and official buffer zone



ASIA / PACIFIC

NINGALOO COAST

AUSTRALIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

NINGALOO COAST (AUSTRALIA) – ID No. 1369

IUCN RECOMMENDATION TO 35th SESSION: To inscribe the property under natural criteria in part, and refer back the remaining part to the State Party

Key paragraphs of Operational Guidelines:
77 Property meets one or more natural criteria.
78 Property meets conditions of integrity and has an adequate protection and management system in part.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: Following the IUCN World Heritage Panel the State Party was requested to provide supplementary information on 04 January 2011. The information was received on 16 February 2011. In addition, the State Party submitted a written request for a minor amendment of the boundaries to the World Heritage Centre on 28 February 2011.

c) Additional Literature Consulted: CALM (Western Australian Department of Conservation and Land Management) (2005). **Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005–2015**. Management Plan 52, CALM, Perth, Australia. CALM (2010). **Cape Range National Park Management Plan 2010**. CALM, Perth, Australia. Colman, J. (1997). **Whale shark interaction management, with particular reference to Ningaloo Marine Park**. Western Australian Department of Conservation and Land Management, Marine Conservation Branch. Fremantle. DEC (2010). **Ningaloo Coast World Heritage Nomination**. Det Norske Veritas, (2001). **Coral Coast Resort Qualitative Risk Assessment**. Prepared for Coral Coast Marina Development Pty. Ltd DEWHA (2010). **Ningaloo Coast Consultation History 2006-2010**. Report provided specifically for IUCN assessment purposes. DEWHA (2010). **World Heritage Nomination Q and A**. Environment Australia, 2002. **Ningaloo Marine Park (Commonwealth Waters) Management Plan.** Environment Australia, Everton Park, Queensland. EPCH (Environmental Protection and Heritage Council) (2009). **Ningaloo Coast Strategic Management Framework**. Gillespie Economics, 2008. **Economic activity of Australia's world heritage areas: final report**. Gillespie Economics, BDA Group. Humphreys, W. F. (ed) (1993). **The Biography of Cape Range Western Australia**. Nahan, M. D. (2010). **The Department of Environment and Conservation's Management of Former Pastoral Leases**. Report No. 4. State Law Publisher, Perth, WA. Strategen Environmental Consultants Pty Ltd. (2008). **Review of Ningaloo Coast Management Plans against national and international requirements for the protection of potential World and National Heritage values**. Prepared for the Department of Environment and Conservation. Strategen Environmental Consultants Pty Ltd. (2009). **Ningaloo Coast Unallocated Crown Land Management Framework**. Prepared for the Department of Environment and Conservation. Seminoff, J. (2002). Shire of Exmouth, DEC and National Parks and Nature Conservation Authority, 1999. **Jurabi and Bundegi coastal parks and Muiron Islands management plan 1999**. Perth, Australia. URS Australia Pty Ltd. (2001). **Environmental Management Plan for RAAF Learmonth and Associated Properties** 2001. Prepared for Department of Defence. WAPC (Western Australian Planning Commission) (2004). **Ningaloo Coast Regional Strategy: Carnarvon to Exmouth**. WAPC, Perth, Australia. World Heritage Consultative Committee (2004). **Report on a proposal to nominate the North West Cape - Ningaloo reef area for inscription on the World Heritage list**. Final report, Government of Western Australia.

d) Consultations: Eleven external reviewers were consulted. Extensive consultations were conducted during the field mission including with representatives of management agencies, administrators in state and federal government, representatives of academic institutions and non-governmental organizations and cultural practitioners.

e) Field Visit: Ameer Abdulla and Rainer von Brandis, October 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The nominated property is located on the remote coast of Western Australia where the East Indian Ocean meets the Australian continent. The total nominated area of 708,350 hectares contains interconnected marine (71%) and terrestrial (29%) values and features. The Ningaloo Coast hosts a major near shore reef system and a directly adjacent limestone karst system and associated habitats and species along an arid coastline. The

nominated property is notable in that it contains a high level of terrestrial species endemism and high marine species diversity and abundance.

The 290 km long Ningaloo Reef is one of the longest near shore fringing reefs in the world. Although by some definitions Ningaloo would not be classified as a true barrier reef, the marine portion contains a high diversity of habitats that includes lagoon, reef, open ocean, the continental slope and the continental shelf. Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also found within the nominated area. The water depths range from 5 to 30 m on the reef to oceanic waters over 500 m deep. The continuous “barrier” portion of the reef is approximately 200 km and includes a lagoon between 200 and 7000 meters wide. North and south of this continuous “barrier” reef are fringing and patch reefs that constitute an additional 100 km of reef habitat.

The various habitats not only support a high diversity of species but also jointly form diverse and aesthetically striking landscapes and seascapes. Less conspicuous but nevertheless one of the major features of the area is the rapid drop-off in bottom depth in the northern part, resulting in a narrow continental shelf that brings the shelf break unusually close to shore. In contrast, the continental shelf in the southern end of the Marine Park and nomination extends more than 30 km from the coastline.

The most dominant marine habitat is the Ningaloo reef, which sustains both tropical and temperate marine fauna and flora, with many species at the limit of their distribution or occurring at atypical latitudes to what is biogeographically considered their normal range. This exceptional transition zone is the result of the mixing between the cold north-flowing West Australian Current and the warm Indian Ocean Counter Current or Leewuin Current. The reef contains a high diversity of corals (300 species), reef fish (738 species), molluscs (655 species), crustaceans (600 species) and a multitude of marine plants (1,000 species). Due to the particular location and oceanography, tropical marine species from Ningaloo are transported more southerly than is typical, in some instances until the Great Australian Bight. An example of this are the reef systems of the Houtman Abrolhos Islands, the southernmost true coral reefs in the Indian Ocean and one of the highest latitude reef systems in the world, that are found 600 km south of the nominated area.

The nominated property is recognized for its large annual aggregations of whale sharks. Population estimates range between 300 and 500 Whale Sharks. Aggregations generally occur between March and June, and coincide with mass coral spawning events and seasonal localized increases in productivity.

Marine reptiles include six recorded marine turtle species, and the Olive Sea Snake. This extraordinary diversity of turtle species related to its location on the ecotone between the tropical and temperate waters. Extrapolations from available data suggest that around 10,000 nests are deposited along the coast annually. This is a significant figure from a national, regional, and global perspective.

Manta rays have been recorded in the reserve and are found on the outer reef. Nineteen species of shark including the Oceanic White Tip Shark, Tiger Shark, Blue Shark and Grey Reef Shark also occur in deeper waters. The open ocean supports large aggregations of fish, including Trevally, Tuna, Mackerel, Marlin and Sailfish, many of which are found much closer to shore than in other parts of the world due to the narrow continental shelf.

Furthermore, dugong and dolphins frequent the lagoons and other marine areas, as do eight species of whales regularly with documented records of a total of 20 cetaceans. The nominated property is notable for the presence of Humpback Whales migrating through twice a year on their annual migration between calving grounds off the Kimberley coast and feeding grounds in Antarctica. Blue and Sperm Whales have been observed in the offshore regions of the nominated area, as have Minke, Bryde's, Southern Right and Killer Whales. The Humpback and Indo-Pacific Dolphin are also relatively common in this area.

Recent research has revealed a wide variety of bottom dwelling species in the Marine Park, including many previously unrecorded in Australia or even new to science. Sponges dominate the deeper water communities with soft corals and algae living among them. The high numbers of 155 sponge species and 25 new species of echinoderms, and unusual forms found in the diverse sponge garden habitats, add to the significance of the area.

A major feature of the terrestrial parts of Ningaloo Coast is the extensive karst system and network of underground caves and water courses of the Cape Range. Karst landscapes are characterized by sinking streams, caves, enclosed depressions, dry valleys, gorges, natural bridges, fluted rock outcrops and large springs. The Cape Range Peninsula within the Ningaloo Coast nomination is characterised by karst limestone that is the product of millions of years of marine fauna skeletons that were deposited in what is now ancient regressed seas and uplifted terrain. The karst system includes hundreds of separate features such as 535 caves, 180 dolines, and 5 permanently standing subterranean water bodies. Currently, below the arid terrain lies a substantial network of caves, conduits, groundwater streams, pools and aquifers that support a diversity of subterranean aquatic species. More than 80 subterranean taxa have been recorded, 75 of which are completely underground and confined to subterranean habitats. In addition to the large number of arthropods, there are two subterranean fish species. The species of the highly specialized underground fauna tell the story of a long-term evolutionary response to an inhospitable

environment and habitat. The biogeographic history and geological history of the region, including the movements of supercontinents, the emerging of the Range from the sea, and subsequent karstification, is narrated through the subterranean fauna and distribution of the karst communities.

The Cape Range Peninsula belongs to the Carnarvon Xeric Scrub ecoregion recognized by WWF for its high levels of species richness and endemism, particularly for birds and reptiles.

3. COMPARISONS WITH OTHER AREAS

The Ningaloo Coast is nominated according to criteria (vii), (viii) and (x) for its marine and terrestrial natural values as a large fringing coral reef, encompassing both a large lagoon and deep-sea continental shelf waters adjacent to an extensive karst system on land. The comparative analysis focuses on arid-zone coastal ecosystems and marine values and contrasts the merits of the Ningaloo Coasts with a large number of World Heritage properties and other sites.

Key features in relation to criterion (vii) are the large aggregations of whale sharks (*Rhincodon typus*) along with important aggregations of other fish species and marine mammals and the contrast and beauty of an arid coast next to a vivid reef and seascape. The rare aggregation of the whale shark, the largest fish in the world, is one of the main features highlighted under this criterion. Although whale shark aggregations occur in other parts of the world such as the Seychelles, Djibouti, Thailand and Belize with predictable periodicity, the aggregations in Ningaloo following the mass coral spawning and seasonal nutrient upwelling cause a peak in productivity that leads approximately 300-500 individuals to gather, making this the largest whale shark aggregation documented in the world.

The most exceptional aggregations of single species contribute to the justification of inscription of the Monarch Butterfly Biosphere Reserve (Mexico), although inscriptions based on the presence of a single species alone are in general not sufficient basis to determine OUV. Several other properties are also recognized for important gatherings of single or multiple species, such as Malpelo Fauna and Flora Sanctuary (Colombia), the West Norwegian Fjords (Norway), and the Islands and Protected Areas of the Gulf of California (Mexico). Other examples include the Brazilian Atlantic Islands of Fernando de Noronha and Atol das Rocas Reserves known for major resident aggregations of dolphins and iSimangaliso Wetland Park (South Africa) featuring massive marine turtle nesting sites.

Many of the features of the Ningaloo Coast are comparable to other places. Aesthetically and in terms of beauty of landscapes and seascapes, it is the rare mix of largely intact marine, coastal and terrestrial environments that makes the nominated property exceptional. Furthermore, the lush and colourful underwater scenery provides a stark and spectacular contrast with the arid and rugged land.

As regards criterion (viii) the nomination acknowledges that all the elements of biogeography and geology can be found elsewhere but argues that no comparable complete and integrated limestone system exists. Main features described are the water bodies with underground connections to the ocean (anchialine systems) sheltering fauna, including aquatic species in caves and groundwater habitats entirely underground beyond the daylight zones of caves (stygofauna).

A recent technical thematic report by IUCN highlights the poor coverage of World Heritage sites containing significant karst system in the Australasia and South Pacific geographic region and arid, semi-arid, and periglacial environments. The recommendation of the report is that future nominations should give particular attention to outstanding karst areas in these regions and/or environmental settings. The Ningaloo Coast is an example of a karst system in the Australasia region and in an arid environmental setting. What sets the Ningaloo Coast apart in terms of terrestrial values is the biodiversity above and below ground in the karst landscapes and features rather than the geology as such.

In terms of in-situ biodiversity under criterion (x) both the terrestrial and the marine systems are noteworthy. The oceanographic conditions on the Ningaloo Coast sustain a wide array of species, both temperate and tropical.

The nominated property lends itself to a comparison with Shark Bay, an existing World Heritage property likewise located in Western Australia and comprising both land and sea areas. Both the Ningaloo Coast and Shark Bay belong to the same WWF Global 200 marine priority ecoregion named "Western Australia Marine" and host distinct superlative features within this priority region as the longest nearshore reefs (Ningaloo) and the largest and most species-rich seagrass meadows (Shark Bay). Ningaloo does include seagrass areas but they are nowhere nearly as extensive and important as those in Shark Bay. In contrast, although coral communities are present in Shark Bay, they do not form reefs and are not a key feature of the property. Ningaloo does not contain major mangrove areas, while small areas of mangrove are found in Shark Bay. Unlike Shark Bay, Ningaloo contains mid- to deep-water areas that are of potentially high and unique biodiversity values associated with feeding communities, such as for example sponge gardens.

Ningaloo and parts of Shark Bay also belong to the same WWF terrestrial priority ecoregions, the "Carnavon Xeric Scrub". Ningaloo does not lie in a terrestrial biodiversity hotspot or Centre of Plant Diversity, while parts of Shark Bay belong to the Southwest Australia terrestrial biodiversity hotspot and the South-west Botanical Province Centre of Plant Diversity, an

important distinction in terms of terrestrial biodiversity values. Unlike Shark Bay, Ningaloo contains significant arid karst areas, with associated subterranean habitats and fauna.

From a global biodiversity conservation perspective, Ningaloo and Shark Bay share a number of outstanding characteristics, habitats and species. However, there are also important differences in the biodiversity values of these two sites providing a sufficient basis to make a case for consideration of separate inscription. From a conservation perspective, the biological and ecological linkages between the two sites deserve further research and should be considered in management and protection.

In spite of the complicating effects of ancient versus modern geo-climatic processes, the broad differences in karst landscape styles are recognized between the humid tropics/subtropics (e.g. karsts of monsoonal Southeast Asia), the hot deserts (e.g. karsts of arid and semi-arid Australia), the humid temperate zone (e.g. the Dinaric Karst), and cold high altitude or high latitude regions (e.g. karsts of Canadian Rockies and Siberia). Relatively common in the northern hemisphere, the Cape Range is the only continental deep anchialine (landlocked water body with a subterranean connection to the ocean) system described in the southern hemisphere. The majority of anchialine species are not found elsewhere in the southern hemisphere and are not related to communities in other karst regions in Australia. The combination of relic rainforest fauna and anchialine stygofauna (small fully aquatic invertebrates) within the same cave system is exceptional.

While secondary to the truly exceptional underground terrestrial and aquatic underground fauna, the Cape Range Peninsula belongs to the Carnarvon Xeric Scrub ecoregion recognized for its high levels of species richness and endemism, particularly for birds and reptiles and a number of localised centres.

While the case for criterion (ix) is not made in the nomination the comparative analysis for other criteria provides evidence that this criterion might deserve additional scrutiny.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

The Ningaloo Coast is located in an isolated, remote and lightly populated part of Western Australia, and this isolation has contributed to its protection.

The area benefits from three governmental levels of formal protection. The nominated property, as nominated, includes six existing protected areas, (Ningaloo Marine Park, Muiron Islands Marine Management Area, Cape Range National Park, Muiron Islands Nature Reserve, Bundegi and Jurabi Coastal Parks), Unallocated Crown Land, leaseholds, freeholds and Defence Land.

Because the World Heritage nominated property is already listed as a National Heritage area, it is subject to the Environment Protection and Biodiversity Act of 1999 (EPBC Act). Any proposed action taken inside or outside the heritage area's boundaries that may have, or is likely to have, a significant impact on the heritage values requires assessment under the Federal EPBC Act.

With exception of the Commonwealth portion of the Ningaloo Marine Park and the Defence Land, the nominated property is also subject to the Wildlife Conservation Act (1950), Environmental Protection Act (1986), Land Administration Act (1997), Heritage of Western Australia Act (1990), the Aboriginal Heritage Act (1972) and the Conservation and Land Management Act (exception: pastoral leaseholds) (1984). The entire marine component is subject to the Fish Resources Management Act (1994).

The marine portion of the property is owned by the Commonwealth and State governments of Australia. Land is owned by the Commonwealth Government (Department of Defence, ± 5%), State Government (Department of Environment and Conservation - DEC, ± 95%), Shire of Exmouth, 0.5%) and private freeholders (< 0.5%).

The State Government owns a 2 km wide coastal strip encompassing the southernmost 180 km of the nominated terrestrial property, which is currently under private pastoralist leasehold (Ningaloo, Cardabia, Warrora, Quobba and Gnaraloo stations). These leases expire in 2015. IUCN requested information from the State Party regarding the lease renewals, and the State Party response stated that: "World Heritage listing will not affect current management, tenure, land rights or the future renewal of current leases [and] the present or future status of privately owned land in the nominated property...".

A native title claim within the nominated property is currently in mediation with the National Native Title Tribunal. In response to an IUCN request the State Party confirmed that the ongoing "Gnulli Native Title Claim" would not be affected by World Heritage listing.

The small-scale commercial and recreational fishing is regulated and appears to constitute no threat to the integrity of the nominated property.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The 2006 State Government proposal boundary for the proposed national and world heritage site was in excess of 2.5 million hectares and included the Exmouth Gulf

and larger portions of pastoral leaseholds. A combination of community consultation and further scientific assessment saw this extension reduced in 2009. The proposed boundaries encompass a coastal strip of some 260 km in length and the adjacent marine environment.

There are several exclusion zones within the terrestrial boundary detailed in maps contained in the nomination document. They include the Coral Bay town area (Coral Bay Exclusion Area); a military array on the tip of North West Cape (North West Cape Area A and a smaller area south of it according to map 1.7 included in the nomination, whereas Learmonth Air Weapons Range is within the nominated area), the Three Mile Camp on the Sourthern coast of the nominated area, a sand pit near Exmouth town, as well as the Cardabia, Warrora, Quobba and Gnaraloo pastoral Leaseholder Homesteads. Upon formal request by the State Party after submission of the nomination dossier, the Ningaloo pastoral station and its associated infrastructure was likewise excluded from the nominated property. These exclusions are generally small in size and do not significantly impinge on natural values. Marine boundaries follow those of existing protected areas, adequately encompassing the Muiron Islands and the Ningaloo coral reef along a series of geographical coordinates and interconnecting lines. Along the 50 km southern extremity of the property, where the state controlled marine park forms the boundary, the border follows the contour of the coastline at an approximate distance of 5 km. The remainder of the boundary extends at least 15 km out to sea.

No physical buffer zones have been delineated. However, the EPBC Act stipulates that activities outside of the nominated area that may significantly impact on heritage values are subject to assessment and approval from the minister for environmental protection. Hence, this Act, in addition to the overarching legal umbrella described above, serves as a functional legislative buffer to possible factors affecting the property.

The boundaries adequately encompass the key values listed in the nomination. The 2 km coastal strip does not contribute significantly to the criteria under which the property was nominated. This strip of land is characterized by low dunes, limestone beach ridges, and arid scrubland provides access to the marine park and is therefore of importance for site management, including for tourism. Despite being owned by the state government, the land in question is currently leased out to pastoralists (Ningaloo, Cardabia, Warroora, Quobba and Gnaraloo stations) who derive income from livestock farming and ecotourism. These leases are due to expire in 2015. Uncertainty over the future of this land has created a division between the leaseholders and DEC. The lessees strongly contest the inclusion of this land in the nomination, for a variety of reasons, which appear to include concerns that inscription may impact their lease renewal applications despite written governmental statements to the contrary. The pastoralists argue that the land does not contain superlative heritage values in their judgment and that state government agencies may not have the management capacity for the additional land.

National conservation NGOs and other institutions advocate the inclusion of the nearby Exmouth Gulf on the grounds that the ecological integrity of the Ningaloo Reef and the gulf are inextricably linked. The gulf supports extensive mangrove stands and other shallow habitats that function as nurseries and adult foraging grounds for vulnerable species including sea turtles, sharks and rays, dugongs and commercially important fish. Furthermore, it was argued that the gulf provides fundamental nutrient source for the adjacent Ningaloo coral reef. Although an extensive prawn fishery exists in the gulf, it is reportedly sustainable and subject to strict fishery regulations.

IUCN considers that the majority of boundaries of the nominated property meet the requirements set out in the Operational Guidelines but some terrestrial areas require further consideration.

4.3 Management

With the exception of the pastoral leaseholds, all areas within the nominated property fall under of one of the following management plans: Cape Range National Park management Plan 2010; Jurabi and Bundegi Coastal Parks and Muiron Islands Management plan 1999; Ningaloo Coast Unallocated Crown Land Management Framework 2009; Ningaloo Marine Park (Commonwealth Waters) Management Plan 2002; Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005-2015; Environmental Management Plan, RAAF Learmonth and Associated Properties 2001.

An independent review (Strategen, 2008) concluded that the requirements for the protection of potential World Heritage values were adequately met. All management plans make adequate provision for the monitoring of management effectiveness. The individual management plans and their respective governance arrangements are combined under the Ningaloo Coast Strategic Management Framework. In addition, there are various species-specific conservation plans.

With the following exceptions, DEC is the management authority for the nominated property: Pastoral leaseholds are managed by the individual leaseholders. The 2 km coastal strip of the Cardabia leasehold (owned by the Baiyungu Aboriginal Council) is co-managed with DEC under a mutual agreement reached in 2006; Defence Land is managed by the Department of Defence; the Commonwealth Waters of the Ningaloo Marine Park are managed by the Department of the Environment, Water, Heritage and the Arts (DEWHA) and the Department of Fisheries with DEC responsible for day-to-day managerial duties; Jurabi and Bundegi coastal parks and the Muiron Islands are co-managed between DEC and

the Shire of Exmouth; the Marine Park (State waters) is co-managed between DEC and the Department of Fisheries.

Management of the existing parks is funded primarily by the state government, which expends approximately AU$ five million annually on staff, offices, maintenance, enforcement, monitoring, research and general management. A further AU$ 700,000 is allocated yearly to promote tourism and once-off funding is occasionally provided for specific projects, such as the goat eradication program. DEWHA provides approximately AU$ 100,000 annually for the day-to-day management of the Commonwealth Marine Park. The Department of Defence occasionally allocates funding for special conservation projects (e.g. protection of Bundera sinkhole). The pastoralist leaseholders reported to provide private funds for the conservation and management of their land along the 2 km coastal strip. In the event of World Heritage listing, Ningaloo will become eligible to receive funding from the 'Caring for our Country' program that provides up to AU$ six million annually to Australian World Heritage Sites. DEC currently employs 33 staff members in the Exmouth district. Because all staff are located at Exmouth (with the exception of one ranger based in the Cape Range National Park and one semi-permanent ranger at Coral Bay), areas south of the Cape Range National Park are rarely visited, the furthest distance from Exmouth being 260 km. The Ningaloo Marine Park includes a 40 m coastal strip and, although camping occurs predominantly in this zone, DEC is not able to adequately enforce regulations. Unless staff numbers and funding are significantly augmented, the additional management responsibility of the eastern foothills of the Cape Range, and particularly the 2 km coastal strip, may exceed DEC's management capacity in the foreseeable future.

As visitor numbers and resident populations increase, challenging tasks include law enforcement and the day-to-day management of remote regions of the Marine Park and the southern regions of the 2 km wide coastal strip. In this regard, the establishment and nurture of key collaborations with other management agencies such as the Department of Fisheries are crucial. Pastoralism is stated to be a principal land use along the coast. A cooperative management framework between management agencies, leaseholders and scientists is currently lacking.

Despite the work that the State Party notes on consultation, it is clear from the technical evaluation mission and numerous letters received by IUCN that there is considerable distrust of DEC amongst members of the Shire of Exmouth and Carnarvon, Exmouth Chamber of Commerce, Baiyungu Aboriginal Corporation, and particularly the pastoral leaseholders and stakeholders appear to question DECs' management capacity. Allegations of insufficient consultation with stakeholders indicate a need for better communication. DEC officials concede that an initial communication and education program clearly outlining the consequences of World Heritage listing and the nomination process would have done much to prevent unnecessary misconceptions of the World Heritage nomination process and consequences of a possible inscription.

It is important that a possible World Heritage status is not perceived as impacting on land rights issues. The partial exclusion of areas from World Heritage status until these issues are resolved does not impact on the protection and management potential, since these areas are included in the national heritage area designation, and the SP confirms that it is that designation which will convey the principal protection to the property.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines with the exception of some disputed terrestrial areas.

4.4 Threats

All future developments and resource extraction plans are subject to the EBPC Act providing an important umbrella of legal protection.

Learmonth Air Weapons Range Facility covering about 18,954 hectares within the nominated property is used for military exercises and as a bombing range. It includes an ancient reef-complex and cave fauna of exceptional importance. It was one of Australia's most active bombing ranges until around 1990. Future bombing activities on the Learmonth Air Weapons range may pose a potential threat, in particular to the Bundera sinkhole which is located on Defence Land. A 2009 review of Department of Defence ranges recommended its continued use in the future. Although Defence Land within the heritage site is subject to the EPBC Act, the act may be countermanded if this is "in the interests of Australia's defence or security, or in relation to a national emergency".

Although tourism is on the increase, associated threats (damage to vegetation, illegal fishing, sewage and waste disposal and disturbance to wildlife) are mitigated via comprehensive management programs and an overall tourism development strategy. Recreational boat launching facilities are limited and strictly controlled. Future concerns include increased water demand leading to water abstraction with effects on the groundwater systems as well document in arid areas with abruptly increasing numbers of visitors.

Pollution could result from accidents, including accidents provoked by natural disasters. There are important off-shore oil and gas resources near the nominated property. IUCN understands that the State Party has licensed oil exploration in permit WA-384-P roughly 50 km offshore of North West Cape. Given that offshore petroleum extraction is expected to increase in adjacent waters, accidental discharge of oil or other pollutants

poses a significant threat to the marine life and ecosystems of the Ningaloo coast. Although an integrated national contingency plan is in place and oil spill response equipment has been pre-deployed at Exmouth, the nominated coastline is too long and remote to afford any reasonable protection from an oil spill.

Invasive alien species, most importantly foxes, cats, goats and weeds on land and some marine species are satisfactorily monitored and controlled. Further potential concerns on land include limestone quarrying, which is taking place in an extraction lease but at its currently modest scale not posing a risk. Fire, historically part of local indigenous management, is a potential threat to the terrestrial vegetation and must be monitored and controlled.

Sea level rise and increases in seawater temperatures associated with climate change have comparatively little effect on the nominated property. The good overall integrity suggest a higher resilience than in disturbed systems under additional stress. Still, careful monitoring is highly recommended.

In summary, IUCN considers the nominated property meets the conditions of integrity as outlined in the Operational Guidelines, with the exception of some terrestrial areas.

5. ADDITIONAL COMMENTS

The envisaged establishment of a "Ningaloo Coast World Heritage Advisory Committee" after a possible inscription of the nominated property, which would bring together representatives from the traditional owners, local government, scientific experts and members of the community is highly commended. IUCN notes that platforms and exchange mechanisms of this nature can be helpful even at a much earlier stage, including nomination processes and should be considered by States Parties as an investment accompanying nomination processes early on.

6. APPLICATION OF CRITERIA

The Ningaloo Coast has been nominated under criteria (vii), (viii), and (x).

Criterion (vii): Superlative natural phenomena or natural beauty
The landscapes and seascapes of the property are comprised of mostly intact and large-scale marine, coastal and terrestrial environments. The lush and colourful underwater scenery provides a stark and spectacular contrast with the arid and rugged land. The property supports rare and large aggregations of Whale Sharks (*Rhincodon typus*) along with important aggregations of other fish species and marine mammals. The aggregations in Ningaloo following the mass coral spawning and seasonal nutrient upwelling cause a peak in productivity that leads approximately 300-500 Whale Sharks to gather, making this the largest documented aggregation in the world.

IUCN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features
Main features are the water bodies with underground connections to the ocean (anchialine systems) sheltering fauna living aquatic lives in caves and groundwater habitats entirely underground beyond the daylight zones of caves (stygofauna) recording and illustrating geographic and biological change across 150 million years; subterranean karst systems with highly specialized and endemic forms of life; and geoecological structure. The nomination acknowledges that all the elements of biogeography and geology can be found elsewhere but argues that no comparable complete and integrated limestone system exists. In IUCN's view the key value of the geological features is to host a remarkable and highly specialized fauna and is more appropriately recognised under criteria related to biodiversity.

IUCN considers that the nominated property does not meet this criterion.

Criterion (x): Biodiversity and threatened species
In addition to the remarkable aggregations of Whale Sharks, the Ningaloo Reef harbours a high marine diversity of more than 300 documented coral species, over 700 reef fish species, roughly 650 mollusc species, as well as around 600 crustacean species and more than 1,000 species of marine algae. The high numbers of 155 sponge species and 25 new species of echinoderms add to the significance of the area. On the ecotone between tropical and temperate waters the Ningaloo Coast hosts an unusual diversity of marine turtle species with an estimated 10,000 nests deposited along the coast annually.

The majority of subterranean species on land, including aquatic species in the flooded caves are rare, taxonomically diverse and not found elsewhere in the southern hemisphere. The combination of relict rainforest fauna and small fully aquatic invertebrates within the same cave system is exceptional. The subterranean fauna of the peninsula is highly diverse and has the highest cave fauna (troglomorphic) diversity in Australia and one of the highest in the world. Above ground, the diversity of reptiles and vascular plants in the drylands is likewise noteworthy.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Inscribes the **Ningaloo Coast (Australia)** under criteria (vii) and (x), taking note that the adopted boundary includes the Ningaloo Marine Park (Commonwealth Waters), Ningaloo Marine Park (State Waters) and Muiron Islands Marine Management Area (including the Muiron Islands), Jurabi Coastal Park, Bundegi Coastal Park, Cape Range National Park, and the Learmonth Air Weapons Range;

3. Refers back the remaining areas of the nominated property to allow the State Party to further consider its collaboration with stakeholders, including holders of private leases within these areas. These areas could be considered via a subsequent minor boundary modification;

4. Adopts the following Statement of **Outstanding Universal Value**:

Brief synthesis

The Ningaloo Coast is located on Western Australia's remote coast along the East Indian Ocean. The interconnected ocean and arid coast form aesthetically striking landscapes and seascapes. The coastal waters host a major near shore reef system and a directly adjacent limestone karst system and associated habitats and species along an arid coastline. The property holds a high level of terrestrial species endemism and high marine species diversity and abundance. An estimated 300 to 500 Whale Sharks aggregate annually coinciding with mass coral spawning events and seasonal localized increases in productivity.

The marine portion of the nomination contains a high diversity of habitats that includes lagoon, reef, open ocean, the continental slope and the continental shelf. Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also found within the property. The most dominant marine habitat is the Ningaloo reef, which sustains both tropical and temperate marine fauna and flora, including marine reptiles and mammals.

The main terrestrial feature of the Ningaloo Coast is the extensive karst system and network of underground caves and water courses of the Cape Range. The karst system includes hundreds of separate features such as caves, dolines and subterranean water bodies and supports a rich diversity of highly specialized subterranean species. Above ground, the Cape Range Peninsula belongs to an arid ecoregion recognized for its high levels of species richness and endemism, particularly for birds and reptiles.

Criteria

Criterion (vii)

The landscapes and seascapes of the property are comprised of mostly intact and large-scale marine, coastal and terrestrial environments. The lush and colourful underwater scenery provides a stark and spectacular contrast with the arid and rugged land. The property supports rare and large aggregations of Whale Sharks (Rhincodon typus) along with important aggregations of other fish species and marine mammals. The aggregations in Ningaloo following the mass coral spawning and seasonal nutrient upwelling cause a peak in productivity that leads approximately 300-500 Whale Sharks to gather, making this the largest documented aggregation in the world.

Criterion (x)

In addition to the remarkable aggregations of Whale Sharks the Ningaloo Reef harbours a high marine diversity of more than 300 documented coral species, over 700 reef fish species, roughly 650 mollusc species, as well as around 600 crustacean species and more than 1,000 species of marine algae. The high numbers of 155 sponge species and 25 new species of echinoderms add to the significance of the area. On the ecotone between tropical and temperate waters the Ningaloo Coast hosts an unusual diversity of marine turtle species with an estimated 10,000 nests deposited along the coast annually.

The majority of subterranean species on land, including aquatic species in the flooded caves are rare, taxonomically diverse and not found elsewhere in the southern hemisphere. The combination of relict rainforest fauna and small fully aquatic invertebrates within the same cave system is exceptional. The subterranean fauna of the peninsula is highly diverse and has the highest cave fauna (troglomorphic) diversity in Australia and one of the highest in the world. Above ground, the diversity of reptiles and vascular plants in the drylands is likewise noteworthy.

Integrity

The property is embedded into a comprehensive legal framework for the various protected areas and all other land. As a National Heritage area, it is subject to the federal Environment Protection and Biodiversity Conservation Act of 1999 (EPBC) according to which all proposed activities with possible significant impacts on the values of the site require assessments. The EPBC is applicable to activities located outside of the boundaries of the property. While no formal buffer zones have been established for the property the Act therefore serves as a legal buffer zone. The boundaries encompass the key marine and terrestrial values with the exclusions being small in size and not conflicting with the maintenance of the values if managed adequately.

Both the marine and the terrestrial areas may face a number of threats to the property's integrity. Learmonth Air Weapons Range Facility, located within the property, includes an ancient reef-complex and cave fauna of exceptional importance. It was one of Australia's most active bombing ranges until around 1990 and future bombing activities may pose a threat, in particular to the Bundera sinkhole which is located on Defence Land. Tourism is on the increase leading to associated threats such as damage to vegetation, illegal fishing, sewage and waste disposal and disturbance to wildlife. Comprehensive management programs and an overall tourism development strategy are functioning and appropriate responses which require consolidation in anticipation of further increasing visitation. Future concerns include increased water demand leading to water abstraction with effects on the groundwater systems as well document in arid areas with abruptly increasing numbers of visitors.

Fire, historically part of local indigenous management, is a potential threat to the terrestrial vegetation and requires monitoring and control. Livestock raising on pastoral leases continues to be an important land use which is compatible with nature conservation when managed appropriately.

Potential off-shore hydrocarbon extraction in the region surrounding the property requires careful consideration in order to prevent potential pollution and disturbance. The coastline's significant length and remoteness poses major challenges to responses to pollution incidents suggesting a need for further investments in emergency response.

Sea level rise and increases in seawater temperatures associated with climate change have had comparatively little effect on the property. The good overall integrity suggests a higher resilience than in disturbed systems under additional stress. Still, careful monitoring is highly recommended.

A concern affecting both marine and terrestrial parts of the property and requiring permanent monitoring and management are invasive alien species, most importantly foxes, cats, goats and weeds on land and some marine species.

Management and protection requirements

The Ningaloo Coast benefits from its remoteness and low population density affording it a high degree of natural protection. The entire, mostly state-owned property is comprehensively protected and managed, including by an overarching strategic management framework. Given the various governmental levels and agencies involved and the differentiation between terrestrial and marine parts of the property effective coordination of the multiple plans in an overall management framework is critical. Full cooperation between agencies, including fisheries, are necessary to ensure management and law enforcement in the vast and remote marine and terrestrial areas. Funding from federal and state levels and staffing as of the time of inscription would benefit from increases.

There is a need for ongoing management of fisheries and careful planning of resource extraction and corresponding monitoring and disaster preparedness to protect the values of the property.

Communication, consultation and joint efforts with local and indigenous stakeholders, including negotiation of native title claims and pastoral leases are indispensable elements of effective management and local acceptance of conservation efforts. Given the vastness of the area and the limited human and financial resources co-management approaches with local stakeholders are a promising option. The establishment of a "Ningaloo Coast World Heritage Advisory Committee" or a similar body bringing together representatives from the traditional owners, local government, scientific experts and members of the community has an important role to play in this regard.

Tourist numbers are expected to rise which will require additional management efforts. Increased water abstraction, including from demand from increased tourism may affect fragile subterranean aquatic habitats and species communities will require constant monitoring and management.

5. Commends the State Party on its conservation and management efforts on the Ningaloo Coast, including the innovative volunteer camp manager and turtle monitoring programs, eradication of terrestrial invasive species, and the management of increasing tourist numbers;

6. Recommends the State Party to:

a) increase the overall management budget and resources, specifically focused at remote regions of the nominated property, to increase field capacities, strengthen co-management arrangements and consolidate monitoring and law enforcement in both marine and terrestrial areas;

b) strengthen the working collaboration with the Fisheries Department in order to pool resources and strengthen monitoring, surveillance and enforcement considering the vast expanse of ocean and land;

c) utilize existing and successful management models for Marine World Heritage sites in other Australian states, such as the Great Barrier Reef Marine Park Authority to enhance the management framework and capacity of the Ningaloo Coast;

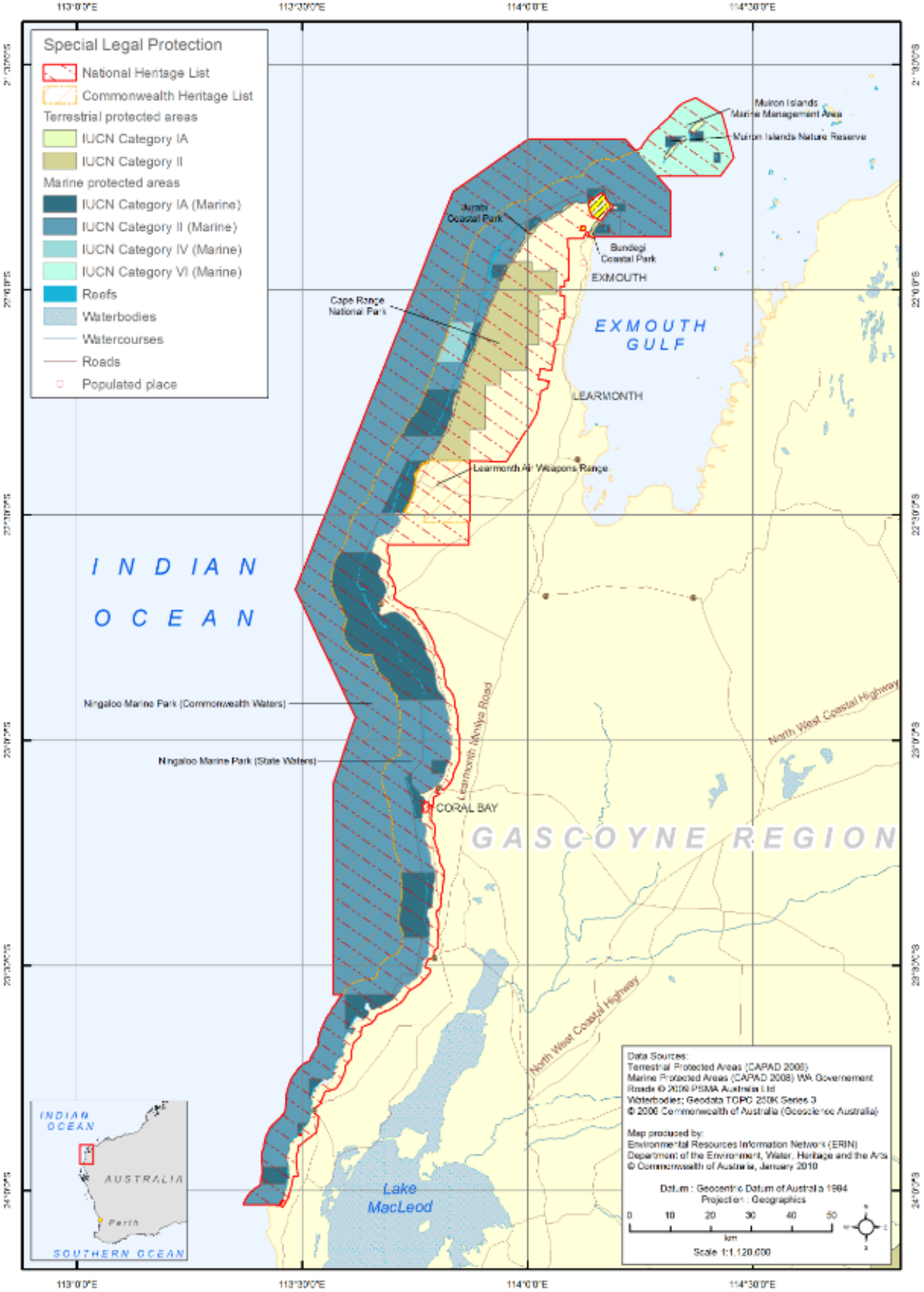
d) bolster its innovative volunteer programs to manage and monitor the large area of the nomination;

e) consider a re-nomination of the property under criterion (ix);

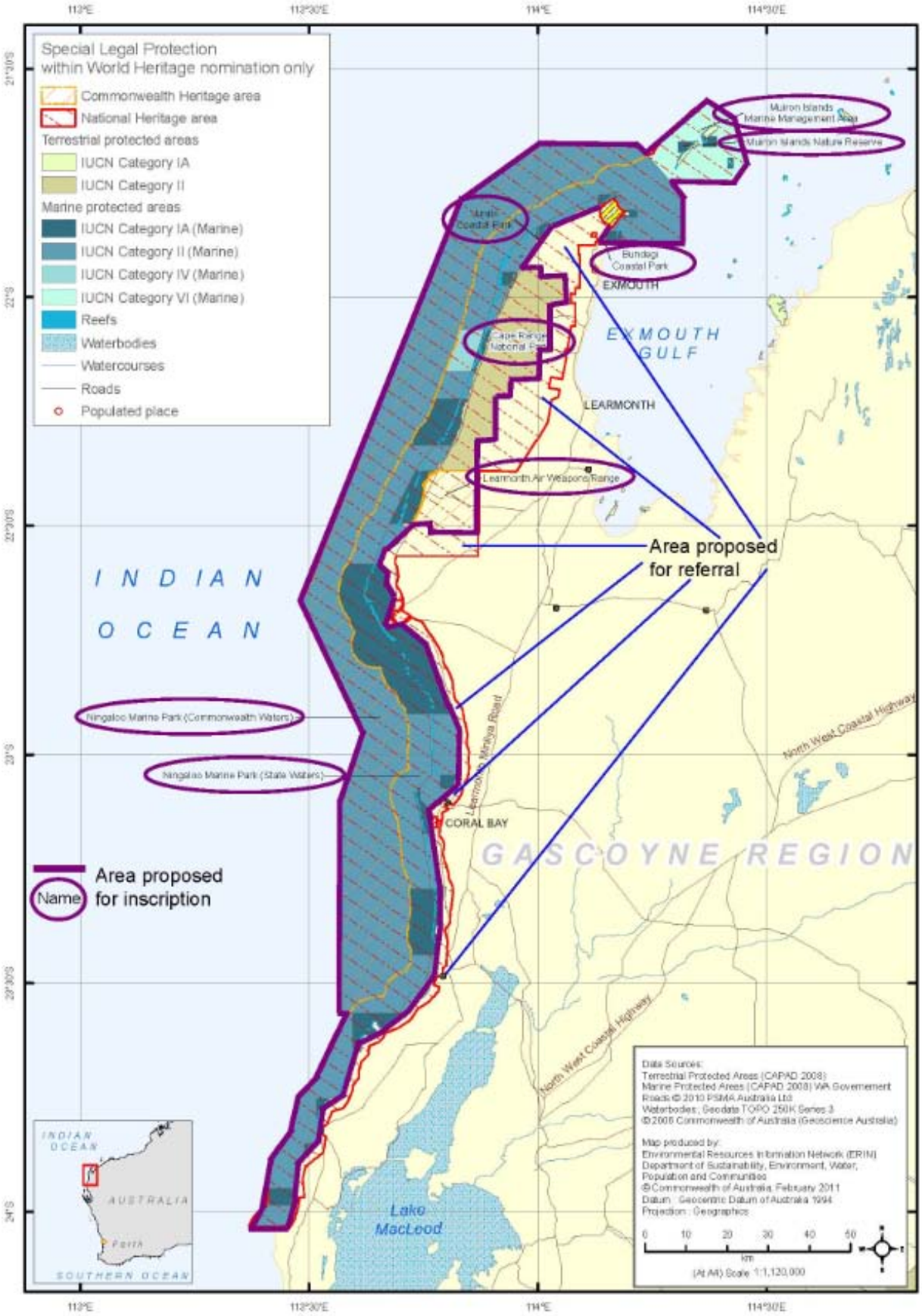
f) consider inclusion of the Exmouth Gulf on the grounds of ecological linkages between the Ningaloo Reef and the gulf, in particular the extensive mangrove stands and other shallow water habitats that function as nurseries and adult foraging grounds for many species;

7. Notes with appreciation the assurance of the State Party that the inscription of the property on the World Heritage List will have no impact on the status of leasehold land, or indigenous title claims related to the property and adjacent areas.

Map 1: Ningaloo Coast nomination as submitted by the State Party



Map 2: Recommended area for inscription and recommended area for referral.



Footnote: This map has been annotated by IUCN based on the map of the nominated property submitted by the State Party, in order to indicate the area IUCN considers can be recommended for inscription, and the area IUCN recommends for referral. The boundary of the area proposed for inscription includes elements detailed in paragraph 2 of the draft decision for the property. The boundaries of the area recommended for inscription are clearly marked in the large scale maps included in the nomination as submitted by the State Party, and have been verified between IUCN and the World Heritage Centre.

ASIA / PACIFIC

WUDALIANCHI NATIONAL PARK

CHINA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

WUDALIANCHI NATIONAL PARK (CHINA) – ID No. 1365

IUCN RECOMMENDATION TO 35th SESSION: Not to inscribe the property under natural criteria

Key paragraphs of Operational Guidelines:
77 property does not meet World Heritage criteria.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010

b) Additional information officially requested from and provided by the State Party: Clarifications regarding annexed material to the nomination were made with the State Party following the evaluation mission.

c) Additional literature consulted: Wang, Y. & Chen, H. (2005): **Tectonic controls on the Pleistocene-Holocene Wudalianchi volcanic field (northeastern China).** J. Asian Earth Sciences 24: 419-431. Wood, C. (2009): **World Heritage Volcanoes**: **A global review of volcanic World Heritage Properties; present situation, future perspectives and management requirements**. IUCN World Heritage Studies. Xiao, L. & Wang, C. (2009): **Geologic features of Wudalianchi volcanic field**, **northeastern China: implications for Martian volcanology** (2009). Planetary and Space science 57: 685-698. Walker, L. & Del Moral, R. (2003) **Primary Succession and Ecosystem Rehabilitation**. Cambridge University Press; Nemeth, K (2010) **Monogenetic volcanic fields: Origin, sedimentary record and relationship with polygenetic volcanism**. Geological Society of America Special Papers 2010; 470; 43-66.

d) Consultations: 11 external reviewers consulted. The mission met with representatives of the Ministry of Housing and Urban Rural Development, representatives of the regional government, Vice-mayor of Heihe City, the head and staff of the Wudalianchi National Park, and a range of national experts.

e) Field Visit: Harald Plachter, August-September 2010.

f) Date of IUCN approval of this report: 29 April 2011

2. SUMMARY OF NATURAL VALUES

The nominated property, Wudalianchi National Park (WNP) is situated in the centre of the Heilongjiang province, Northeastern China, about 251km south of Heihe City and the Siberian border and 285km north of Harbin. It has an area of 51,759 ha and is surrounded by a buffer zone of just over 47,100 ha.

The nominated property is a volcanic landscape and protects an area that includes 25 volcanoes. Within a relatively compact area, it displays a complete, well-preserved and accessible assemblage of volcanic landforms. The property also displays natural values for biodiversity, including plant communities adapted to the geographical location and harsh environmental conditions of the area and which have arisen following a history of successive partial destruction and re-assembly of the vegetation cover over the last 2.1 million years.

The dominant landscape features are the volcanoes, 14 of which have formed large lava plateaus surmounted by a large pyroclastic cone, while the 11 others are smaller lava shields. Each volcano developed in a single period of eruptive activity and in a different location than its neighbours, and together they form a good example of a monogenetic volcanic field in a mid-continental (intracontinental) location. The volcanic activity began about 2.1 million years ago, and proceeded through seven phases, with the last main eruptions taking place in 1719-21. The most recent activity erupted large quantities of lava and built the cones of Laoheishan and Huoshaoshan Volcanoes. The extensive lava outflows eventually blocked the Shilong River in several places, to create the five lakes from which the area takes its name. The area also abounds in mineral springs, the waters from which provide the area with an important economic resource.

The ecology of the property developed in a transitional zone between the temperate and frigid climates of NE Asia, and the floristic regions of the Lesser and Greater Xing'an Mountains, with some additional influences from the Mongolian Steppe and Siberian Taiga ecoregions. Flora from these regions are found in unusual combinations within the nominated property. The harsh climate, terrain and substrate, and the history of successive volcanic eruptions are all factors that influence the flora of the area, through a history of successive colonisations under changing environmental conditions. Each burial led to new combinations of species during subsequent recolonisation, with evidence of some amendments to the form of species in adaptation to the local conditions. Thus the nominated property provides excellent opportunities for the study of the adaptation and development of both species and biological communities.

3. COMPARISONS WITH OTHER AREAS

The nomination document provides a lengthy discussion on the comparisons of WNP with other localities, and considers values that relate to the three criteria selected for nomination (vii), (viii) and (ix).

In relation to criterion (vii), IUCN notes that whilst the property is well known for its scenery in China, it is not clearly regarded as one of the world's most significant geological landscapes. The types of phenomena represented by the property: monogenetic volcanism and areas of primary plant succession are, in a general sense well known globally and for the reasons set out below cannot be considered to be the most superlative. The scale of the property both vertically and horizontally is far less than many volcanic landscapes that have been inscribed under this criterion, and the comparisons note a range of properties of much greater size, with greater numbers of volcanoes. Although the nomination conveys a landscape which is aesthetically pleasant, there do not appear to be key features which would justify a claim for Outstanding Universal Value. The height of the cones is limited, and patterns are hard to appreciate from the ground. Features noted in the nomination regarding this criterion such as the contrast of land, air and water and seasonal changes in colour are ubiquitous and not a basis for recognition of Outstanding Universal Value.

In relation to criterion (viii), geological and geomorphological values, IUCN notes the starting point is the Committee's past consideration of volcanic landscapes, noting in Decision 31COM 8B.12 that volcanic systems are relatively well represented on the World Heritage List and that there is increasingly limited potential for further inscriptions of volcanic sites on the World Heritage List. Subsequent to this decision IUCN compiled a thematic study on World Heritage Volcanoes, to guide further priorities. This study evaluated the principal areas of gap on the World Heritage List and reviewed priorities within sites included on tentative lists, including the nominated property. The type of volcanic feature represented in the nominated property was not identified as a significant priority in the conclusions on filling the remaining gaps on the World Heritage List, nor was the nominated property identified as a strong candidate for consideration for listing in relation to its volcanic values within the conclusions of the thematic study.

Monogenetic volcanoes are widespread throughout the world in a wide range of geotectonic environments. The nomination cites a series of examples in the comparative analysis that include areas that appear to be larger, more extensive and/or more extensively studied than the nominated property, including sites in Ethiopia, Uganda, France, New Zealand, Cameroon, Niger, Spain, Japan, Peru, Argentina, and USA. It also notes that most of the continental volcanic fields in China are monogenetic in origin. The features of Wudalianchi are similar to those in two adjoining volcanic fields in China, Keluo and Erkeshan, although it may be better preserved than these examples. The nomination notes the Auckland Volcanic Province (New Zealand), Newer Volcanic Province (South Australia), Puy (France) and four sites in the USA as comparable areas on landscape grounds. The comparison further notes that while no monogenetic volcanic field has been specifically inscribed to the List under criterion (viii) to date, that one such field at Lake Turkana National Parks (Kenya) is already included on the World Heritage List, as part of a wider range of values that led to the recognition of the property under criterion (viii).

The nomination notes a range of constraints to compiling a comparative analysis, including due to lack of study of this topic, whilst some reviewers also call for additional comparative research on monogenetic volcanism. A recent significant global review of monogenetic volcanic fields globally, emphasizes the different models that are being developed for their formation and the considerable research questions that are being considered. It mentions several tens of localities, including some references to Chinese locations, but does not mention the nominated property. The comparative analysis in the nomination states the property is regarded as a particularly instructive example of an intracontinental basaltic monogenetic field in Asia. Amongst monogenetic volcanic fields globally, Wudalianchi appears to have some unusual characteristics in that it has a very remote location, on a continental plate, more than 1,800 km distant from the nearest plate boundary. The suggested mechanism of its formation is different to many other intracontinental volcanic fields, and may offer some particular insights into the mechanisms by which these fields are formed. However it is not unique in providing insights of general application regarding the mechanisms of formation of monogenetic volcanic fields.

The nomination notes that the property is renowned for its well-preserved and accessible volcanic features. These appear to represent a good range of features that are typical of monogenetic volcanic fields. One feature of importance is the notable field of hundreds of driblet cones, or hornitos, comparable to the type location for such features located in Mexico. However this is only one part of the range of features of monogenetic volcanic fields, and the development of other features are more significant in other examples. In terms of the World Heritage List, IUCN's theme study noted that monogenetic volcanic landforms are represented by examples including Galapagos (Ecuador), Jeju Volcanic Island and Lava Tubes (Republic of Korea), Surtsey (Iceland), Kamchatka (Russian Federation), Hawaii Volcanoes National Park (USA) and Iguazu and Iguaçu National Parks (Argentina and Brazil respectively).

Based on the information presented in the nomination, and its own analysis, IUCN considers that there is not a strong basis for regarding Wudalianchi National Park as meeting criterion (viii), and there appear to be a large number of sites that could make similar types of arguments to those presented in the nomination. Whilst

the site has some distinctive aspects, this is the case for other volcanic landscapes, and compelling reasons that would set the nominated property apart are not evident. Conversely acceptance of the narrow and specialized distinction of the particular regional circumstances that are unusual in relation to the nomination (although not without parallels in other sites) would represent a move that is in the opposite sense to the Committee's clear past guidance to States on the recognition of volcanic landscapes on the World Heritage List.

In relation to criterion (ix), the comparative analysis emphasizes the unusual combination of features that create circumstances that have resulted in Wudalianchi being recognised as an internationally significant site for the study of the successive re-colonization of new land. However there are other active volcanic sites in the world that are also serving as laboratories for the study of colonization of new ground. These include Kilauea Volcano, Hawaii (USA); Paracutin (Mexico); Katmai, Alaska (USA); El Malpais, New Mexico (USA); Taal (Philippines); Galapagos Islands (Ecuador); Mount St Helens (USA); Anak Krakatau (Indonesia); Long Island, (Papua New Guinea); and Surtsey (Iceland). Three of these sites - Kilauea Volcano, Anak Krakatau and Surtsey - are included within existing World Heritage Sites, recognised for these and other natural values. Biological colonization was recognised as a key feature of the OUV of Ujung Kulon (which includes Anak Krakatau) at the time of inscription amongst a range of other values. Surtsey was accepted as an exceptional case for listing on the sole basis of its demonstration of succession following a volcanic eruption, as a pristine natural laboratory, free from human interference.

Beyond those classic sites focused on volcanic sites, Hawaii Volcanoes and Anak Krakatau are amongst a small number of noted sites which are the locations for classic studies of primary succession that have been carried out over the last century. Other World Heritage Sites, which are locations of important successional studies, include Glacier Bay National Park, part of the Kluane / Wrangell-St Elias / Glacier Bay / Tatshenshini-Alsek World Heritage Site (USA/Canada), and Franz Josef/Westland, within the Te Wahipounamu World Heritage Site (New Zealand).

IUCN concludes that, whilst the nominated property is of regional significance in its demonstration of plant succession, and may grow in international importance, the values represented are both recognized on the World Heritage List through more established classic sites (that also have additional factors that support a case for Outstanding Universal Value), and also that there are a significant number of comparable sites that are also unique and important examples but are not included on the World Heritage List. IUCN concludes that the nominated property does not present a strong case for inscription on the World Heritage List under criterion (ix).

The nomination also emphasizes the combination of factors relevant to the different natural criteria as important. It states that the site has a unique situation in terms of its geographic, climatic, biogeographic, geological and environmental situation, and notes that, but for this combination of features "Wudalianchi would not stand out as a spectacularly different natural resource". IUCN notes that the Operational Guidelines clearly require that a nominated property must meet one or more of the World Heritage criteria to be recommended for inscription on the World Heritage List. Whilst many natural sites can make the statement that they are unique, this is not sufficient to support their inscription on the World Heritage List, even if they have a regional or international importance. IUCN considers that based on the information it has compiled, and considering the interaction of values emphasized in the comparative analysis of the nomination, that the status of the property as an internationally recognised Geopark and also a Biosphere Reserve provides a strong basis for recognizing the important international values of the property.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is state-owned and was designated as one of the first 44 National Parks of China in 1982. In addition, it has also been designated as a Nature Reserve and as a National Geopark. The property is recognised as a UNESCO Biosphere Reserve (2003) and as one of the first Global Geoparks recognised by UNESCO in 2004. The means to implement these protective mechanisms are clearly explained within the nomination, and includes a tabulation of the major laws and regulations that are established to protect the area. Implementation involves an effective collaboration between the national park management and local authorities.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The boundaries of both the nominated property and its buffer zone are clearly defined and demarcated. They appear to accord relatively closely to the features that are nominated although in some places the boundary of the nominated property appears to be unnecessarily complex. The boundary of the buffer zone takes greater account of the need to define limits based on features that facilitate effective management of the property. The boundaries appear to be slightly differing boundaries to those that define the different forms of protection that are applied to the nominated area, but all are clearly mapped and understood.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3 Management

The nominated property appears to be well managed with an effective, efficient and professional staff team, which numbers more than 100, with a further 120 ancillary staff. Park guards are distributed over several guard stations covering the different areas of the park.

The documentation of the management system is sophisticated, and includes a series of management plans for the area, the latest of which was adopted in 2009, to cover a period of the next 25 years. It has considered the implications of World Heritage nomination. The monitoring system is well established, with a camera system used to monitor visitors and wildlife, and a mature approach to documenting management effectiveness.

Local community involvement in management, aside from the number of local people who are directly employed within the nominated property, is achieved through village pledges and other commitments. The nomination notes that there are 15 communities with about 8,535 residents living in the property, whilst within the buffer zone, there are 15 communities with 15,237 residents. The nomination states that specific measures have been taken to accelerate the relocation process in the nominated property. IUCN was not able to conclude the degree to which this has community consent and support, or not, nor to confirm the justification for such relocation in relation to protection and conservation objectives. IUCN also notes that the community development objective of Geopark recognition of the nominated property should be considered in this regard. IUCN considers that the World Heritage Committee may wish to reflect further on its approach and guidance regarding relocation of people in relation to prospective World Heritage properties, since this matter can be highly sensitive, and is attracting increasing comment, including from institutions recognised by the UN.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines.

4.4 Threats

The nomination notes both development and environmental pressures as potential threats to the property. It appears that necessary measures to address these threats are in place. Where people have been relocated (see above), there are a range of fallow areas around the former settlements. These areas are being spontaneously recolonised with elements of the indigenous flora, however due to past fertilization the patterns of colonization are modified, and this could be considered a potential concern regarding integrity in relation to the values noted for the study of ecological processes, at least in the altered areas. In the east of the nominated property, agricultural fields are still present. The management plan foresees the abandonment of these for the next years. As noted above, IUCN is not convinced that such relocation measures are a prerequisite for effective conservation of the property.

Around 0.5 million tourists are reported to visit the park per year, principally domestic visitors, with Russia as the second source of visits. Many visitors come because of the mineral waters. Whilst the stated target is that only water sources outside the property are used for mineral water production and bathing, there are abundant sources within the nomination and there is some evidence that these are used, and the IUCN field mission reviewed one site where the impacts on nature from water collection vehicles are locally significant. It is situated close to one paved road.

Visitors are brought to the most dramatic view points over the property by bus from where they can walk on dedicated pathways. These trails are arranged to provide good access to view the features of the property on difficult and dangerous ground. It is probable that run off from some trails will have local impacts on plant succession. Measures to prevent this are necessary. There is a good infrastructure of visitor facilities, and the area is also well prepared to host more tourists in future. However, there is a natural limit of tourism in the park which should be identified by the management plan and measures should be taken to limit tourism within this capacity. There is also a good provision of educational panels on site, however the presentation of the biological values of the property could be strengthened.

In summary, IUCN considers the nominated property meets the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

None.

6. APPLICATION OF CRITERIA

Wudalianchi National Park has been nominated under natural criteria (vii), (viii) and (ix).

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
Whilst the nominated property is attractive and recognised at the national level, its scale and range of features do not stand out at the global level, and are comparable to many sites regionally and globally.

IUCN considers that the nominated property does not meet this criterion.

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

The nominated property is a noted example of a particular regional setting for monogenetic volcanism that has the potential to make an important contribution to research. However this type of volcanism is globally common, and the narrow basis for identifying the specificity of the nominated property would not correspond to the Committee's earlier conclusions regarding volcano nominations. The property is not amongst the key sites noted in global and comparative studies, and there are areas within China, and elsewhere, that appear to have comparable values to the nominated property. The existing status of the property as a Global Geopark recognised by UNESCO is an effective and appropriate means to recognize the geological values of the property, and the programme of work related to this status could be further developed.

IUCN considers that the nominated property does not meet this criterion.

Criterion (ix): Ecological processes

The combination of complex factors that affect primary succession within the nominated property are recognised within the international literature, and may provide new research insights of general application. However, the processes demonstrated within the nominated property are examples of primary succession in volcanic landscapes that have many parallels in existing World Heritage Sites, and in sites not included on the World Heritage List. These include sites that are better known as the classic sites for studies of primary succession. Unlike Surtsey which was listed to recognize the process of ecological colonization of volcanic land, the nominated property is affected by a history of human use, whilst it does not have the complementary values that other properties, such as Ujung Kulon, demonstrate to provide a strong argument for inscription under criterion (ix). The existing status of the property as a Biosphere Reserve recognised by UNESCO is an effective and appropriate means to recognize the ecological values of the property, and the programme of work related to this status could be further developed.

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

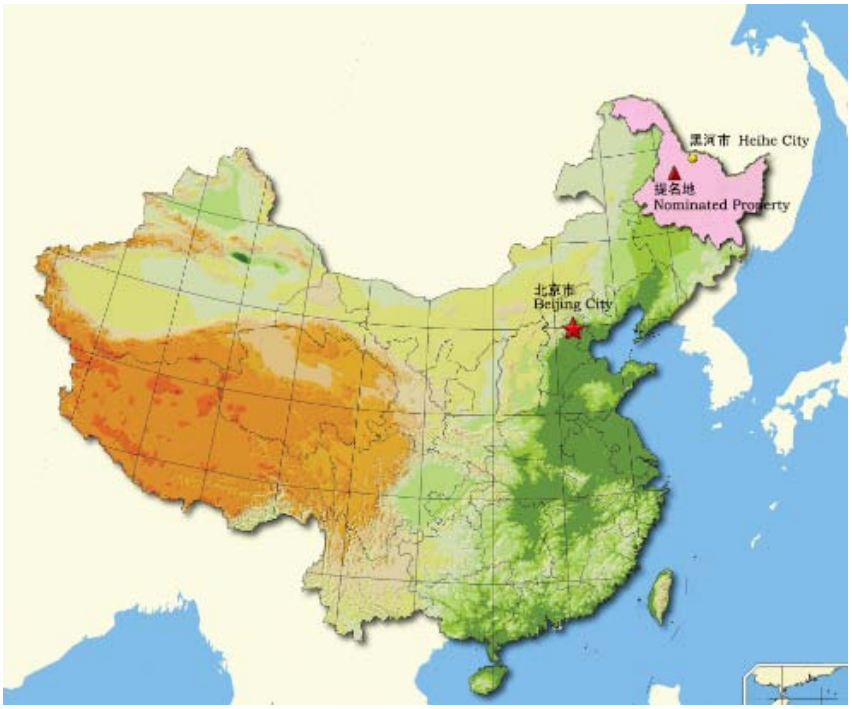
The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

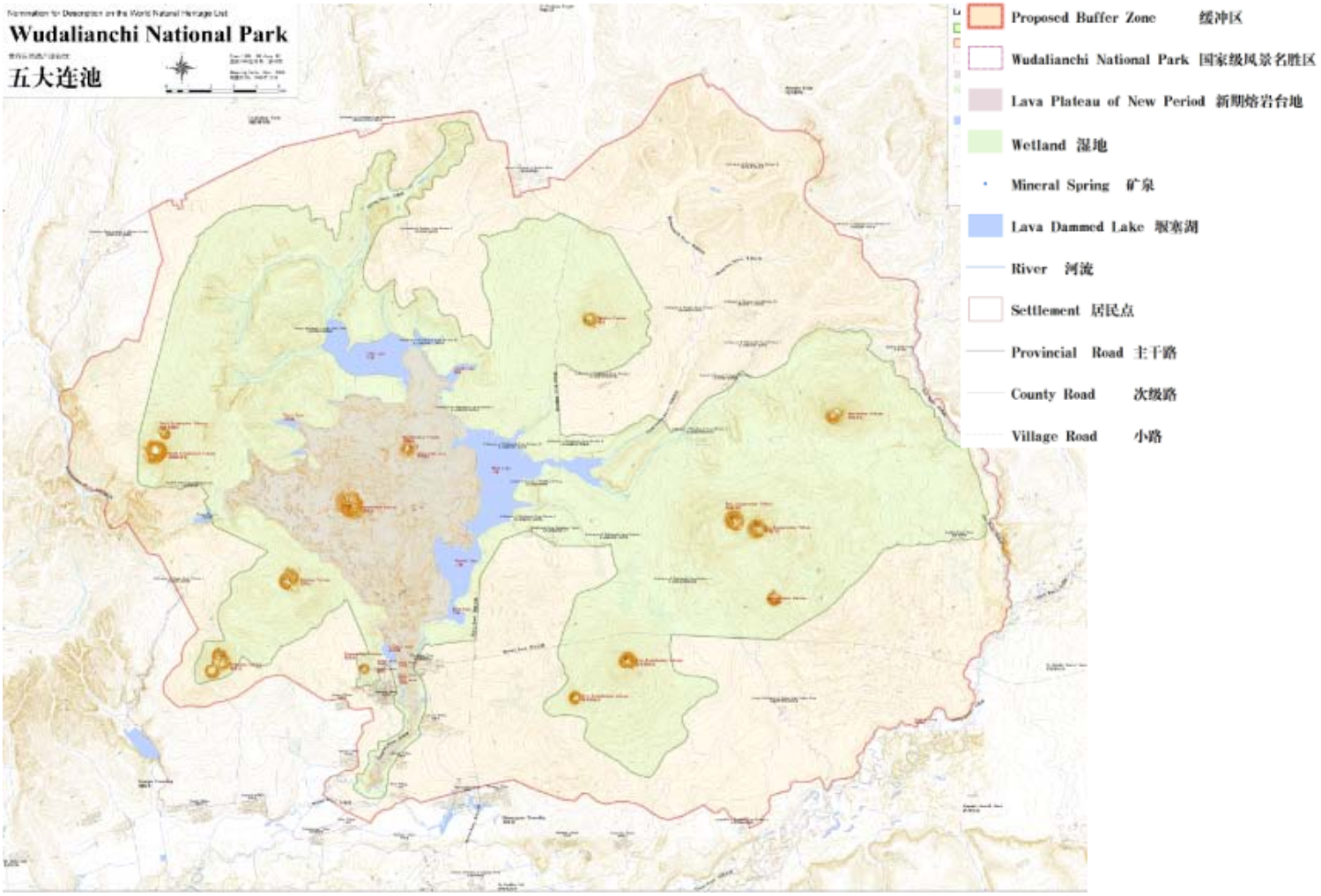
2. Decides not to inscribe the **Wudalianchi National Park (China),** on the World Heritage List under natural criteria;

3. Commends the State Party for securing recognition of Wudalianchi National Park via UNESCO as both a Biosphere Reserve and a Global Geopark, and also for its commitment to conservation and presentation of the property, and recommends the State Party to develop and integrate its management of this site to support increased research and promotion of the natural colonization and succession within Wudalianchi, and to realise increased benefits to local populations in and around the Park.

Map 1: Nominated property location in China



Map 2: Nominated property and proposed buffer zone



ASIA / PACIFIC

WESTERN GHATS

INDIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

WESTERN GHATS (INDIA) ID No. 1342

IUCN RECOMMENDATION TO 35th SESSION: Defer the nomination of the property

Key paragraphs of Operational Guidelines:
77 Property does not meet natural criteria.
78 Property does not meet conditions of integrity or protection and management requirements.
114 Management requirements for serial properties.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: IUCN requested supplementary information after the field mission regarding management planning and other issues. Further supplementary information was requested following the deliberations of the IUCN World Heritage Panel in December 2010 and was subsequently provided by the State Party on 24 February 2011.

c) Additional literature consulted: Anand, M.O., J. Krishnaswamy, A. Kumar and A. Bali (2010). **Sustaining biodiversity conservation in human-modified landscapes in the Western Ghats: Remnant forests matter.** Biological Conservation 143: 2363-2374. S.D. Biju and F. Bossuyt (2003). **New frog family from India reveals an ancient biogeographical link with the Seychelles.** Nature. London 425: 711-714. BirdLife International (2010). **Endemic Bird Area factsheet: Western Ghats.** http://www.birdlife.org. T.M. Brooks, R.A. Mittermeier, C.G. Mittermeier et al. (2002). **Habitat loss and extinction in the hotspots of biodiversity.** Conservation Biology 16: 909-923. CEPF (Critical Ecosystem Partnership Fund) (2007). **Ecosystem Profile: Western Ghats and Sri Lanka Biodiversity hotspot, Western Ghats Region.** Ashoka Trust for Research in Ecology and Environment, Bangalore. A. Das et al. (2006). **Prioritisation of conservation areas in the Western Ghats, India.** Biological Conservation 133: 16-31. A.N. Henry and R. Goplan (1995). **Agastyamalai Hills, India.** In: **Centres of Plant Diversity. A Guide and Strategy for their Conservation**. Vol 2. IUCN Publications Unit, Cambridge, UK. IUCN (2004). **The World Heritage List: Future priorities for a credible and complete list of natural and mixed sites.** Submitted to the World Heritage Committee WHC-04/28.COM/INF.13B. C. Magin and S. Chape (2004). **Review of the World Heritage Network: Biogeography, Habitats and Biodiversity. A Contribution to the Global Strategy for World Heritage Natural Sites.** WCMC / IUCN. R.A. Mittermeier, J. Ratsimbazafy, A.B. Rylands et al. (2007). **Hotspots Revisited.** CEMEX, Mexico City, Mexico. N. Myers, R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca and J. Kent (2000). **Biodiversity hotspots for conservation priorities.** Nature 403: 853-857. N.C. Nair and P. Daniel (1986). **The floristic diversity of the Western Ghats and its conservation: a review.** Proc. Indian Acad Sci. (Animal Sci./Plant Sci.) Suppl:127-163. P.O. Nameer, S. Molur, and S. Walker (2001). **Mammals of Western Ghats: A Simplistic Overview.** Zoos' Print Journal 16(11): 629-639. E. Vajravelu (1995). **Nilgiri Hills, India.** In: Centres of Plant Diversity. A Guide and Strategy for their Conservation. Volume 2. IUCN Publications Unit, Cambridge, UK. Bossuyt, F., M. Meegaskumbura, N. Beenaerts et al. (2004). **Local endemism within the Western Ghats – Sri Lanka biodiversity hotspot.** Science 306: 479-481. Dahanukar, N, Raut, R. and Bhat, A. (2004). **Distribution, endemism and threat status of freshwater fishes in the Western Ghats of India.** Journal of Biogeography 31(1): 123-126. Gunawardene, N.R., A.E. Dulip Daniels, I.A.U.N. Gunatilleke et al. (2007). **A brief overview of the Western Ghats – Sri Lanka biodiversity hotspot.** Current Science 93: 1567-1572. 669-670. Helgen, K.M. and C.P. Groves (2005). **Biodiversity in Sri Lanka and the Western Ghats.** Science 308: 199.

d) Consultations: three external reviewers were consulted. The mission met with officials, representatives and staff of various authorities concerned with the Western Ghats including the Minister of the Environment and officials of the Forestry Department; Conservator of Forests from each State; Wildlife Institute of India; UNESCO Project Coordinator; numerous members of the academic community; Chair of the Western Ghats Ecological Panel; NGOs including Ashoka Trust for Research in Ecology and the Environment (ATREE), WWF, Nature Conservation Foundation Mysore, Nilgiri Wildlife and Environment Association, Creative Nature Friends; Ecodevelopment Committees set up for participatory management of protected areas; private sector representatives and members of the public.

e) Field visit: Wendy Strahm and Brian Furze, October, 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The Western Ghats is a mountain chain 1,600 km long running almost parallel to India's western coast and spanning six Indian States: Gujarat, Maharashtra and Goa in the north down to Karnataka, Kerala and Tamil Nadu in the south. It is mostly comprised of tropical evergreen and moist deciduous forests with some tropical dry thorn forest on its leeward side, and stunted montane evergreen forests and grasslands at higher altitudes. The mountains form a continuous chain throughout the range apart from the 30 km Palghat Gap. With the highest peak at 2,695 m, the mountains form a considerable rainshadow with 80% of rainfall (between 2,000-6,000mm/year) falling between June-September, and most of the rest from October-November.

The Western Ghats covers an area of about 160,000 km^2 (CEPF, 2007) composed of mountains, large tracts of rainforest, rivers and waterfalls, seasonal mass-flowering wildflower meadows, and what is called the "shola-grassland ecosystem" which are patches of forests in valleys surrounded by grasslands. This serial nomination consists of seven different areas (the "sub-clusters") covering a total of 795,300 ha. 39 different component parts (or "site elements" as they are referred to in the nomination) comprise these sub-clusters. Three sub-clusters are comprised of 5-6 contiguous components, and four sub-clusters are comprised of 4-7 at times contiguous components. The different components range in size from a minimum of 377 ha to a maximum of 89,500 ha. A list of the seven sub-clusters with their 39 components and their size is provided in Annex 1.

The components refer for the most part to administrative boundaries, which include Tiger Reserves, National Parks, Wildlife Sanctuaries, or Reserved Forest (in decreasing order of strict protection). Maps for each of the 39 components have been submitted by the State Party. No formal buffer zones have been identified in the nomination.

The property has been nominated under criteria (vii) and (x), and the State Party has also acknowledged in supplementary information the possibility to consider criterion (ix). The Western Ghats display high natural biodiversity values despite the high human population densities and development needs of this region. The nomination dossier notes that some "23% of the original extent of forest remains as natural habitat". However, many of the natural areas have been disturbed. Patches of native forest are interspersed with different types of cultivation (e.g. coffee, cardamom, Areca nut and coconut palm, tea, rice and vegetables, and timber plantations, as well as human habitation). Nonetheless reasonable forest canopy has been retained in some of these disturbed areas allowing a degree of ecological connectivity for wildlife.

The nomination states that "the Western Ghats have the highest protected area coverage on the Indian mainland (15%), in the form of 20 national parks and 68 sanctuaries" and it is clear that this region enjoys a high level of formal protection. The State Party has given lengthy consideration to which components of areas already under protection ought to be included within the serial nomination. Hence the components include 21 protected areas. Supplementary information confirms that 40% of the nominated area is classed as Reserved Forest and so lies outside of formal protected areas. As a result, in total 5% of the area of the Western Ghats has been included in the nomination. The Western Ghats also include two Biosphere Reserves, the Nilgiris Biosphere Reserve (covering 11,040 km^2) and the Agasthyamalai Biosphere Reserve (covering 3,500 km^2).

Estimates derived from different scientific sources of the number of species of native plants in the Western Ghats vary between 4,000 to 5,000 plant species (Nair et al. 1986) estimate that there are 4,000 species with 1,500 endemic (almost 38%), whereas the "Critical Ecosystems Partnership Fund (CEPF) Western Ghats hotspot" website (2007) says that there are 5,000 species, with 1,700 endemics (34%). These figures point to an area with extremely high plant diversity and endemicity for a continental area. CEPF (2007), note that of the nearly 650 tree species found in the Western Ghats, 352 (54%) are endemic, which is at record levels. A number of plant genera such as *Impatiens* (with 76 of 86 species endemic), *Dipterocarpus* with 12 of 13 species endemic, and *Calamus* with 23 of 25 species endemic exhibit massive evolutionary radiation.

The Western Ghats have been identified as an Endemic Bird Area (Birdlife, 2010) with 16 endemic breeding species. Currently just two of these 16 species are listed as Vulnerable (VU) on the IUCN Red List. 66 Important Bird Areas (IBAs) are also listed in the Western Ghats, most of which coincide with the nominated components (apart from 12 Reserved Forests). A few IBAs such as Mudumalai, Nagarhole, Bandipur and Waynad National Parks have not been included in the nomination and a case could be made for including these National Parks in the serial site based on the value of some flagship species.

The nomination notes 139 mammal species with 17 endemic species. Nameer et al. (2001) note 135 species and 16 endemic species, with all but 2 species threatened and one data deficient. The Western Ghats is also known for a high diversity of bat species, with nearly 50 species and one endemic genus, represented by the Critically Endangered (CR) bat *Latidens salimalii*, which is endemic to the High Wavy Mountains in the Western Ghats (not included in the nomination). A number of flagship mammals have been repeatedly identified throughout the nomination including the Endangered (EN) endemic lion-tailed Macaque, Nilgiri Tahr (EN) and Nilgiri Langur (VU). These have been identified as key indicator species for monitoring purposes. The nomination also includes areas that protect the Malabar civet (CR and one of the most threatened Indian mammals) occurring in Talacauvery Wildlife Sanctuary,

Kudremukh National Park and as "possibly extinct" in the Sahyadri sub-cluster.

In addition, Asian Elephant (EN) and Tiger (EN) are highlighted throughout the nomination with claims that "The Western Ghats are also home to the world's largest population of the endangered Asian Elephant, with about 11,000 animals." The mission, however, noted that very few animals actually occur inside the proposed property, cause for some concern given that both Asian Elephant and Tiger have been chosen as indicator species to monitor the state of conservation of the proposed property and are highlighted throughout the nomination as central to its OUV. Elsewhere the nomination notes "The Nilgiri Sub-cluster is recognized as one of the most significant landscapes for conservation of a whole range of plant and animal taxa, as well as vegetation and ecosystem types. Together with the adjoining protected areas in the States of Karnataka (Bandipur and Nagarahole), Kerala (Wayanad) and Tamil Nadu (Mudumalai), this landscape has vast expanses of grasslands, scrub, deciduous and evergreen forests that possibly contain the single largest population of globally endangered 'landscape' species such as the Asian Elephant, Gaur and Tiger."

In terms of species richness, the nomination also provided figures for amphibians (179 species of which 65% are endemic, not referenced). CEPF (2007) noted that amphibians had the greatest degree of endemicity, with 126 species of which 78% are endemic. Whatever the correct figures are, amphibian diversity and endemism is extremely high. The nomination mentioned a newly described species of purple frog belonging to an endemic family (Biju et al. 2003) that has been classified as EN (Biju 2004), just one example of the importance of amphibians in the Western Ghats. The nomination also highlights high species richness in reptiles (157 species, 62% endemic and fish (219 species, 53% endemic) as well as noting that invertebrate biodiversity, once better known, is likely also to be very high (with some 80% of tiger beetles endemic).

Human impacts are evident across this landscape notwithstanding careful delineation of boundaries to exclude these wherever possible from the nominated property itself. Nearly all the component parts have villages, some sizeable, either within them or in close proximity. Inevitably the presence of human settlements poses a threat to the natural values of the property components through issues such as encroachment, livestock grazing, fodder and fuel wood collection, illegal hunting and increasing interest in tourism-related activity among others. Infrastructure related to mining, large dams, pipelines and roads is present or adjacent to a number of components. Pilgrimage sites are also located within some components of the nominated property with resultant periodic heavy use and impact.

3. COMPARISONS WITH OTHER AREAS

It is important to note that the Western Ghats, given its rich endemism, has been long identified as a potential World Heritage site in a number of global assessments. The serial property has been originally nominated under criterion (vii) for its mountain range scenery and associated wildlife and under criterion (x) for its terrestrial biodiversity values. The nomination document does not use the two criteria to specifically compare the Western Ghats against other properties.

The justification for criterion (vii) is based on the imposing scale of the Western Ghats as a mountain range rising to 2,000m ASL and extending some 1,600 kms along the coastline of the Indian continent. The case for superlative natural phenomenon and outstanding natural beauty rests with the mosaic of landscapes: from thorn scrub to deciduous and evergreen forests through grasslands and swamps. The case under criteria (vii) is further supported by the diversity of geomorphology and flora and fauna that exists within the region. Particular mention is made of the spectacular mass flowering displays of *Strobilanthes kunthianus*, said to flower every 12 years.

Fifteen other World Heritage properties occur within a radius of 2,000-3,000km from the Western Ghats. Many of these sites occur in very different environments making comparisons based on similarities under criterion (vii) not particularly valid. Of these the closest comparisons might be made with the Central Highlands of Sri Lanka and the Nanda Devi and Valley of Flowers National Parks serial World Heritage site in northern India. The Central Highlands, with similar montane forest structures and topography, was inscribed in 2010 under criteria (ix) and (x) having been nominated against all four natural criteria. The most dramatic feature within this property is "World's End", a near vertical 1 km drop to the lowland areas below, although this was not considered sufficient to justify criteria (vii). Although the overall size of the Western Ghats is far greater and has some impressive waterfalls and mountain scenery, the fragmented nature of the property interspersed with numerous non-natural elements means that there are many mountain protected areas offering vistas and natural phenomenon of greater size and scale than the nominated serial property. The Valley of Flowers NP is inscribed partly due to its renowned displays of wildflowers, however this is in a very different biogeographic zone making comparisons difficult. The mass flowering displays within the nominated property are compelling natural phenomena, although very localised. It is considered that the seasonal wildlflower displays in the property, while impressive, do not exceed other wildflower displays elsewhere in the world.

The Western Ghats have been repeatedly identified, including based on their species and habitat values, as an important gap on the World Heritage List. They have been identified as a potential forest World Heritage site (Thorsell et al. 1997), a potential mountain World Heritage site (Thorsell et al. 2002), a high priority Endemic Bird Area not yet on the World Heritage List

(Smith et al. 2000), and an IUCN/SSC global habitat type in Asia that could be considered for inscritption to the World Heritage List (Magin et al. 2004).

The nominated areas are all part of the Western Ghats and Sri Lanka biodiversity hotspot, a distinction they share with the Sinharaja Forest Reserve in Sri Lanka and the Central Highlands of Sri Lanka. This hotspot is home to at least 4,780 vascular plant species, of which 2,180 are endemic (representing 0.7% of the world's plant species), and 1,073 vertebrate species, of which 355 are endemic to this hotspot (these represent 1.3% of the world's vertebrate species) (Myers et al. 2000). At the time of the original hotspot analysis, which identified 25 hotspots, the Western Ghats and Sri Lanka were the 4th "hottest" hotspot in terms of endemic vertebrate species per area unit, and the 7th "hottest" hotspot in terms of endemic vascular plant species per area unit. They were also among the 8 "hottest hotspots" when considering various measures of endemism and remaining primary vegetation in relation to original extent. Less than 7% of original primary vegetation remains in the Western Ghats and Sri Lanka (Myers et al. 2000). Considering past and predicted habitat and species losses, the Western Ghats and Sri Lanka are also among the 11 hotspots that were identified as "hyperhot" priorities for conservation investment by Brooks et al. (2002).

The nominated areas include parts of the Agastyamalai Hills and Nilgiri Hills Centres of Plant Diversity and the Western Ghats Endemic Bird Area, all not yet covered on the World Heritage List. The nominated areas fully or partly include up to 14 Important Bird Areas and 3 Alliance for Zero Extinction sites. The nominated areas also include a number – but not all – of the forest reserve areas of high conservation value that were identified by Das et al. (2006) using a systematic conservation planning approach.

In terms of species diversity the Western Ghats nomination provides somewhat inconsistent information on the exact number of species and endemic species. Based on the information available it is however clear that the species richness and endemism of the Western Ghats is exceptional: the whole region includes some 5,000 vascular plant species (1,700 endemics), 288 freshwater fish species (118), 179 amphibian species (117) and 157 reptile species (97), 508 bird species (17) and 139 mammal species (17). Even if the nominated areas were to include only half of these species, their species richness and endemism would exceed that of most existing natural World Heritage properties in the region. Only the Central Highlands of Sri Lanka – less than a tenth the size of the nominated area – achieve similarly exceptional levels of endemism in freshwater fish, amphibians and reptiles, but there are far fewer species present overall. However, the faunas of Sri Lanka and the Western Ghats are quite distinct, with large numbers of endemic species including mammals, birds, reptiles, amphibians and freshwater fish not occurring in both areas (Bossuyt et al. 2004, Gunawardene et al. 2007, Helgen et al. 2005).

The Western Ghats include a large number of globally threatened species. It has been estimated, for example, that at least 41% of the freshwater fish species are globally threatened (Dahanukar et al. 2004). In addition the full biodiversity values of the Western Ghats are not yet known with additional large numbers of species still being discovered. A recent study suggests that further research will increase the number of known freshwater fish species from 288 to 345 for example (Dahanukar et al. 2004).

The comparison demonstrates that for just about all groups of taxa, the Western Ghats comes out as being outstandingly rich with among the highest levels of endemicity for any continental tropical area, supporting the case for inscription under criterion (x), especially given the large size of the property.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The 39 component parts of this serial nomination fall under a number of protection regimes, ranging from Tiger Reserves, National Parks, Wildlife Sanctuaries, and Reserved Forests. All components are reportedly owned by the State and are subject to stringent protection under laws including the Wildlife (Protection) Act of 1972, the National Wildlife Action Plan of 1983, and the Forest Conservation Act (1980). Through these laws the nominated components are under the control of the Forestry Department and the Chief Wildlife Warden, thus the legal status is considered adequate.

Nonetheless there are some unclear land tenure issues as parts of the property were reported to be private land. The State Party provided additional details on land tenure and land use, however, the complexity of the extent of private land, land associated with towns and villages, community-controlled land, cultivated land, dam and ex-mine maintenance hamlets, tea plantations, and all other forms of non-protected area activities and land-uses that are occurring within the nominated sites makes it difficult to effectively evaluate adequate protection. It is also important to know to what extent property rights may take precedence over the wildlife and forest protection laws cited in the nomination.

Another protection issue pertains to the strength of protection afforded through "Reserved Forests". The State Party confirmed that 40% of the nominated property lies outside of the formal protected area system, mostly in Reserved Forests which do "not provide strict conservation and management of wild faunal species." Further that due to the density of human occupation "strict protection is also not feasible within some of these areas." It is argued that management plans will govern landuse and conserve biodiversity in

these areas. Whilst IUCN understands the rationale for this approach it remains unconvinced that this level of protection will successfully protect the values of such a large proportion of the property from various pressures including access and infrastructure development.

IUCN considers that the protection status of at least parts of the nominated property does not meet the requirements set out in the Operational Guidelines, principally due to concerns about land tenure and the strength of legal controls over development.

4.2 Boundaries

This nomination proposes 39 mapped components and stresses the importance of the "contiguous site elements" or components in all 7 sub-clusters. The State Party has confirmed that some component parts have adjoining boundaries, however, further consideration is needed to demonstrate how other components in each sub-cluster are contiguous, especially as in 4 of the sub-clusters the components are not physically connected.

The State Party has provided clearer maps (non-digital) showing the context of component parts within larger protected areas or Reserve Forests but it remains unclear how the component parts are planned and provided for in broader individual management plans. The updated maps also confirm that a number of dams and related infrastructure as well as disturbed areas are included within the nominated area which raise concerns regarding integrity and how these areas contribute to the values of the property.

Whilst the State Party has reinforced the rationale for the selection of component parts, there remain a number of questions related to whether the proposed component parts comprehensively encompass the ecological processes that could be considered under criterion (ix); and whether the proposed components will include all of the "ecologically sensitive areas" yet to be identified by the Western Ghats Ecological Expert Panel. Both these issues may require either modification of the boundaries and/or the addition of new component parts. As noted above it appears that the boundaries do not necessarily respond to areas for key species noted in the nomination.

No formal buffer zones have yet been defined for any of the components of this serial nomination. The nomination states that "buffer zones have not been specifically carved out as the entire area is managed under the provisions of the Indian Wildlife (Protection) Act, 1972 and Indian Forest Act, 1927. The adjoining Reserved Forests act as buffer zones to the property." However, Reserved Forests are not in place around all components and hence do not provide for a comprehensive buffer zone in all instances. In addition there is a need to clarify the overall definition of buffer zones which is being applied across all components of the property.

IUCN considers that the boundaries of the nominated property do not meet the requirements set out in the Operational Guidelines primarily due to concerns regarding site selection; land tenure, inclusion of dams and other infrastructure and buffer zone effectiveness.

4.3 Management

Integrating the management of 39 sites across 4 States will be a challenge. It is noted that the Western Ghats Natural Heritage Management Committee has been formed under the auspices of the MoEF to deal with coordination and integration issues. This Committee will be chaired by the Director-General of Forests and includes appropriate representation from national level; State level through the Chief Wildlife Wardens of Kerala, TN, Maharashtra, Karnataka, Gujarat and Goa; as well as representatives from Wildlife Institute of India (WII), ATREE, Nature Conservation Foundation (NCF), and the Western Ghats Ecology Expert Panel. The State Party has provided additional detail on how coordination will take place, nevertheless the operationalization of the Committee's Terms of Reference will need to be carefully monitored given the size and complexity of the nomination.

The Western Ghats Ecology Expert Panel is due to report in 2011. A number of its Terms of Reference have direct relevance to the management of the World Heritage nominated areas, including TOR ii (identify areas for demarcation as 'ecologically sensitive zones'), TOR iii (recommendations for the conservation, protection and rejuvenation of the Western Ghats Region), TOR v (recommend the modalities for the establishment of the Western Ghats Ecology Authority to be formed under the Environment (Protection) Act 1986, a professional body which will be responsible for the protection and sustainable development of the Western Ghats).

The relationship between the Expert Panel, the Western Ghats Natural Heritage Management Committee and the current World Heritage nomination is reported as complementary; however, there are overlapping issues which would benefit from close integration of these bodies and processes. For example, on issues such as buffer zone identification and management; integration of tourism, ecotourism, eco-development activities; and local institutions becoming involved in management of various initiatives. More fundamental would be to ensure the integration of the Expert Panels' findings on priority areas for inclusion within the nominated property and/or a rationalization of the existing 39 components.

The State Party has confirmed that "all 39 site elements (components) in the 7 sub-clusters are managed under specific management / working plans." The field evaluation contends that whilst individual management plans have for the most part been prepared, the specific management prescriptions are often unclear or lacking in detail, especially where components are covered by larger general management plans.

The State Party noted in its advice of 24 February 2011 that there is consistency in objectives across all the individual component management plans. Whilst this is positive, there is no overarching management plan or framework to ensure consistency and harmonization between complex planning instruments. This is highly desirable to bring a degree of cohesion to such a large serial site with differing types of protected areas. It is also important to spell out overall management goals and a common set of principles which will maintain and enhance the values of the Western Ghats.

In a number of instances there are well-developed ecologically sensitive development activities where local people have high levels of support and 'buy in' for the World Heritage nomination, for example at sites such as the Periyar and Parambikulam Tiger Reserves. Whilst at others, such as the Kas Plateau, local people expressed concerns that the World Heritage nomination would ultimately lead to even more tourism and the decimation of the natural values of the plateau. There is a need for greater communication of the benefits of World Heritage inscription if managed in a way that engages local communities and ensures benefits flow equitably.

Support for the World Heritage nomination is evident from many quarters including Government agencies, local populations, academics and committed conservationists including a variety of NGOs and individuals. However, there are obvious concerns in some locations over what listing would mean. The IUCN mission witnessed strident opposition to NGOs, Government and the nomination in some places such as Kodagu and Karnataka.

Given that the World Heritage nomination process is occurring at the same time as the Panel of Experts is looking at conservation of the Western Ghats, and given that both these processes have had a significant consultative and participatory component to them, it is essential to harmonise the two processes and integrate them both into the nomination for purposes of 'buy-in' of stakeholders as well as those reasons previously identified. While this may not change the opposition of certain groups, especially recognising the wide range of individual interests, at the same time it will provide important recognition to, and incorporation of, the variety of voices that each of the processes have been working with.

A number of sites have had their protection status and/or their boundaries altered since the nomination and this may have implications for management. In most cases this has strengthened protection, however, there are likely to be implications for buffer zone and tourist zone management, and for relationships with local human populations. For example Tiger Reserves require core "no go" areas which, in the past, required relocating people into buffer zones. The *Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act*, is leading to a redefined understanding of 'core', as property rights of forest dwellers have been recognised and forced relocation is banned. The implications of these changes need to be carefully weighed. The State Party did not provide detailed supplementary information on the changed protection status of component parts of the nomination.

Given the points discussed above, IUCN considers the management of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.4 Threats

Mining
Mining has been identified as a major threat and the nomination was careful to exclude any areas under mines. For example, and although not part of the nomination, there are mining concerns in Sindhudurg in Maharashtra. Similarly, Kudremukh National Park has a large iron-ore mine in the centre which, although the State Party has confirmed that "no mining occurs at present", holds the potential to be reactivated. An additional concern is the liability of mine rehabilitation, which in this case was reported to be the responsibility of the park on land which has been returned to the park (an area of 5,000 ha).

Hydroelectricity, irrigation and wind farms
As already noted, many of the components have large dams within them with the threat of dam expansion in response to increased irrigation and hydro-electric demand. Similar pressures may arise for wind power generation, noting a number of new windmills within the mountains. The State Party has stated that the dams do not affect OUV, however, the evidential basis of this conclusion has not been made clear.

Invasive species and fire
Levels of alien invasive species infestations appear limited at present (roadside infestations of *Lantana camara* were noted in some areas and some components not visited recorded some other problematic species). This will need to be monitored, especially in light of climate change impacts. Fire has been cited as a repeated threat in a number of areas such as Kudremukh, and visibly promotes the invasion of species such as bracken *Pteridium aquilinum*.

Population pressure, grazing, unsustainable non timber forest products (NTPF) and fuelwood extraction
It is recognised that high population pressures and encroachment, grazing and unsustainable NTFP and fuelwood extraction will always remain a threat. Measures are in place to control this and some protected areas have been declared "grazing free" thanks to ecodevelopment projects, largely financed by the Government. However, in other areas grazing remains a visible impact. Human-wildlife conflict is also a major issue in a number of components.

Visitors and Tourism
Tourism has been identified as a significant threat across a number of sites, and the State Party has noted that "Periyar and Eravikulam which are presently over-visited would require strict regulation of visitor numbers". Perhaps the most at risk is Kas Plateau, but nature-based and religious tourism brings significant challenges elsewhere across the nomination. This is likely to continue to be a threat as domestic tourism and interest in natural areas continues to grow in India. In some components of the nomination there are misconceptions and/or legitimate concerns about the impact of tourism. These relate to impact on natural resources; traditional livelihoods; on benefit distribution and over development.

The relationship between the Forest Department and various Tourism Departments will require further consideration and clarification. The development of an effective partnership between conservation and tourism sectors is essential to sensitively plan and develop tourism opportunities which are consistent with the values of the nomination and which provide for participation and shared benefits. An inclusive approach is needed to ensure that World Heritage concepts are interpreted and promoted within the context of tourism/ecotourism.

A final issue to note is that a number of pilgrimage sites are located within the protected areas which bring large numbers of people causing considerable impact on the integrity of the property.

In conclusion, whilst this nomination is extremely ambitious and has a number of challenges, it possesses the potential to strengthen the extraordinary conservation efforts that are underway to ensure that the natural values of the Western Ghats are conserved for future generations. The size of the nominated sites (totalling 795,300 ha), the geographical positioning along a mountain range 1,600 km long, and the choice of sites to ensure wide coverage of all of the natural values of the Western Ghats makes for a serial site that conserves and communicates the outstanding universal values of this property. However, certain issues need to be addressed to realise this potential.

While it is highly commendable to base individual site selection on a peer-reviewed journal article and a robust scientific methodology, more thought is needed on how to ensure all the major examples of OUV are conserved in an optimal selection of component parts, while at the same time ensuring that the approach taken is as simple and efficient as possible. A simpler design with less site elements would be more cost effective and have a higher likelihood of being managed effectively. There is a need to review the component parts of the nominated property based on new scientific assessments Western Ghats Ecology Expert Panel); OUV, noting the agreement to nominate the property under criterion (ix); as well and opportunities to rationalise the design of the serial property.

Consideration is needed to determine if the presence of large dams and massive water pipes traversing the PA, with roads leading to large settlements and their surrounding cultivated areas impinge unacceptably on the values and thus integrity of the proposed site.

In summary, IUCN considers the nominated property does not meet the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

The proposed property is made up of 39 component parts grouped into 7 sub-clusters.

a) What is the justification for the serial approach?
The serial approach is justified in principle from a biodiversity perspective because all 39 components belong to the same biogeographic province, and remain as isolated remnants of previous continuous forest. The justification for developing a serial approach rather than just identifying one large protected area to represent the biodiversity of the Western Ghats is due to the high degree of endemism, meaning that species composition from the very north of the mountains to 1,600km south varies greatly, and no one site could tell the story of the richness of these mountains. However there are a number of issues regarding site selection and management which have been highlighted above.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the Operational Guidelines?
The formulation of this complex serial nomination has evolved through a consultative process drawing on scientific analysis from various sources. However, IUCN considers that although this series of component sites have been chosen on a scientific basis in order to conserve the most irreplaceable species and habitats of the Western Ghats, the nomination still does not adequately encompass the full values of the Western Ghats. In addition, given that each State focuses on its own biodiversity and conservation activities, this means that the overall continuity in interpreting the full values of the Western Ghats as a whole remains very weak.

As noted above there remain some questions on the degree of connectivity between the component parts and sub clusters which impacts on the functional linkages across this large area.

c) Is there an effective overall management framework for all the component parts of the nominated property?
There is no overarching management plan for the nominated property. The State Party in its advice of 24 February 2011 reaffirmed that the component sites would be managed according to individual site management plans and working plans. It outlined a

range of proposed oversight and coordination measures following inscription. However IUCN contends that this large number of individual plans is inadequate in specifying how the proposed World Heritage Site as a whole is to be managed to integrate planning across all sites and the four States involved.

5.2 Application of criterion (ix)

Criterion (ix) was not included in the original nomination from the State Party. The December 2010 IUCN World Heritage Panel considered that nominating the property under this criterion would strengthen the overall case for inscription.

The case for inscription included in the supplemental information describes three incidents that led to the great speciation found in the Ghats. The first was the breakup of the ancient landmass of Gondwanaland in the early Jurassic period. The second was the formation of India into an isolated landmass. The third incident was the Indian landmass being pushed together with Eurasia. Together with favourable weather patterns and a high gradient being present in the Ghats, high speciation resulted. The description of the Ghats as being an "Evolutionary Ecotone" is well supported in the supplemental material with different hypotheses ("Out of Africa" and "Out of Asia") about dispersal and vicariance explained.

In conclusion, although not originally nominated under criterion (ix), the Western Ghats area could also be considered a strong candidate in relation to this criterion because they represent two Global 200 priority ecoregions that are not yet represented on the World Heritage List and that have been identified as important gaps on the World Heritage List. The State Party has acknowledged this as an oversight and provided justification for inscription under criterion (ix), however no comparative analysis was provided nor is it clear of the component parts chosen on the basis of criteria (vii) and (x) are also suitable for conserving the ecosystem function values of the Western Ghats.

6. APPLICATION OF CRITERIA

The Western Ghats of India has been proposed under criteria (vii) and (x).

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
The property contains nationally important vistas of large expanses of tropical mountainous forests and grasslands, seasonally flowering wildflower meadows as well as numerous rivers and waterfalls. However these values are not unique or outstanding at the global level. In addition, a large part of the property has been covered by artificial reservoirs with fluctuating water levels formed by very large dams and adjoining hydroelectric plants with very large irrigation pipes. Parts have also been affected by mining or contain rather large human settlements, and a range of human uses. Heavy use on pilgrimage routes also creates impacts on the property which require improved management.

IUCN considers that the nominated property does not meet this criterion.

Criterion (x): Biodiversity and threatened species
The Western Ghats contain exceptional levels of plant and animal diversity and endemicity for a continental area. In particular, the level of endemicity for some of the 4-5,000 plant species recorded in the Ghats is very high: of the nearly 650 tree species found in the Western Ghats, 352 (54%) are endemic. Animal diversity is also exceptional, with amphibians (up to 179 species, 65% endemic), reptiles (157 species, 62% endemic), and fishes (219 species, 53% endemic). Invertebrate biodiversity, once better known, is likely also to be very high (with some 80% of tiger beetles endemic). A number of flagship mammals occur in the property, including parts of the single largest population of globally threatened 'landscape' species such as the Asian Elephant, Gaur and Tiger. Endangered species such as the lion-tailed Macaque, Nilgiri Tahr and Nilgiri Langur are unique to the area. The property is also key to the conservation of a number of threatened habitats, such as unique seasonally mass-flowering wildflower meadows, Shola forests and *Myristica* swamps.

IUCN considers that the nominated property has the potential to meet this criterion, if integrity, protection and management issues are addressed, and a revised proposal is required to meet the requirements of the Operational Guidelines.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Defers the examination of the nomination of the **Western Ghats (India)** to the World Heritage List, noting the potential of the nominated property to meet criteria (ix) and (x), to allow the State Party to address the following important issues:

a) review the scope and composition of the current serial nomination to take account of the recommendations of the "Western Ghats Ecology Expert Panel", to ensure inclusion of components to reflect the full spectrum of ecological and biodiversity values of the Western Ghats, to ensure that any incompatible land uses are excluded, and to correspond to any changes in protection status and/or boundaries of the nominated component parts

b) take measures to reduce the impact of existing and planned infrastructure as well as disturbed areas on the values of the property;

c) review and strengthen buffer zones and ecological connectivity measures to ensure consistency and greater functional linkages between component sites;

d) improve coordination and integration between component parts of the property, particularly through the preparation and implementation of an overarching management plan or framework for the serial property as a whole;

e) facilitate increased engagement with all stakeholders to build awareness and support; foster participatory governance approaches; and ensure equitable sharing benefits;

f) harmonize arrangements between the "Western Ghats Natural Heritage Committee" and the "Western Ghats Ecology Expert Panel" and strengthen community membership and input through the establishment of the proposed "Western Ghats Natural Heritage Conservation Authority"; and

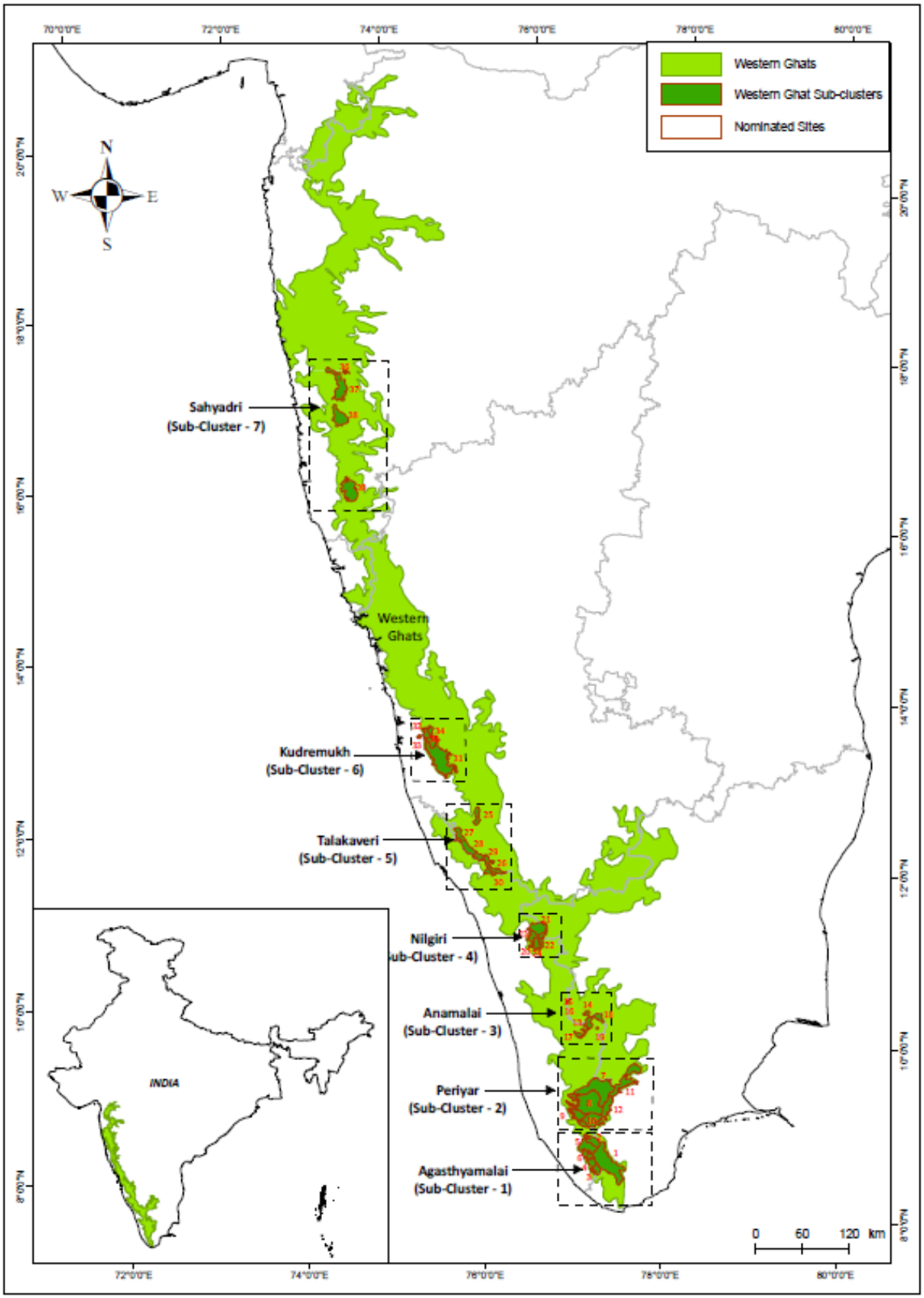
g) consider nominating the property also under criterion (ix) in recognition of its ecological processes values.

3. Highly commends the State Party for their on-going commitment to ensure a comprehensive approach to conserving the globally recognised high biodiversity values of the Western Ghats noting the scale and complexity of this area.

Annex 1: Site Elements (Components) and Sub-clusters – Western Ghats Serial Nomination

Sub-cluster	No.	Component	Area (ha)	State
(1) Agasthyamalai (furthest south)	1	Kalakad-Mundanthurai Tiger Reserve	89,500	Tamil Nadu
	2	Shendurney Wildlife Sanctuary	17,100	Kerala
	3	Neyyar Wildlife Sanctuary	12,800	Kerala
	4	Peppara Wildlife Sanctuary	5,300	Kerala
	5	Kulathupuzha Range	20,000	Kerala
	6	Palode Range	16,500	Kerala
(2) Periyar	7	Periyar Tiger Reserve	77,700	Kerala
	8	Ranni Forest Division	82,853	Kerala
	9	Konni Forest Division	26,143	Kerala
	10	Achankovil Forest Division	21,990	Kerala
	11	Srivilliputtur Wildlife Sanctuary	48,500	Tamil Nadu
	12	Tirunelveli (North) Forest Division (part)	23,467	Tamil Nadu
(3) Anamalai	13	Eravikulam National Park (and proposed extension)	12,700	Kerala
	14	Grass Hills National Park	3,123	Tamil Nadu
	15	Karian Shola National Park	503	Tamil Nadu
	16	Karian Shola (part of Parambikulam Wildlife Sanctuary)	377	Kerala
	17	Mankulam Range	5,284	Kerala
	18	Chinnar Wildlife Sanctuary	9,044	Kerala
	19	Mannavan Shola	1,126	Kerala
(4) Nilgiri	20	Silent Valley National Park	8,952	Kerala
	21	New Amarambalam Reserved Forest	24,697	Kerala
	22	Mukurti National Park	7,850	Tamil Nadu
	23	Kalikavu Range	11,705	Kerala
	24	Attapadi Reserved Forest	6,575	Kerala
(5) Talacauvery	25	Pushpagiri Wildlife Sanctuary	10,259	Karnataka
	26	Brahmagiri Wildlife Sanctuary	18,129	Karnataka
	27	Talacauvery Wildlife Sanctuary	10,500	Karnataka
	28	Padinalknad Reserved Forest	18,476	Karnataka
	29	Kerti Reserved Forest	7,904	Karnataka
	30	Aralam Wildlife Sanctuary	5,500	Kerala
(6) Kudremukh	31	Kudremukh National Park	60,032	Karnataka
	32	Someshwara Wildlife Sanctuary	8,840	Karnataka
	33	Someshwara Reserved Forest	11,292	Karnataka
	34	Agumbe Reserved Forest	5,709	Karnataka
	35	Balahalli Reserved Forest	2,263	Karnataka
(7) Sahyadri	36	Kas Plateau	1,142	Maharashtra
	37	Koyna Wildlife Sanctuary	42,355	Maharashtra
	38	Chandoli National Park	30,890	Maharashtra
	39	Radhanagari Wildlife Sanctuary	28,235	Maharashtra
		TOTAL	**795,315**	

Map 1: Map atlas of 39 serial sites



ASIA / PACIFIC

HARRA PROTECTED AREA

IRAN

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

HARRA PROTECTED AREA (IRAN) – ID No. 1373

IUCN RECOMMENDATION TO 35th SESSION: Not to inscribe the property under natural criteria

Key paragraphs of Operational Guidelines:
77 Property does not meet natural criteria.
87 Property does not meet conditions of integrity.
108 Property does not meet management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: No supplementary information was requested after the technical field evaluation.

c) Additional literature consulted: BirdLife International (2010). **Important Bird Areas factsheet: Khouran Straits.** http://www.birdlife.org. Darehshouri, B.F. (2009). **The Nature of Qeshm.** UNDP/GEF/SGP, Agah Publishing House, Tehran, Iran. Darvishsefat A., Khosravi A., Borzui A., (2008). **The history of environmental protection in Iran.** In Concept of the National Atlas of Protected Areas of Iran and its Realization. Höpner, T., Ebrahimipour, K. Maraschi (2000). **Five Intertidal Areas of the Persian Gulf.** Wadden Sea Newsletter 2000 – 2. Ramsar Convention. **Information sheets on Iranian Ramsar sites, including Khouran Straits.** Islamic Republic of Iran. **The Department of the Environment in the International Scene. An introduction to environmental conventions and international projects.** DoE. Keijl G.O. and van der Have T.M. (2002). **Observations on marine mammals in southern Iran, January 2000.** Zoology in the Middle East 26: 37-40. Olson, D.M., Dinerstein E., Wikramanayake E.D. et al. (2001). **Terrestrial ecoregions of the world: A new map of life on Earth.** BioScience 51 (11): 933-938. Smith G. and Jakubowska J. (2000). **A Global Overview of Protected Areas on the World Heritage List of Particular Importance for Biodiversity.** IUCN, Gland, Switzerland and UNEP-WCMC, Cambridge, UK. Spalding, M., Kainuma M., Collins L. (2010). **World Atlas of Mangroves.** ITTO, ISME, FAO, UNEP-WCMC, UNESCO-MAB, UNU-INWEH, TNC. Earthscan. Van der Have, T.M., Keijl G.O., Mansoori J. and Morozov V.V. (2001). **Searching for Slender-Billed Curlews in Iran, January-February 2000.** Working Group International Waterbird and Wetland Research. WIWO-report 72.

d) Consultations: four external reviewers consulted. The mission met with officials, representatives and staff of various authorities concerned with the Harra Protected Area including the Iranian Cultural Heritage, Handicrafts and Tourism Organization (ICHHTO); the Department of Environment (DoE) both in the capital and in Hormozgan Province; the GIS departments of both ICHHTO and DoE in Tehran; Qeshm Free Trade Area (including its Environment Bureau); and local mayors, park staff, religious leaders and teachers.

e) Field visit: Tarek Abul Hawa and Tilman Jaeger, October 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

Harra Protected Area covers 86,581 ha of land and sea areas in the Straits of Khouran (formerly Clarence Straits) between the Iranian mainland and Qeshm Island. Qeshm is by far the largest island in the Persian (Arabian) Gulf located at the entrance to the Persian (Arabian) Gulf and covering approximately 2,400 km^2. Qeshm Island has a rich history of pearl trade and shipbuilding, the latter continuing to this day. The Khouran Straits area is the largest mangrove-mudflat system in Iran and was designated a Ramsar Site in 1975 (100,000 ha, named "Khouran Straits"), and a Biosphere Reserve in 1976 (85,686 ha).

The protected area encompasses mangrove forests, intertidal mudflats and creeks in the shallow straits and includes parts of the coastline of Qeshm and the mainland. While the nomination document has a strong focus on mangroves, it should be noted that Harra Protected Area encompasses part of the Meydan River delta and the Kul/Rasul River delta in a dryland area of the mainland. The desertic mainland is mostly comprised of sandy flats with scattered *Acacia*, *Prosopis* and other thorn trees. The outer margins of the deltas have significant mangrove stands. The marine environment is influenced by the numerous rivers and the inflow from the Indian Ocean and the Oman Sea. The literature suggests important marine values, in particular as regards coral reefs. However, there are no coral reefs in the nominated area.

Harra Protected Area includes the most extensive mangrove stand in Iran with an estimated 6,000-7,000 ha of low growing habit *Avicennia marina*, the Black

Mangrove, locally known as "harra" or "hara". The *A. marina* stands are intersected by a network of tidal channels. Black Mangrove is the most widespread of the four species occurring in the region and one of only two mangrove species occurring in Iran. Whereas *Avicennia* sometimes occurs in mixed stands jointly with *Rhizophora mucronata* ("chandal") in the Gulf of Oman, it forms purely monospecific stands in the Persian (Arabian) Gulf. Notwithstanding the low species and structural forest diversity the stands are of considerable ecological importance.

The intertidal mudflats are home to large populations of mudskippers and crabs. Höpner et al. (2000) suggest the system plays a vital function in terms of primary productivity and in serving large parts of the Iranian coastline with eggs, larvae, organisms and vegetative material. The mosaic of tidal flats and mangroves is a major spawning area, nursery and feeding ground for fish and crustaceans important to the local fishery. The lush green of the mangroves constitutes a stark visual contrast along one of the most arid coastlines in the world.

Jointly with the numerous other coastal wetlands and river deltas along Iran's Gulf coast and in particular the various Ramsar sites on the Northern and South-eastern shore of the Straits of Hormuz, Harra Protected Area is an important area for nesting and migrating waterfowl. It is recognized as one of currently 104 important bird areas (IBAs) in Iran (Khouran Straits, IR096, IBA assessment 2001). Among the noteworthy values are Iran's largest breeding colony of the Indian Pond Heron (*Ardeola grayii*) and substantial breeding populations of egrets and herons as well as some shorebirds (notably Crab Plover, *Dromas ardeola*, and Green-backed Heron, *Burhinus recurvirostris*), as well as terns. The area supports more than 1% of the regional populations of *Egretta gularis*, *Platalea leucorodia*, *Haematopus ostralegus*, *Dromas ardeola*, *Numenius arquata*, *Tringa cinerea*, *Larus ridibundus*, *Gelochelidon nilotica* (Ramsar Convention 1997). The extensive mudflats are an extremely important staging and wintering area for shorebirds and gulls, along with smaller numbers of the globally threatened Dalmatian Pelican (*Pelecanus crispus*), *Platalea leucorodia*, *Phoenicopterus ruber* and many other species. Noteworthy wintering raptors include the White-tailed Eagle, the Marsh Harrier and various hawk species. Depending on the source, the total number of recorded bird species varies between 93 and 103.

The area is believed to be an important feeding ground for Green Turtle (*Chelonia mydas*), which has a nesting site on the southern coast of Qeshm Island. However, there is no evidence that Harra Protected Area plays a major role for the species, even at the regional level.

The Harra Protected Area includes a number of human settlements with the nomination reporting 4,459 residents in 2006. The socio-economic importance of the area is evidenced through local resource use, including fishing, livestock browsing and collection (lopping) of *Avicennia* for livestock (mostly camels), and collection of wild honey.

3. COMPARISONS WITH OTHER AREAS

Harra Protected Area is nominated under criteria (vii), (ix) and (x), however, the nomination document ("Justification for Inscription") was not structured according to these criteria and the comparative analysis included in the nomination was insufficient, as it did not compare Harra's values under each of the proposed criteria with other relevant World Heritage sites and protected areas worldwide.

According to the Udvardy classification the terrestrial areas of Harra are situated in the Anatolian-Iranian Desert province. There are no existing World Heritage sites within the Anatolian-Iranian Desert province. Although Smith et al. (2000) identify this as a gap, Harra includes very limited desert areas, the reserve design does not seem to consider these values and desert values are not the focus of the nomination.

Most of the natural features described in relation to criterion (vii) refer to geological values located outside of the nominated area. The main ecosystems represented do not stand out globally in terms of size, diversity or visual attractiveness. Many mangrove areas are larger, more structurally diverse and comprised of many more woody species, e.g. the Sundarbans (India and Bangladesh), the Niger Delta (Nigeria) and the Everglades (United States of America). Likewise, there are much larger, visually stunning tidal mudflat systems, including Banc d'Arguin (Mauritania) and the Wadden Sea (The Netherlands and Germany). Harra Protected Area stands out nationally and in some ways regionally, as illustrated by its long and ongoing conservation history. It is rightfully a well-known conservation area and reference within Iran. Natural features present in the nominated area are of national and possibly of regional importance.

Harra is nominated under criterion (ix) primarily for its ecosystem values as the largest mangrove-mudflat system in Iran and the region. The values described in the nomination dossier are mostly functions or services commonly provided by any mangrove forests. While clearly very important and a strong justification for protection status, they are not setting the area apart from other mangrove areas or tidal mudflats. Harra is indeed the largest mangrove-mudflat system in Iran and the Middle East (Spalding et al. 2010). However, it is neither one of the largest nor one of the richest mangrove or mudflat systems in the world. Substantially larger mangrove areas are included for example in the following World Heritage properties: Great Barrier Reef (Australia), New Caledonia (France), Sundarbans (India), Sian Ka'an (Mexico), Everglades (USA). All of these properties harbor a much higher diversity of mangrove species with a record number of 37 in the Great Barrier Reef. Whilst the ecosystems and communities of Harra are arguably of regional significance they are not considered to be of global significance.

Harra is recognized as a Wetland of International Importance under the Ramsar Convention and is located in one of Iran's 105 Important Bird Areas (Khouran Straits). Both designations are a clear indication of local, national and partially regional importance. Many existing natural World Heritage sites featuring mangrove systems have far larger mangrove areas and/or far higher mangrove species diversity than the nominated property. The Sundarbans in Bangladesh and India contain over 650,000 ha of mangroves, the largest mangrove ecosystem in the world, with over 30 mangrove species. Australia's Great Barrier Reef contains over 200,000 ha of mangroves and over 30 mangrove species. The Wet Tropics of Queensland, also in Australia, contain some 30 mangrove species; and the Everglades National Park in the USA contains 100,000 ha of mangroves, the largest mangrove ecosystem in the Western Hemisphere.

Globally the mangrove species diversity of the Middle East is relatively poor, with only four of the world's 73 woody mangrove species and hybrids (Spalding et al. 2010). *Avicennia marina* is one of the most wide ranging mangrove species in the world occurring from South Africa to the Northern Red Sea and eastwards across Asia, Australia and the Pacific Islands. The species is represented in several natural World Heritage sites.

There are two natural World Heritage sites where mudflat systems are a key feature. The Wadden Sea in Germany and the Netherlands contains one of the largest mudflat ecosystems in the world. Banc d'Arguin National Park in Mauritania has extensive mudflats on an arid coast. In terms of their global importance as breeding, staging and wintering areas for waterbirds, these two existing natural sites are significantly more important than Harra Protected Area.

The nomination notes the importance of Harra for birds, fishes and turtles, including two globally threatened species. At the national level, Harra is a key site for a number of waterbird species, and it was found to have the highest waterbird diversity (53 species) among the 20 Iranian wetland sites along the Persian (Arabian) Gulf coast (Van der Have et al. 2001). The Dalmatian Pelican (*Pelecanus crispus*, (VU on the IUCN Red List) which occurs in Harra also has breeding populations in eastern Europe and east-central Asia, including for example in the Danube Delta (Romania), Srebarna (Bulgaria) and Saryarka (Kazakhstan) natural World Heritage sites. The Green Turtle (*Chelonia mydas*, (EN), also found in Harra, has a circumglobal distribution and occurs in a number of natural World Heritage sites. Marine mammals such as Finless Porpoise (*Neophocaena phocaenoides*, VU), Indo-Pacific Hump-Backed Dolphin (*Sousa chinensis*, NT) and Dugong (*Dugong dugon*, VU) have been sighted in Harra, but the nominated area does not support resident populations of these marine mammals.

Finally it should be noted that Harra Protected Area has not been identified as a "biodiversity gap" on the World Heritage List in any of the theme studies prepared by IUCN and/or UNEP-WCMC.

4. INTEGRITY

4.1. Protection

In Iran, several institutions play a role in conservation. These include the Forests, Rangelands and Watershed Management Organization (FRWO) of the Ministry of Agricultural-Jihad; Ministry of Energy; Ministry of Defence and the Department of the Environment (DoE).

The nominated property is state-owned in its entirety and protected under Iran's Environmental Protection and Enhancement Act, 1974 which superseded all previous enabling nature conservation legislation, and remains the main law covering national conservation. A zoning system provides adequate levels of protection at the site level.

Harra is stated to be under the exclusive mandate of the DoE. However, a number of other agencies have responsibilities and undertake activities within Harra. For example there seem to be planned mangrove restoration activities, which would be managed by FRWO; the Qeshm Free Area is involved in environmental and tourism issues affecting Harra; and institutions involved in fisheries management appear to be active in the protected area. DoE was established in 1971 and provides technical guidance to provincial offices, however, agency coordination and jurisdictions within the protected area remains unclear.

Some confusion arises from the fact that in the English translations of texts about protected areas in Iran, the term "protected area" is used both as the umbrella term for all conservation designations and the name of one of four specific protected area categories. The four categories of protected areas under DoE's mandate are National Parks, Wildlife Refuges, Protected Areas and National Nature Monuments. Protected Areas are described as:

"Relatively vast areas of high protection significance are selected with the purpose of preserving and restoring plants sites and animals habitats. Protected areas are appropriate places for the implementation of educational and research plans. Tourism and economic utilizations in proportion with each area under the comprehensive management plan of the area are allowed."

In very early recognition of its importance, Harra was designated as a "protected region" in 1972 or 1973 according to slightly differing sources. Soon after, it was enlarged and upgraded to National Park Status. In 1980, the area's status was downgraded to protected area. The reasons for this change are not described in the nomination dossier and could not be established during the field evaluation.

The current category as "Protected Area" is not necessarily incompatible with long-term conservation objectives. However, it is important to ensure that "tourism and economic utilizations" be interpreted in a

way that does not compromise the area's conservation values.

Harra was designated a Ramsar site in 1975 and became a Biosphere Reserve in 1976. In 2001 Harra was recognized as an Important Bird Area in the extension of the Ramsar site. It is noteworthy that the Ramsar site exceeds the size of the nominated area.

IUCN considers that the protection status of the property meets the requirements set out in the Operational Guidelines, notwithstanding some concerns regarding lack of coordination and confusion over agency responsibilities and jurisdictions.

4.2 Boundaries

The outer boundaries of the protected area include the majority of the mangroves and tidal mudflats and span across the entire Khouran Strait. Overall, the reserve design appears to incorporate the area's main values. The delta of the Mehran River is only partially included, whereas the western part is dominated by shrimp farming.

Of the possible eleven zones, which can be differentiated under the Protected Area category, eight have been used to specify uses, however, only a modest 2,024 hectares in the centre of the mangrove forests are strictly protected.

This very detailed zonation system appears based on a desktop analysis of soil types and other environmental characteristics without much consideration of local resource use. Such an approach can be counterproductive to getting community consensus on the management plan. A further concern relates to the ability to implement zoning management prescriptions given current management capacity. Finally the broad definitions of zones for "extensive use", "intensive use", "recovery", "buffer", "transition" and "multiple use" leave much room for interpretation and raise the question of the appropriateness of such a fine-filtered approach.

Although a proposed buffer zone is noted in the nomination it is not clear how this affects adjoining management and therefore if the buffer zone conforms to the meaning according to the Operational Guidelines.

IUCN considers that, whilst there are concerns about the effectiveness of the buffer zone, the boundaries of the property meet the requirements set out in the Operational Guidelines.

4.3 Management

The nomination dossier mentions the governmental intention to establish management plans for all biosphere reserves in Iran, including Harra Protected Area. The process is described as underway, with funding secured and an intention to base the plan on consultations with environmental NGOs. However, the planning process to date appears largely centralised. Management goals stated in the nomination dossier are appropriate for a World Heritage site. However, the implications of these stated objectives could not be established. Many of the statements on management in the nomination dossier are suggestions and recommendations rather than a reflection of any current management activity. As noted above there are multiple agencies involved in the management of the property and while there are working relationships, there appear to be no overall management system or plan and no clear mandates and coordination of the various involved institutions.

A local office of DoE is involved in the management but there is no director of the park. Rather, the responsibility for the park seems to be covered by a senior officer as one among several other responsibilities. Likewise, other staff and equipment appears to be allocated to the wider tasks of DoE rather than the protected areas. This is not necessarily a shortcoming but it makes it somewhat difficult to assess the exact management capacities for Harra. The staffing levels and capacities described in the nomination refer to the national situation rather than Harra Protected Area. Staff of several institutions is partially involved in various activities but there are very few staff working full time in Harra, if any.

There is also no easily obtainable overall budget for the Harra Protected Area as the activities carried out by the various involved institutions are funded from many different budgets. The amount of five million USD stated in the nomination dossier is misleading as it seems to lump together various funding sources, including what appears to be the entire GEF support to Iran.

IUCN considers that the property does not meet the management requirements set out in the Operational Guidelines, primarily as there is no current management plan and unclear site specific staffing and budgeting.

4.4 Threats

Oil and Gas

While not site-based and largely beyond the control of the protected area management, oil and gas is an important economic activity in the region. The narrow Strait of Hormuz is nearby with a substantial role in global oil transportation making oil spills an ever present threat. Every effort should be made to ensure high safety standards for transportation and in the ports management, in particular in the nearby port of Bandar Abbas nearby. Monitoring and plans for quick and effective responses to disasters are indispensable.

Development

Industrial development, including active gas fields in the direct vicinity of the park and several factories in the Qeshm Free Area occurs in the region surrounding Harra. Qeshm Free Area is a high growth economic development zone (http://www.qeshm.ir/?Lang=en). Plans to link Qeshm Island to a mainland through a major bridge construction were reported. This bridge would be constructed in immediate vicinity of the protected area and, if completed, could dramatically alter access to and

impact on the area. Clearly, the possible implications of these developments will have to be carefully considered in the future management of Harra Protected Area.

Tourism
The numbers of tourists are currently low, according to local boat tour operators, in the order of tens of visitors even during the peak of the season. The number of "200,000 annual visitors" stated in the nomination dossier does not seem to relate to Harra Protected Area alone and may refer to the entire island of Qeshm. Qeshm Free Area has ambitious objectives to boost tourism on the Island and to develop the protected area in this regard, which may lead to increased tourism pressure and the consequent need to manage impacts for example on sensitive bird resting and nesting sites.

Natural Resource Use
The literature suggests use of mangrove wood for firewood and charcoal in some areas of Harra. This could not be confirmed during the site visit. The collection of leaves as fodder for camels is an important resource use. In the Mehran Delta on the Iranian mainland camels are regularly browsing. This use must not exceed the capacity of *Avicennia* to regenerate if it is not to lead to the degeneration or destruction of the mangroves.

Shrimp farming does not take place within the protected area, however, the existing shrimp farms in the partially protected delta of the Mehran River should be carefully monitored in terms of impacts such as the use of chemicals, including hormones and antibiotics and the reported release of shrimp larvae in the protected area, apparently in an attempt to re-stock wild populations.

Given that the protected area is the basis for the local fisheries and livestock fodder in an otherwise scarcely vegetated desert area, there is a strong local dependence on the resources in the protected area. This implies a need and a great potential to work with local communities to ensure sustainable practices which do not impact adversely on the values of the protected area.

In summary, IUCN considers the nominated property does not meet the conditions of integrity as outlined in the Operational Guidelines primarily due to a combination of problems such as unclear legal jurisdictions, the lack of a management plan, and the lack of dedicated staff and budgets.

5. ADDITIONAL COMMENTS

Several key sections of the nomination dossier, in particular the sections on OUV, comparative analysis and management, are regrettably lacking in detail and not specific to the issue under consideration.

The nomination dossier, including the photographic documentation, contains numerous references to areas located outside the nominated area, in particular as regards geological values and some marine values. These values are partly included in a Geopark, however, they have not been considered in this technical evaluation report. Likewise, the various references to a marine turtle nesting site on the Southern coast of Qeshm Island are not considered in this evaluation, as they are located outside of the nominated area.

6. APPLICATION OF CRITERIA

The Harra Protected Area has been nominated under criteria (vii), (ix) and (x).

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
Most of the natural features described refer to geological values located outside of the nominated area. Features present in the nominated area are of national and possibly of regional importance. The main ecosystems represented do not stand out globally in terms of size, diversity or visual attractiveness. Many mangrove areas are larger, more structurally diverse and comprised of many more woody species, e.g. the Sundarbans (India and Bangladesh), the Niger Delta (Nigeria) and the Everglades (USA). Likewise, there are much larger, visually stunning tidal mudflat systems, including Banc d'Arguin (Mauritania) and the Wadden Sea (Transnational World Heritage Property of The Netherlands and Germany but also extending into Denmark).

Harra Protected Area stands out nationally and in some ways regionally, as illustrated by its long and ongoing conservation history. It is rightfully a well-known conservation area and reference within Iran.

IUCN considers that the nominated property does not meet this criterion

Criterion (ix): Ecological processes
Harra is nominated under this criterion primarily for its ecosystem values as the largest mangrove-mudflat system in Iran and the region. The values described in the nomination dossier are mostly functions or services provided by any mangrove forests. While clearly very important and a strong justification for protection status they are not setting the area apart from other mangrove areas or tidal mudflats.

Harra is indeed the largest mangrove-mudflat system in Iran and the Middle East (Spalding et al. 2010). However, Harra is neither one of the largest nor one of the richest mangrove or mudflat systems in the world. Substantially larger mangrove areas are included for example in the following World Heritage properties: Great Barrier Reef (Australia), New Caledonia (France), Sundarbans (India), Sian Ka'an (Mexico), Everglades (USA). All of these properties harbor a much higher diversity of mangrove species with a record number of 37 in the Great Barrier Reef. The ecosystems and communities of Harra are clearly of regional significance but not of global significance.

IUCN considers that the nominated property does not meet this criterion.

Criterion (x): Biodiversity and threatened species

Harra Protected Area has not been identified as a "biodiversity gap" on the World Heritage List in any of the theme studies prepared by IUCN and/or UNEP-WCMC. However, Harra is recognized as a Wetland of International Importance under the Ramsar Convention and is located in one of Iran's 105 Important Bird Areas (Khouran Straits). Both designations are a clear indication of local, national and possible regional importance.

Many other natural World Heritage mangrove system properties display greater levels of species diversity and endemism across larger areas than the nominated property. Equally many other properties inscribed on the World Heritage List contain more extensive mudflat ecosystems with accompanying diversity of habitats for waterbirds than Harra Protected Area. The nominated property demonstrates important ecological value for a number of bird, fish, turtle and marine mammal species, however, these values are replicated in many other mangrove systems around the world.

Although Harra qualifies as a Ramsar site and Important Bird Area, its diversity and abundance of breeding and/or wintering birds is not outstanding at the global level. The two globally threatened species mentioned in the nomination are present in a number of existing natural World Heritage sites.

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

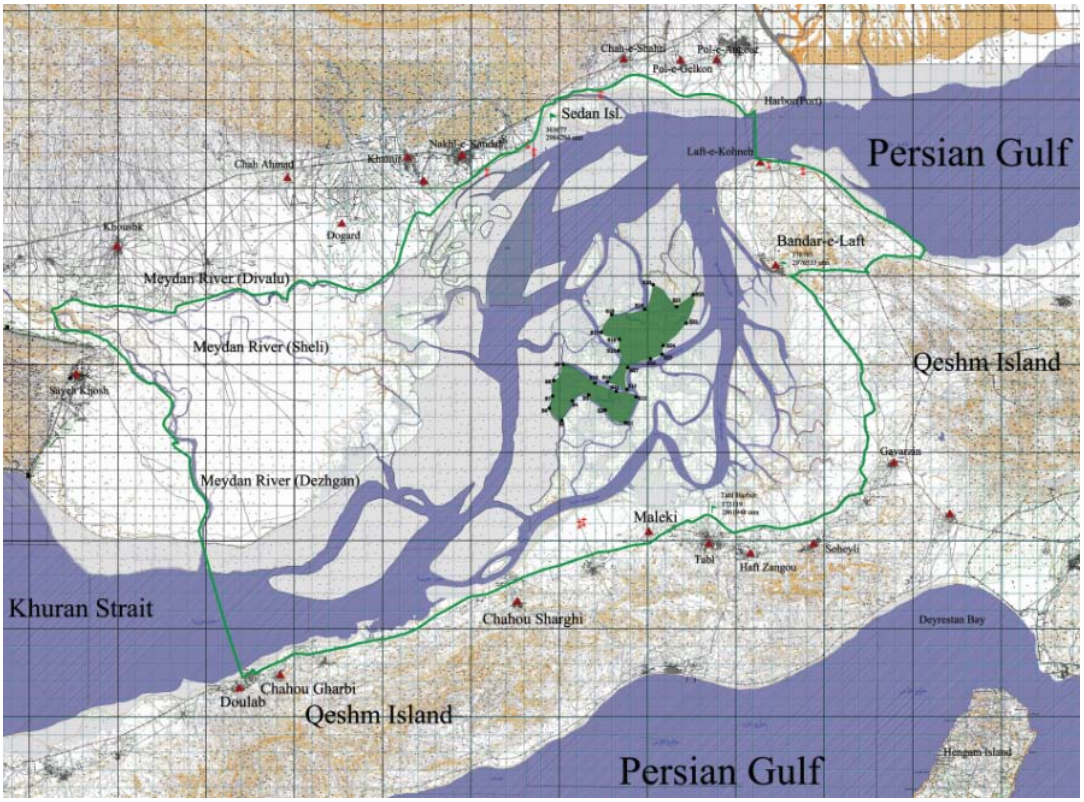
2. Decides not to inscribe the **Harra Protected Area (Iran)** on the World Heritage List;

3. Welcomes the recognition of the Harra Protected Area as a Ramsar Site and Biosphere Reserve and encourages the State Party to strengthen the management of the site to address threats to its values, including the risk of oil pollution, shrimp farming and inappropriate infrastructure and tourism development;

4. Requests the Advisory Bodies and World Heritage Centre to provide support, if required by the State Party, in order to assist it to identify and prioritise those sites on Iran's tentative list which have the strongest potential for nomination to the World Heritage List.

Map 1: Nominated property location

Map 2: Harra Protected Area boundary



ASIA / PACIFIC

OGASAWARA ISLANDS

JAPAN

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

OGASAWARA ISLANDS (JAPAN) – ID No. 1362

IUCN RECOMMENDATION TO 35th SESSION: To inscribe the property under natural criteria

Key paragraphs of Operational Guidelines:
77 Property meets one or more natural criteria.
78 Property meets conditions of integrity and has an adequate protection and management system.
114 Property meets management requirements for serial properties.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: Following the technical evaluation mission the State Party was requested to provide supplementary information on 14 September 2010. The information was received on 12 November 2010.

c) Additional Literature Consulted: Chaloupka, M., Bjorndal, K., Balazs, G. H., Bolten, A. B., Ehrhart, L. M., Limpus, C. J., Suganuma, H., Troeng, S. and Yamaguchi, M. (2007): **Encouraging outlook for recovery of a once severely exploited marine mega-herbivore**. Global Ecol. Biogeogr. Dingwall, P., Weighell, T. and Badman, T. (2005). **Geological World Heritage: A Global Framework Strategy**. Gland, Switzerland. IUCN (2009). **IUCN Red List of Threatened Species**. Compiled by Hilton-Taylor, C. Gland, Switzerland. Ministry of Environment *et al.* (2010). **Ogasawara Islands World Heritage Area Plan**. Molloy, L. (2006). **Ogasawara Islands National Park. A report to the Japanese Ministry of the Environment and the Japan Wildlife Research Centre on the likelihood of World Heritage values in the Ogasawara Islands National Park**. Shimizu, Y. (2003). **The nature of Ogasawara and its conservation**. Global Environmental Research. Tatsumi, Y. and Maruyama, S. (1989). **Boninites and high-Mg andesites: tectonics and petrogenesis**. In: Crawford, A.J., ed, **Boninites and Related Rocks**. Unwin Hyman, London. Udvardy, M.D.F. (1975). **A Classification of the Biogeographical Provinces of the World**. UNEP-WCMC (1987). **Ogasawara (Bonin Islands) National Park UNEP-WCMC Data Sheet**. Cambridge, U.K. UNESCO (2008). **World Heritage and Biodiversity** No. 49. Éditions UNESCO. Wood, C. (2009). **World Heritage Volcanoes: A Thematic Study**. IUCN Programme on Protected Areas. Gland, Switzerland.

d) Consultations: Ten external reviewers were consulted. The mission included extensive consultations with officials from the various managing agencies with responsibility for the property both in Tokyo and on the Ogasawara Islands: Ministry of Environment, Nature Conservation Bureau (MoE); Forestry Agency; Cultural Heritage Agency; Tokyo Metropolitan Government (TMG); and Ogasawara Village, and the Scientific Council. Numerous discussions were held with members of local NGOs and two special sessions were organised to meet with community representatives on Chichijima and Hahajima Islands.

e) Field Visit: Peter Shadie and Naomi Doak, July 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The Ogasawara Islands are located in the western Pacific Ocean, to the north of the Tropic of Cancer and roughly 1,000 km south of the main Japanese Archipelago. The serial nomination is comprised of five components within an extension of about 400 km from north to south and includes more than 30 islands, clustered within three island groups of the Ogasawara Archipelago: Mukojima, Chichijima and Hahajima, plus an additional three individual islands: Kita-iwoto and Minami-iwoto of the Kazan group and the isolated Nishinoshima Island. The nominated property originally totalled 7,408 ha comprising a terrestrial area of 6,358 ha and a marine area of 1,050 ha. Following discussions during the IUCN evaluation mission, the State Party proposed to increase the marine areas to a total of 1,581 ha and has provided supplementary information to confirm a revised boundary. The overall surface after amendment is therefore 7,939 ha.

The islands rest along the Ogasawara Ridge, which forms the fore-arc of the Izu-Ogasawara Arc-Trench System that was formed along the eastern edge of the oceanic Philippine Sea Plate as a result of the subduction of the Pacific Plate around 48 million years ago. A series of volcanic activities and magma compositions record the evolutionary process from juvenile oceanic arc to what the Ogasawara Islands are today. The archipelago preserves an excellent series of terrestrial exposures and differentiated lava flows illustrating the evolution of an island arc over millions of years. This evolution provides a detailed picture of the

ongoing formation of continents. In addition, the origin of the continental crust (the middle crust) formed under the arc demonstrates the ongoing evolutionary process from an oceanic island arc to a continent.

The landscape varies between the island groups and individual islands. The islands in the Chichijima Group are all plateau-like in shape with gently rolling plains bounded by sea cliffs whereas the Mukojima Group islands are flat and surrounded by sea cliffs. The Hahajima Islands Group in turn is characterised by precipitous ridges and tall sea cliffs. The two islands from the Kazan Group are mountainous with both islands formed from the summits of giant submarine stratovolcanos. Nishinoshima Island is flat and triangular and located on the peak of a large submarine volcano which rises 3,000 metres from the sea floor.

The islands have a maritime, subtropical climate characterised by small annual and diurnal temperature ranges and high levels of relative humidity. The area is slightly affected by typhoons and has a mean annual precipitation of 1,276.7 mm. There is wide range of microclimates across and within the islands.

The archipelago is a mixed island biome dominated by subtropical forest types and sclerophyllous shrublands. On steep cliffs and windswept headlands the vegetation is reduced to grasses and herbs. The coast is also home to a tall forest of pantropical species. There are 441 documented taxa of native plants including 161 taxa of endemic vascular plants and 88 taxa of endemic woody plants. Due to the location of the islands the plant species reflect a mixture of origins with many species from subtropical Southeast Asia, as well as species reflecting a northern origin from the mainland of Japan. The climatic conditions on a number of the islands and the frequent presence of fog within the cloud belt also provides suitable conditions for many species of bryophytes, epiphytes and tree ferns.

The faunal composition of the islands is characteristic of isolated oceanic island systems. The numbers of native taxa are unusually skewed with some being underrepresented or absent altogether while others are disproportionally large in number.

The only terrestrial native mammal species is the endemic, critically endangered Bonin Flying Fox. Fourteen of the 195 recorded bird species are on the IUCN Red List. Two species of terrestrial reptiles have been recorded on the islands: the endemic Ogasawara Snake-Eyed Skink and the Micronesian Gecko. There are 1380 insect species, 379 of which are endemic. The Ogasawara Islands further host 40 recorded species of freshwater fish.

One of the most distinctive examples of adaptive radiation of the fauna is found within the land snails. There are 134 species of land snails of which 100 are endemic.

In the ocean around the islands 795 species of fish, 23 species of cetaceans and 226 hermatypic coral species have been documented. The ocean surrounding the archipelago is known to provide excellent habitat for migratory cetaceans and turtles.

3. COMPARISONS WITH OTHER AREAS

Several islands or portions of islands are on the World Heritage List. The nomination document provides a comparative analysis with a focus on geological values, in particular a comparison among oceanic island arcs, and ecological/biological values in relation to other island groups. Further comparative research according to the criteria selected for nomination ((viii), (ix) and (x)) was undertaken to complement the State Party's comparative analysis.

The basis of nomination under criterion (viii) is the preservation of exposures on land of the evolutionary processes involved in the formation of an island arc over millions of years. An examination of the Pacific 'Rim of Fire' shows that there are many volcanic sites coincident with subduction zones. High magnesium andesites, including boninite, are found in many other places around the world in association with subduction zones, although most are either disturbed by other geological processes or are submerged. The closest comparative sites in terms of volcanic setting are the Kermadec Islands (New Zealand), Macquarie Island (Australia) and the Volcanoes of Kamchatka (Russian Federation), all displaying island arc volcanic sites, although there are many other island arc volcanic systems globally. The Kermadec Islands have similar volcanic origins and exist in a similar tectonic setting aligned to the subduction of the Pacific Plate under the Indian-Australian Plate. The Kamchatka Peninsula, whilst not an island, displays similar island characteristics. The Kamchatka Peninsula encompasses an impressive 700km volcanic belt associated with the subduction of the Pacific Plate under the Eurasian Plate with a series of volcanoes, a number of which are active. Macquarie Island has similar pillow lavas, lava flows, and basaltic dykes to the Ogasawara Islands; however, it lacks the exposed rock sequences which are found in the Ogasawara Islands. Similarly, the Kermadecs lack the exposures and clarity of evidence of the Ogasawara Islands. Whilst the particular geology of the islands is of significant international technical interest, alone it is not of sufficient basis for World Heritage recognition. As noted in the IUCN thematic study on volcanoes, the potential in this regard would be in relation to extending representation via a transnational extension of Kamchatka, however this is not the proposal as put forward in the nomination.

The Ogasawara Islands are also nominated under criterion (ix) as an outstanding example of the ongoing evolutionary processes in oceanic island ecosystems, as evidenced by the high levels of endemism; speciation through adaptive radiation; evolution of marine species

into terrestrial species; and for their importance for the scientific study of such processes.

The high degree of endemism is striking and is best illustrated in relation to vascular plants and land snails. According to the nomination, 76 (93%) of the 82 remaining native land snail species are endemic to the island group. Thus, the Ogasawaras have a higher level of land snail endemism than the Madeira Archipelago (Portugal, 88%) and the Canary Islands (Spain, 81%); however, their level of endemism does not reach that of the Hawaiian Islands (United States of America, 97%), Galapagos Islands (Ecuador, 96%) and Socotra Archipelago (Yemen, 95%).

Several World Heritage properties are recognized for the demonstration of evolutionary processes such as adaptive radiation and speciation, in particular the Galapagos Islands (Ecuador), East Rennell (Solomon Islands) and Aldabra Atoll (Seychelles). The Kermadec Islands, on New Zealand's Tentative List, are also known for comparable values. Each one of these sites differs from Ogasawara in individual ways, including the range of taxa showing adaptive radiation. Although not as well known as the Galapagos Islands or the Hawaiian Islands, the Ogasawara Islands provide evidence for the different stages of the evolution of endemic species on oceanic islands: long-distance migration, establishment, enlargement and adaptive radiation and diversification. However, only seven plant genera show adaptive radiation. Perhaps the most direct comparison in this regard is to be made with Galapagos Islands given its iconic standing in the development of evolutionary theory. Whilst the degree of speciation and differentiation in the plants and animals of the Galapagos is not matched in the Ogasawara Islands, the nominated property illustrates a higher concentration of endemism and examples of adaptive radiation in a significantly smaller area.

In this sense, the Ogasawara Islands complement the observable evolutionary processes in the Galapagos with many examples at a different spatial scale and showing much earlier stages of evolutionary processes. For example, the degree of adaptive radiation shown by the land snail genera *Hirasea* and *Mandarina* is very striking, resulting in distinct morphological variation in four ecotypes: arboreal; semi-arboreal; ground (sheltered); and ground (exposed). Further *Mandarina* species display extraordinary variation between islands and even fine scale such as in the Minamizaki area of Hahajima Island.

The archipelago also offers significant examples showing the evolution of species such as the isopod genus *Ligia* from marine to brackish to freshwater and then terrestrial species.

In relation to criterion (x), the Ogasawara Islands have relatively low overall levels of species diversity across all taxa, as is common on oceanic islands and island groups. The nomination lists 441 native vascular plant taxa, of which a notable 37% are endemic. As these figures include subspecies and varieties, the actual number of vascular plant species on the Ogasawaras is lower. The nominated property is also recognized as a Centre of Plant Diversity.

The nominated property is an Endemic Bird Area (EBA) and five of Japan's 167 Important Bird Areas (IBAs) are located in the archipelago. The large number of bird species does not stand out when compared to other similarly sized islands and island groups such as Lord Howe Island Group, Macquarie Island (both Australia) or Gough and Inaccessible Islands (U.K.). Apart from birds, the Ogasawaras have a species-poor vertebrate fauna. Invertebrates display high levels of species richness and degree of endemism, in particular land snails. There are 1,380 recorded insect species with an endemic ratio of slightly under 30 %.

The nominated property is located within the Japan biodiversity hotspot, a global conservation priority well covered by existing World Heritage properties. These are Yakushima ((vii), (ix)), Shirakami-Sanchi (ix) and Shiretoko ((ix), (x)), all of which have a higher plant and vertebrate diversity than the Ogasawaras, except for the number of recorded bird species. In terms of total species numbers, the small Ogasawaras have a far poorer invertebrate fauna than many larger island groups such as the Hawaiian Islands (U.S.A.), Galapagos Islands (Ecuador), Canary Islands (Spain) and the Madeira Archipelago (Portugal). Several island systems boast considerably higher numbers of endemic species and higher ratios or endemic to native species, e.g. Galapagos, Lord Howe and Hawaii Islands in the Pacific and Socotra Island (Yemen) in the Indian Ocean.

The terrestrial biodiversity of the Ogasawara Islands is remarkable and clearly of national and even regional significance, especially considering the small surface area.

The surrounding marine areas, including but not limited to the formally protected areas and the small areas included in the nomination, deserve to be noted.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Most of the nominated property is state owned and under the authority of various governmental agencies, including the Forestry Agency, the Ministry of Finance, the Ministry of the Environment (MoE) and the Tokyo Metropolitan Government (TMG). The Forestry Agency is in charge of the National Forests, roughly 80% of the terrestrial surface of the nominated area. In addition, some land is owned by Ogasawara Village with the remaining areas privately owned.

The nominated property contains five legally designated categories of protected area managed by three national

Government agencies: 1. Wilderness Area; 2. National Park; 3. National Wildlife Protection Areas (all MoE); 4. Forest Ecosystem Reserves (Forestry Agency); and 5. Natural Monuments (Cultural Agency). Various management functions are delegated to the TMG and Ogasawara Village Administration.

The Ogasawara archipelago is protected through seven pieces of national legislation which overlap in jurisdiction and objectives. These include the: 1. Nature Conservation Law (1972, MoE) proclaiming Wilderness Areas; 2. Natural Parks Law (1957, MoE) governing National Parks; 3. Law on the Administration and Management of National Forests and Forest Reserve System based on National Forest Administration and Management Bylaw (1951 and 1999, Forestry Agency) governing national forests; 4. Wildlife Protection and Appropriate Hunting Law (2002, MoE) protecting significant wildlife; 5. Law for the Protection of Cultural Properties (1950, Cultural Agency) proclaiming National Natural Monuments; 6. Law for the Conservation of Endangered Species of Wild Fauna and Flora (MoE); and 7. Invasive Alien Species Act (MoE).

The application of a suite of legislation to formalize protection is common in Japan. Despite the complex matrix of laws defining and affecting the property, they together provide for a complementary and generally harmonized suite of protection. The laws strictly control development and are consistent in their objectives to protect the key values of the property. Any jurisdictional conflicts are resolved through an interagency Regional Liaison Committee structure. This coordination structure is modelled on the collaborative approach applied in Shiretoko World Heritage property.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The nominated property is zoned under the legislation noted above. The principle management zones are identified under the Natural Park Act and the Law and Bylaw on the Administration and Management of National Forests. Six zones are defined under the Natural Parks Law and two under the Forestry laws. Recent amendments to the zoning system have strengthened protection increasing the Special Protection Zone to cover 74% of the property and the Special Zones to 26% of the property.

The integrity, protection and management of the Ogasawara Islands cannot be separated from the surrounding ocean. Following discussions during the technical evaluation, the existing Marine Park Zones were included in the nominated area, a welcome addition expected to contribute to the integrity of the site and to facilitate management.

While not specified in the original nomination, the State Party confirmed in supplementary information officially submitted following the IUCN evaluation mission, that the much larger Ogasawara National Park serves as a functional buffer zone in line with the Operational Guidelines.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3 Management

The 2010 multi-agency Ogasawara Islands Management Plan and companion Ogasawara Islands Ecosystem Conservation Action Plan cover a wide area of 129,360 ha and include controls beyond the nominated property such as ship navigation routes. The plans deal with critical issues such as access to the islands and control of alien invasive species. Management activities are detailed for the different island groups within the property with clear coordination mechanisms and monitoring plans prescribed. The plan is based on scientific knowledge and includes timetabled and prioritized actions. The plans are terrestrially focused and would benefit from more attention to marine management issues.

Interagency cooperation, driven through a Regional Liaison Committee which meets regularly, is effective and should be further developed over time to foster more empowered stakeholder engagement in management. The nominated property benefits from strong links and dialogue between researchers, managers and community, including through a Scientific Council.

A considerable increase in staffing and resources has taken place over the last five years with currently USD 11.6 m spent annually on conservation interventions. Of special note are the efforts and significant investment in alien invasive species control programmes. Staff numbers, currently 47 located both in the archipelago and Tokyo, have increased by 36% and funding has almost doubled since 2005. In addition to rangers TMG have appointed a World Heritage Officer for the property.

Business planning to diversify and secure future financing is not yet being undertaken on the Ogasawara Islands due to the significant levels of Government funding for current management. There is scope to undertake business planning on community-based activities such as guided tours. At present, visitors are charged a fee which covers the guides' salary and operating costs as a break-even operation. The actual willingness to pay might be considerably higher suggesting room for a more entrepreneurial approach. Such an approach would constitute a source for both local income and conservation funding. Similarly, an impact fee or conservation contribution could be charged and opportunities could be developed to market local niche products.

Breaches of law may incur prosecution under the multiple laws outlined above. There is adequate legal protection and scope for enforcement. The at present few severe violations of the law are handled by the police.

The multi-agency management presence on the Ogasawara Islands results in somewhat complex procedures. Currently rangers from one particular agency aware of infringements are required to report these to the relevant authority and then these incidents, if serious enough to warrant further action, are reported to the police.

This situation calls for the introduction of reciprocal enforcement powers such that rangers have the authority to report and hand over law enforcement matters to the appropriate jurisdiction. There are currently three types of uniformed rangers on the islands: TMG, MoE and Forestry Agency. Ideally, law enforcement should be communicated as a unified and common effort. This should be reflected in uniforms or at least a common logo.

Human occupation of the islands is relatively recent with a small group of Westerners and Pacific Islanders settling on Chichijima in 1830. The islands were virtually abandoned during World War II and reoccupied only after 1968. Today only two of the islands within the nominated property are inhabited (Chichijima and Hahajima) with a combined residential population of 2,462. Residential areas and surrounding small scale agricultural lands are excluded from the area of the nominated property.

A high level of local involvement is evident in the nominated property, most notably on Chichijima and Hahajima Islands. Local NGOs such as the Institute of Boninology are conducting quality research work in cooperation with other academic institutions and the Government agencies. They are also active in involving local community groups and members in their work. Over 200 accredited tour guides are providing visitor services in the islands.

Consultation meetings during the technical evaluation indicated an adequate level of consultation in the World Heritage nomination process. The nomination has also been accompanied by major awareness-raising efforts both locally and with Tokyo Metropolitan residents. No local opposition to the nomination was detected. The communities are motivated by their pride and passion for the islands and expressed a desire to maintain their current lifestyles, including the continued conservation and management of the property. Communities are also involved through both paid and volunteer programmes.

Some instances of misdirected community action occur. For example, artificial watering points in the Sekimon Forest area of Hahajima are serviced by the community to provide water for birds. The motivation for this appears to be a mixture of concern for the birds during dry conditions and a way of attracting them for visiting tourists on guided walks. It is recommended that this practice be reviewed and either stopped or perhaps limited to short term watering to attract the birds for viewing.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines.

4.4 Threats

It is noteworthy that the islands were once covered by dense subtropical evergreen broadleaved forests. Most of the forest was cleared or seriously degraded over the last hundred years. The Ogasawara Islands have been and continue to be severely threatened by the human presence. The main causes for this are conversion of habitats and invasive alien species. Further concerns include possible future air access, increased tourism and development, and the expected consequences of climate change.

Invasive alien species
Without doubt alien invasive species present the most significant immediate and future threat. The main pest animals among the 22 recorded alien species are goats, cats, black rats, green anoles, pigs, the predatory flatworm, bullfrogs and cane toads with the predominant invasive plants among more than 300 recorded species being *Bischofia*, *Casuarina*, and *Leucacena*.

There has been noteworthy progress made in the management of alien invasive species. The corresponding strategy outlined in the Ogasawara Islands Management Plan adopts approaches ranging from control to mitigation to eradication. A good understanding of ecosystem dynamics and interspecies dependency is driving decisions about control sequencing with a significant input from the Scientific Council.

Managing agencies have also assessed international literature and sourced best practices from Australia and New Zealand. Control techniques have been modified to suit local conditions and further innovated in many cases.

Many satellite islands are free of vertebrate pests, a critical factor in re-establishing seabird habitat and breeding. There is an excellent programme of collaborative management oriented research helping to take an adaptive approach to management and control of alien invasive species. Academic institutions, Government agencies, at both national and local levels, NGOs and communities are working together to address these issues.

There is a need to strengthen access and quarantining protocols along the lines of the strict regulations in countries such as Australia and New Zealand. A variety of strengthened quarantining measures should be

introduced including mandatory completion of the currently voluntary declaration forms available to passengers to the islands; stronger controls on garden plant introductions both being bought to the islands by residents and being used in street plantings; and a more rigorous protocol of shoe cleaning and bag checking.

The same protocols should be applied to controls between islands, e.g. between Chichijima Island and Anijima where boaters are allowed to come ashore in intertidal zones only. To ensure continued local community buy-in, it is preferable to manage this movement between islands rather than prohibit it completely. The introduction of rigorous protocols would help to ensure no further introductions occur, particularly on to islands where eradication efforts have already been successful or are currently underway. Tour operators are voluntarily complying with these controls. However, these efforts should be strengthened and included as conditions within licensing and certification systems to ensure compliance beyond voluntary commitments.

It is recommended that beyond continued efforts to control feral cats, stronger measures to control domestic cats are also introduced. In addition, regulations on the sterilizing of pets are recommended. Continued community awareness-raising is recommended to a point where residents may voluntarily agree to a complete ban on cats.

Future air access, increased tourism and development

The establishment of air services to the islands through an airstrip on Chichijima Island is under discussion. Most residents seem strongly supportive but appear to favor a small scale solution for residential and emergency use. IUCN is critical of the consequences of any air access development on grounds of potential change in numbers and type of visitor to the islands. The legitimate concerns regarding emergency access might be addressed by considering midsize seaplanes as an alternative. Such an alternative could also serve to carry low numbers of willing-to-pay visitors.

Currently, around 17,000 tourists p.a. visit the Ogasawara Islands. The property is very well protected through a strict access control regime with many sensitive areas off-limits to visitors or only accessible through guided tours. The islands have an Ecotourism Master Plan prepared in 2005 and revised in 2010. It is prepared and overseen by the Ogasawara Ecotourism Council, a Government, NGO and community body. This approach is commendable but could be significantly strengthened by the Scientific Council becoming a member of the Ogasawara Ecotourism Council.

An increase in visitation could follow World Heritage inscription, especially if access to the islands is changed. Therefore, the approach to tourism should be adapted in anticipation of increased visitation with a focus on managing numbers, impacts and community benefits. The Ogasawara Village administration should continue to use bed numbers to control overall levels of visitation. Careful regulation and incentivizing of commercial operators should be used to manage visitor impacts. Mandatory requirements and branding incentives can be applied through licensing thereby certifying responsible operators. Licensing should be diversified beyond whale watching association members to cover other operators such as diving, fishing and sea kayaking.

Overall growth in the residential population on the Ogasawara Islands is modest. Residential development should be closely monitored to ensure population size does not exceed the limits of infrastructure and island ecosystems. Any development should be small scale and in keeping with the islands' values.

Climate change

The Ogasawara Islands may not be subject to the same level of impacts of predicted sea level rise as other low lying island systems and atolls. Nonetheless, there are likely impacts of climate change, such as on species compositions, ranges, seasonal cycles and habitat preferences. In addition, a higher frequency and intensity of natural disasters such as landslides, typhoons and droughts could impact the islands in future. The impact of climate change on ecosystem dynamics and alien invasive species should also be considered in corresponding control strategies. In the absence of clarity, IUCN recommends that research begin to also consider the potential impacts of climate change. Capacity should be developed within management staff to understand and plan for climate change impacts. Community awareness programmes should also be developed on climate change and responses.

In summary, IUCN considers the nominated property meets the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

When IUCN evaluates the nomination of a serial property it asks the following questions:

a) What is the justification for the serial approach?

A serial approach is justified as components of the property display different aspects of the values within these islands. The suite of endemic flora and fauna is spread across various islands and components of the property. The variation within these species, and how this demonstrates adaptive evolutionary radiation can only be understood if seen across the various components of the serial nomination.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the Operational Guidelines?

The component parts of the property jointly represent the natural values of the archipelago. IUCN finds that all of the components of the property required to express Outstanding Universal Value have been included within the nomination.

c) Is there an effective overall management framework for all the component parts of the nominated property?
While under differing but complementary legal and jurisdictional regimes, the management of the nominated property is appropriately linked under the umbrella of the Ogasawara Islands Management Plan and by the fact that it commits the five managing agencies to joint action and coordination. The establishment of an active Regional Liaison Committee provides a forum for concerted action and to resolve any jurisdictional issues. Similarly, the Scientific Council provides a vehicle for ensuring that the property is managed in a holistic manner and considering issues outside of the property boundaries.

The Management Plan commits all the managing interests to a common plan of action and is detailed enough to ensure harmonized management, research and policy. The Management Plan is up to date and comprehensive is scope.

5.2 Nomination process

IUCN would like to commend the exemplary nomination process. A feasibility study delivered through a member of IUCN's World Commission on Protected Areas upon State Party request had identified various integrity and management issues which were addressed through work over several years prior to the formal submission of the nomination document.

6. APPLICATION OF CRITERIA

Ogasawara Islands has been nominated under natural criteria (viii), (ix) and (x).

Criterion (viii): Earth's history and geological features
The basis of nomination under this criterion is the preservation of exposures on land of the evolutionary processes involved in the formation of an island arc over millions of years. An examination of the Pacific 'Rim of Fire' shows that there are many volcanic sites coincident with subduction zones. The particular geology of the islands is of significant international technical interest; however alone it is not of sufficient basis for World Heritage recognition. As noted in the IUCN thematic study on volcanoes, the potential in this regard would be in relation to extending representation via a transnational extension of Kamchatka. However this is not the proposal as put forward in the nomination.

IUCN considers that the nominated property does not meet this criterion.

Criterion (ix): Ecological processes
The property's ecosystems reflect a range of evolutionary processes illustrated through its rich assemblage of plant species from both a Southeast Asian and a Northwest Asian origin. There is also a very high percentage of endemic species in selected taxonomic groups, resulting from these evolutionary processes. Within the flora it is an important centre for active, ongoing speciation.

The Ogasawara Islands provide valuable evidence of evolutionary processes through their significant on-going ecological processes of adaptive radiation in the evolution of the land snail fauna as well as in their endemic plant species. The examples of fine-scale adaptive radiation between and sometimes within the different islands of the archipelago are central to the study and understanding of speciation and ecological diversification. This is further enhanced by the relatively low extinction rates in taxa such as the land snails.

It is the combination of both the concentration of endemism and extent of adaptive radiation evident in the Ogasawara Islands which sets the nominated property apart from other places illustrating evolutionary processes. When taking into account their small area, the Ogasawara Islands show exceptionally high levels of endemism in land snails and vascular plants.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species
The Ogasawara Islands have a number of biodiversity values that are displayed in similar or more remarkable forms in other Pacific locations. The nominated property has a rich flora and fauna, including a number of rare and threatened species, with a relatively high percentage of endemic species. However, Ogasawara has generally low levels of biodiversity with many underrepresented taxa. While efforts to conserve and reintroduce threatened seabirds are laudable, the islands are not considered to be critical remaining habitat for any particular species.

Whilst the Ogasawara Islands are recognised as a Centre of Plant Diversity, many archipelagos have a higher concentration of plant species per area. The same holds true for insects. Several comparable oceanic island sites have higher numbers and percentages of endemic species. The mixed Island system biome is represented on the World Heritage list by more outstanding places from the perspective of criterion (x).

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Inscribes the **Ogasawara Islands (Japan)** on the World Heritage List under natural criterion (ix);

3. Adopts the following statement of **Outstanding Universal Value**:

Brief synthesis
The Ogasawara Islands are located in the western Pacific Ocean roughly 1,000 km south of the main Japanese Archipelago. The serial property is comprised of five components within an extension of about 400 km from north to south and includes more than 30 islands, clustered within three island groups of the Ogasawara Archipelago: Mukojima, Chichijima and Hahajima, plus an additional three individual islands: Kita-iwoto and Minami-iwoto of the Kazan group and the isolated Nishinoshima Island. The nominated property totals 7,939 ha comprising a terrestrial area of 6,358 ha and a marine area of 1,581 ha. Today only two of the islands within the property are inhabited, Chichijima and Hahajima.

The landscape is dominated by subtropical forest types and sclerophyllous shrublands. On steep cliffs and windswept headlands the vegetation is reduced to grasses and herbs.

Criteria
Criterion (ix)
The property's ecosystems reflect a range of evolutionary processes illustrated through its rich assemblage of plant species from both a Southeast Asian and a Northwest Asian origin. There is also a very high percentage of endemic species in selected taxonomic groups, resulting from these evolutionary processes. Within the flora it is an important centre for active, ongoing speciation.

The Ogasawara Islands provide valuable evidence of evolutionary processes through their significant on-going ecological processes of adaptive radiation in the evolution of the land snail fauna as well as in their endemic plant species. The examples of fine-scale adaptive radiation between and sometimes within the different islands of the archipelago are central to the study and understanding of speciation and ecological diversification. This is further enhanced by the relatively low extinction rates in taxa such as the land snails.

It is the combination of both the concentration of endemism and extent of adaptive radiation evident in the Ogasawara Islands which sets the nominated property apart from other places illustrating evolutionary processes. When taking into account their small area, the Ogasawara Islands show exceptionally high levels of endemism in land snails and vascular plants.

Integrity
The boundaries of the serial property cover the key values of the property and are well designed. The zonation and the legal set-up provide an appropriate framework, while the boundaries of Ogasawara National Park serve as a functional overall buffer. Marine protected areas are partly included contributing to more effective management of the terrestrial-marine interface and thus integrity. Integrity issues are mostly related to external threats, most importantly invasive alien species. The effects of invasive alien species and historic logging have already altered many of the archipelago's habitats. Future invasions have the potential to compromise the very values the Ogasawara Islands have been recognized for and therefore need careful and continuous attention. Possible future air access, as well as increased visitation and corresponding development potentially have strong and even irreversible effects in a fragile island environment. Control of access to the islands and of alien invasive species, two in part overlapping issues, are of critical importance for the conservation of the archipelago.

Management and protection requirements
The majority of the property is state owned and under the authority of various agencies. Some land is owned by Ogasawara Village with some other areas privately owned. The nominated property contains five legally designated categories of protected area managed by three national Government agencies and is surrounded by the much larger Ogasawara National Park serving as a functional buffer zone. The property is protected through seven pieces of national legislation which overlap in jurisdiction and objectives specifying the mandate of the Ministry of the Environment, the Forestry Agency and the Cultural Agency. Any jurisdictional conflicts are resolved through an interagency Regional Liaison Committee structure.

The 2010 multi-agency Ogasawara Islands Management Plan and companion Ogasawara Islands Ecosystem Conservation Action Plan cover a wide area of 129,360 ha and include controls beyond the nominated property such as ship navigation routes. The plans deal with critical issues such as access to the islands and control of alien invasive species. Management activities are detailed for the different island groups within the property with clear coordination mechanisms and monitoring plans prescribed. The plan is based on scientific knowledge and includes timetabled and prioritized actions.

The property benefits from strong links and dialogue between researchers, managers and community. Particularly commendable is the role of the Scientific Council and the approach to research which is adaptive and management-oriented. Local involvement and the maintenance of community benefits are crucial elements in the management of this remote archipelago.

4. Commends the State Party on the major and increasing conservation investments evident in the

nomination, a high level of community participation, the multi-agency approach taken and the decision to increase the marine area of the property during the nomination process;

5. Requests the State Party to:

a) continue its efforts to address invasive alien species;

b) ensure all significant infrastructure development, including for tourism and access to the islands is subject to rigorous prior environmental impact assessment;

6. Strongly encourages the State Party to:

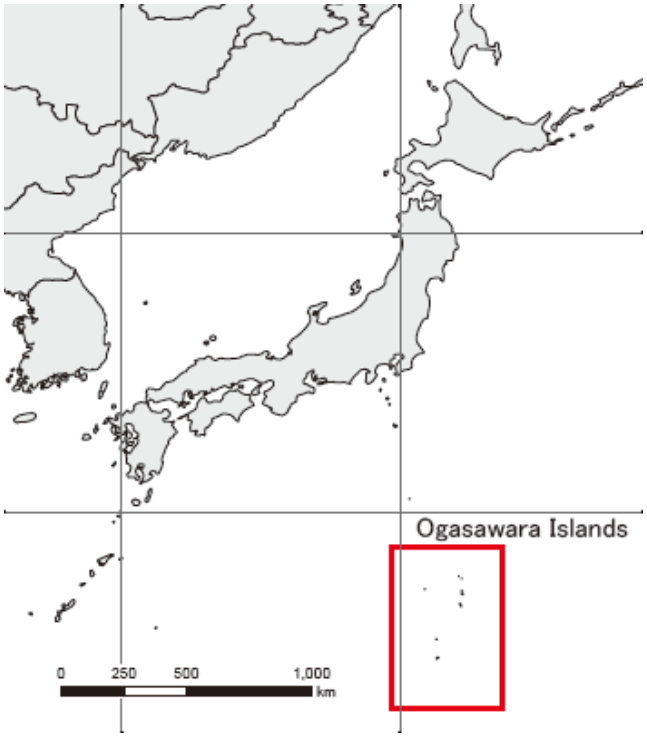
a) consider further expansion of the property's Marine Park Zones to facilitate more effective management and thereby enhance the integrity of the marine-terrestrial ecosystem dynamic;

b) develop and implement a research and monitoring programme to assess and adapt to the impacts of climate change on the property;

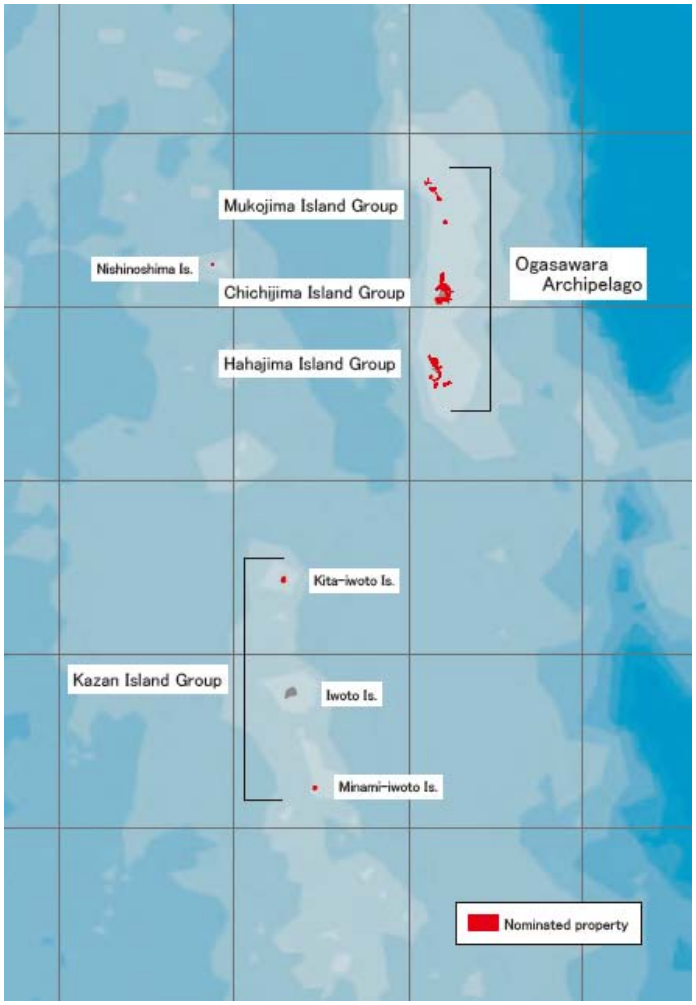
c) ensure careful tourism management in anticipation of increased future visitation and, in particular, to strengthen the Ogasawara Ecotourism Council integrating the Scientific Council as a member of the Ogasawara Ecotourism Council and advising on appropriate tourism policies that protect the island's values;

d) ensure careful regulation and incentivization of commercial operators to manage visitor impacts, including through mandatory requirements and certification incentives for tourism operators.

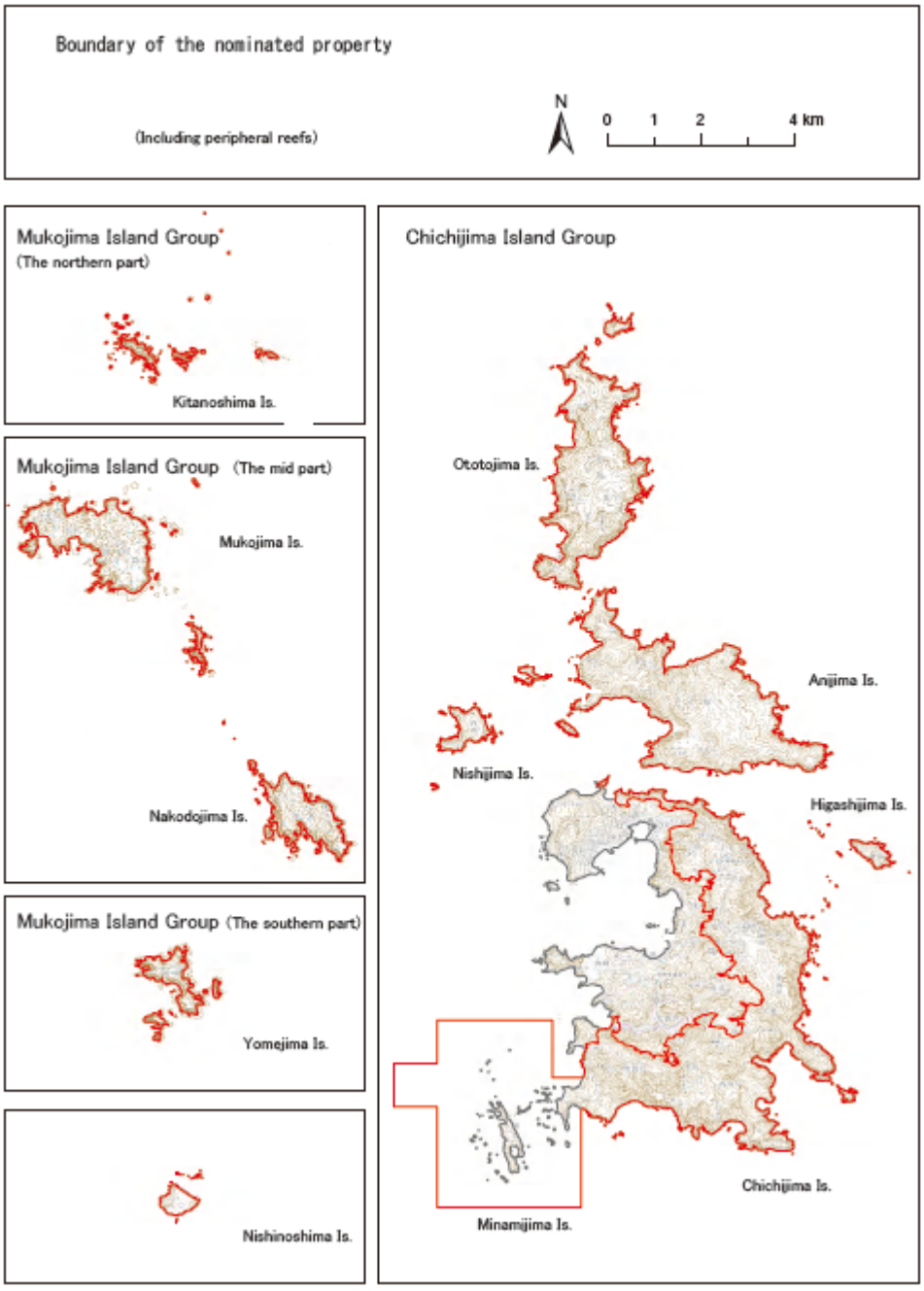
Map 1: Nominated property location in the Pacific Ocean



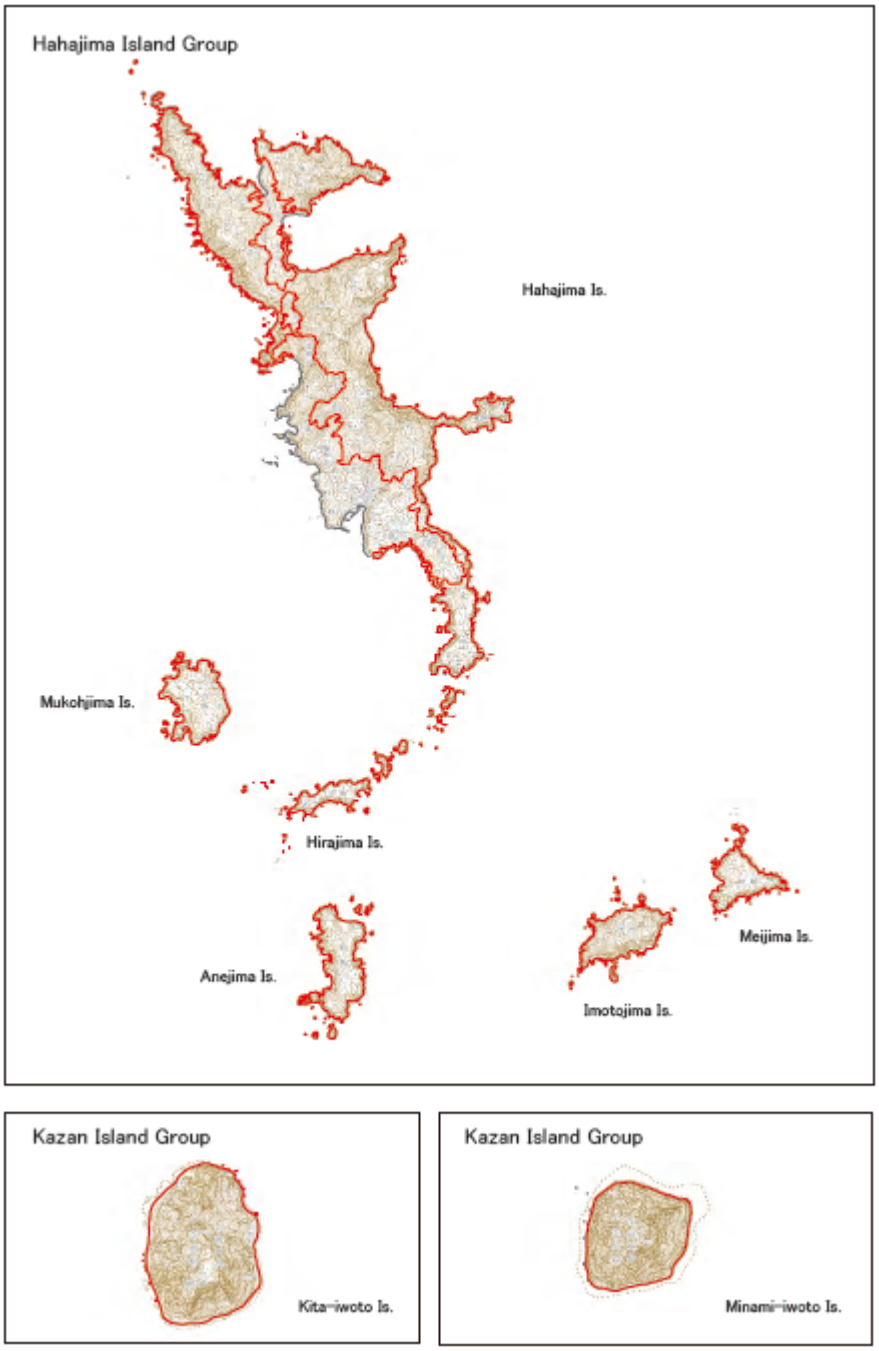
Map 2: Nominated property location



Map 3: Boundary of the Mukojima and Chichijima Island Groups



Map 4: Boundary of the Hahajima and Kazan Groups



A. NATURAL PROPERTIES

A2. DEFERRED NOMINATIONS OF NATURAL PROPERTIES

AFRICA

KENYA LAKES SYSTEM IN THE GREAT RIFT VALLEY

KENYA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

KENYA LAKES SYSTEM IN THE GREAT RIFT VALLEY (KENYA) – ID No. 1060 rev

IUCN RECOMMENDATION TO 35th SESSION: To inscribe the property under natural criteria

Key paragraphs of Operational Guidelines:
77 Property meets natural criteria.
78 Property meets conditions of integrity or protection and management requirements.
114 Property meets management requirements for serial properties.

Background note: This nomination was submitted in 2001 and considered by the World Heritage Bureau in June 2001. At that time the Bureau noted several concerns, principally the unclear legal protection status of Lake Elementaita, but also the importance of Lake Natron in Tanzania to the viability of the Great Rift Valley flamingo population; threats from pollution and deforestation to Lake Nakuru; and incomplete management plans for the three components of the nomination. The Bureau noted that the nominated property fulfilled criteria (ii), (iii) and (iv) [now (ix), (vii) and (x)] and decided to defer the nomination until the gazettal of Lake Elementaita as a protected area and completion of management plans for all three lakes.

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1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: IUCN requested supplementary information after the field mission regarding the landfill project in Soysambu Conservancy and possible linkage to neighboring countries regarding coordination for the conservation of Lake Natron.

c) Additional literature consulted: Kenya Wildlife Service (2007). **Lake Nakuru Integrated Management Plan**. GLECA (2010). **Greater Lake Elementaita Conservation Area Management Plan.** Lake Bogoria National Reserve (2007). **Lake Bogoria Integrated Management Plan.** Adeka J.E., Strobl R.O. and Becht R. (2007). **An environmental system analysis of lake Elementaita, with reference to water quality.** Proceeding of Taals, the 12th World Lakes Conference. Harper D.M. et al. (2003). **Aquatic biodiversity and saline lakes: Lake Bogoria National Reserve, Kenya**. Hydrobiologia 500: 259-276. Birdlife International (2010). **Regional Thematic Analysis for a Serial Transnational World Heritage Nomination of the African-Eurasia Migratory Flyway" the Great Rift Valley Segment.** Birdlife International African Partnership Secretariat, Nairobi. Magin C. and Chape S. (2004). **Review of the World Heritage Network: Biogeography, Habitats and Biodiversity.** IUCN and UNEP-WCMC. Scott, J.J., Renaut R.W. and Bernhart Owen R. (2010). **Taphonomic Controls on Animal Tracks at Saline, Alkaline Lake Bogoria: Impact of Salt Efflorescence and Clay Mineralogy**. Journal of Sedimentary Research: 639-665. Wood J. and Guth A. (2010). **East Africa's Great Rift Valley: A Complex Rift System.** Michigan Technological University www.geology.com. Zaccara S. et al (2008). **Lesser Flamingo populations in eastern and southern Africa are not genetically isolated**. Journal of African Ornithology, 79, 2. Childress B. et al (2007). **East African flyway and key site network of the Lesser Flamingo (*Phoenicopterus minor*) documented through satellite tracking**. Journal of African Ornithology, 78: 483-488. Brown A. and Abell R. (2008). **Freshwater Ecoregion Description: Southern Eastern Rift.** WWF, TNC. Raini, J.A. (2009). **Impact of land use changes on water resources and biodiversity of Lake Nakuru catchment basin, Kenya.** African Journal of Ecology 47: 39-45. Harper D.M. et al (2003). **Aquatic biodiversity and saline lakes: Lake Bogoria National Reserve.** Hydrobiologica, 500: 259-276. Matagi S.V. (2004). **A biodiversity assessment of the Flamingo Lakes of eastern Africa.** Biodiversity 5 (1): 13:26. McClanahan T.R. and Young T.P. (1996). **East African Ecosystems and their Conservation**. OUP. Brown L. (1971). **East African Mountains and Lakes**. EA Publishing.

d) Consultations: Four external reviewers were consulted. The mission met with officials, representatives and staff of various authorities concerned with the Kenya Lake System including the National Museum of Kenya, Kenya Wildlife Service (KWS), Kenya Forest Service, Baringo and Koibatek Councils, Soysambu Conservancy, Ututu Wildlife Conservation Trust, WWF in Nakuru, local Water Users' Associations, local Conservation Forest associations, and representatives of Nakuru town.

e) Field Visit: Geoffroy Mauvais, October - November 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The nominated property, Kenya Lakes System in the Great Rift Valley (KLS) is a serial property comprising three lakes that are ecologically, geologically and hydrologically inter-linked and located in the Rift Valley Province of Kenya. From North to South the three lakes include:

Name	Area of Property (ha)	Area of Buffer zone (ha)
Lake Elementaita	2,534	3,581
Lake Nakuru	18,800	0
Lake Bogoria	10,700	0

The nominated property combines a total core area of 32,034 ha which includes the area covered by the water bodies of the three lakes, the area covered by Lake Nakuru National Park and Lake Bogoria National Reserve together with the riparian area of Lake Elementaita. A buffer zone of 3,581 ha surrounding Lake Elementaita is not included within the nominated property. These lakes are relatively shallow (except Bogoria which has a maximum water depth of 19 meters), alkaline and endorheic (not having any surface outlet). They are included among the sixty "Important Bird Areas of Kenya" by Birdlife International as they host 13 globally threatened bird species and support globally important populations and congregations of water birds. They also include sizable populations of mammals, including Black Rhino, Rothschild's Giraffe, Greater Kudu, Lion, Cheetah and Wild Dog. All three protected areas are managed as IUCN Category II with Lake Elementaita's buffer zone largely managed as Category IV under the IUCN system. All three areas have been designated Ramsar sites.

Lake Bogoria National Reserve lies about 10 km north of the equator in Baringo and Koibatek Districts, in the Rift Valley province. It includes the lake body (about 3,800 ha) and its surroundings (for a total of 10,700 ha) while the catchment surface is approximately 93,000 ha. The reserve provides habitat for regionally and nationally endangered species and contains many distinctive physiographic features and geothermal manifestations (fumaroles, hot springs, geysers). Terrestrial vegetation is primarily thorny bush land dominated by *Acacia sp.*, *Combretum sp.*, *Ficus sp.* and alkaline-tolerant grasslands (210 species of flora). The lake supports a dense growth of green algae (*Spirulina platensis*) which, in turn, is a key feeding ground for the itinerant Rift Valley population of Lesser Flamingos. Congregations of more than 1.5 million of Lesser Flamingos have been counted while more than 370 bird species also occur as well as a range of typical savannah woodland fauna, including a population of 350 Greater Kudu.

Lake Nakuru National Park is located 3 km to the south of the city of Nakuru and is included within the Nakuru municipality boundaries. With a population of 500,000 people, the urban, agricultural and industrial centre of Nakuru lies close to Lake Nakuru National Park. This park centres on a very shallow, alkaline lake (approximately 4,000 ha), surrounded by woodlands and grasslands for a total of 18,800 ha. Its catchment covers an area estimated around 180,000 ha. The park can be divided into different complementary ecosystems: the open water zone is where one finds the main primary producer (an algae called *Spirulina platensis*). A species of Tilapia (*Sarotherodon alcalicus grahami*) introduced in 1962 is now the main food source for fishing birds. The lake shores are open alkaline mud, with areas of marsh around the river inflows and springs, giving way to grassland. The lake is surrounded by a belt of woodlands dominated by Acacia. More than 550 plant species occur in the property.

Nakuru is internationally famous for its populations of Lesser Flamingo which can number up to 1.5 million at times. However, attempts by flamingos to breed here have not been successful. Nakuru is also a major feeding ground for Great White Pelicans, which nest on rocky islets in Lake Elementaita and move to Nakuru daily to feed. Large numbers of Palearctic waders winter at Nakuru or use the site on passage. More than 480 bird species have been recorded. The park has a wide range of typical African mammal species, particularly Black Rhino (population of 125 individuals), Rothschild's Giraffe (population of almost 200 individuals), and large numbers of waterbucks, gazelles, elands and Cape Buffalos.

Lake Elementaita National Wildlife Sanctuary is a shallow alkaline lake some 20 km south-east of Nakuru town. The property covers the lake area and its close riparian lands (2,534 ha) and a buffer zone is defined around the lake (3,581 ha) but is not included in the property. The catchment area is some 63,000 ha. To the east, the lake is bordered by the Ndundori-Ngorika-Gitare Hills and to the west by Eburru Hills which are part of the Mau Escarpment. Also to the east, the lake is flanked by small-scale agriculture and hotel development, while some ranches surround the remainder. Vegetation around the property consists of upland forest, woodland (mostly Acacia forest), bush land and grassland. The lake hosts important populations of Greater and Lesser Flamingo. Although it lacks fish, except in the peripheral hot springs, Elementaita also hosts a large population of Great White Pelicans (sometimes over 20,000 individuals) which breed on rocky islets. The pelicans move daily to Lakes Nakuru and Navaisha to feed. Greater Flamingos are known to have bred there ten years ago, but seem to have been displaced by pelicans. Approximately 450 species of birds have been counted within the property and its buffer zone including at least 49 recorded waterbird species and 10 Palaearctic migrants. Healthy populations of typical African mammal species occur in the riparian and in the surrounding conservancies, including the Rothschild's Giraffe (around 150).

Although not part of the nominated property, Lake Natron in Tanzania is an integral part of the flamingo lakes system of eastern Africa being the breeding and nesting site for the population which moves between the soda lakes of the region. This site is therefore critically

important to the long term ecological functioning of the nominated Kenyan serial property.

3. COMPARISONS WITH OTHER AREAS

The property has been nominated under three natural criteria: (vii), (ix) and (x).

The three lakes within the nominated property are part of the "Flamingo Lakes" of the Eastern Rift Valley, a series of ten lakes occurring along the floor of the Eastern Rift Valley in Tanzania, Kenya and Ethiopia. Birdlife International notes the global significance of the Great Rift Valley as a migratory corridor for 500 million birds from 350 species who pass through this area en route from nesting sites of Eurasia to those of southern Africa. Birdlife specifically notes the nominated property as a foundation for national and transnational serial World Heritage properties within the Greater Rift Valley.

The nominated property belongs to Udvardy's East African Woodland/Savanna Biogeographical Province which is already represented on the World Heritage List by seven properties. However, the property is part of the more detailed WWF Northern Acacia-Commiphora Bushlands and Thickets terrestrial ecoregion, which is not yet represented on the World Heritage List. Further East Africa's "Saline Rift Valley Lakes" have been identified as an IUCN/Species Survival Commission global habitat type of potential outstanding universal value. Whilst part of Lake Turkana is included on the World Heritage List, this habitat type remains a gap on the World Heritage List.

The KLS is part of the Great Rift Valley which is an exceptional geomorphological feature in itself. The lakes are surrounded by escarpments, undulating hills and old volcanoes which form a distinctive panorama and landscape. This scenic beauty compares favourably to the dominant freshwater wetland ecosystems of the Pantanal Conservation Area (Brazil) and associated Amolar Mountains. Comparison may also be made with the Djoudj Bird Sanctuary (Senegal), however, the KLS illustrates a different and unique association of topographies, volcanic activities, multiple ecosystems and wilderness areas making it much more impressive than the landscape found within and around the Djoudj Sanctuary. The extremely large numbers of Lesser Flamingos moving between the three components of the nominated property is considered one of the world's most spectacular wildlife phenomena. Flamingos are found in a number of other locations in Africa including Namibia, Ethiopia, South Africa, Botswana and Uganda however not in the concentrations found in the KLS. The outstanding beauty of the KLS has been recognised for a long time and has been described as such by Sir Peter Scott (founding chairman of WWF) as "a sight of incredible beauty and interest and there can be no more remarkable ornithological spectacle in the world".

The main soda lakes in the region are the three nominated areas as well as Magadi and Logipi in Kenya (not protected and considered of less conservation interest), Natron and Eyasi in Tanzania and Langano Awass and Abijatta-Shalla in Ethiopia. As a system they are among the world's most productive ecosystems serving as feeding grounds to millions of birds. They also provide unique scientific insights into the ecological dynamics and food chains of these harsh yet highly productive biological systems. For instance, and like the KLS, the Abijatta-Shalla Lakes are located in the Great Rift Valley; both lakes are without outlets and the water is alkaline. Lake Abijatta is very shallow and, together with the deeper Lake Shalla, they provide an important feeding ground for a great number of lesser and greater Flamingos. Although these lakes account for over 400 species of aquatic and terrestrial birds, the KLS has a higher and more diverse avifauna with 450 species recorded and many more species of mammals included within its boundaries.

Lake Turkana in the Great Rift Valley was inscribed on the list of World Heritage Sites in 1997 as a serial nomination (three national parks) and is described as an outstanding laboratory for the study of plant and animal communities and their evolution. Sibiloi National Park lies on the lake's eastern shore, while Central Island National Park and South Island National Park lie in the lake. The three National Parks serve as a stopover for migrant waterfowl and are major breeding grounds for the Nile crocodile, hippopotamus and a variety of venomous snakes. Lake Turkana is the world's largest alkaline lake. While the KLS is much smaller than this cluster, it represents a unique place for the understanding of soda lakes ecosystem evolution complementing the values of Lake Turkana.

The KLS has some of the highest bird diversities in the world occurring in huge congregations. For instance, there are five species of Flamingo in the world, and the KLS supports two of them (the Lesser and the Greater Flamingo) with occasional congregations representing more than 75% of their total populations. Those two Flamingo species exist elsewhere in Africa but in no other place do they reach the concentrations found within the KLS and Lake Natron in Tanzania during the breeding season. The KLS are also home to over 100 species of migratory birds and support globally important populations of Black-Necked Grebe, African Spoonbill, Pied Avocet, Little Grebe, Yellow Billed Stork, Black Winged Stilt, Grey-Headed Gull and Gull Billed Tern. Comparison can be made with the Djoudj Bird Sanctuary, in Senegal, a fragile sanctuary for breeding and migrating birds which is known to support around one million water birds and is one of the main West African sanctuaries for Palearctic migrants. This property is similar to the KLS for its high concentrations of migrants, but the KLS has much higher concentrations of birds. For instance, flamingos number only in the thousands in Djoudj while the KLS hosts around 1.5 million Lesser Flamingos. In terms of breeding, Djoudj supports approximately 2,500 pairs of Great White Pelicans while more than 8,000 pairs are known to breed at Lake Elementaita. The nominated property includes the only suitable breeding site for Great

White Pelicans in the Great Rift Valley. In terms of bird species diversity, the list of birds for the KLS exceeds 450 while Djoudj Bird Sanctuary hosts only 400 species.

In conclusion, the KLS are a cornerstone of the soda lakes of the Rift Valley of Africa which "…are of extraordinary interest and are biologically unique; there is nothing quite like them in the world" (L. Brown, 1971). Within the relatively small size (less than 36,000ha. in total) exists one of the most diverse and spectacular avifaunal assemblages in the world. Overviews of the soda lakes of the Rift Valley emphasize that they "are among the world's most productive natural ecosystems. Conspicuous features of these lakes are enormous flocks of lesser flamingos grazing on the thick green suspensions of algae. In contrast to such prolific biological activity are the harsh physical and chemical conditions and a depauperate fauna". (McClanahan and Young, 1996).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Each of the three sites is under a different form of protection:

Lake Nakuru is a National Park (managed by KWS);
Lake Bogoria is a National Reserve (managed by two County Councils but under national policy set by and in cooperation with KWS);
Lake Elementaita is gazetted as a National Wildlife Sanctuary under the responsibility of KWS and surrounded by a buffer zone that includes a Conservancy and a Wildlife Conservation Trust.

Although National Park designation for all three lakes would provide a more desirable level of protection, the existing forms of protection are adapted to the ongoing use of land and conservation practices in each site. However, Lake Elementaita as a National Wildlife Sanctuary is considered to have a somewhat weaker level of legal protection than the other two sites. The Wildlife Conservation and Management Act of 1989 is the principal Act that regulates the conservation and protection of the KLS. It stipulates that the KWS is in charge of wildlife management. The sites also benefit from catchment laws and policies introduced over the last 10 years, such as the Environmental Management and Co-ordination Act (1999), the Water Act (2002) or the Forest Act (2005), which have strengthened a more comprehensive approach to catchment management and conservation.

Whilst there are some concerns about the strength of protection afforded to Lake Elementaita, IUCN considers that the protection status of the nominated property meets the requirements set out in the Operational Guidelines

4.2. Boundaries

The property comprises three sites, each of them clearly defined on maps and demarcated on the ground by beacons and/or fences. Lake Elementaita National Wildlife Sanctuary is surrounded by a buffer zone, part of the Soysambu Wildlife Sanctuary and Ututu Wildlife Conservation Trust. Lake Bogoria and Lake Nakuru do not have formal buffer zones, however, wide gazetted terrestrial zones within the protected areas serve as buffer zones for the lake bodies.

It would be beneficial to extend the buffer zone of Lake Elementaita up to Nakuru National Park to restore connectivity and resilience between the two areas. This would help to solve many of the problems that the park currently faces (high tourism, growth in wildlife populations etc). It is pleasing to note that the KWS has agreed in principle with the Soysambu Conservancy to open a wildlife migratory corridor to connect Lake Nakuru and Lake Elementaita.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3. Management

Each site has a management plan in place: the Greater Lake Elementaita Conservation Area Management Plan (2010-2020), the Lake Nakuru Integrated Ecosystem Management Plan (2002-2012) and the Lake Bogoria National Reserve Integrated Management Plan (2007-2012). Those plans describe extensively the management and monitoring procedures that are applied. In each site, a management committee including various stakeholders related to the lakes' catchments is in place to monitor the implementation of the plan.

Nakuru is under direct management of KWS with appropriate staff numbers (170 permanent rangers), budget and means (including a plane, a research unit, an educational center, a rhino monitoring centre, etc.). A stakeholders' forum: Lake Nakuru Catchment Conservation and Development Forum meets regularly to monitor the implementation of the management plan.

Bogoria is managed by a multi-stakeholder management committee led by the two county councils (Baringo and Koibatek) that have authority to manage the reserve as provided for in the Wildlife Conservation & Management Act. A warden is in charge, supervises almost 40 staff and benefits from enough means and budget (including an education centre).

Elementaita does not yet have a locally based staff member directly responsible for the gazetted area, rather it depends upon the KWS warden based in Navaisha. This is a concern, however, most of the area which needs active management (buffer zone) is under private ownership and benefits already from conservation efforts. A local landowners and users association (the Greater

Lake Elementaita Conservation Area) provides a dynamic management structure that aims at controlling entry into the site and all related construction or developments within the catchment. There is still some soda extraction done by hand along the northwestern shore and grazing by nomadic pastoralists in the south of the property but with little or no impact.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines

4.4. Threats

The property faces numerous pressures, however regulatory and management measures have significantly improved during the past few years.

Water and forest management
Increasing areas of forest and woodland cover have been lost to agriculture and human settlements in the catchment areas during the last thirty years. Small irrigation dams have also been constructed along rivers flowing into the lakes and river flows have reduced markedly while silt loads have risen, resulting in less water reaching the wetlands and the lakes.

Forest conservation is not a problem within the boundaries of the property, but a major concern for the catchments themselves as deforestation directly affects the quantity and quality of water which goes into the lakes. The catchment around Lake Nakuru has suffered serious deforestation with one reviewer noting catchment maps showing a progressive decline in the area of land under forests from 47% in 1970 to 26% in 1986. The new Forest Act (2005) provides a sound basis for addressing this issue in a participative and effective way and many programs of reforestation are now going on in the catchment areas, including in the Mau Escarpment which is an area which has suffered particularly serious deforestation.

Pollution of water is also a problem, mostly originating from the growing agricultural and industrial centre of Nakuru. Treatment of waste water entering the lake from the town has improved and water quality monitoring is now in place, as is an expanded sewage treatment works. Concerns about industrial pollution and surface runoff persist but it is important to note that the municipality of Nakuru is taking decisions to solve these issues (including moving the waste deposit which is above the lake).

The effective management of water resources in an integrated manner is critical to the integrity of the property. Continued efforts will be needed to mitigate threats through the management plans of the lakes and to build upon the improvements resulting from the recent Water Act (2002) which allows for more participative management of shared water resources.

Mining issues
This concerns essentially Elementaita where artisanal extraction of soda and sand exists, as well as a diatomite extraction site outside the buffer zone (east of the sanctuary). At current levels this small scale mining does not pose a significant threat to the property.

Livestock
This concerns mainly the southern area of Elementaita where overgrazing is still an issue. While it does not threaten directly the value of the site, it may lead to conflicts between users and between wildlife and cattle. It is thus important that cattle grazing is progressively prohibited within the property and its buffer zone.

Encroachments and settlements
The limits of the property are known and clearly demarcated on the ground (and in the case of Nakuru, a fence exists). A risk of new settlement still exists in the eastern part of the Elementaita buffer zone, but the Gleca Management Committee is charged with controlling any new development or land-use conversion.

Ecological and climatic changes
While unpredictable, they may greatly affect the property and records in the past 80 years have shown huge water level fluctuations in all lakes (including complete drying out of Elementaita and Nakuru). Measures can be taken to mitigate some of those risks, mostly linked to water management in the catchment, and until now, the property has been resilient to these climatic fluctuations.

Tourism
Up to 300,000 visitors enter Nakuru NP per year, presenting a significant management challenge. However, KWS has plans to mitigate ecosystem impact and until now, has successfully controlled direct or indirect consequences of over population in the park. This impact is concentrated in the terrestrial part of the property more than the lake itself. The possible extension of the park to the south by merging with the Soysambu Conservancy would offer an effective way to dilute this tourism pressure in a larger conservation area.

Infrastructure development
A pipeline is under construction near the buffer zone of Elementaita but it will be buried. The main current threat comes from a proposed landfill site which could occur on the border of Nakuru National Park, in the Soysambu Conservancy and would jeopardize the connectivity between the two sites. While this project does not concern the property itself, it could impact considerably the ecological functioning of the ecosystem and would prohibit the possibility of reconnecting Nakuru to Naivasha. The State Party has recently advised that this proposed development has been stopped and alternative areas will be investigated.

In summary, despite a number of concerns on the protection of Lake Elementaita and surrounding land use threats, IUCN considers the nominated property meets

the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

a) Justification for the serial approach?
Large numbers of birds move between each of the sites, sometimes on a daily basis. All three are thus strongly linked in a "flamingo system" after the dominant species using the lakes. The serial nomination is justified as no one of the three sites on its own would adequately display and protect this unique Rift Valley "flamingo system".
One major component of this system, however, is missing, which is the breeding ground for the Lesser Flamingo at Lake Natron in Tanzania. For now, there is no indication that this lake is not going to continue to play its role in the future. The addition of Lake Natron should be however investigated in the future by both State Parties as any threat that may impact this site would have consequences on the property.

b) Functional linkages between the separate component parts of the nominated property
Lakes Elementaita, Nakuru and Bogoria are part of a system of lakes in the Eastern Rift Valley that share a common volcanic landscape, and have in common their geological history, human history, hydrological processes and associated ecological features. Geographically, they lie on the floor of the Rift Valley and share common geological origins; hydrologically, they are linked by a complex surface and underground water system; ecologically, they share and exchange a huge number of species and individuals of birds (resident and migratory) which utilize different sites to fulfil their needs. Functionally, they are all gazetted protected areas, managed under a common authority (KWS Chaired National Steering Committee).

c) Overall management framework for all the component parts of the nominated property
Each site is now managed by a specific management committee, implementing a management plan. Some stakeholders are common to the three sites, such as Water Resources Authorities, Kenya Forest Service, Kenya Forest Service and the National Museum of Kenya. The three committees fall under the umbrella of KWS which ensures technical support and coordination among all the sites. The committee, chaired by KWS, meets at least three times a year to review the progress of conservation within the cluster.

5.2 Evolution since the previous assessment in 2001

As noted in the background note, this nomination was submitted first in 2001 for the same cluster. Since that time a number of matters have been addressed including two new laws (Water Act and Forest Act) which have been enacted to regulate the management of the catchment areas in a more integrated and participatory way; Lake Elementaita has been gazetted as a protected area (National Wildlife Sanctuary); all three sites now have management plans addressing issues raised in 2001; and a national steering committee has been created to ensure management and stakeholder coordination between the three sites.

6. APPLICATION OF CRITERIA

The KLS in the Great Rift Valley (Bogoria, Nakuru and Elementaita) is proposed for inscription under three criteria: (vii), (ix), and (x).

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
The property demonstrates outstanding scenic beauty. It combines many distinctive associated landforms and ecosystems: steep fault scarps, cinder cones and craters, ramp, box faults, geysers, hot springs, open waters, marshes, rivers and waterfalls, Acacia and Euphorbia forests and open grasslands. Birds congregate in millions on the shores of the lakes and offer, with the backdrop of faulted scarps, hot springs and geysers, an exceptionally stunning display of ecological dynamics and large scale wildlife movements. Their daily movements from one lake to another create an unparalleled natural spectacle set amid the terrestrial plants and animal species that occur around the lakes.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecological processes
The shallow alkaline endorheic lakes of the KLS are of great scientific interest to limnologists studying the high productivity of these distinct ecosystems. The low species diversity and abundant resident population make soda lakes especially appealing environments in which to conduct investigations of trophic dynamics and ecosystem processes. The production of huge biomass quantities in these distinctive soda lakes and the food chain that this green algae supports are also of international scientific value. The bird migration phenomenon which occurs there is an ecological process of major importance that illustrates adaptation to seasonal changes in the environment as well as breeding cycles.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species
Within the relatively small size of each of the components, some of the highest levels of bird diversity in the world are recorded. The soda lakes are a key feeding ground for millions of birds, including the itinerant Rift Valley congregations of the Lesser Flamingo, of which they sustain 75% of the global population. Many other species, like the Great White Pelican, occur there in numbers of several hundred thousand individuals. As part of the largest bird migration in the world the lakes also provide

critical support to millions of migrants that winter or stop over in Kenya. Over 450 bird species are recorded in the property which has been designated as Important Bird Areas by BirdLife International.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Inscribes the **Kenya Lake System in the Great Rift Valley (Kenya)** on the World Heritage List under natural criteria (vii), (ix) and (x);

3. Adopts the following **Statement of Outstanding Universal Value**:

Brief synthesis

The Kenya Lake System is composed of three alkaline lakes and their surrounding territories: Lake Bogoria, 10,700 ha; Lake Nakuru, 18,800 ha; and Lake Elementaita, 2,534 ha. These lakes are found on the floor of the Great Rift Valley where major tectonic and/or volcanic events have shaped a distinctive landscape. Some of the world's greatest diversities and concentrations of bird species are recorded within these relatively small lake systems. For most of the year, up to 4 million Lesser Flamingos move between the three shallow lakes in an outstanding wildlife spectacle. Surrounded by hot springs, geysers and the steep escarpment of the Rift Valley with its volcanic outcrops, the natural setting of the lakes provides an exceptional experience of nature.

Criteria

Criterion (vii)

The Kenya Lake System presents an exceptional range of geological and biological processes of exceptional natural beauty, including falls, geysers, hot springs, open waters and marshes, forests and open grasslands concentrated in a relatively small area and set among the landscape backdrop of the Great Rift Valley. The massed congregations of birds on the shores of the lakes including up to 4 million Lesser Flamingos which move between the three lakes is an outstanding wildlife spectacle. The natural setting of all three lakes surrounded by the steep escarpment of the Rift Valley and associated volcanic features provides an exceptional experience of nature.

Criterion (ix)

The Kenya Lake System illustrates ongoing ecological and biological processes which provide valuable insights into the evolution and the development of soda lake ecosystems and the related communities of plants and animals. Low species diversity and abundant resident populations of birds and other animals make the soda lakes of the property especially important environments in which to conduct investigations of trophic dynamics and ecosystem processes. The production of huge biomass quantities in these distinctive soda lakes and the food web that this green algae supports are also of international scientific value, and provide critical support to birds, which visit the property in large numbers as part of their migration in response to seasonal and episodic changes in the environment.

Criterion (x)

The Kenya Lake System is the single most important foraging site for the Lesser Flamingo in the world with about 1.5 million individuals moving from one lake to the other and provides the main nesting and breeding grounds for Great White Pelicans in the Great Rift Valley. The lakes' terrestrial zones also contain important populations of many mammal and bird species that are globally or regionally threatened. They are home to over 100 species of migratory birds and support globally important populations of Black-Necked Grebe, African Spoonbill, Pied Avocet, Little Grebe, Yellow Billed Stork, Black Winged Stilt, Grey-Headed Gull and Gull Billed Tern. The property makes a critical contribution to the conservation of the natural values within the Great Rift Valley, as an integral part of the most important route of the African-Eurasian flyway system where billions of birds are found to travel from northern breeding grounds to African wintering places.

Integrity

The three lakes constituting the property represent the most significant Rift Valley lakes within Kenya, and are an essential component of those in the Great Rift Valley as a whole. Each of the three components of the property is gazetted as a protected area and whilst the property is of small size, it contains the main ecosystems and features that support its Outstanding Universal Value. Surrounded by an area of rapidly growing population, the property is under considerable threat from surrounding pressures. These threats include siltation from soil erosion, increased abstraction of water in the catchment, degradation of land, deforestation, growth in human settlements, overgrazing, wildlife management, tourism and pollution coming from Nakuru town. Management authorities must be vigilant in continuing to address these issues through effective multi-sector and participatory planning processes.

Protection and management requirements

Each component of the property enjoys adequate legal protection, up to date management plans and a satisfactory on-ground management presence. In order to maintain and enhance the Outstanding Universal Value of the property it will be important to sustain and enhance this effective management, and to address a range of long term issues. These include catchment level management of threats and development with particular

emphasis on management of groundwater and surface pollution and forest cover, inter-sectoral and participatory management processes especially with respect to environmental impact assessment of adjoin development and the building of increased ecological connectivity between the component parts of the system. Transboundary cooperation is also important as the values of the property are partly dependant on protection of other lake and wetland areas that support migratory species. In this regard there is potential for other areas, including Lake Natron in Tanzania, to be considered as part of a future transnational serial World Heritage property.

4. Commends the State Party on the significant efforts to improve conservation of the nominated property and to reduce the impacts of surrounding land use through effective management of development and threats within the lake catchments.

5. Also commends the State Party on its decision to abort the proposed landfill development close to Lake Nakuru National Park in order to avoid impact and keep open options for ecological connectivity between Lake Nakuru and Lake Elementaita through the Soysambu Conservancy.

6. Encourages the State Party to continue to strengthen the protection and management of the property, including in relation to the following issues:

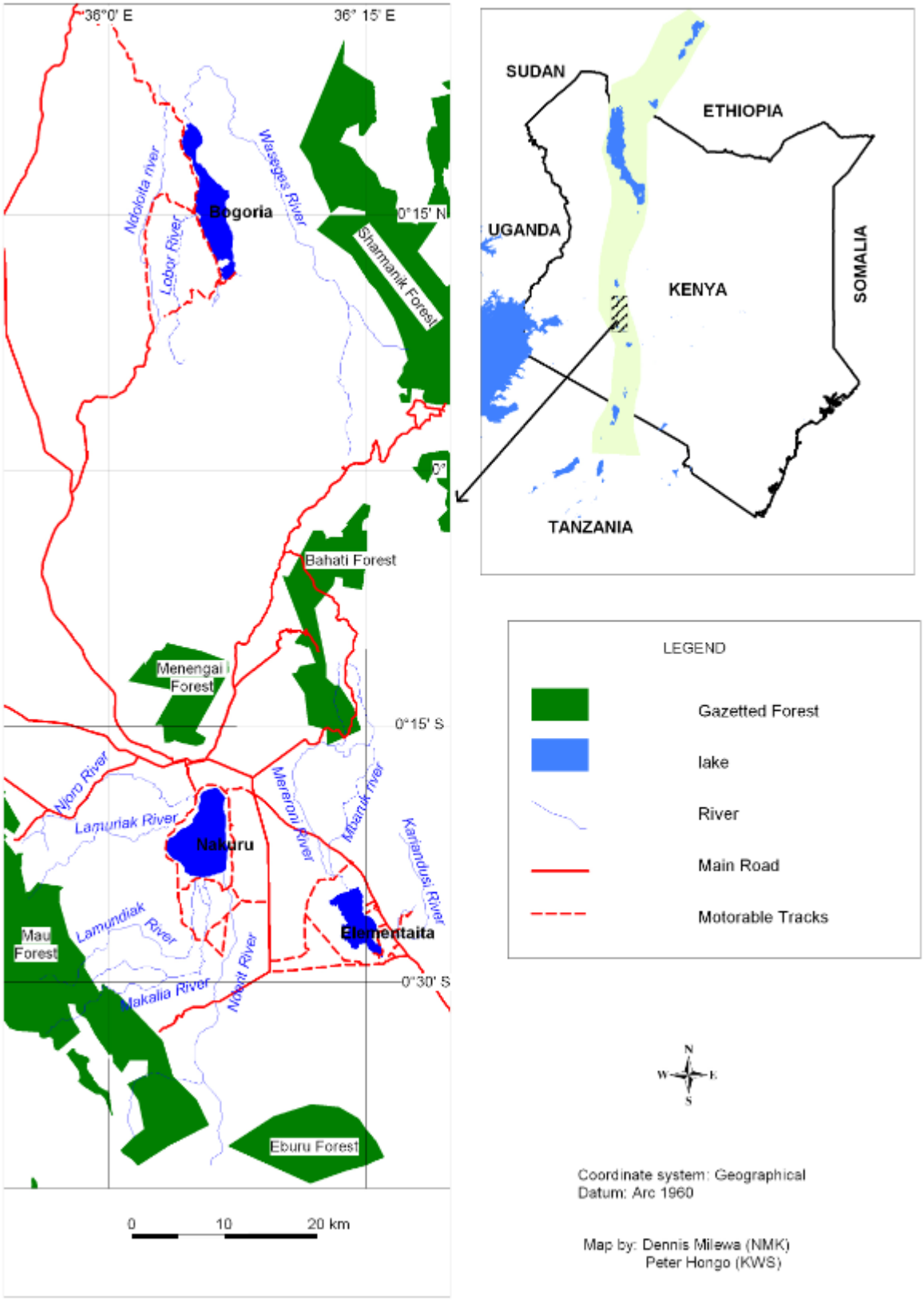
a) to upgrade the protection of Lake Elementaita through strengthened legal protection; recruitment of site-specific staff; and prohibition of cattle grazing so that it is afforded a similar standard of protection as the other components of the property;

b) to take any effective action which could reinforce the link between and the conservation of the three parts of the property, including protecting secondary ecological areas and opening wildlife corridors such as that linking Lakes Nakuru and Elementaita through the Soysambu Conservancy;

c) to enhance catchment-wide efforts to curb deforestation especially on the Mau Escarpment within the watershed of Lake Nakuru;

7. Considering the property's essential function within the lakes and wetlands in the region, encourages the States Parties of Kenya and Tanzania, and other relevant States Parties, to cooperate regarding the effective conservation of Lake Natron and other lakes in the region, and to consider further potential serial extensions as part of a potential transnational serial World Heritage property, taking account of relevant recent thematic studies by Birdlife and IUCN.

Map 1: Nominated property location



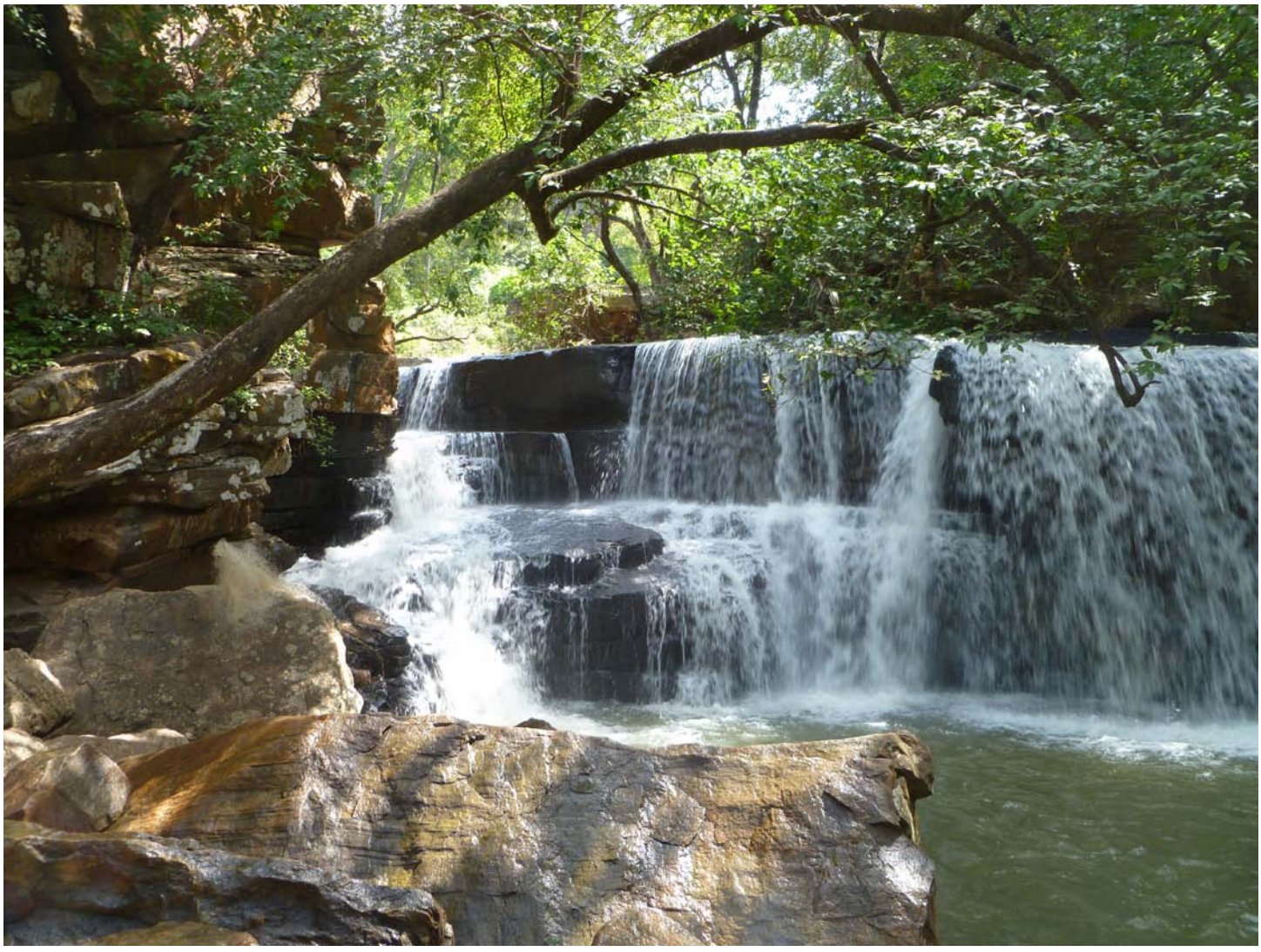
A. NATURAL PROPERTIES

A3. EXTENSIONS / RENOMINATIONS OF NATURAL PROPERTIES

AFRICA

PENDJARI NATIONAL PARK
(Extension of W National Park of Niger, Niger)

BENIN



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

PENDJARI NATIONAL PARK (BENIN) – ID No. 749 bis
Extension of W National Park of Niger (Niger)

IUCN RECOMMENDATION TO 35th SESSION: Defer the nomination of the property

Key paragraphs of Operational Guidelines:
77 Property is not nominated under the same criteria as the property for which it is proposed as an extension.
78 Property does not meet conditions of integrity set out in the Operational Guidelines.
114 A management system for serial property as a whole is not in place.

Background note: Pendjari National Park (PNP) in Benin is nominated, under natural criterion (x) only, as an extension of W National Park of Niger (WNPN), which was inscribed on the World Heritage List at the 20th Session of the World Heritage Committee (2000) under natural criteria (ix) and (x). At the time of inscription, IUCN did not consider that the WNPN fulfilled any of the natural criteria. After an intense debate the nomination was put to a vote at the Committee, and received the necessary majority for inscription, as noted in the record of the meeting.

PNP was the subject of a previous joint nomination (under the equivalent of natural criteria (vii) and (x)) with the W National Park of Benin (WNPB). WNPB adjoins WNPN along the national border, which was considered by Committee at its 22nd Session (2002), and discussed in depth at the preceding Bureau. The Bureau considered that the proposed nomination did not meet natural criteria, but decided that this nomination be referred back to the State Party with the recommendation that it re-submit the nomination as an extension of WNPN, seeking the approval of the Niger authorities for this extension. The Bureau noted that the authorities in Burkina Faso were intending to nominate Arli National Park and other areas as a third extension to WNPN and recommended that the three States Parties coordinate the entire tri-national complex as one natural World Heritage property.

In decision 29COM 7B.3 related to the State of Conservation of WNPN, taken at the 29th Session of the Committee (2005), the Committee also encouraged Niger, Burkina Faso and Benin to finalise the proposal to extend WNPN into a transboundary property between the three countries.

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1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: IUCN requested supplementary information from the State Party on 04 January 2011. No reply was received before the statutory deadline of 28th February 2011, nor at the point at which this report was finalised.

c) Additional literature consulted: CENAGREF/GTZ (2010) **Plan d'Aménagement participatif et de Gestion 2004-2013** – Parc national de la Pendjari. version intermédiaire révisée; CENAGREF (2002-2003) **Guide pratique de la Pendjari**. ADEPTE / GTZ (2010) **Rapport du suivi de la mise en oeuvre de la Stratégie de Développement de l'Ecotourisme dans la Réserve de Biosphère de la Pendjari.** CENAGREF / GTZ (2010) **Stratégie de Développement de l'Ecotourisme dans la Réserve de Biosphère de la Pendjari**; Collaboration entre le Parc national de la Pendjari et le Parc National du W au Niger – papier préparé par le parc lors de la visite; **Listes Réserves de Biosphère et Ramsar**; UNEP-WCMC (1986) **Review of the Protected Areas System in the Afrotropical Realm** (259p.); Cartes des différents statuts de protection au niveau régional, Past nomination dossiers, evaluations and Committee decisions relevant to the nomination.

d) Consultations: one external reviewer consulted. The mission met with a range of stakeholders in Benin, including the direction of CENAGREF and Secretary General of the Ministry of Environment, village associations (AVIGREFS), local sustainable tourism associations, leaseholders of the hunting zones, and representatives of Beninois-German cooperation. The mission was not able to meet with representatives from Niger.

e) Field visit: Mamadou Sidibé and Pierre Galland, October 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The nominated property, Pendjari National Park (PNP) covers an area of 2,750 km^2 at the extreme northwest of

Benin. It is part of the largest complex of protected areas in Africa, the so-called W-Arli-Pendjari (WAP) complex. In addition to the nominated property, this area is also recognised by the "W" Transfrontier Biosphere Reserve, shared between Benin, Niger and Burkina Faso, and various protected areas in Burkina Faso (Pama, Arli, Singou), and Togo (Oti, Kéran, Mandouri).

The Pendjari River, which gives PNP its name, is a major permanent water course adjoining the property. The vegetation of the area includes grassland, shrub and wooded savannah ecosystems with richer forest areas adjoining the river. In total 240 plant species in 53 families have been identified within the nominated property. Six of these species are included in the IUCN Red List of Threatened Species, such as *Thunbergia atacoriensis,* an endemic species found only in the Bondjagou Forest. The property also supports some notable insect species, including butterflies such as nationally rare *Euchrysops sahelianus* and the regional rarity *Axiocerses amanga.* The long term use of fire, in the course of human use of the area for perhaps 50,000 years ago has greatly influenced the vegetation to favour fire tolerant species, and there are local impacts on vegetation patterns around villages and in other areas.

The wildlife of the nominated property includes the majority of large mammal species typical for West Africa, including 10 different antelope species, as well as species that have disappeared or are highly threatened in most of the rest of the region, such as Elephant, Buffalo, Lion, Cheetah, Leopard and African Wild Dog. Whilst not abundant, the antelopes include: Kob, Bohor Reedbuck, Defassa Waterbuck, Roan Antelope, Bubal Hartebeest, Topi, Bushbuck, Grimm's Duiker, Red-Flanked Duiker, Oribi. Warthog, Hippopotamus and Baboon add further to the diversity of large mammals.

A series of recent surveys has helped to clarify the numbers of large predators, with over 70 lions, and a fragile population of 15 Cheetah noted. Numbers of Leopard and African Wild Dog are less clearly established.

The bird fauna of PNP comprises 460 recorded bird species with a relatively large number of raptors (37 recorded species). The presence of flooded zones during parts of the year creates favourable conditions for waterbirds, and PNP has an importance for supporting passage migrants. There is also a notable diversity of fish in the marshes and river areas, with the River supporting c.100 species, and a recent study has noted the wetland areas of the park include seven of the nine endemic fish recorded in the Volta basin. Nile crocodile is present in the park, and there are ongoing studies of reptiles and amphibians. This importance is part of the basis for the recognition of the area as a Ramsar Site in 2007, in addition to the coverage by Biosphere Reserve status noted above.

3. COMPARISONS WITH OTHER AREAS

As noted above the Committee previously considered the nominated property, on its own, does not meet natural World Heritage criteria. The nominated ste property does not fill a major biogeographic region gaps on the World Heritage list and it is not a terrestrial biodiversity hotspot. IUCN noted in its comparisons for the previous nomination of PNP in 2002, that three existing World Heritage sites are located in the Udvardy West African Woodlands/Savanna Biogeographic Province: Niokolo-Koba National Park in Senegal, Comoé National Park in Côte d'Ivoire and W National Park in Niger. The first two sites are both included on the List of World Heritage in Danger. In terms of natural values they have many similarities with PNP. Both are located in slightly higher rainfall areas and this is reflected in the presence of more extensive gallery forests along the rivers which provide habitat for a number of forest species that do not occur in the nominated area. This is offset by the presence of species such as the Cheetah, Topi, Wild Dog and red-fronted gazelle in PNP. Niokolo-Koba had, at the time of inscription, a relict population of Giant Eland (*Taurotragus derbianus*) – a species which is almost extinct in West Africa and which could possibly have occurred in the distant past in the PNP. The population of elephants in the nominated area is larger and better protected than in the other two areas. The elephant population of the large area of Eastern Burkina Faso, Western Niger and Northern Benin remains the most important and the best protected in West and Central West Africa, and is a common population to the three countries, requiring a joint approach to conservation.

PNP is somewhat smaller than Comoé and Niokolo-Koba, but the reserves surrounding it constitute a protected area block that greatly exceeds the other sites and the conservation status of the entire block is better than other protected areas in this region.

Although in a different Udvardy province, the Manovo-Gounda-St Floris National Park (MGSFNP) in the Central African Republic (included on the List of World Heritage in Danger) shares many of the features of PNP. This area has in the recent past supported far larger populations of globally threatened wildlife species than those found in the nominated area, at least in recent historical times. MGSFNP had populations of the Black Rhinoceros, Giant Eland and some primate species not found in West Africa. However, the park has suffered heavy poaching pressure in recent years and its values have been greatly diminished. Considering sites elsewhere in Africa, IUCN noted the Selous Game Reserve (Tanzania) as a comparable wooded savannah zone, but as most of the plant and animals species in SGR are different to those found in West Africa, a comparison was not pursued.

In conjunction with the earlier nomination of PNP (jointly with WNPB) in 2002, IUCN and UNEP conducted an extensive analysis of their comparative conservation value. This concluded even when PNP and PWNP are added to the Niger part of 'W' National Park, the property

is of significantly less conservation importance than the other three existing World Heritage sites. It was noted that a site containing PWNP, the WNPN and several as yet un-nominated adjacent sites in Burkina Faso (Arli National Park and the Singou Wildlife Reserve) would lead to a tri-national World Heritage site exceeding 2 million hectares. As such, it would be the largest protected area in any biome in this part of West Africa. The significant losses in biodiversity values in the other comparable sites, recognised by their inscription on the World Heritage List in Danger, are notable, and considering the relatively good state of conservation of the nominated property its importance within the region can be considered to have further increased in the last ten years.

Beyond the comparisons noted above, IUCN considers a key issue regarding the present nomination is that it is proposed as an extension of WNPN, which is already inscribed on the World Heritage List. In this context there is a clear basis for concluding that the association of Pendjari to the already inscribed area of WNP would strengthen greatly the overall biodiversity values of the ensemble; however as noted below this position does not necessarily correspond to the integrity, protection and management requirements that would also need to be in place for an effective serial nomination.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Legal protection of PNP is provided by its status as a national park, recognised by a number of laws and decrees dating between 1954 and 2005, and is complimented by 3 hunting zones (zones cynégétiques) which are managed by the Park authorities and are not part of the nominated area. PNP is also included in a Biosphere Reserve, allowing it to influence positively activities in the villages bordering the property.

The whole of the property is managed by CENAGREF (Centre national de gestion des réserves de faune) and there is no private property included within the boundaries of the area. The single hotel located within the property is managed by the national ministry of tourism.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The boundaries of the property coincide with those of the national park as designated. Although of a modest size by the standards of some African protected areas, PNP has a sufficient size to allow the survival of large mammal species.

The boundaries of the hunting zones that provide the function of the buffer zone were discussed in detail during the IUCN evaluation mission with the authorities and the village associations, who recognise and support these areas. In addition the property has been zoned in relation to its Biosphere Reserve status, and this appears to provide an effective mechanism for protection and conservation although the nomenclature used for different types of “buffer areas” within nominated property (tourism buffer zone) could cause confusion. It is recommended that the term buffer zone is applied only to areas that are located outside of a nominated World Heritage property.

The boundaries of the nominated property are clearly understood on the ground and those internal to Benin are adequate. The boundary formed by the Pendjari River is however more problematic from a conservation point of view, as this also forms the frontier with Burkina Faso. Thus the nominated property only comprises one bank of the river, rendering management of conservation issues such as fishing only partially effective. Protection of the gallery forest of Bondjagou located on the border of the property is also not fully addressed, although there is de facto protection from inhospitable and uninhabited nature of the areas where these forests are located in the Atacora.

The nomination does not propose formal buffer zones, as it notes that the property is surrounded by protected areas that it considers provide this function. This decision means that there is no formal connection between PNP and the existing inscribed area of WNPN. There is also no adjoining protected area in one part of Benin, and also across the river in Burkina Faso.

In the view of IUCN in order to meet minimum requirements in relation to integrity, and notably to ensure the necessary connectivity between WNPN and the nominated property, the areas surrounding the property and especially those that connect PNP and WNPN should be identified as buffer zones to the nominated areas, or alternatively included as zoned areas within the nominated area. Although this would not require a change in their present protection status, it would ensure a clear connection was established between the components of the resulting serial property, and provide a long-term basis for the protection of the property to be achieved. IUCN requested supplementary information on this point from the State Party, but no response has been received.

IUCN considers that the boundaries of the nominated property do not meet the requirements set out in the Operational Guidelines, in relation to the apparent lack of connectivity to the existing inscribed site of WNP in Niger.

4.3 Management

CENAGREF, which manages the nominated property, is based at Taguiéta to the south west of the Park. The Park is well managed, and the long-term efforts of a highly effective director of the park, who has been associated with the property for over 30 years, are a significant reason for this success.

Management is supported by an effective management plan (Plan d'Aménagement Participatif et de Gestion - PAG) prepared in 2003-2004 for the period until 2013. A partial revision of the plan in 2010 is currently being adopted. The preparation of the plan has been actively supported by the German development agency GIZ (formerly GTZ), and KfW, in the course of a 10 year collaboration between the two states.

Under the leadership of the Park Director a strong team of well trained and confident staff has been created. This team provides good quality management and services in the key areas of management required, including management of tourism, maintenance of management infrastructure, management of hunting zones, and the maintenance of an effective network with donors, neighbouring managers and local communities. There is a total of 35 staff, which whilst appearing small in relation to the total area of the property, is adequate in relation to current management requirements, and considering the relatively low visitor numbers.

Public participation in the management of the property functions at a number of levels. Village Associations for Wildlife and Reserve Management (Associations Villageoises de Gestion des Réserves de Faune - AVIGREF) are a key mechanism to assure not only consultation but also participation in management activities and AVIGREF members take part in site patrols. The zoning arrangements including the adjacent hunting zones have enabled a harmonious relationship with the village associations to be achieved.

A detailed business plan is in place for the period 2007-11 and PNP has an annual budget of c. €450,000, of which 23% comes from the State, 28% from fee income, with the remaining budget coming from the German international agencies KFW and GIZ, with a small contribution from UNESCO (3%). Thus PNP has a significant dependence on external aid. To account for this risk the donors are putting in place an endowment fund of €15 – 20 million, which would provide income from interest to support the two national parks of Benin (W-Bénin et Pendjari). Contributions have already been provided from several parties amounting to €15 million, and other donors are expressing interest in contributing. This is being proposed as a Foundation for West African Savannah (Fondation des Savanes Ouest Africaines), allowing the opportunity to extend support in due course to the activities of neighbouring countries within the W-Arly-Pendjari complex. An interim sinking fund has also been put in place with the aid of the agencies KfW, and IDA, and it is intended that funding will transfer to the trust fund from 2012.

PNP has been the subject of a range of survey and research projects, and a member of staff is responsible for maintaining an effective monitoring database. There is a basic monitoring programme in the business plan, and is focused on indicators of the effectiveness of management. The monitoring of outcomes and impacts of management could be strengthened.

IUCN was not able to meet with representatives of WNPN during the evaluation mission. Whilst the management of PNP is strong, the transboundary collaboration that exists appears to be generally informal at this stage. IUCN notes that the nomination when submitted had the confirmed official support of Niger.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines.

4.4 Threats

Resource Extraction/Sustainable Use

PNP is an effective protected area and the fact that the area is largely inaccessible during a significant part of the year during the rainy season (June-November) helps to limit the threats present. Poaching has been largely eliminated from the area, and the hunting zones appear to provide an effective buffering function.

The adjoining hunting zones are managed under leases and the lessees organize sport hunting for a market composed of foreign clients. Game meat and a proportion of income is returned to the village associations. The hunting areas also provide a significant employment to a number of local people during the hunting season. This system appears to have almost completely eliminated poaching and the lessees also observe set quotas, enabling the maintenance and in some cases increase in the population of large mammals. There is a need to put in place a similar model in relation to fishing, and this is not effectively managed yet regarding pressures from Burkina Faso. Whilst the pressure seems to be within current limits, this issue should be addressed in the medium term to assure long term health and productivity of the fisheries.

The IUCN evaluation mission noted that there are no known conflicts with mineral extraction, nor to date any proposals for dam building on the Pendjari River.

Tourism

Tourism is also a source of revenue to the property, through the application of entry fees and service charges, and also provides local employment. The level of visitor use in the property is appropriate in relation to its capacity. The main active management in PNP, aside from regular maintenance, involves controlled burning of some grassland areas. Management is in place to address the pressures from the current level of visitors (7,000 per year). An increase in sustainable tourism is one potential strategy to support the long-term revenue streams required to manage the property. There is scope to increase the effectiveness of the management of the one state-run hotel within the property, and it is recommended that an increased focus on the quality of provision is adopted, rather than seeking to measure success based on numbers of visitors.

IUCN considers that the protection and management of PNP are carried out to a high standard, and meet the

requirements of the Operational Guidelines, however due to the absence of wider connectivity with the inscribed site of W National Park of Niger, the nominated extension does not meet the requirements for integrity as set out in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

The nomination of PNP is an extension of the existing inscribed property of WNPN. There is no direct connection between these two areas, as they are separated by a distance of c.70-80 km. The area between the two components in Benin includes the WNPB and the Atacora hunting reserve. Thus the proposed extension would create a transnational serial property.

a) What is the justification for the serial approach?
PNP is an important component of the WAP complex, and its state of conservation is one of the best within West Africa, with increasing wildlife population that are in good health, and an effective participative management system. A serial property is justified in principle within the area, as part of an effective transboundary approach, and the values of PNP add to and complement those of the existing inscribed property of WNPN. However a key weakness of the nomination as put forward is the lack of clear connectivity between WNPN and PNP. IUCN requested clarification on the degree to which the hunting zones that link PNP with WNPN could be considered to function as buffer zones, but no reply was received on this point.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the Operational Guidelines?
Although the components drain to different river basins (Niger and Volta) the two components form part of the same ecosystem. There are differences in river fauna, but the two components are clearly functionally linked.

c) Is there an effective overall management framework for all the component parts of the nominated property
The nomination of Pendjari has been discussed between the managers of WNPN, who meet regularly. For some decades the donors supporting the protected areas in the region have contributed to a common approach to management in the W-Arli-Pendjari complex. The financing arrangements being put in place in Benin are capable of supporting the neighbouring areas, and a new project financed by the European Union for the area is being launched. There is collaboration between the managers and authorities for both components, but these are not systematic, nor particularly formal. There is currently no overall management framework for the WNPN and the nominated extension, and this is also evident in aspects of the nomination related to its name (which would need to consider the whole of the scope of the serial nomination) and the proposed Statement of Outstanding Universal Value (which also does not consider the whole serial property). Equally the difference in the criteria selected for the extension and those that apply to the existing property suggests a lack of agreed and documented values between WNPN and PNP. A clarification regarding these issues was requested from the State Party but was not received at the time of finalization of this evaluation report.

6. APPLICATION OF CRITERIA

Pendjari National Park (Benin) has been nominated under natural criterion (x) as an extension of W National Park of Niger (Niger), which is already inscribed under criteria (ix) and (x).

Criterion (x): Biodiversity and threatened species
The wildlife of PNP includes the majority of large mammal species typical for West Africa, including ten antelope species, as well as species that have disappeared or are highly threatened in most of the rest of the region, such as Elephant, Buffalo, Lion, Cheetah, Leopard and African Wild Dog. The property is very well managed and whilst some wildlife populations are fragile, there is an overall good state of conservation. As noted above, PNP has previously been evaluated by IUCN and the World Heritage Committee as not being on its own of Outstanding Universal Value. However, it can be concluded that the association of Pendjari to the already inscribed area of W National Park of Niger would strengthen greatly the overall biodiversity values of the ensemble. However there is a lack of connectivity between these two components and a number of questions to clarify the position with the State Party remain to be considered have not received a response.

IUCN considers that the nominated property does not meet this criterion, but, if connectivity between PNP and WNP were secured, there would be a good basis for inclusion of the property as an extension to W National Park of Niger under this criterion.

IUCN notes that the same criteria should be applied to all components of any serial property inscribed on the World Heritage List. The State Party has not considered the application of criterion (ix) to the nominated property, despite this being one of the criteria for inscription of W National Park of Niger. A parallel argument to the above could also be made regarding the application of criterion (ix) to PNP, even though this criterion is not considered in the present nomination. The application of this criterion would, however, need further assessment by the State Party and to be put forward in a nomination. IUCN requested information from the State Party on this point and a response is awaited.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Defers the inscription of **Pendjari National Park (Benin)** as an extension of W National Park of Niger (Niger) under natural criterion (x).

3. Recommends the State Party of Benin to resubmit the nomination of Pendjari National Park, as an extension of W National Park of Niger (Niger) at its earliest opportunity, with the assistance of IUCN and the World Heritage Centre as required, and having considered the following points:

a) to nominate the extension under identical criteria to the existing inscribed property, namely natural criteria (ix) and (x), and to provide a justification for inscription and comparative analysis in relation to each criterion;

b) to provide a proposed Statement of OUV, agreed jointly with the State Party of Niger, that would relate to the property as a whole, including both serial components;

c) to confirm that there are effective means to provide connectivity and buffer zones between the Pendjari National Park, and W National Park of Niger, and to consider identifying relevant hunting zones and other protected areas as either part of the nomination, or as buffer zones to a serial property;

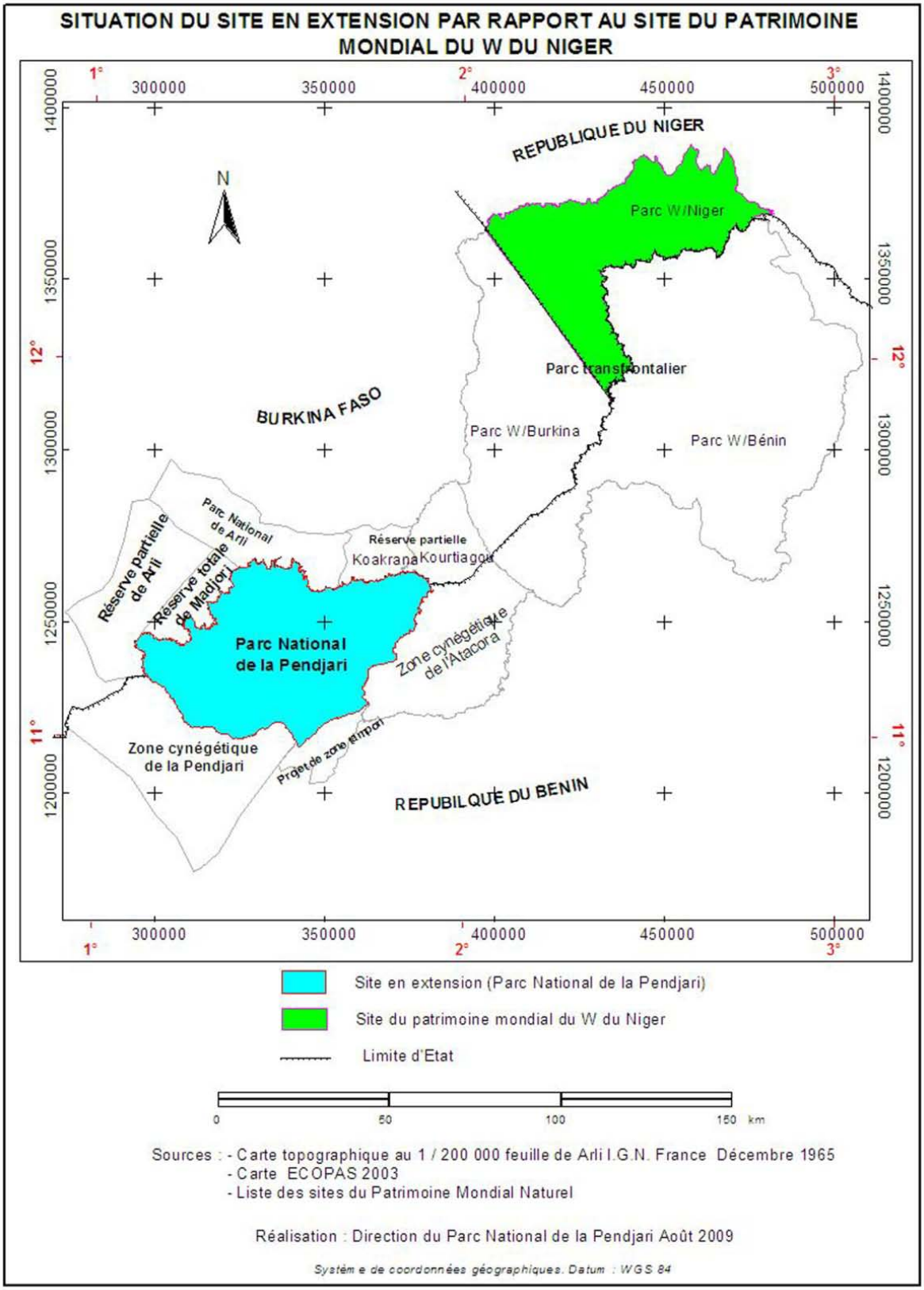
d) to establish and explain the overall management system that would be applied to the serial property, in conformity with paragraph 114 of the Operational Guidelines which specifies the requirements for management systems for serial properties;

e) to propose an appropriate name for the property if extended that would be agreeable to both States Parties;

4. Encourages the States Parties of Benin, Burkina Faso and Niger, supported by international partners and donors, to continue the cooperation with the aim of establishing eventually an overall transboundary conservation programme for the W-Arli-Pendjari complex, as previously recommended by the World Heritage Committee;

5. Notes with appreciation the high quality of conservation management that has been achieved within Pendjari National Park, and the efforts of the State Party of Benin, supported by the State Party of Germany and other partners to achieve significant conservation success, and encourages these partners to continue their work, including through the establishment of sustainable finance mechanisms for savannah areas in West Africa, and the building of protection and management capacity within all of the protected are as in the W-Arli-Pendjari complex.

Map 1: Location of the extension in relation to the World Heritage Site of W National Park of Niger



ASIA / PACIFIC

PHONG NHA – KE BANG NATIONAL PARK
(Renomination under additional criterion)

VIET NAM

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

PHONG NHA - KE BANG NATIONAL PARK (VIET NAM) – ID No. 951 bis (Renomination under additional criterion)

IUCN RECOMMENDATION TO 35th SESSION: Defer the nomination of the property

Key paragraphs of Operational Guidelines:
78 Property does not meet conditions of integrity or protection and management requirements.

Background note: Phong Nha Nature Reserve (41,132 ha) was first nominated as a World Heritage property in 1998 and, at its 23rd session (Paris, 1999), the Bureau decided to defer a decision on the property, pending review of the possibility of expanding the boundaries of the site. A revised nomination for a much larger area (147,945 ha) was submitted in 2000 but not considered further at that time because of road construction plans that could affect the potential outstanding universal value of the area. A further revised nomination for the newly established Phong Nha – Ke Bang National Park (PNKB; 85,754 ha) was submitted in 2002 and inscribed on the World Heritage List under criterion (viii) in 2003. Based on the little information available at that time on the area's biodiversity values, IUCN had concluded that the property itself did not meet criterion (x), noting that a larger area may have the potential to meet this criterion. Nonetheless, the State Party has now re-nominated the property in its original extent for additional recognition under criterion (x), based on new information on the area's biodiversity values that has become available since 2003.

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1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: No supplementary information was requested after the technical field evaluation.

c) Additional literature consulted: BirdLife International & Forest Inventory and Planning Institute (2001). **Sourcebook of Existing and Proposed Protected Areas in Vietnam.** BirdLife International Vietnam Programme and Forest Inventory and Planning Institute, Hanoi, Vietnam. Brooks, T.M et al. (2002). **Habitat loss and extinction in the hotspots of biodiversity.** Conservation Biology 16: 909-923. Haus, T. et al. (2009). **Distribution and population densities of diurnal primates in the karst forests of Phong Nha – Ke Bang National Park, Quang Binh Province, Central Vietnam.** International Journal of Primatology 30(2): 301-312. Hendrix, R. et al. (2008). **New anuran records from Phong Nha - Ke Bang National Park, Truong Son, central Vietnam.** Herpetology Notes, 1: 23-31. IUCN (2010). **IUCN Red List of Threatened Species.** Version 2010.2. www.iucnredlist.org (accessed on 15 July 2010). Le Trong Dat et al. (2009). **Census of southern white-cheeked crested gibbons in U Bo and adjacent buffer zone forests, Phong Nha-Ke Bang National Park.** Fauna and Flora International Vietnam Programme, Hanoi, Vietnam. Magin, C. & S. Chape (2004). **Review of the World Heritage Network: Biogeography, Habitats and Biodiversity.** IUCN, Gland, Switzerland and UNEP-WCMC, Cambridge, UK. Momberg, F. & G. Rambaran (2004). **Vietnam Ecotourism Map.** Fauna & Flora International, Hanoi, Vietnam Myers, N. et al. (2000). **Biodiversity hotspots for conservation priorities.** Nature 403: 853-858. Patry, M. & S. Ripley (eds.) (2007). **World Heritage Forests: Leveraging Conservation at the Landscape Level.** Proceedings of the 2nd World Heritage Forests Meeting, Nancy, France, March 9-11, 2005. UNESCO World Heritage Centre, Paris, France. Smith, G. & J. Jakubowska (2000). **A Global Overview of Protected Areas on the World Heritage List of Particular Importance for Biodiversity.** IUCN, Gland, Switzerland and UNEP-WCMC, Cambridge, UK. Sterling, E.J., M.M. Hurley & Le Duc Minh (2006). **Vietnam: A Natural History.** Yale University Press, New Haven, USA. Van Ngoc Thinh et al. (2010). **A new species of crested gibbon, from the central Annamite mountain range.** Vietnamese Journal of Primatology 4: 1-12. Van Ngoc Thinh et al. (2010**). Phylogeny and distribution of crested gibbons (genus Nomascus) based on mitochondrial cytochrome b gene sequence data.** American Journal of Primatology 71: 1-8. Williams, P. (2008). **World Heritage Caves and Karst: A Thematic Study.** IUCN, Gland, Switzerland. Ziegler, T. et al. (2006). **Review of the amphibian and reptile diversity of Phong Nha – Ke Bang National Park and adjacent areas, central Truong Son, Vietnam.** Herpetologia Bonnensis II. Proceedings of the 13th Congress of the Societas Europaea Herpetologica: 247-262. Ziegler, T. et al. (2010) **A third new *Cyrtodactylus* (Squamata: Gekkonidae) from Phong Nha-Ke Bang National Park, Truong Son Range, Vietnam.** Zootaxa 2413: 20-36.

d) Consultations: Seven external reviewers consulted. The mission met with officials, senior representatives

and staff from various authorities concerned with PNKB including National Ministry of Culture, Sports and Tourism; Forest Inventory and Planning Institute under the National Ministry of Agriculture and Rural Development; UNESCO office in Hanoi and the Vietnam National Commission for UNESCO; Provincial People's Committee (PPC) of Quang Binh Province; relevant Provincial Departments; management staff of PNKB; German Development Cooperation (GTZ) / German Development Bank (KfW) project in the PNKB region; Cologne Zoo and Fauna & Flora International (FFI) projects in the PNKB region; IUCN office in Hanoi; Education for Nature-Vietnam (ENV); Fauna & Flora International (FFI) Vietnam; Frankfurt Zoological Society (FZS); German Primate Center (DPZ); Wildlife Conservation Society (WCS) Vietnam and BirdLife Indochina.

e) Field Visit: Cristi Nozawa and Bastian Bomhard, September - October 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

Phong Nha – Ke Bang National Park (PNKB) currently covers 85,754 ha in the Annamite mountain range in central Vietnam. It is bounded on the west by the border with PDR Lao, and elsewhere surrounded by a 203,245 ha buffer zone, which is not part of the World Heritage property. In 2003, PNKB was inscribed on the World Heritage List under criterion (viii) as it represents one of the most significant karst areas in Southeast Asia, with many spectacular and scientifically significant caves. PNKB's Earth science values were well described in the 2003 IUCN evaluation and are not the subject of this evaluation. The park has been re-nominated for its biodiversity values and these are summarized below.

PNKB belongs to Udvardy's Indochinese Rainforest province in the Tropical Humid Forests biome. The park has largely undisturbed evergreen primary forest, both karst and non-karst, with rich biodiversity. Almost 94% of the park is forested and 84% of this is primary forest. PNKB's forest ecosystems, both karst and non-karst, support a high diversity of plants and animals including many karst specialist species, many endemic species, and a number of species that are globally threatened.

PNKB is part of several globally identified priority areas for biodiversity conservation: the Indo-Burma biodiversity hotspot, the Annamite Range Moist Forests Global 200 priority ecoregion, and the Annamese Lowlands Endemic Bird Area. PNKB also contains two of Vietnam's 58 Important Bird Areas.

According to the nomination dossier, 2,651 vascular plant species in 906 genera and 193 families have been recorded in PNKB, including 419 species endemic to Vietnam. Among the endemics are 28 orchid species. Some 79 vascular plant species, including a number of tree species, are globally threatened: e.g. PNKB is home to globally significant stands (total area c. 1,000 ha) of the endangered conifer *Calocedrus rupestris*, whose known global population is estimated to be less than 2,500 mature individuals, and which is otherwise only sparsely distributed across limestone areas in central and northern Vietnam.

The 735 vertebrate species recorded so far include the following (numbers in brackets represent those endemic to Central Vietnam): 132 mammal species (2), 338 bird species (4), 96 reptile species (6), 45 amphibian species (2) and 124 freshwater fish species (16). According to the nomination dossier, 59% of Vietnam's mammal species, 47% of the country's bird species, 28% of reptile species and 21% of amphibian species have been recorded in PNKB. Amongst the park's vertebrate species, over 70 are globally threatened, including over 30 mammal species, 17 bird species, over 10 reptile species and 5 amphibian species.

PNKB is of particular importance for the conservation of primate species: Of the nine primate species that occur in the park (i.e. 43% of Vietnam's 21 primate species), seven are globally threatened, and PNKB possibly has the largest protected viable populations of three of them (Hatinh Langur (EN), Red-shanked Douc Langur (EN) and Southern White-cheeked Gibbon (EN)). The other primate species are: Bengal slow loris (VU), Pygmy slow loris (VU), Stump-tailed Macaque (VU), Northern Pig-tail Macaque (VU), Eastern Assamese Macaque and Rhesus Macaque. Other globally threatened mammal species in PNKB include Owston's civet (VU). PNKB is also home to 46 bat species (43% of Vietnam's 107 bat species).

The 2003 IUCN evaluation noted that knowledge of the PNKB was remarkably limited and that this had constrained the IUCN evaluation. The evaluation also noted that systematic biodiversity assessment had begun only five years ago and that many more species would be discovered and recorded in PNKB. Indeed, a great number of plant and animal species, including dozens previously unknown, have been recorded in PNKB over the past ten years: the number of recorded amphibian and reptile species for example increased from 96 in 2000 to 137 in 2006. Further species have been found since. Comparably little is yet known about the PNKB's subterranean biodiversity. Similarly little is known of the biodiversity values of PNKB's buffer zone and the adjoining Hin Namno National Biodiversity Conservation Area in PDR Lao that is contiguous with PNKB.

3. COMPARISONS WITH OTHER AREAS

The nearest existing natural World Heritage properties are Ha Long Bay in Vietnam (vii, viii), the world's most extensive and best known example of tropical tower karst invaded by the sea, and the Dong Phayayen-Khao Yai Forest Complex (x) and Thungyai-Huai Kha Khaeng

Wildlife Sanctuaries (vii, ix, x) in Thailand, both of which include karst areas that are not yet well known. Both the properties in Thailand belong to the same Udvardy biogeographic province as PNKB: the Indochinese Rainforest. However, PNKB belongs to the Northern Annamites Rain Forests WWF ecoregion and the Annamite Range Moist Forests WWF Global 200 priority ecoregion, both of which are not yet represented on the World Heritage List.

PNKB is part of the Indo-Burma biodiversity hotspot, a distinction it shares with Ha Long Bay (not inscribed under biodiversity criteria and largely marine), and the two natural World Heritage properties in Thailand. This hotspot is home to at least 13,500 vascular plant species, of which 7,000 are endemic to this hotspot (representing 2.3% of the world's plant species), and 2,185 vertebrate species, of which 528 are endemic to this hotspot (representing 1.9% of the world's vertebrate species). At the time of the original hotspot analysis, which identified 25 hotspots (now there are 34), Indo-Burma was identified as one of the 8 "hottest" hotspots when considering various measures of endemism and habitat loss. Indo-Burma was also among the 11 hotspots that were identified as "hyperhot" priorities for conservation investment. PNKB is also part of the Annamese Lowlands Endemic Bird Area which is not yet represented on the World Heritage List.

According to the numbers provided in the nomination dossier, PNKB has considerably more plant species than Puerto-Princesa Subterranean National Park in the Philippines, the three components parts of South China Karst and other Vietnamese protected areas, and more plant species than Dong Phayayen-Khao Yai in Thailand (Table 1). PNKB also has more mammal species than any other karst World Heritage property in the region except for the much larger Three Parallel Rivers of Yunnan, more freshwater fish species than any other karst World Heritage property in the region, and more bird species than other Vietnamese karst sites, Puerto-Princesa in the Philippines, Gunung Mulu in Malaysia and the three component parts of South China Karst. PNKB's herpetofauna has as many species as Gunung Mulu and Thungyai-Huai Kha Khaeng and more species than other Vietnamese karst sites, Puerto-Princesa, Three Parallel Rivers of Yunnan and the three component parts of South China Karst.

Few World Heritage properties contain as diverse a primate fauna as PNKB: in Asia, PNKB with 9 species has more primate species than Thungyai-Huai Kha Khaeng (8), Dong Phayayen-Khao Yai (7) and Gunung Mulu (5). PNKB is of outstanding importance for the survival of the globally endangered Hatinh langur, a karst specialist endemic to Central Vietnam and PDR Lao, whose largest remaining single population occurs in the park. PNKB is also home to a viable population of the globally endangered red-shanked douc langur and is the most important protected area in Vietnam for the globally endangered southern white-cheeked gibbon.

At 85,754 ha, which is planned to be extended to 125,000 ha in the near future, PNKB is already over 15 times as large as Puerto-Princesa and almost twice as large as Gunung Mulu and South China Karst. PNKB, with the neighbouring Him Namno Biodiversity Conservation Area in PDR Lao, is one of the largest areas of intact forest habitat on limestone karst still found in Indo-China. 94% of PNKB is covered by forests, 84% of which is primary forest, the highest percentage of primary forest remaining in any Vietnamese protected area.

In summary, recent research suggests that PNKB itself is a regionally and globally significant area for the conservation of biodiversity, including three globally threatened primate species. PNKB lies within a very important biodiversity hotspot and is part of an Endemic Bird Area that is not yet represented on the World Heritage List. PNKB also captures a considerable part of the biodiversity values of a Global 200 ecoregion and, in terms of both plant and animal species richness and endemism, equals or exceeds a number of other Asian karst properties inscribed on the World Heritage List under biodiversity criteria.

Table 1. Comparison of PNKB with karst World Heritage properties in the region and Vietnamese protected areas

Property, State Party	**Total area (ha)**	**Natural WH criteria**	**Mammal species**	**Bird species**	**Reptile species**	**Amphi-bian species**	**Fresh-water fish species**	**Vascular plant species**
PNKB, Viet Nam	**85,754**	**(viii), (x)**	**132**	**338**	**96**	**45**	**124**	**2,651**
Ba Be, Viet Nam	23,340	Tentative List: (viii), (ix)	81	234	48		107	1268
Cat Tien, Viet Nam (no karst)	71,935	Tentative List: (vii), (ix), (x)	113	348	89	45	168	1,610
Cuc Phuong, Viet Nam	25,000	-	97	300	36	17	11	2,000
Ha Long Bay, Viet Nam	150,000	(vii), (viii)	14	40	8	4	?	?

Property, State Party	Total area (ha)	Natural WH criteria	Mammal species	Bird species	Reptile species	Amphi-bian species	Fresh-water fish species	Vascular plant species
South China Karst, China	47,588	(vii), (viii)	Libo: 59 Shilin: 42 Wulong: 46	Libo: 137 Shilin: 87 Wulong: 174	Libo: 75 Shilin: 44 Wulong: 48		Libo: 43 Shilin: 12 Wulong: 64	Libo: 1,532 Shilin: 889 Wulong: 558
Three Parallel Rivers of Yunnan, China	939,441	(vii), (viii), (ix), (x)	173	417	59	36	76	6,000+
Lorentz, Indonesia	2,505,600	(viii), (ix), (x)	123	411	324	90	100+	?
Gunung Mulu, Malaysia	52,864	(vii), (viii), (ix), (x)	81	270	55	76	48	3,500
Puerto-Princesa, Philippines	5,753	(vii), (x)	30	91	18	10	?	800
Dong Phayayen – Khao Yai, Thailand	615,500	(x)	112	392	200+		?	2,500
Thungyai – Huai Kha Khaeng, Thailand	577,464	(vii), (ix), (x)	120	400	96	43	113	?

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

PNKB was established as a national park in 2000. The national park is state land, primarily special use forest, and currently covers 85,754 ha. It is surrounded by a buffer zone covering 203,245 ha in 10 communes / 3 districts with a population of approximately 60,000. The buffer zone, which is not included in the nominated property, was established at the same time as the national park and includes state forests and community forests.

The PNKB Management Board, under the jurisdiction of the Quang Binh Provincial People's Committee, is in charge of the management of the park, while local authorities are in charge of the management of the buffer zone.

A Law Enforcement Implementation Plan (LEIP) was approved in September 2010 by the Quang Binh Provincial People's Committee. A Law Enforcement Interagency Cooperation Working Group (LEWG) will be established with membership from the Quang Binh Forest Protection Division, the Environment Crime Prevention Police, the PNKB Forest Protection Department and a representative of civil society operating in Quang Binh. The formation of the LEWG and the implementation of the LEIP 2010 respond to the continuing threats posed by the illegal harvest and trade of forest products in the province, fuelled by continuing local, national and international demand for wildlife products and their derivatives. The increased focus on law enforcement activities in the park is supported by the Vietnamese/German (GTZ/KfW) project in the PNKB region. However, the key challenge lies in making forest protection happen on the ground. Forest protection efforts should not only provide the policy frameworks, plans and resources but the creation of an enabling environment, including incentive measures, for forest rangers/forest protection staff, local communities and local civil society members to ensure the protection of the park (including from wildlife poaching) and its associated heritage values.

IUCN considers the protection status of the nominated property does not meet the requirements set out in the Operational Guidelines and efforts should continue at local, provincial and national levels to improve law enforcement to eliminate the illegal harvest and trade of forest products from the park.

4.2 Boundaries

The current re-nomination under criterion (x) covers the same area as the existing World Heritage property (85,754 ha). The park's eastern and south-eastern boundary largely follows the border of the rough karstic terrain, which naturally prevents encroachment from the buffer zone (203,245 ha), and is signposted. The park's western boundary follows the border of Vietnam and PDR Lao, while its north-western boundary cuts across the largely inaccessible karst plateau that extends further north in Vietnam and PDR Lao. PNKB has three management zones: strictly protected zone (64,894 ha), regeneration zone (17,449 ha) and administration zone (3,411 ha).

A process to extend the park northward has been initiated by the Quang Binh Provincial People's Committee and is expected to be completed in 2012.

This would add c.40,000 ha of the karst plateau on the Vietnamese side to PNKB and respond to point 3 of Decision 27 COM 8C.8 in which the 2003 World Heritage Committee encouraged the State Party to undertake a thorough review of PNKB's boundaries in order to provide more complete coverage of the natural values. According to the State Party, the planned extension is not yet included in the re-nomination because it is not yet approved at national level and no research has yet been undertaken in the extension area, and thus little is known about its biodiversity values. Considering that the extension area is part of the same karst plateau, also with largely undisturbed forest, it is likely that it has similarly rich biodiversity as PNKB and would significantly add to the values and integrity of the property. Therefore, in light of the on-going extension process, the significant 46% increase in area of the park and previous recommendations by the World Heritage Committee and IUCN, the re-nomination appears to be premature.

As pointed out by the 2003 IUCN evaluation, the main cause for concern is that the survival of PNKB's karst systems and ecosystems strongly depends on the health of the entire watershed of the karst area, which extends beyond the current boundaries of PNKB but has not to date been thoroughly researched. Such research is planned under the Vietnamese/German (GTZ/KfW) project in the PNKB region and will hopefully lead to effective catchment wide management, essential to maintaining the values pertinent to criterion (viii).

IUCN considers the boundaries of the nominated property do not meet the requirements set out in the Operational Guidelines as they have not yet addressed the concerns expressed by the World Heritage Committee and IUCN in 2003.

4.3 Management

The last management plan for PNKB, prepared by the Forest Inventory and Planning Institute under the National Ministry of Agriculture and Rural Development, expired in 2006. A successor management plan is not yet in place but there are plans and resources for the revision of the management plan supported through the Vietnamese/German (GTZ/KfW) project in the PNKB region. The data gathering for the management planning process has started and the revised management plan is due for completion by the end of 2011.

Meanwhile, the park does not have a current management plan to guide its management decision-making processes. Recent decisions on infrastructure development, for instance, would have benefited from an existing management plan with clear overall goals and management objectives and guidelines for each of the three management zones.

Ten ranger stations are located primarily along the Ho Chi Minh Highway and Road 20. There are 126 rangers now assigned around PNKB with some ranger stations staffed by as many as 20 rangers. Each ranger station is assigned to cover and patrol a segment of the park. However, accessibility of the forest area for patrol is not always possible particularly in areas of limestone forests. Rangers are also limited in their ability to maintain surveillance over vehicle movements on access roads in and out of the park which is important to effectively control wildlife trade known to occur in Quang Binh Province.

IUCN considers the management of the nominated property does not meet the requirements set out in the Operational Guidelines principally due to the absence of a current management plan.

4.4 Threats

Community forest use/illegal harvest and trade of forest products

High levels of illegal hunting and the intensive use of timber and non-timber forest products have placed considerable pressure on some species in PNKB. A number of large mammals such as Asian elephant and tiger have almost certainly disappeared from the PNKB region, while others such as Asiatic black bear, some primates, birds and reptiles are now close to local extinction. Following the designation of the national park and World Heritage property, more visible controls on forest use were put in place. As a consequence, traditionally practiced community forest use is now mainly illegal in the park, resulting in livelihood loss for local communities who used to access the forests. Some alternative livelihoods and community subsidies are provided in the forest communities inside the park and near the border but not yet in the buffer zone. Alternative livelihood schemes have to be fast tracked and targeted to forest dependent family members. Illegal harvest and trade of forest products is the main threat to the biodiversity of the property and recent reports World Heritage show that Quang Binh Province remains to be a hotspot for illegally traded wildlife. While physical evidence of law enforcement has become more visible, implementation may need to be further strengthened. Allowing for independent and transparent monitoring will improve the credibility of law enforcement in PNKB.

Access

Road 20 is mainly used to access the Arem community (some 200 individuals) inside the park and another 1600 individuals just outside the park near the Lao border. It is also accessed by the army/border police to and from the border stations. While impacts from the Arem community inside the park may be manageable, the community near the border and other buffer zone communities have greater potential to impact on the park and its resources through uncontrolled and technically illegal use of forest resources. The rest of PNKB which borders Lao PDR is patrolled by the border police/army and this is under national level jurisdiction. How illegal wildlife and timber trade is controlled under the border police/army is not clear.

Infrastructure development
Two infrastructure projects are noted to be currently under construction: the Ho Chi Minh Trail Museum which is planned to occupy some 30 ha just outside PNKB near Phong Nha, and the Paradise Cave development where another 55 ha of secondary forest lands including the Paradise Cave have been leased to a private investor to provide access to the cave. This development is inside PNKB but outside of its "strictly protected zone". A robust heritage and environmental impact assessment system that looks into the potential impacts of any infrastructure before any clearing of forest lands (whether secondary or primary) and implementation will need to be strictly enforced with sufficient transparency and public consultations in the process. This will help ensure the future infrastructure development is consistent with the new management plan of the park and supports the conservation and maintenance of the integrity of the property. Mandatory environmental impact assessment must be strictly enforced for all investors and national agencies with either development interests in PNKB or mandates to develop infrastructure that may impact on the park's natural values.

Implementation of the Sustainable Tourism Development Plan
The Sustainable Tourism Development Plan (STDP) that was prepared under the Vietnamese/German (GTZ/KfW) project in the PNKB region, is awaiting approval from the Quang Binh Provincial People' Committee. The STDP will be key to ensuring that the fast growing tourism around PNKB does not jeopardize and in fact supports the maintenance of the integrity of the property. Its speedy implementation will ensure that any impacts of future developments such as future visitor facilities and visitor activities do not adversely impact on the conservation values of the site. Monitoring the implementation of the STDP must form part of the new management plan.

In summary, IUCN considers the nominated property does not meet the conditions of integrity as outlined in the Operational Guidelines, primarily due to concerns over the fact that the planned increase of 46% in the park area has not yet occurred, tourism development and because illegal harvest and trade of forest products continue to put a high pressure on a number of key species in PNKB.

5. ADDITIONAL COMMENTS

The PNKB region is home to eight minority ethnic groups. Some 200 people of the Arem minority live in a village inside the park, close to its southern border, while some 300 people of the Ruc minority live in the buffer zone. Both these minorities, which are amongst the smallest ethnic groups in Vietnam, live isolated from other communities in the karst area and depend on the support of the park. A number of these people are working on seasonal contracts as forest rangers for PNKB.

According to the more recent classification of terrestrial ecoregions by Olson et al. (2001), PNKB belongs to the Northern Annamites Rains Forests ecoregion, which is not yet present in a biodiversity World Heritage site. Similarly, none of the two freshwater ecoregions (Northern Annam and Southern Annam) to which PNKB belongs is yet present in a biodiversity World Heritage site. PNKB is also part of the Global 200 terrestrial priority ecoregion Annamite Range Moist Forests. There is no existing natural WH site in this Global 200 ecoregion. PNKB is not nominated under criterion (ix), however, it is noted that the proposed enlarged property could also have potential to meet this criterion because it represents a Global 200 priority ecoregion whose biodiversity values are not yet represented on the World Heritage List.

6. APPLICATION OF CRITERIA

PNKB has been re-nominated under criterion (x), in addition to criterion (viii) under which it was inscribed on the World Heritage List in 2003.

Criterion (x): Biodiversity and threatened species
PNKB is of global significance for the conservation of biodiversity because its forest ecosystems, both karst and non-karst, support a comparably high diversity of plants and animals including a number of karst specialist species, many endemic species, and a number of species that are globally threatened. Almost 94% of the park is forested and 84% of this is primary forest. The park is also part of a Global 200 priority ecoregion and an Endemic Bird Area, which are not yet represented on the World Heritage List, as well as a global biodiversity hotspot. PNKB is home to 2,651 vascular plant species, including 419 species endemic to Vietnam, and 735 vertebrate species, including over 70 of which are globally threatened. Seven of the nine primate species occurring in the park are globally threatened, and PNKB is one of the most important refuges for three of them. The planned increase of almost 46% in the property's area is likely to significantly enhance its value for biodiversity and threatened species and future research is likely to further underline the property's outstanding biodiversity values.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision.

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Defers the examination of the re-nomination of **Phong Nha - Ke Bang National Park (Vietnam)** to the World Heritage List under the additional criterion (x).

3. Recommends the State Party submit a revised nomination, with the assistance of IUCN and the World Heritage Centre as required, and having considered the following points:

a) Completion of the ongoing process to extend the park from 85,754 ha to 125,729 ha, in addition to actively pursuing continued discussions with the Government of PDR Lao with a view to the potential nomination of Hin Namno National Biodiversity Conservation Area as part of a transnational serial site.

b) The need to considerably strengthen, including through improved interagency cooperation and cooperation with Vietnam's border police and army, law enforcement in the region to reduce the illegal harvest of, and trade in wildlife, timber and non-timber forest products that is adversely affecting the Outstanding Universal Value and integrity of the park;

c) The need to update the park's management plan, which expired in 2006, through a participatory process involving relevant stakeholders. Adopt the updated management plan and provide adequate resources for its effective implementation, especially in relation to safeguarding the newly identified values that are being proposed. The updated management plan should ideally cover both the park and the proposed extension of the park. The revised management plan should incorporate a landscape level vision and potential cooperation regionally for the recovery of wide-ranging and significant keystone species;

3. Encourages the State Party to also consider the application of a revised nomination to be put forward for criterion (ix), as well as criterion (x), in recognition of the potential for an enlarged area to meet both these criteria;

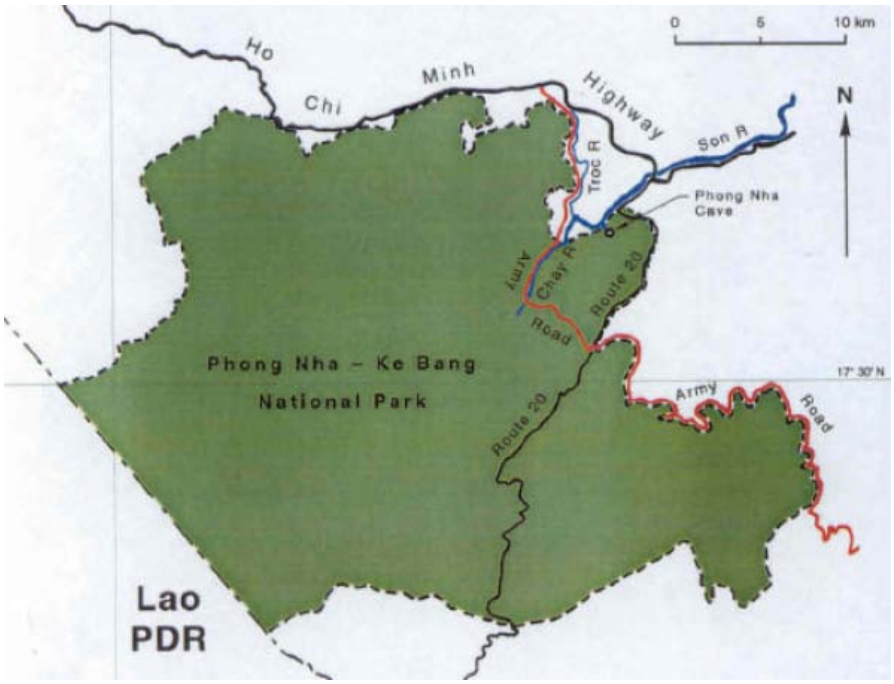
4. Encourages the State Party, Quang Binh Provincial People's Committee, park management, and all partners of the park to continue their efforts to strengthen conservation and management of the park and its buffer zone, in order to ensure that tourism development and the use of natural resources by local communities is environmentally sustainable and benefits equitable shared;

5. Urges the State Party to ensure that, Environmental Impact Assessments are undertaken and acted upon, in order to ensure that any infrastructure and tourism developments being considered within the property and in adjacent areas that could be part of a future extension do not adversely affect the Outstanding Universal Value of the property.;

6. Encourages the State Party, with the support of IUCN, World Heritage Centre and other partners, to seek additional technical and financial assistance for staff training and equipment to strengthen law enforcement, management and monitoring capacity, adoption of a tailored management effectiveness evaluation framework, and for improved heritage interpretation and conservation at local and landscape scales.

Map 1: Nominated property location

Map 2: Nominated property map



EUROPE / NORTH AMERICA

ANCIENT BEECH FOREST OF GERMANY
(Extension of Primeval Beech Forests of the Carpathians, Slovakia and Ukraine)

GERMANY

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

ANCIENT BEECH FORESTS OF GERMANY (GERMANY) – ID No. 1133 bis (Extension of Primeval Beech Forests of the Carpathians, Slovakia and Ukraine)

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: Defer the nomination of the property

Key paragraphs of Operational Guidelines:
77 property does not meet World Heritage criteria.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: No additional information was requested, however, the Permanent delegation of the Federal Republic of Germany to UNESCO provided voluntary information by letter of 25 February 2011 on initiatives taken through 2010 with respect to the serial nomination.

c) Additional literature consulted: Thorsell J. and Sigaty T. (1997). **A Global Overview of Forest Protected Areas on the World Heritage List.** IUCN, Gland, Switzerland. European Commission Directorate-General for the Environment (2003). **Natura 2000 and forests, "Challenges and opportunities," Interpretation Guide.** Office for Official Publications of the European Communities, Luxembourg. Forest Research Network (1995-1999). **European Cooperation in the Field of Scientific and Technical Research, Action E4**. Larsson T-B. (2001). **Biodiversity Evaluation Tools for European Forests.** Ecological Bulletins: 50. Blackwell Science, Oxford, U.K. Engels B., Ohnesorge B., Burmester A., Editors (2009). **Nominations and Management of Serial Natural World Heritage Properties: Present Situation, Challenges and Opportunities;** Workshop Proceedings, Nov 2008; Federal Agency for Nature Conservation, Bonn, Germany. UNESCO/WHC (2007). **World Heritage Forests: Leveraging Conservation at the Landscape Level.** Proceedings, 2nd World Heritage Forests Meeting, 2005, UNESCO, Paris. Knapp H. Ed. (2008). **Beech Forests – a German contribution to the global forest biodiversity.** (BfN, Bonn, Germany. Knapp H. et al. (2008). **Nauturebe Buchenwalder: Situationsanalyse und Handlungserfordernisse.** BfN-Skripten 240, BfN, Bonn, Germany. Knapp H. and Spangenberg A. Eds (2007). **Europaische Buchenwaldinitiative.** BfN-Skripten 222, BfN, Bonn, Germany. Kohlhammer (2007). **Schwerpunkt: Buchenwälder.**Natur und Landschaft 82 (9/10). Veen, P. et al. (2010). **Virgin forests in Romania and Bulgaria: results of two national inventory projects and their implications for protection.** Biodiversity & Conservation 19 (6): 1805-1819. Winter S. et al. (2005). **The Importance of Near-natural Stand Structures for the Biocoenosis of Lowland Beech Forests.** Forest Snow and Landscape Research: 79. Winter S. and Möller G.C. (2008). **Microhabitats in Lowland Beech Forests as Monitoring Tool for Nature Conservation.** Forest Ecology and Management: 255.

d) Consultations: One external reviewer consulted. The mission met with governmental officials in Bonn from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Agency for Nature Conservation (BfN). The mission also met with officials, representatives and staff of various authorities concerned with the Ancient Beech Forests of Germany including the Länders of Mecklenburg-Western Pomerania, Hesse, Brandenburg, and Thuringia; local elected officials; local business leaders; and conservation NGOs.

e) Field Visit: David Mihalic, September 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The Ancient Beech Forests of Germany (ABF) is a transnational serial extension to the Primeval Beech Forests of the Carpathians (PBF) and comprised of five component parts in the northern half of the Federal Republic of Germany from the low mountains to the Baltic Sea. The component parts of the proposed extension are Jasmund and Serrahn, in Mecklenburg-Western Pomerania; Grumsin in Brandenburg, Hainich in Thuringia, and Kellerwald in Hesse (see table 1 on the next page). The existing PBF of the Carpathians World Heritage property is located along the common boundary of Slovakia and Ukraine and is comprised of ten serial components.

The 11 species of the genus *Fagus*, while distributed worldwide, are found only in the temperate nemoral zone of eastern North America, Europe, and Asia. The European or copper beech (*Fagus sylvatica L*.) is not found outside of Europe and west Asia. The European beech represents the main climax tree species in the temperate zone of Central Europe and historically is a significant forest constituent in an area extending from the north of Spain and the south of England and

Sweden, to the east of Poland, the Carpathian Arc and south of the Balkan and Apennine peninsulas i.e. the biogeographical provinces of the Atlantic, Central European Highlands, Pannonian and Balkan Highlands according to Udvardy's classification (1975). The PBF of the Carpathians, a serial World Heritage property, belongs to the Middle European Forest, as do the nominated sites in Germany proposed to extend this property. The nominated extension includes five components, three in the lowlands (Jasmund, on the Baltic Sea), Serrahn, and Grumsin in the lowlands (from 0 to 140m a.s.l.), and two, Hainich and Kellerwald situated in the colline to montane zone (200 to 626 m a.s.l.). The ten component parts of the existing World Heritage property in the Carpathians lie at the montane to subalpine zones, between 600 to 1,940 m a.s.l. This proposal would therefore add representative sites of beech forest communities to the inscribed components in the Carpathians, with examples from the montane to sea level, thus better representing the complete biogeographic history of European forest recolonization after the last glacial period.

Table 1: Nominated serial sites (and buffer zones): location and size

Serial Property	**Protected Area**	**Länder**	**Size in Hectares** Nomination (Buffer Zone)*
Jasmund	Jasmund National Park	Mecklenburg-Western Pomerania	492.5 (2,510.5)
Serrahn	Müritz National Park	Mecklenburg-Western Pomerania	268.1 (2,568)
Grumsin	Schorfheide-Chorin Biosphere Reserve	Brandenburg	590.1 (274.3)
Hainich	Hainich National Park	Thuringia	1,573.4 (4,085.4)
Kellerwald	Kellerwald-Edersee National Park	Hesse	1,467.1 (4,271.4)
Total Size of Nominated Serial Property Extension			4,391.2 (13,709.6)*
Total Size of the World Heritage property, *Primeval Beech Forests of the Carpathians*			29,278.9 (48,692.7)*

* Note: Buffer Zones are not formally part of the nominated extension, but, as with the *Primeval Beech Forests of the Carpathians,* buffer zones are part of the *proposed Integrated Management System* put forward by Germany, Slovakia, and Ukraine.

Primary European temperate forests are rare, due to the long history of continuous human exploitation of forests (both directly for wood products and fuel, and indirectly through conversion to agriculture and settlement) as population increased. Beech forests once covered 40% of Europe beginning 6,500 years ago from refugia in the Balkans after the last glacial period. The existing serial World Heritage property in the Carpathians are some of the oldest with the greatest amount of biodiversity because they were the first to return, while the five nominated serial property components are much younger in development. The five nominated serial properties proposed to extend the Carpathian properties are not "primeval," but have small (5-50 hectares) primeval segments within them that have remained free from exploitation. The nominated sites are, however, the best conserved, most natural and closest to beech-dominant primary forest sites remaining in Germany and have not been exploited for many decades and in some parts, over a century.

Natural European beech forests are often mono-dominant stands of this single species, yet they display an enormous spectrum of different plant associations (and associated biodiversity) underneath their canopies. The five components of the nominated property reflect this spectrum and associated diversity, but are markedly different in base soil content, from the acidic in Serrahn and Kellerwald to the high lime soils of Jasmund and Hainich. The beech forest communities of the nomination are not the same as the Carpathian sites, but with the differences in soils and plant communities contribute to greater understanding of European beech and its forest development across Europe, as is evidenced by the nominated sites' species and characteristic growth in different site conditions.

The nominated sites are surrounded by larger forested buffer zones (with the possible exception of Grumsin) managed to maintain and enhance the proposed outstanding universal values. All nominated serial properties and their buffer zones lie within larger national parks or biosphere reserves, which, in turn, lie within larger nature parks or protected areas.

3. COMPARISONS WITH OTHER AREAS

Not including the *Nothofagus* forests of the southern hemisphere, there are eleven species of beech in the northern hemisphere; one each in Europe, Western Asia, Taiwan, two in Japan and North America, and four in southern China. For all beech species only small refugia of undisturbed locations persist today and for more than half of the species it is even unclear whether there are any undisturbed areas remaining - Systematic analysis of strictly protected forest areas in 19 European countries including 8 central and eastern European countries, and Russia, found 0.3 million ha virgin forest in 2,500 reserves with an average size of 100 ha. The 1997 IUCN theme study, "A Global Overview of Forest Protected Areas" identified only the PBF of the

Carpathians portion of the region (since inscribed) as an area that may merit consideration for nomination to the World Heritage List. The "Natura 2000 and Forests: Challenges and Opportunities," and other studies suggest the role of the German "near-natural" beech forest remnants may be of World Heritage value. The technical evaluation for the Carpathians noted the ten component parts in Slovakia and Ukraine did not represent all types of original beech forest that once covered Europe although there are a few examples scattered across Europe. The PBF of the Carpathians evaluation also noted that Germany has some significant old-growth beech forests that may extend the coverage of Europe's original beech forests in the World Heritage List.

In 2007 PBF of the Carpathians was inscribed on the World Heritage List because its undisturbed, complex temperate forests exhibit the most complete and comprehensive ecological patterns and processes of pure stands of European beech across a variety of environmental conditions, and the European beech is one of the most important elements of forests in the Temperate Broadleaf Forest biome. The component parts of PBF were considered to protect the best of the last fragmented remnants of this globally significant forest types.

Aside from PBF several other World Heritage sites might be compared with the nominated property. Shirakami-sanchi (Japan) is in the montane zone and encompasses the last remaining area of primeval Siebold's beech (*Fagus crenata*). At 10,139 ha it is the largest beech forest remaining in the East Asian Region. However, *Fagus crenata* constitutes a different species isolated from *Fagus sylvatica*. Great Smoky Mountains National Park (USA) has diverse deciduous forests with over 130 tree species. American beech is found in the upper elevation however, is not a dominant species in these forests. Plitvice Lakes National Parks (Croatia) contains some 14,000 ha of predominant beech low-altitude forests and beech-fir forest at higher elevations (700m). Of these, about 9,600 ha are beech-dominant forests, but are not part of the property's outstanding universal values. Pirin National Park (Bulgaria) contains four beech forest associations between its mostly coniferous forests but is noted for its spruce forests. The forests with beech are not beech-dominant in the montane zone. Durmitor National Park (Serbia and Montenegro) includes a 270 ha virgin mixed deciduous forest, however, again beech is not dominant. Pyrénées - Mount Perdu (France and Spain) montane areas are characterized by beech, fir and Scotch pine but are not old beech-dominant forests. 70% of the Caves of the Aggtelek and Slovak Karst (Hungary and Slovakia) is deciduous forest, including beech, however, it is listed for karst values. Nonetheless, the forests are not beech-dominant. Western Caucasus (Russian Federation) include Oriental beech forest (*Fagus orientalis)* in the western portions of the property at the montane. The Oriental beech has only recently been suggested to be similar to the European beech. In addition, a previously deferred nomination of the Caspian Hyrcanian Mixed Forests (Azerbaijan) includes an area of broadleaf, mixed forests of which about one third is beech (*F. orientalis*), however, mixed with maple, lime, oak and hornbeam, and this forest also extends to Iran. Belovezhskaya Pushcha / Białowieża Forest (Belarus and Poland) was inscribed because of its large area of remnant natural, old-growth, lowland mixed broadleaf and conifer European forest with a protected population of threatened animals and plants.

The components parts of ABF belong to two biogeographical provinces in Udvardy's Temperate Broadleaf Forest biome in the Palaearctic realm: the Atlantic province and, primarily, the Middle European Forest. Existing natural World Heritage sites in the Atlantic province include the Wadden Sea and Pyrénées - Mont Perdu, in the Middle European Forest the PBF and Srebarna. Among these sites, significant areas of undisturbed European beech forests occur only in PBF and ABF.

The components parts of ABF also belong to two terrestrial ecoregions, Western European Broadleaf Forests and Baltic Mixed Forests, which are part of the Temperate Broadleaf and Mixed Forests biome in the Palaearctic realm (Olson et al. 2001). None of these ecoregions is yet represented in a biodiversity World Heritage site whilst the PBF belongs to the Carpathian Montane Forests ecoregion, which is part of one of the 142 Global 200 terrestrial priority ecoregions of the world: European-Mediterranean Montane Mixed Forests (Olson et al. 2002). The components parts of ABF do not belong to a Global 200 ecoregion.

The components parts of ABF do not belong to any globally identified conservation priorities and have not been identified as a "biodiversity gap" on the World Heritage List in any of the theme studies prepared by IUCN and/or UNEP-WCMC. There is a large body of research suggesting Germany, being in the centre of the natural distribution of this forest type and having some of the largest areas of this forest type left, has a globally important role in the conservation of European beech forest ecosystems. However, only very small areas of the German beech forests are considered to be "ancient" and/or "primeval", and the most important of these are included in the ABF nomination.

The ABF nomination convincingly argues that the existing PBF site represents only one (Carpathian) of six European beech forest "biogeographic regions" and only one of three altitudinal zones in which European beech forests occur. The ABF would broaden this representation, nevertheless the proposed extension will not result in a full representation of all six European beech forest regions in the World Heritage site, because all five component parts of the proposed extension belong to the Central European biogeographic region.

Very recently, Veen et al. (2010) identified for the first time significant areas of "old-growth" or "virgin" beech

forests in Bulgaria and Romania, leading them to conclude that "a representative selection of virgin forest sites" should be declared World Heritage sites. In line with the arguments provided by the ABF nomination, it is possible that some of these sites in the Illyric-Balkan and Carpathian biogeographic regions, together with sites in other yet unrepresented European beech forest regions, may also merit consideration as future extensions to PBF / ABF.

The five nominated components are species-rich, especially with species indicative of old-growth, even undisturbed, deciduous and/or beech forests. But, where the PBF of the Carpathians and its primeval forests have all the floristic and smaller life-forms of primeval beech forests, they also include the large mammals (bison, bear, wolf, etc.) indicative of primeval forests in Europe, a key component of their OUV.

In conclusion, ABF belongs to two ecoregions that are not yet represented on the World Heritage List, but not to any globally identified conservation priorities. As an extension to PBF, ABF would ensure a better representation of major European beech forest types (and their ecological patterns and processes) on the World Heritage List; however, a number of these major European beech forest types would still be unrepresented within the PBF / ABF World Heritage site.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The five nominated serial extension components are subject to national law and are also governed by the Länder that make up the Federal Republic of Germany. Both governmental entities share responsibility for nature conservation protection. The component parts are protected by the Federal Nature Conservation Act (2002, amended 2008) that specifically incorporates by reference the World Heritage Convention. The Grumsin component is also a Biosphere Reserve. The Länder have laws and ordinances that incorporate both standards set by Federal law (such as for national parks) and the European Union (such as Birds and Habitats directives, etc.).

Land in the four national park component parts are owned and managed by the Länder with varying percentages of land under private ownership. None of the five nominated components are subject to any forest exploitation or other development pressure and neither are the surrounding buffer zones, which are proposed for sympathetic management to protect the values of the nominated components.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines

4.2 Boundaries

Boundaries of all proposed component parts are specified in the nomination and clearly demarcated on maps. Each of the nominated component parts lies within a larger national park, and, in turn, within larger nature parks, except for Grumsin which lies within the designated core zone of the larger Schorfheide-Chorin Biosphere Reserve. Each of the component parts also is surrounded by larger buffer zones, which are also areas of beech forest that will be managed to protect the proposed property but do not display the level of naturalness to warrant designation as component parts of the nomination. Buffer zones have the same level of legal protection as the component parts of the nominated extension. Boundaries of the nominated components have been designated with a view to ensuring retention of values and integrity, however, the small size and relative isolation of these remnant forests raises some concerns about their ecological resilience and viability.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3 Management

All the nominated component parts have existing individual management plans developed in accordance with law and policy that meet national park (or biosphere reserve) goals for both management and monitoring. Plans incorporate monitoring of environmental parameters, visitor use impacts, and other resource issues such as managed control of wildlife impacts. Park management, biosphere maintenance and development plans are directly binding for existing programs and protection goals. In addition, there are management and spatial plans by the Länder for regional spatial development, State Development Plans, Landscape Framework Plans, and so on, that incorporate park and biosphere reserve protection values and goals. All plans were developed with public involvement.

The nomination has been submitted by the Federal Republic of Germany with the full support and understanding of obligations placed upon the four relevant Länder. Annual budgets totalling over €12 million exist now for all component parts and are considered more than adequate to effectively manage these component parts. Additional funds may be available from European Union programs, foundations, municipalities, nature conservation organizations and direct donations.

Cooperative management agreements with local groups and tourism agencies contribute to the achievement of management goals. Municipal authorities are also cooperating closely for example through the canopy walkway "Tree-top Trail" educational experience in Hainich, and nature conservation organizations such as the Kellerwald Park Centre and Königsstuhl Centre at

Jasmund. Management cooperation also exists to support university research.

All five components have well-established, qualified and experienced professional and technical staff in place. The four park units have established ranger forces for both park protection and education of park visitors.

Visitor management is of a high standard with a number of visitor centres, facilities and guide services providing quality interpretation and education services.

Ecological research, monitoring and science programs are on-going guided by unit management plans and in cooperation with universities, EUROPARC Germany, UNESCO biosphere reserves, and nearby nature parks. Various programmes and initiatives are in place to ensure local community engagement. The protected area management entities also have advisory boards or communal national park boards composed of interest group representatives, elected officials (mayors), district administrators, ministerial representatives, and park staff to help reconcile the interests of local stakeholders and citizens.

IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines

4.4 Threats

At present the five nominated serial components are not subject to any proposed development or factors that may have a direct impact on their integrity. All are under long-term protection regimes and management as national parks or biosphere reserve core zones. According to scientific studies, climate change is not expected to appreciably affect the evolutionary progress of beech forests. In fact, the properties may help explain climate change since they are a result of environmental reaction to past climate change. Increases in temperature should not be a factor but stress by dryness may be a factor, although beech has physiological mechanisms to adapt for dryness. Hunting was identified as an issue in the nomination, but in reality is a form of management intervention, notably in limiting the impact of deer. There is no public hunting in any of the components. Monitoring of resource impacts (particularly wild boar and deer) may dictate when controlled taking of game by resource managers as appropriate to protect natural values.

Coordination is effected through a steering group comprised of representatives of the four Länder, the federal ministries, the national park and biosphere reserve managers. The nomination has been closely coordinated with Slovak and Ukrainian counterparts, and an Integrated Management System is proposed for the sites, if inscribed. This arrangement will implement a plan of coordinated management among all component parts, to sustain, protect, and preserve the OUV and integrity of the sites.

In summary, despite some concerns about the viability of small remnant forested areas, IUCN considers the nominated property meets the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

a) What is the justification for the serial approach?
The nomination of the ABF of Germany is proposed as an extension to the previously inscribed PBF of the Carpathians (Slovakia and Ukraine). As noted above IUCN's technical evaluation for the PBF of the Carpathians highlighted the fact that some of Germany's old-growth beech forests had potential to extend the coverage of Europe's original beech forests. The Carpathians World Heritage property contains some of the largest remnants but even the largest of these, Uholka in the Ukraine, is only 11,800 hectares. Two of the Carpathians' component parts, Rožok with 67 ha and Havešová at 171 ha, are smaller than the five nominated sites.

The nominated components of the property represent different altitude zones, site conditions, and dominant beech forest types that are not represented by the ten PBF components and hence provide the basis for a serial approach.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the Operational Guidelines?
The PBF of the Carpathians component parts are representative of the montane-subalpine altitudinal zones and are the best remaining primeval beech forests in Europe. The five nominated components of the ABF are representative of the colline-submontane (Kellerwald, Hainich) and planar (Serrahn, Grumsin, Jasmund) altitudinal zones and propose to add important beech forest community examples not represented by the PBF. While the nominated components are not primeval, the five components do include small old-growth, previously unexploited areas within the larger nominated parts.

There is nonetheless a difference in the nomination between the notion of primeval (PBF of the Carpathians) versus ancient (ABF of Germany) which undermines the conceptual linkages between these properties. The nomination proposes to extend the OUV of the Carpathians property, not with primeval forests, but with forests that were never fully exploited, or have not been exploited or managed in recent decades, and still contain small, remnant primeval patches of forest within them. The conceptual difference is amplified by the lack of proposed Statement of OUV for the proposed single, serial property. Further is a lack of clarity about the coherent concept for a finite or completed serial property that would incorporate all component parts across relevant States Parties. IUCN also notes that principles

adopted for identifying the scope of a series at the time of nomination recommend "…that when accepting the inscription of a serial property, there must be clarity about what the potential scope of the series might be…. particularly important when planning a phased series. The first phase of the nomination should indicate the intended overall series that might eventually be nominated, including the different component parts…".

c) Is there an effective overall management framework for all the component parts of the nominated property?
The existing Joint Management Plan between Slovakia and Ukraine has been proposed for expansion to include the Federal Republic of Germany in an "Integrated Management System" that outlines the mechanism for trilateral cooperation between the three countries. The existing Joint Management Plan is comprehensive and could serve as a model because so many levels of government, management agencies, communities and interest groups are included. The agreement has not yet been fully realized due to changing political conditions and the fact that it has been in effect only for a few years, but there is continued cooperation on the ground at the committee levels.

The State Party of Germany has worked commendably to facilitate transnational dialogue and cooperation on developing a suitable overall management framework for the serial property.

6. APPLICATION OF CRITERIA

The Ancient Beech Forests of Germany has been nominated under criteria (ix) to extend the Primeval Beech Forests of the Carpathians, which is inscribed under the same criterion.

Criterion (ix): Ecological processes
The ABF of Germany represent examples of on-going post-glacial biological and ecological evolution of terrestrial ecosystems and are indispensable to understanding how one species, the European beech, came to absolute dominance across a variety of environmental parameters. The nominated components are some of the best remaining, least disturbed, and best conserved near-natural forest examples of the variety of site conditions not currently represented in the PBF of the Carpathians. Taken in isolation and given the small size and fragmented nature of these remnant ancient beech forests, they do not possess sufficient ecological integrity to meet criterion (ix). However, considered as an extension, and therefore part of a transnational serial property with PBF of the Carpathians, they demonstrate key aspects of processes essential for the long term conservation of natural beech forests and illustrate the environmental parameters in which the beech came to dominance following the last glacial period, a process which is still on-going. That said, the proposed extension has clear differences in values (Ancient, Germany) to the existing inscribed property (Primeval, Carpathians) plus there exist a range of other primeval and ancient forests that appear to have equivalent claims to be considered as serial extensions to the existing properties. The nomination does not present the extension as a coherent part of the series, nor does it clarify the potential scope of an eventual serial property.

IUCN considers that the components within the nominated property have the potential to meet this criterion, only when considered as an extension to the Primeval Beech Forests of the Carpathians, however there may be alternative sites of equivalent or greater value that should be considered in other States Parties.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

2. Defers the examination of the nomination of the **Ancient Beech Forests of Germany (Germany)** to the World Heritage List under natural criterion (ix) as an extension of the **Primeval Beech Forests of the Carpathians** to allow the State Party to continue working with the States Parties of Ukraine and Slovakia and other interested States Parties, with the support of IUCN and the World Heritage Centre as required in order to define the scope of a finite and complete serial transnational nomination based on an extension of the existing property;

3. Encourages the State Party, in collaboration with other relevant States Parties, to address the following points in the consideration of the potential for further extension of the existing property:

a) the establishment of an effective Integrated Management System that would identify and protect the functional linkages between the component parts of a completed serial property;

b) the establishment of cooperative and transnational research and monitoring plans that would be able to monitor and report on a completed transnational serial property as a whole;

c) cooperative international programmes of capacity building to share best practices from countries included in the series, and other countries with significant primeval and ancient beech forests;

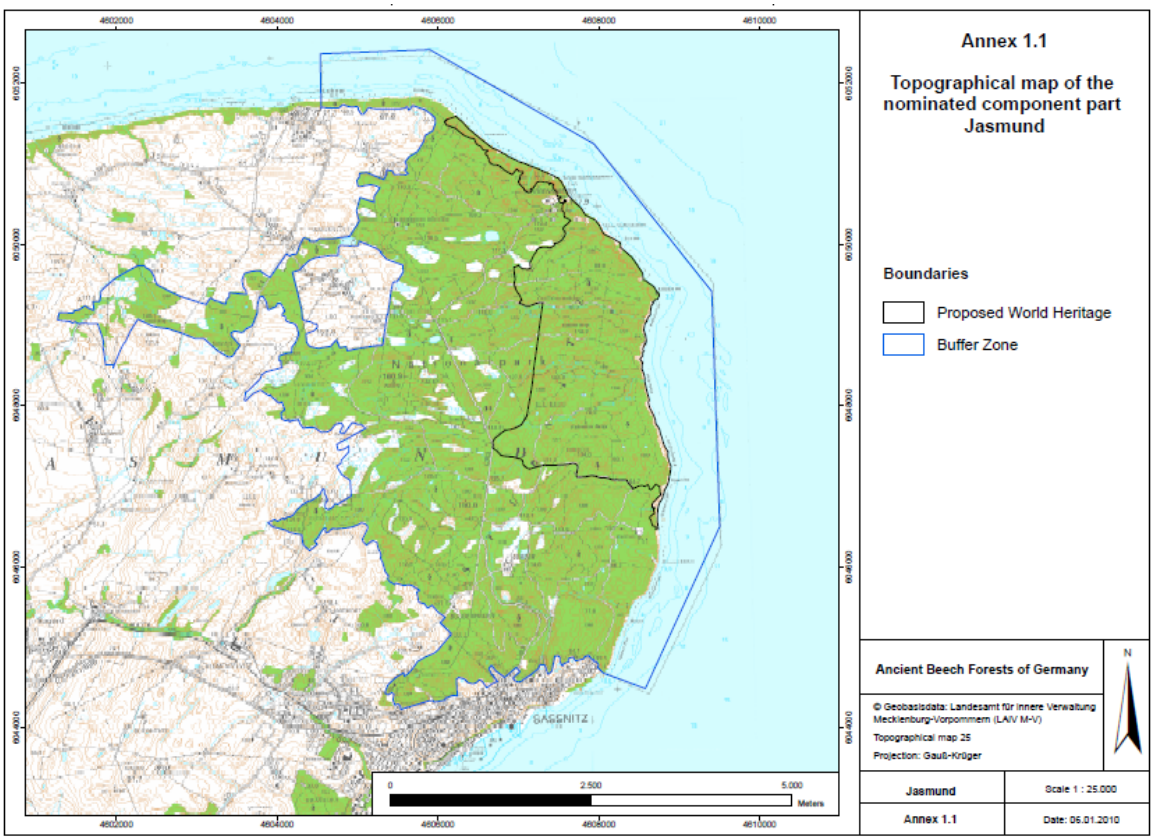
d) the consideration of a new name, agreeable to all of the relevant States Parties, and an

accompanying Statement of Outstanding Universal Value for a completed serial property which would convey and describe the scope and values of the property as whole.

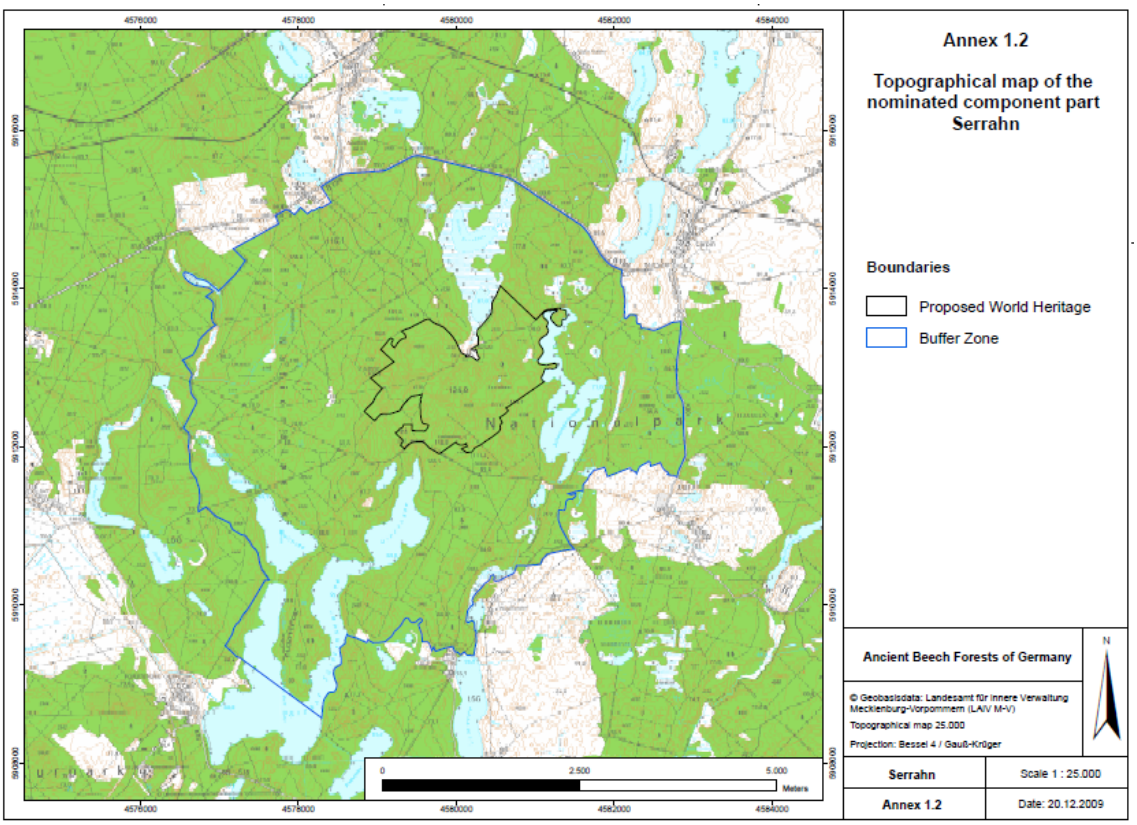
4. Commends the State Parties (Ukraine, Slovakia, Federal Republic of Germany) for their on-going commitment to ensure a comprehensive approach to conserving the primeval and ancient beech forests of Europe and for their exploration of the potential for the World Heritage Convention to further these efforts.

Map 1: Components location within Germany

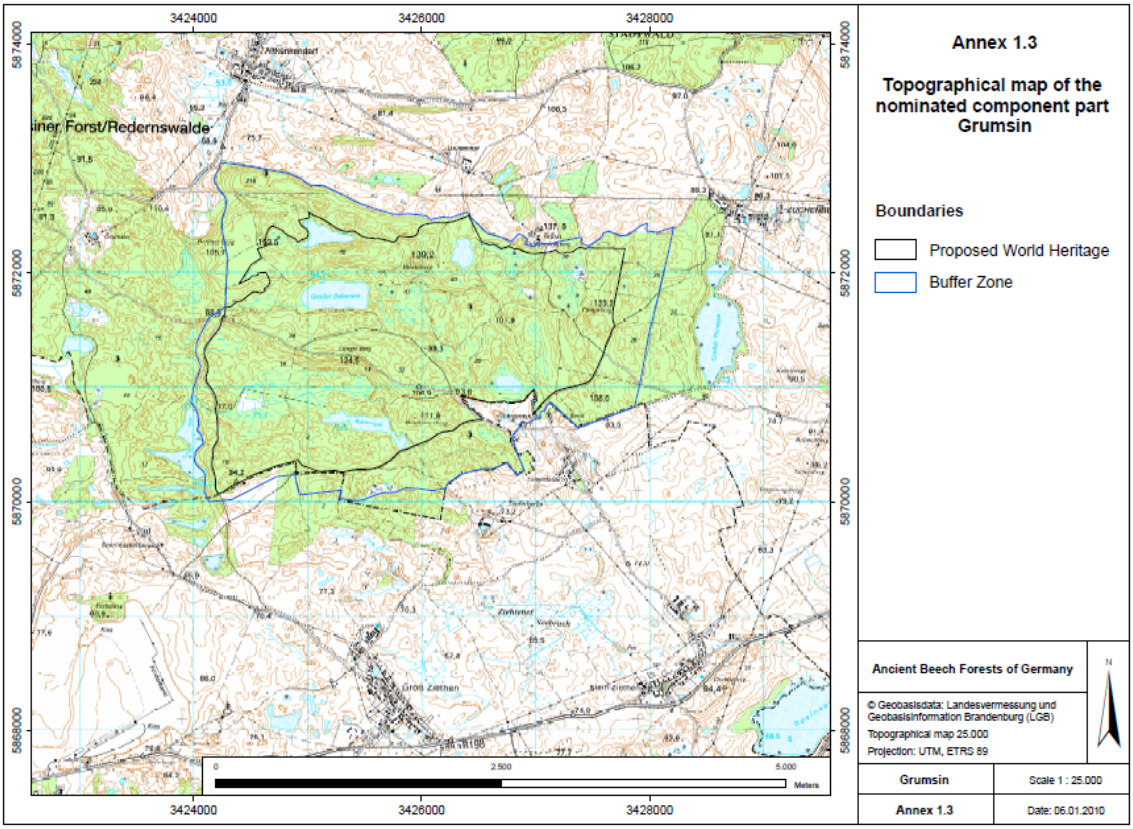
Map 2: Jasmund component



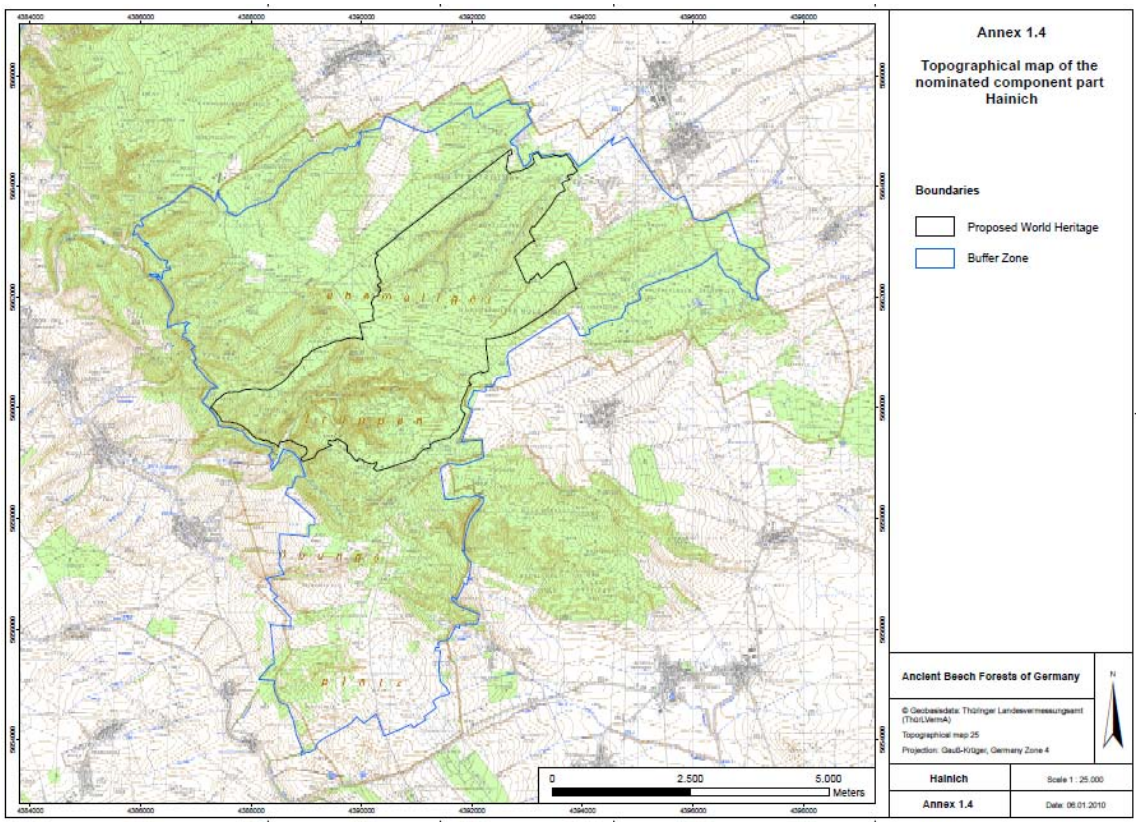
Map 3: Sehrran component



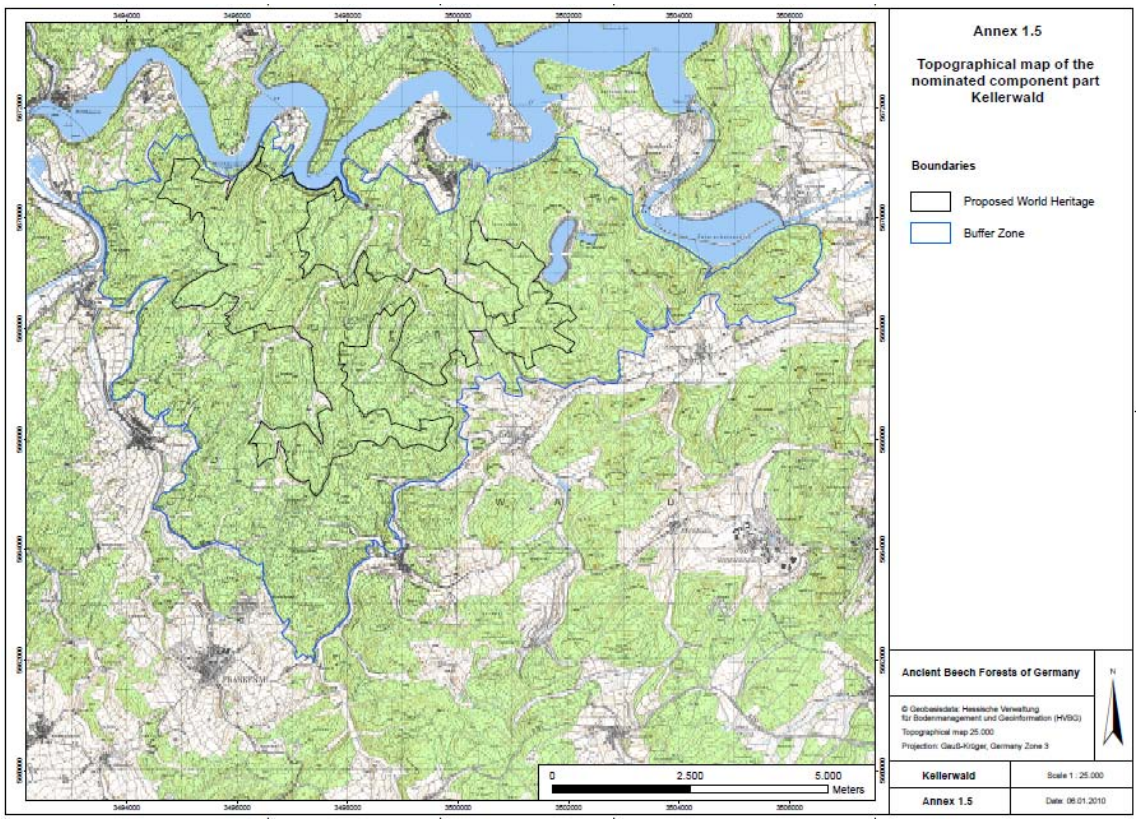
Map 4: Grumsin component



Map 5: Hainich component



Map 6: Kellerwald component



A. NATURAL PROPERTIES

A4. BOUNDARY MODIFICATIONS OF NATURAL PROPERTIES

AFRICA

SELOUS GAME RESERVE

TANZANIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SELOUS GAME RESERVE (TANZANIA) – ID No. 199

1. BACKGROUND INFORMATION

The Selous Game Reserve (SGR), covering over 50,000 square kilometres, is one of the largest remaining wilderness areas in Africa with relatively undisturbed ecological and biological processes. The property, located in Southern Tanzania, harbors one of the most significant concentrations of Elephant, Black Rhinoceros, Cheetah, Giraffe, Hippopotamus and Crocodile, amongst many other species. The reserve contains a great diversity of habitats including Miombo woodlands, open grasslands, riverine forests and swamps, making it a valuable laboratory for on-going ecological and biological processes. The property was inscribed in 1982 under natural criteria (ix) and (x).

2. BRIEF SUMMARY OF PROPOSAL

The State Party proposes to adjust part of the south-western boundary of the World Heritage property to exclude a potential mining area of approximately 19,793 hectares from the property, whilst retaining it within the SGR, and to establish it as a buffer zone around that area. This would reduce the total size of the property of 5,120,000 ha by 0.69%. The rationale for this is the identification of a significant uranium deposit in the proposed area of boundary modification known as the Mkuju River Project – Nyota Prospect.

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

As it concerns the exclusion of land from the existing World Heritage property, the proposal is considered in its effects on the Outstanding Universal Value of the inscribed World Heritage property and its impacts on the protection and management of these values. The State Party has submitted an Environmental and Social Impact Assessment (ESIA). IUCN and the World Heritage Centre reviewed and provided an assessment of the ESIA in a letter to the State Party dated 8 March 2011. They consider that this ESIA contains a number of serious shortcomings in relation to specific aspects relevant to the World Heritage Convention, including that it does not address the proposal's potential direct, secondary and cumulative impacts on the property's Outstanding Universal Value. One potential secondary impact is a significant population increase in the Selous Niassa corridor, which is key to maintaining the long-term integrity of the property. IUCN also notes that stakeholders have not yet been provided with the opportunity to comment on the final ESIA report. IUCN suggests to consult conservation experts on this issue and to conduct an independent review to assess the impacts of the proposed project on Selous' ecosystem and its biodiversity, for which the property was inscribed on the World Heritage List. The reviewed ESIA should be re-submitted to the World Heritage Centre prior to any decision made by the State Party on the property, in accordance with paragraph 172 of the Operational Guidelines. IUCN notes that even if the proposed uranium mine were to be located outside the property, the ESIA would still need to demonstrate that the proposal would not have a significant impact on the property.

IUCN also recalls the advice provided on this issue in the most recent World Heritage Centre / IUCN mission to the property in 2008.

IUCN considers that the boundaries of World Heritage properties should not be modified with the primary objective of facilitating mining, as this would not be in line with the Committee's "no-go" commitment to mining in World Heritage properties.

IUCN therefore concludes that the proposal to exclude the proposed area and create a buffer zone does not meet the requirements for approval as a minor boundary modification of the property.

4. OTHER COMMENTS

None.

5. RECOMMENDATION

IUCN recommends that the World Heritage Committee adopt the following decision:
The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2, and also recalling its past decisions regarding the State of Conservation of the property, including Decisions 33 COM 7B.8 and 34 COM 7B.3;

2. Decides not to approve the minor modification of the **Selous Game Reserve (Tanzania)**;

3. Considers that any proposed amendment to the boundary of the property should consider the context of the property's Outstanding Universal Value, and the overall Selous Ecosystem, as outlined in the most recent World Heritage Centre and IUCN mission undertaken in

2008, and should also take account of the Committee's decisions on the State of Conservation of the property;

4. Also considers that boundaries of World Heritage properties should not be modified with the primary objective of facilitating mining.

Map 1: Nominated property location

EUROPE / NORTH AMERICA

THE WADDEN SEA

GERMANY AND THE NETHERLANDS

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

WADDEN SEA (GERMANY AND THE NETHERLANDS) – ID No. 1314

1. BACKGROUND INFORMATION

The Wadden Sea is the largest unbroken coastal tidal and mud flat system in the world and characterized by a mosaic of sand and mudflats, tidal channels, salt marshes, seagrass meadows, mussel banks, sandbars and barrier islands extending over a transboundary area where natural processes proceed in a relatively undisturbed manner. The Wadden Sea World Heritage property comprises the Dutch Wadden Sea Conservation Area and the German Wadden Sea National Parks of Lower Saxony and Schleswig-Holstein. The site represents over 66% of the whole Wadden Sea and is home to numerous plant and animal species, including marine mammals. It is also a breeding and wintering area for up to 12 million birds per annum and it supports more than 10 percent of 29 species. The property was inscribed in 2009 under natural criteria (viii), (ix) and (x).

2. BRIEF SUMMARY OF PROPOSAL

The proposed modification is to include the Hamburg Wadden Sea National Park (Germany) in the property. This area is an integrated and contiguous part of the Wadden Sea and closes the "triangle" in site element 006 of the inscribed property to create a coherent and continuous tidal area within the property. The proposed extension is a national park and therefore under strict legal protection. At 13,611 ha, it would comprise ca. 1,4% of the inscribed property area (total area 968,393 ha).

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

As it concerns the inclusion of land into the existing World Heritage property, the proposal is considered in its relation to the criteria under which the current World Heritage site is inscribed, and its contribution to the integrity, protection and management of its values.

The proposed enlargement of the property strengthens integrity in relation to all three criteria under which the Wadden Sea has been inscribed on the World Heritage List. The location of the proposed extension at the outer part of the Elbe estuary adds a distinctive estuary feature to the property in conjunction with a highly dynamic and extended open tidal flat area, which is also important for migratory and breeding bird species. The National Park is a retreat area for whelping and moulting Harbor Seals (*Phoca vitulina*). Harbour Porpoises (*Phoecoena phocoena*) are also frequently seen. The natural movement over the last 70 years of the dune island of Scharhörn, included in the proposed extension, testifies to the relatively undisturbed tidal processes in this area. Another impact of the natural dynamic system is the phenomenon of large shell assemblages of the mussel *Mya arenaria*. These so-called "mussel graveyards" indicate strong shifts of sediments within the tidal flat area. The proposed extension also includes the embanked area of the island of Neuwerk, where original salt marshes are being reestablished. The inclusion of the proposed area enhances the management of the property. Hamburg Wadden Sea National Park is under strict legal protection and entirely embedded in the trilateral protection and management scheme according to the Joint Declaration on the Protection of the Wadden Sea in conjunction with the Trilateral Wadden Sea Plan. 97,8% of the National Park is owned by the Federal Government, 2% by the City of Hamburg and the remaining 0,2% is privately owned. The park is staffed with six people including one ranger and supported by members of the Hamburg Port Authority and shipping police forces. The inhabitants of the island of Neuwerk have explicitly approved the inclusion of the island in the World Heritage property and the State Party has provided IUCN with an official Letter of Consent.

IUCN considers that the proposal to include the Hamburg Wadden Sea National Park meets the requirements for approval as a minor boundary modification of the property.

4. OTHER COMMENTS

Following the provision of supplementary information by the State Party on the effects of the deepening of the Elbe shipping lane outside the property, IUCN notes that the implementation of an integrated concept for the Tidal River Elbe, which aims at a sustainable stabilization of the tidal river system by managing the river mouth, should be evaluated in regard to its impacts on the World Heritage property.

IUCN also recalls the decision of the 33rd Session of the World Heritage Committee at the time of inscription, that also encourages the State Party of Denmark to submit a nomination of the Danish part of the Wadden Sea as soon as feasible to extent and complement the existing property.

5. RECOMMENDATION

IUCN recommends that the World Heritage Committee adopt the following decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2, and recalling Decision 33COM 8B.4;

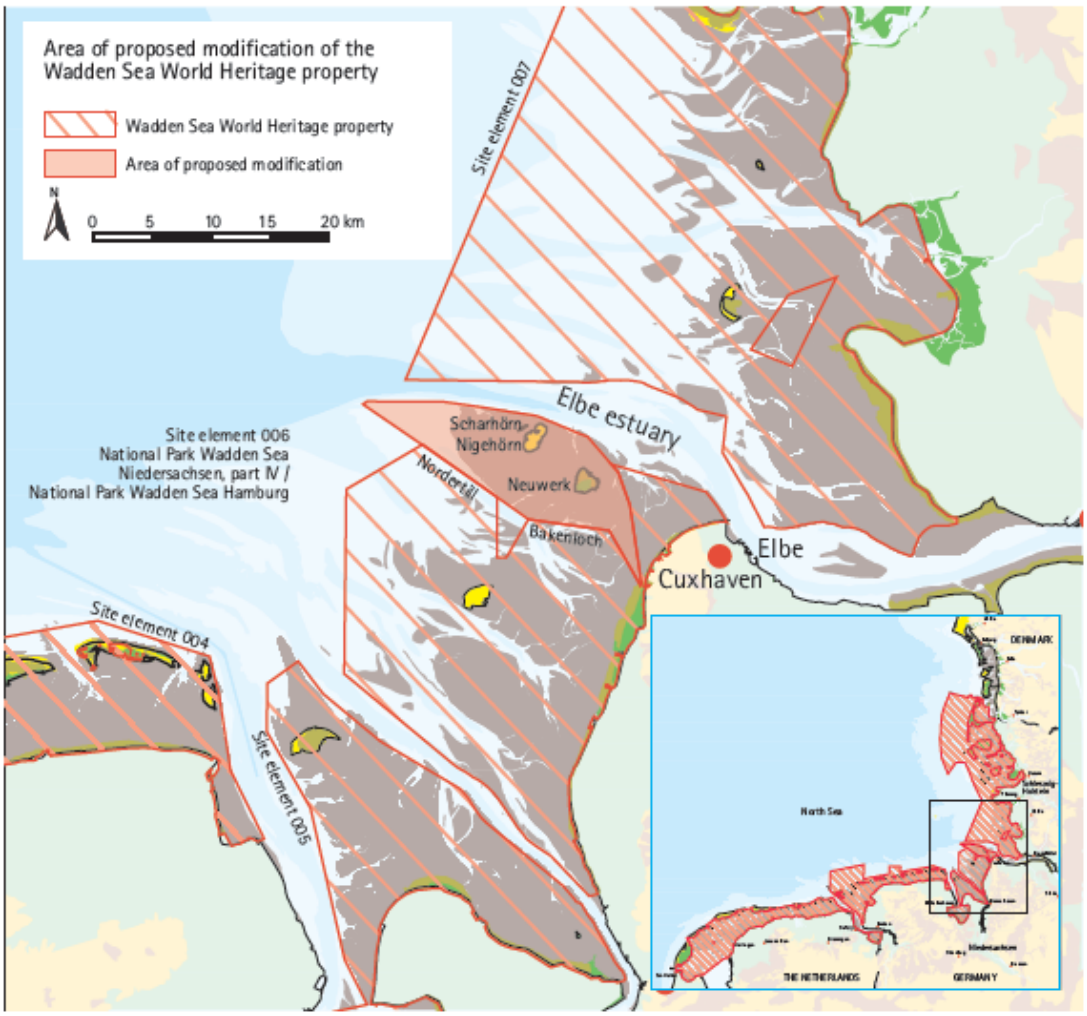
2. Approves the minor boundary modification of the Wadden Sea (Germany/The Netherlands) to include the Hamburg Wadden Sea National Park (13,611 ha), in order to strengthen the integrity of the inscribed property and support its effective protection and management;

3. Notes with appreciation that the Hamburg Wadden Sea National Park is already fully subject to the agreements and decisions made in the framework of the Trilateral Wadden Sea cooperation, as detailed in the original nomination dossier for the Wadden Sea;

4. Encourages the State Parties to continue to strengthen their transboundary collaboration in managing the property, and with the State Party of Denmark, and to consider the potential for nomination of an extension of the property to include the Danish Wadden Sea, taking account of the Committee's recommendations at the time of inscription of the property on the World Heritage List.

Map 1: Area of proposed modification

Figure 1:
Map of the proposed modification of the Wadden Sea World Heritage property.



LATIN AMERICA / CARIBBEAN

ISLANDS AND PROTECTED AREAS OF THE GULF OF CALIFORNIA

MEXICO

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

ISLANDS AND PROTECTED AREAS OF THE GULF OF CALIFORNIA (MEXICO) – ID No. 951bis

1. BACKGROUND INFORMATION

The existing natural World Heritage property comprises 244 islands, islets and coastal areas that are located in the Gulf of California in north-eastern Mexico. The serial property is of striking natural beauty and provides a dramatic setting due to the rugged forms of the islands, with high cliffs and sandy beaches contrasting with the brilliant reflection from the desert and the surrounding turquoise waters. The diversity of terrestrial and marine life is extraordinary and constitutes a unique ecoregion of high priority for biodiversity conservation. This serial property was inscribed in 2005 under natural criteria (vii), (ix) and (x) and extended in 2007. The original Committee Decision in 2005 (29 COM 8B.9) recommended to create and propose marine reserves around the inscribed islands as extensions of the property.

2. BRIEF SUMMARY OF PROPOSAL

The proposal is to include the terrestrial area "Balandra Zone of Ecological Conservation and Community Interest" of 1,197 ha as a twelfth serial component of the serial property. Balandra is located in the State Baja California Sur within the Bay of La Paz, north of and in close proximity to the capital city La Paz. Balandra is a municipal protected area by decree of the municipality of La Paz since 2008 and has clear demarcated boundaries.

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

As it concerns the inclusion of land into the existing World Heritage property, the proposal is considered in its relation to the criteria under which the current World Heritage property is inscribed, and its contribution to the integrity, protection and management of its values.

The proposed extension of the property strengthens the integrity of the inscribed World Heritage site in relation to all three criteria under which the Gulf of California has been inscribed on the World Heritage List. Balandra is located within Marine Priority No. 10, known as "Complejo Insular de Baja California Sur", as part of the Priority Regions for Conservation established by the National Commission for the Knowledge and Use of Biodiversity (CONABIO, 2006). The mangrove forest, extending over 22.5 ha and thus the largest within the bay of La Paz, underwent a large reforestation effort, starting 12 years ago, based on the reintroduction of *Avicennia germinans* in certain areas that had been affected by illegal logging. The area functions as a nursery for juveniles of a number of important fish species, some of them of economic importance for local communities. The close proximity of the mangrove areas to sea grass communities and coral and rocky reefs, such as the grass beds of Gaviota Island and the reefs located in Balandra itself, facilitates the transfer of nutrients between these different habitats for fish and invertebrates. Balandra is also a nesting site for endangered resident and migratory bird populations. It has been classified as an Important Bird Area for Conservation. This strengthens the integrity of the property by providing valuable breeding grounds for the high marine productivity and biodiversity richness of the area and by establishing connectivity with the other parts of this serial property.

Balandra Zone of Ecological Conservation and Community Interest is a protected area established by the National Commission for Protected Areas of Mexico (CONANP) that has granted management rights and authority to the municipal government. In light of threats of tourism development and real estate projects, further layers of legal protection should be established and implemented as soon as possible. In supplementary information provided on the legal protection of the site, the State Party confirms that it is preparing to establish the area as a protected area at federal level and that the technical studies, community consultations and impact assessments have already taken place. The effective management of the area also requires the finalization and implementation of the management plan as soon as possible. The State Party has informed IUCN that the final version of the management plan will be analyzed by the Municipality of La Paz end of July 2011. At the moment, there are five staff members working in the area with an additional annual budget of ca. 80,000 USD. Conservation of Balandra is supported by the local community, which values this place for recreation and aesthetic and spiritual values. It is an emblematic place of great interest for the population of La Paz. Given its accessibility and importance for local population, many education outreach programmes by schools, the government and different civil society organizations are carried out in the region.

IUCN considers that the proposal to include "Balandra Zone of Ecological Conservation and Community Interests" meets the requirements for approval as a minor boundary modification of the property.

4. OTHER COMMENTS

None.

5. RECOMMENDATION

IUCN recommends that the World Heritage Committee adopt the following decision:

The World Heritage Committee,

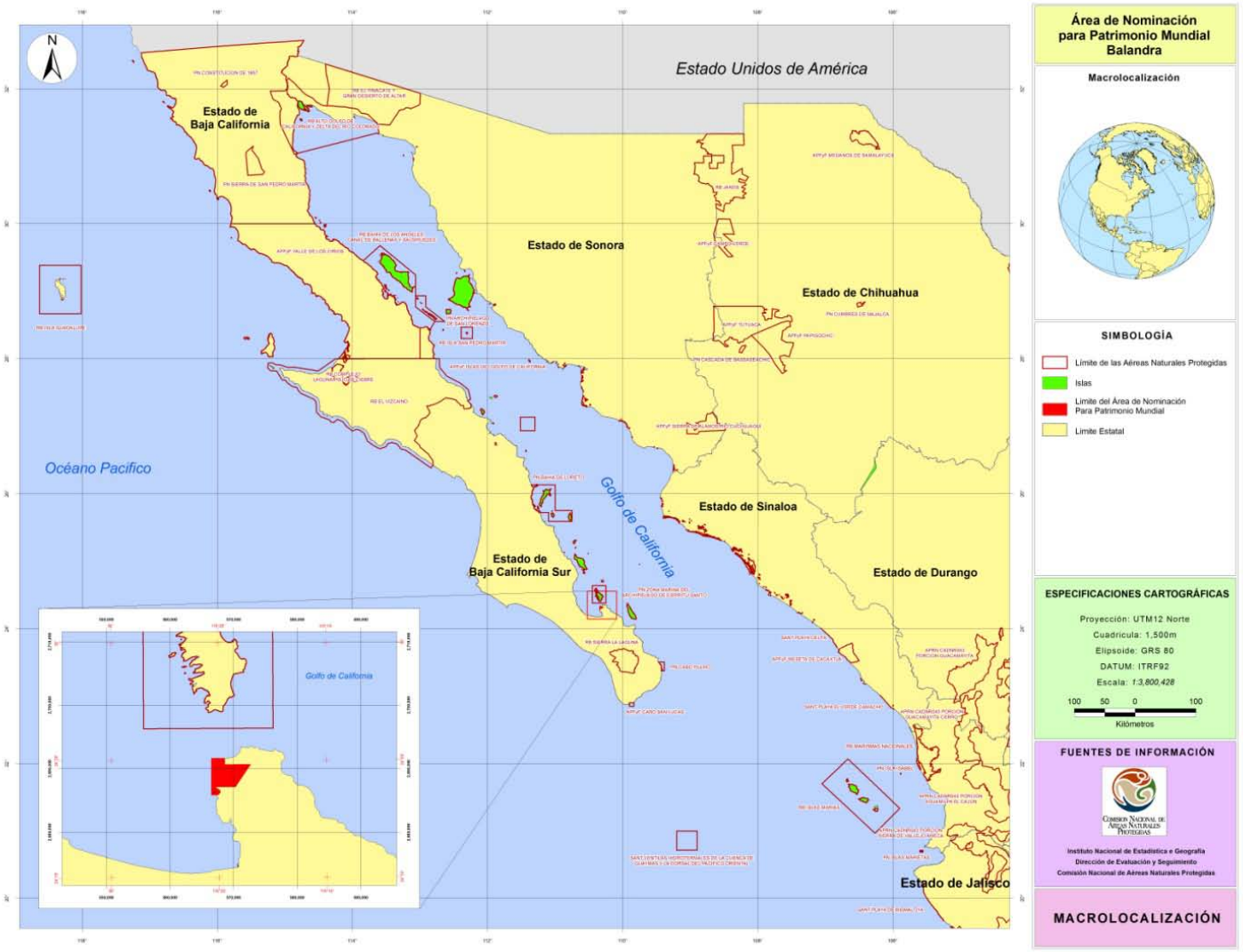
1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2, and recalling its previous decision 29COM 8B.9, which recommended the State Party consider further extensions to this serial property;

2. Approves the minor boundary modification of the **Islands and Protected Areas of the Gulf of California, (Mexico)** to include the "Balandra Zone of Ecological Conservation and Community Interest" (1,197 ha) as a new component part of the existing serial property, in order to strengthen the integrity of the inscribed property, provide connectivity and support its effective protection and management;

3. Requests the State Party, in close collaboration with the relevant local communities to complete the management plan for this component of the property and to submit this to the World Heritage Centre before the 36th Session of the World Heritage Committee in 2012, and to ensure continued attention to the measures to manage tourism development and fisheries within and associated with the new component;

5. Notes with appreciation the restoration of the mangroves within Balandra and encourages consideration of similar approaches to reestablish additional mangrove areas and new marine protected areas in the Sea of Cortez.

Map 1: Nominated property location



B. MIXED PROPERTIES

B1. NEW NOMINATIONS OF MIXED PROPERTIES

AFRICA

SALOUM DELTA

SENEGAL

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SALOUM DELTA (SENEGAL) – ID No. 1359

IUCN RECOMMENDATION TO 35th SESSION: Not to inscribe the property under natural criteria

Key paragraphs of Operational Guidelines:
77 Property does not meet natural criteria.
78 Property does not meet conditions of integrity or protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: No supplementary information was requested.

c) Additional literature consulted: wide consultation of literature including: BirdLife International (2009). **Important Bird Area factsheet: Delta du Saloum**, Senegal; BirdLife International (2010) **Important Bird Areas factsheet: Arquipélago dos Bijagós**. Dia, I.M.M. (2003). Elaboration et mise en oeuvre d'un plan de gestion intégrée - **La Réserve de biosphère du delta du Saloum, Sénégal.** UICN, Gland, Suisse et Cambridge, Royaume-Uni. xiv + 130 pp. Diouck, D. (1999). **Adaptations aux modifications du milieu des Colobes bais (Colobus badius temminckii) de la forêt de Fathala, parc national du Delta du Saloum, Sénégal.** PhD Thesis. Dakar : UCAD. 165 pp. Dodman, Tim, Ndiaye Mame Dagou Diop & Sarr Khady (eds.). (2008). **Conservation Strategy for the West African Manatee.** UNEP, Nairobi, Kenya and Wetlands International Africa, Dakar, Senegal. Dupuy, A.R. (1986). **The Status of Marine Turtles in Senegal**. Marine Turtle Newsletter 39:4-7. FAO (2007). **The World's Mangroves 1985-2000.** FAO Forestry Paper 153. Rome, Italy.; IUCN (1992). Protected Areas of the World: **a Review of National Systems. Volume 3: Afrotropical**. Compiled by WCMC. IUCN, Gland, Switzerland and Cambridge, UK. xii + 360 pp. Keijl G.O., Brenninkmeijer, A., Schepers, F.J., Stienen, E.W.M., Veen, J. and Ndiaye A. (2001). **Breeding gulls and terns in Senegal in 1998, and proposal for new population estimates of gulls and terns in north-west Africa**. Atlantic Seabirds 3(2): 59-74. LPO Mission rapaces. (2009). **Compte-rendu du comptage de rapaces insectivores (Faucon crécerellette et Elanion naucler) fréquentant le dortoir de l'île de Kousmar (Kaolack / Sénégal) le 21 janvier 2009**. LPO, 4p. Mullié, W.C. (2009). Birds, locusts and grasshoppers. In: Zwarts, L., Bijlsma, R.G., van der Kamp, J., Wymenga, E. (eds.) **Living on the edge. Wetlands and birds in a changing Sahel**. KNNV Publishing, Zeist. pp. 202 -223. Oates, J.F., Struhsaker, T., McGraw, S., Galat-Luong, A., Galat, G. and Ting, T. (2008). **Procolobus badius**. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.3; Powell, J. and Kouadio, A. 2008. **Trichechus senegalensis**. In: IUCN 2010. IUCN Red List of Threatened Species. Version 2010.4; Sadio, S. **Pédogenèse et potentialités forestières des sols sulfatés acides salés des tannes du Sine-Saloum.** ORSTOM, Paris, 1991, 269 pp. UNDP (2007). Project Title: **Integrated Ecosystem Management in Four Representative Landscapes of Senegal, Tranche 2**. Project submitted to the GEF by UNDP. 51 pp.

d) Consultations: two external reviewers consulted. The mission also met and travelled with representatives of the national cultural and natural heritage administrations, national office of UNESCO, and the President and Vice-President of the Rural Council for the area. The mission met with the Director of Cabinet, Ministry of Culture, the Adjoint Director of the Park Service, and the Sous-Préfet for Toubakouta Ibou Ndiaye. Consultations with Ecoguards and other park staff, inhabitants of the village inside the park, a selection of local artists and politicians, the Director of the Forest of Fathala and the President of the Bamboung marine protected area were also undertaken.

e) Field visit: Dr Wendy Strahm, September – October 2010 (joint mission with ICOMOS).

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

The nominated property named the Delta du Saloum (DDS) (Saloum Delta in English) is located c.150 km south of Dakar, some 50 km southwest of Kaolack, and 20 km from Banjul in the Gambia. The nominated property lies within the wider area of the delta, which also extends across the border into the Gambia, formed by a number of rivers including the Saloum, Sine, Bandiala and Diombos. The delta covers an estimated 500,000 ha, which includes some 60-80,000 ha of mangroves. The nomination put forward is for a mixed property and the IUCN evaluation below considers the natural values of the area, whilst the evaluation of cultural values will be carried out by ICOMOS.

The whole area of the delta of the Saloum includes some 200 islets separated by narrow channels of mostly saline to somewhat brackish water, and is protected in part by some sandy spits and islets on the seaward side which are very important for breeding and migratory waterfowl and marine species. Rising from 0-5 m above sea level (apart from the "artificial" islands which have been created by shell middens created over two thousand years which may reach 10 m in height), the delta includes important wetland habitats including mangrove swamps, coastal marine, and an adjoining area of dry woodland.

There is a complex and confusing pattern of designation of protected areas within the area: 180,000 ha of the delta was designated as a Biosphere Reserve in 1980, including the smaller 76,000 ha Saloum Delta National Park (SDNP), 73,000 ha of which has also been designated as a Ramsar site. SDNP contains 61,000 ha of marine habitat, 7,000 ha of mangroves and saltwater vegetation, and 8,000 ha of dry savanna and forest. Crossing the national border to the south, the delta is contiguous with the 4,940 ha Niumi National Park in the Gambia.

The nominated property, DDS, includes 145,811 ha which includes the SDNP in its entirety as well as a community-managed marine protected area (Bamboung) and a number of other mangrove islands falling under different management regimes. Thus DDS includes a much larger area of mangrove islets than does that of the National Park, mainly because it is these islets which include shell middens of cultural importance. The mangroves in the nominated zone are largely intact, whilst mangroves further north and east of the property have been killed by increased soil salinity. A "buffer zone" of 78,842 ha includes, in addition to villages and cultivated lands, the "community nature reserve" of Missira.

A high number of waders and seabirds, many occurring in large congregations, are found in the DDS which is an Important Bird Area defined by BirdLife International. The sandy islands, particularly "Île aux Oiseaux", host important breeding populations of African Royal Terns, Caspian Terns, Slender-billed Gulls and Grey-headed Gulls. Of greatest interest is the African Royal Tern, of which Île aux Oiseaux has the largest Royal Tern breeding colony in the world. Although the nomination cites the Royal Tern as threatened, it has been listed by IUCN as Least Concern. Recorded bird numbers of 66,784 individuals on Île aux Oiseaux during the breeding season (May 2009) and 120,000 wintering waterfowl comprising 95 species (1998) are provided in the nomination. Thus this island as well as the sandbars and mudflat habitat in the DDS provides an important spectacle of large numbers of birds during the breeding season as well as during the northern winter as the site lies along the East Atlantic Flyway. Other notable bird species occurring in the DDS include Lesser and Greater Flamingo, Great White and Pink-backed Pelicans, Sacred Ibis, Western Reef-egret, Goliath and Black Herons, African Fish Eagle and Osprey (none listed as threatened by IUCN).

The nomination lists the presence of West African Manatee (Vulnerable) as an important attribute, although in Senegal, the Manatee is close to extinction, noting that in most areas of the country it has not been seen for many years. Although there have been some reported sightings in the delta of the Sine Saloum River near Kaolack, the species is considered to be severely depleted and threatened and given the saline water in the DDS, it is unlikely to be a very important element inside the nominated site. The Atlantic Hump-backed Dolphin (Vulnerable) is cited as present in the DDS, with 100 animals out of an estimated population size of several thousand stretching from the coasts of southern Morocco to Angola. Marsh Mongoose and Nile Monitor Lizard are also noted in the property but are not globally threatened.

Thirty-six species of large and medium sized terrestrial mammals, are noted in the dry forest area of the DDS. Almost all of these species have a fairly widespread distribution and while are perhaps threatened in Senegal and therefore of national importance, are not threatened at a global level (e.g. Sitatunga and African Clawless Otter). The most interesting species is the Endangered Red Colobus, a monkey of which a subspecies (*Procolobus badius temminckii*) occurs in the DDS where it is at the north-western limit of its range (Senegal, Gambia, Guinea-Bissau and north-west Guinea). This species seems to be declining throughout most of its range, and although the subspecies *temminckii* occurs in a number of protected areas (e.g. Abuko NP and River Gambia NP in the Gambia, Niokolo-Koba NP in Senegal; and Cufada NP in Guinea-Bissau), the absence of large and well-managed protected areas means that the status of this subspecies is likely to continue to decline. It is estimated that there are probably fewer than 400-500 individuals of *P. b. temminckii* surviving in Saloum Delta NP, and probably fewer than 100 in the isolated Niokolo-Koba and north-west Guinea population. Therefore despite its relatively small remnant of dry forest, the DDS may have the potential to contribute to the conservation of this species, provided integrity issues (below) in this forest are resolved.

Six species of marine turtles have been listed as using the DDS including five species that the nomination cites as "frequent". Four species have been recorded as nesting in the DDS: the Vulnerable Olive Ridley, Endangered Green and Loggerhead, and Critically Endangered Leatherback. Two other Critically Endangered turtles (Hawksbill and Kemp's Ridley) have also been recorded. It appears that while some turtles (mainly Green) still nest on Île aux Oiseaux and Sangomar, nesting records are rare in Senegal with a decline noted from a minimum of 200 nestings observed on the coast in the 1950's, to about 20 observed in 1985. Therefore DDS is not an important breeding site for any of these species, but the area has the potential to be

much more important for turtle conservation once the threats can be solved.

Within the estuary component of the property 114 species of fish belonging to 42 families have been identified, including one species of carp (*Lisa bandialensis*) which is considered to be endemic to the DDS and is decreasing because they are highly sought after by Senegalese consumers. The site is an important fish nursery as well as provides habitat for numerous crustaceans and molluscs of which several (shrimps, oysters, and various other shells) are very important locally. There is also high diversity in the marine ecosystem, including cartilaginous fish (80 species in 30 families) and bony fish (470 species in 110 families). A number of these species are over-exploited and given the comparatively small marine area in the nomination compared to the area where these species range, the contribution of the property for marine fish as well as marine mammals and invertebrates is limited.

The dry forests of the DDS are said to contain about 20% of the flora of Senegal making the area of national importance. Baobabs growing on the shell middens, while scenic, are not natural as they require lime-rich substrates so only grow on the artificial islands; indeed they serve as an indicator to identify where the shell middens occur.

Mangroves in Senegal (as throughout West Africa) are under severe pressure. Since 1980 Senegal has lost approximately a third of its area under mangroves, and the largest area remaining in Senegal is in the Delta du Saloum providing a largely intact and very important habitat.

3. COMPARISONS WITH OTHER AREAS

The property is nominated under natural criteria (vii) and (x), in addition to cultural criteria. In relation to its representation of superlative phenomena, the principal points of comparison are also relevant to the application of the biodiversity criteria and are discussed below, consider notably that there are larger, more natural and more diverse areas within the region (notably the Banc d'Arguin in Mauritania and the Bijagos in Guinea-Bissau). From the point of view of aesthetic values, the property is certainly attractive, but does not present distinct values in this regard that would set it apart from other areas of mangroves of marine conservation areas both in the sub-region and elsewhere in the world. IUCN considers the property is clearly of great national significance for Senegal for both natural beauty (the mangrove, tropical sandy island and marine habitats) and natural phenomena (including its highly important seabird nesting colony along the West African coast). However at a global level these habitats and phenomena are found in a range of places and at a larger scale.

In relation to biodiversity values, the nomination recognises that mangrove forests (here composed of four species) are common throughout the world and that there are many other mangrove forests much larger than that found in the DDS. The nomination focuses on the juxtaposition of the natural values of the site with the cultural values, which are mainly the man-made shell middens that occur in the site, and which are in effect protected from erosion by the mangroves as a key value. Whilst this may be the case, IUCN considers that this issue is an important aspect of integrity regarding the cultural attributes of the property, but would not be a basis for the application of natural criteria.

Regarding species conservation, no comparative analysis is made with the relatively small dry forest portion of this nomination. This area could, with more effective management become the most important area for the conservation of the Red Colobus, although the same could be said for larger areas where this species occurs. Although a number of threatened marine species occur within the reserve, the marine component is small and there are either other or larger areas which play a more significant role in their conservation. The site is important for the Atlantic Hump-backed Dolphin, but probably not the most important site for this species.

The most significant basis for international conservation value of DDS appears to relate to its bird population. IUCN regards the Delta of Saloum as the third most important site for *waterfowl* in West Africa after the Banc d'Arguin in Mauritania and Djoudj in Senegal, whilst BirdLife cites the Bijagos Archipelago of Guinea-Bissau as the second most important site for *migratory waders* after the Banc d'Arguin. When the Banc d'Arguin was evaluated, IUCN noted that it was by far the most important area for *migratory birds* in the region with only the Bijagos Archipelago in Guinea-Bissau coming close. The other World Heritage wetland site found in the same biogeographic province is the Djoudj National Park where riverine flats also support significant Palaearctic migrants, mostly waterfowl. It is, however, much smaller and does not have a marine aspect.

The nomination notes that there are many close similarities between the DDS and the Bijagos, noting that the Bijagos covers a much larger area. The Bijagos, in addition to being important for migrating waterfowl, also have a number of nesting species including ibis and a heronry. On the basis of breeding species (see Table 1), the DDS is significant, in particular for gulls and terns. These are mainly on the 200 ha Île aux Oiseaux, and this tern and gull colony is very spectacular. However, there exist spectacular tern and gull colonies in other parts of the world, but with different species. Therefore in comparing areas within the same biome, the breeding bird colonies in the DDS surpass those of the Banc d'Arguin and the Bijagos, but are not globally exceptional.

All of the water birds listed above are classified by IUCN as "Least Concern" species, although there is one species that nests in very large but few colonies, and that is the African Royal Tern (a subspecies that is

restricted to the West African coast, with another subspecies occurring in the Americas). African Royal Terns only breed in Senegal, Mauritania, Gambia and Guinea Bissau, and Île aux Oiseaux in the DDS has the largest Royal Tern breeding colony in the world. However, it has been noted that breeding colonies of Royal Terns can shift between breeding sites, resulting in seemingly large fluctuations at any site. While 40,000 pairs were observed in 1999 on Île aux Oiseaux, "only" 21,000 pairs were counted in 1998 (Keijl *et al*., 2001), and the nomination cites a figure of 19,588 individuals counted in May 2009. This may indicate a decline since the BirdLife data is some ten years old. In summary, whilst the nominated property is certainly of international interest, the values of the property appear to be at a lower level than those of both the Banc d'Arguin and Bijagos in the region, thus the case for the application of criteria x is weakened.

Table 1. Breeding pairs of IBA species (BirdLife, 2010)

Species	Season	Banc d'Arguin	DDS	Bijagos	Djoudj
Greater Flamingo	resident	12,940	-	-	-
Eurasian Spoonbill	resident	1,610	-	-	-
Western Reef-egret	resident	745	1,750	870	-
Great White Pelican	breeding	3,080	-	-	8,500
Great Cormorant	breeding	4,260	-	-	-
Grey-headed Gull	breeding	-	4,600	800	-
Slender-billed Gull	breeding	1,610	3,350	170	-
Gull-billed Tern	breeding	1,180	309	-	-
Caspian Tern	breeding	2,575	8,610	1330	-
Royal Tern	breeding	5,630	40,000	7,600	-
Common Tern	breeding	40	80	-	-
African Sacred Ibis	breeding	-	-	742	-
African Spoonbill	breeding	-	-	1,000	-
Black-crowned Night-heron	breeding	-	-	168	1,000
Squacco Heron	breeding	-	-	318	-
Great Egret	breeding	-	-	925	807
Little Egret	breeding	-	-	553	-
TOTAL		33,670	58,699	14,476	10,307

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The legal protection (apart from the portion of the DDS inscribed as National Park) of the proposed site is unclear. The nomination notes the land nominated as core is mostly State-owned, but does not explain what land is under private ownership. Given that a number of small villages and one small hotel lie within the proposed core area, the situation pertaining to any private land inside the proposed property requires clarification. The nomination also notes that the State may "transmit the utilisation and rational enhancement of [State] land in conformity with development plans and programmes to third parties", and the law 96-07 of 22 March 1996 allows the region, commune and rural community to define and organise the use of this land, in liaison with the State (i.e. the National Park Service and the Forest Department). Thus the extent of actual protection provided is not clear and whilst World Heritage site status could provide a basis to strengthen and clarify the legislative protection, it could also lead to increased visitation and resultant impacts on the area.

IUCN considers the protection status of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.2 Boundaries

The boundaries of this property include three ecosystems: mangrove, dryland forest and marine. Included in the nomination is the entire National Park as well as additional mangrove habitat. The fact that there exists a Biosphere Reserve, a National Park, and a Ramsar Site, as well as the present nomination, within the Delta of Saloum makes understanding what is happening very difficult. There are some discrepancies noted during the evaluation, for instance DDS is cited as totalling 224,653 ha, but the Biosphere Reserve is said to cover 180,000 ha and appears on maps to be larger than the nominated area. Likewise why the DSNP is said to cover 76,000 ha and the Ramsar Site 73,000 ha (but they are supposed to have the same boundaries) also requires clarification.

The nomination includes a 3 km wide buffer zone on the seaward side, and a somewhat unclear buffer zone to the west (which, in addition to villages and cultivated areas, is supposed to include the community managed reserve of Missira). The present marine buffer zone is too narrow to be effective, but it was explained that this was due to management reasons as the National Parks could not police a larger zone, and thus included the same buffer zone as that included in the Biosphere Reserve. There is no buffer zone to the edge of the Forest of Fathala, where one would appear needed, due to the proximity to the Gambian border to the south and villages (and a hunting zone) to the west.

Apart from the issue of the Forest of Fathala, the boundaries for the nomination seem reasonable, especially as they include a good amount of mangrove and marine habitat. It is not certain that all of the area where the Red Colobus occurs is included in the nomination. Thus whilst the actual area of the nominated property needs to be checked, and investigation as to whether all the important areas of

forest for the Red Colobus are included would be useful, the boundaries appear to meet minimum requirements.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3 Management

Although the nomination submitted a management plan for the property, much of this is a reproduction of the nomination and it is not apparent that there is an overall management system for the property in place. However there seem to be a number of different management and development plans for the Delta, and the challenge will be to see how to combine all of these into a coherent system for the management of a WH property. In supplementary information provided to ICOMOS, the State Party notes that next steps to improve the management of the site will be to create a management committee and to identify a manager.

The nomination stresses the importance of local conventions, noting that traditional practices have had a great importance in the conservation of the site and that these would continue. However it also recognised that there have been declines in biodiversity and projects are in place, such as the community marine protected area at Bamboung, to reverse this trend. The mission noted a range of types of use going on inside the proposed core of the property (tourism, gathering of grasses and other plant products, bee-keeping, shell collection, fishing, some livestock-rearing, agriculture, possibly some hunting). The extent to which these uses are being addressed by the management system, and the levels of use that would or not be considered sustainable are also not clear.

There is a structure in place for managing the National Park, and the Forest Department manages “Classified Forests” (Forêts classées). However the mechanisms for managing State land that has no protection status is unclear. There appears to be good progress in the development of an ecoguard/ecoguide programme and the work with the community managed marine protected area. There are a number of different initiatives with NGO’s (including IUCN) to better manage the area and also a number of examples of projects that have clearly been unsustainable.

A special note needs to be made about the management of the Forest of Fathala. This 11,800 ha area has been included inside the National Park and therefore the DDS. The management of a third of the forest (4,000 ha) has been given to a Dakar-based NGO (SPEFS, the “Société pour la Protection de l’Environnement et de la Faune du Sénégal”), which has fenced 2,000 ha with electrified fencing. There appears to be significant conflict between this reserve and the surrounding local people, including poaching of wildlife.

The nomination lists a total of 15 people spread over 7 bases. In addition to the staff of the Forest of Fathala, there are also 38 ecoguards listed who work mostly on a voluntary basis at the community level. Still, there are not sufficient resources to manage a protected area of this size. Annual bird censuses are undertaken although seem to be less than before when there was more intense Belgian interest in counting the birds. Otherwise the monitoring of the property at the present time appears to be very limited.

IUCN considers the management of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.4 Threats

Wildlife management
In addition to trying to conserve the native fauna of the area, an attempt has been made to re-introduce elements of the fauna that have become extinct, in many cases a long time ago, such as the Western Giant Eland, Buffalo and Roan Antelope. However other species, such as two White Rhino, four Giraffe (a different subspecies of Giraffe as the original West African one is extinct), and a herd of Cape Zebra (that never existed in Senegal), all coming from South Africa, have been introduced to the reserve. Most of these experiments seem to be failing however. For example the evaluation mission was informed that 3 of the 4 Giraffe had being poached. While it is laudable to try to “recreate” biodiversity that once occurred, the unscientific manner in which animals are being introduced to a National Park is clearly not appropriate.

Population growth and unsustainable use
The nomination says that the DDS has integrity given the good state of conservation of the property and the traditional practices of sustainable use (for shell collection and fishing), although also notes that there has been unsustainable use which is being resolved by the creation of a marine reserve and new techniques for oyster farming that reduce impacts. Whilst many parts of the area including the mangroves surrounding the islands are for the most part intact, the property is not pristine and impacts from the resident population include agriculture, fire, fuel wood collection, pollution, and possible collection of bird and turtle eggs. It is not clear as to how many people actually live inside the proposed core area, but the nomination says that some 55,000 people are living mostly at the edge of the property, and another 81,000 people reside in the buffer zone (and population growth is at 2.5%). The nomination notes pressure from increasing rice cultivation and illegal firewood collection as well as bush fire, which was also evident during the evaluation mission.

Tourism
Tourism is still very basic in the delta but developing, which seems to be one of the main motivations for inscribing this area as World Heritage. The neighbouring towns of Missira, Toubakouta and Foundiougne all have

plans for tourism development. The mission noted interest in sports fishing, and some local people receive income from stuffing or making models of the tourist's "big catch". The mission heard reports that few proceeds from the larger hotels in the region go to the local community. Unmanaged tourism in the area could pose a very real threat to the natural values of the site, especially to Île aux Oiseaux which still receives a relatively low number of tourists and is said to be strictly managed by the National Park, but increased visitor demand will create management issues. In this context the preparedness of the management of the property to consider possible increases does not yet seem to be in place.

Soil salinisation and erosion
In 1991, it was estimated that soil salinisation affected 90,000 ha in the Saloum estuarine domain. While rainfall seems to be increasing today, with global change it is impossible to predict what will happen in the future. Low rainfall means that the whole of the area could be threatened by increases in salinity which would destroy the remaining mangroves. Similarly in 1994 the "Point of Sangomar" was breached and this sandy spit turned island is progressively moving southward, removing the previous protection of the mangroves from wave erosion.

Pollution
The Delta du Saloum is not far from Banjul, capital of the Gambia, and there seems to be a direct flow of water to the delta which brings lots of plastic debris that ends up on the mudflats and forms garlands of plastic on the mangroves. Other pollution comes from Kaolack. The mission noted community clean up efforts and that measures are being taken to tackle both solid waste and sewage, but fixed plans are not yet made.

The State Party is clearly aware of the challenges to this property and is doing much to address them through the creation and better management of reserve areas, as well as wider planning efforts. Nevertheless there are a range of significant sources of concern, including from the potential impacts of World Heritage status in relation to tourism pressures, and there remain underlying issues regarding the adequacy of legislation, staffing and resources to resolve before a viable management system could be established. Whilst World Heritage status might arguably have a catalytic role, and this appears to be a basis for UNESCO local support for the initiative, it also has the potential to bring additional pressures ahead of adequate management capacity being established. Conversely the existing recognition by UNESCO of the area as a biosphere reserve, as well as its existing recognition as a Ramsar site provide alternative and existing sources of leverage for conservation and sustainable development efforts, more clearly relevant to the property at the present time.

IUCN considers the nominated property does not meet the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

One area within the delta but which is not located within the nomination that could possibly increase the OUV of the site is "Île de Kousmar", which houses possibly the largest bird of prey roost ever discovered. This massive winter roost contains approximately 45,000 insectivorous raptors, including over 28,600 Lesser Kestrels and 16,000 African Swallow-tailed Kites. The roost is thought to host more than half of the combined known breeding Lesser Kestrel (Vulnerable) populations of western Europe and northern Africa. This species has declined rapidly in western Europe since 1950 and significant conservation efforts have been devoted to the Lesser Kestrel in its European breeding range, but the discovery of this 'super-roost' in 2007 highlights the importance of protecting wintering sites as well. In the winter it must be an extraordinary spectacle to observe this density of raptors in one place. Whilst it would be challenging to associate this area, remote from the nominated property, to a revised nomination, it should be noted and protected as a highly noteworthy and important area within Senegal.

6. APPLICATION OF CRITERIA

The Delta du Saloum has been nominated under natural criteria (vii) and (x), as well as under cultural criteria which will be evaluated separately by ICOMOS.

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
This property is of great national significance for Senegal for both natural beauty (the mangrove, tropical sandy island and marine habitats) and natural phenomena (the most important seabird nesting colony along the West African coast). However at a global level these habitats and phenomena (although not with the same species) exist elsewhere and at a larger scale.

IUCN considers that the nominated property does not meet this criterion.

Criterion (x): Biodiversity and threatened species
The property is of international significance as an important seabird nesting colony, including one quarter of the entire breeding population of African Royal Terns. It is however the third most important wintering site for Palaearctic migratory waders, after the Banc d'Arguin in Mauritania and the Bijagos Archipelago in Guinea-Bissau. It is differentiated from these two sites by its combination of sandy islands and mangroves. Whilst the property provides habitat for a number of threatened species, including six species of marine turtles and the Atlantic Hump-backed Dolphin, its contribution to overall conservation of these species within their ranges is limited due to its small marine area and impacts of human use. The dryland forest provides one of the last habitats for the Endangered Red Colobus, along with a number of reserves in the region. The levels of integrity and protection and management of the property are not

sufficient to provide protection for these values at the present time.

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

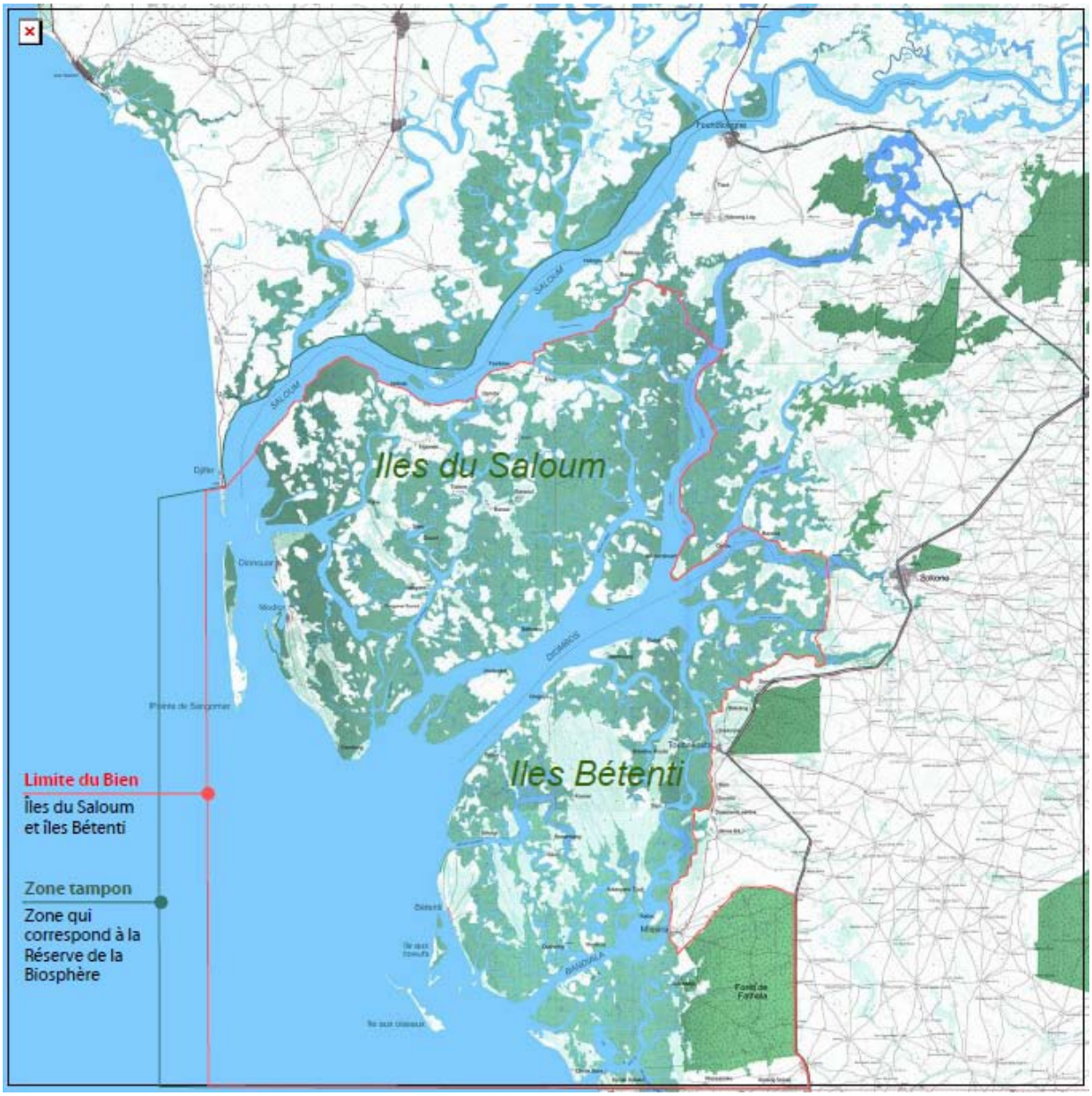
1. Having examined Documents WHC-10/35.COM/8B and WHC-10/35.COM/INF.8B2;

2. Decides not to inscribe the **Saloum Delta (Senegal)** on the World Heritage List under natural criteria (vii) and (x);

3. Recommends the State Party to seek assistance via the UNESCO Man and Biosphere Programme and also of the Ramsar Convention, in order to ensure the international recognition of the Saloum Delta as both a Biosphere Reserve and as a Ramsar Site contributes to the effective conservation of the site, and also assists the development of well-planned and equitable approaches to sustainable development within the property and the surrounding area, including via sustainable tourism;

4. Further recommends the State Party to clarify and strengthen the legal protection of the property, and to increase the available human and financial resources to ensure the protection and conservation of the site, including the protection, and restoration where appropriate, of the important natural values within the area, including the high quality mangrove habitat, dry forest areas capable of supporting conservation of the Red Colobus, the important bird and turtle conservation area of the *Île aux Oiseaux*, and to also put in place an effective protection and management regime to secure the conservation of the nearby Île de Kousmar.

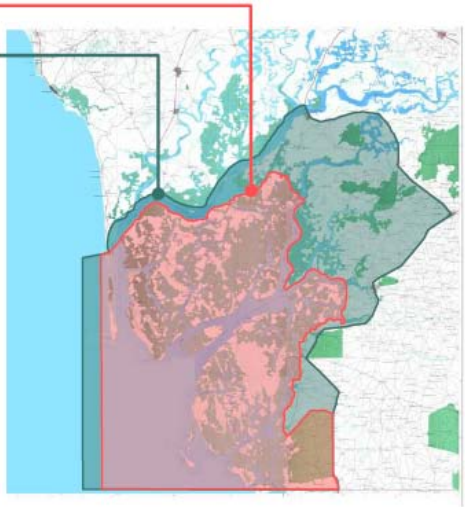
Map 1: Nominated property and buffer zones



Surface du bien proposé ..... 145 811 Ha

Surface de la zone tampon ..... 78 842 Ha

Total ..... 224 653 Ha



ARAB STATES

WADI RUM PROTECTED AREA

JORDAN

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

WADI RUM PROTECTED AREA (JORDAN) – ID No. 1377

IUCN RECOMMENDATION TO 35th SESSION: Refer back the nomination of the property

Key paragraphs of Operational Guidelines:
77: Property meets one or more World Heritage criteria.
78: Property does not fully meet conditions of integrity or protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: IUCN requested supplementary information following the meeting of its World Heritage Panel in December 2010. A response from the State Party was received on 28th February 2011.

c) Additional Literature Consulted: Abdelhamid, G. (1990) **The Geology of the Jabal Umm Ishrin Area (Wadi Rum) Map Sheet No. 3049 II**, Geology Directorate Geological Mapping Division Bulletin 14, Ministry of Energy and Mineral Resources, Natural Resources Authority, Amman. Bendor, F. (1974) **Geology of Jordan**, Berlin. Cooper, G.A., 1976, **Lower Cambrian brachiopods from the Rift Valley (Israel and Jordan)**, Journal of Paleontology, v. 50, p. 59-75. Howard, T. (2007) **Treks and climbs in Wadi Rum**, Cicerone Press; Masri, A., **Geology of Jordan**, Geological Mapping Division, Natural Resources Authority. Osborn, G. Duford, J.M. (1981) **Geomorphological processes in the inselberg region of SW Jordan**. Palestine Exploration Quarterly, p. 1-16. Powell, J.H. (1989) **Stratigraphy and sedimentation of the Phanerozoic rocks in central and south Jordan. Part A: Ram and Khreim groups.** Bull. No. 11, Geology Dir., Natural Resources Authority, Jordan. Selley, R.C. (1970) **Ichnology of Palaeozoic sandstones in the southern desert of Jordan; a study of trace fossils in their sedimentologic context**. In: Crimes, T.P. Harper, J.C. (eds.), Geological Society of London Special Report No. 9, p. 477-488. Selley, R.C. (1972) **Diagnosis of marine and non-marine environments from the Cambro-Ordovician sandstones of Jordan**. Journal of Geological Society of London, v. 128, p. 135-150; Smith, B.J. (2009) **Weathering Processes and Forms**. In: Parsons, A.J. and Abrahams, A.D. (eds.) **Geomorphology of Desert Environments,** Springer Science+Business Media. Viles, H.A. Goudie, A.S. (2004) **Biofilms and case hardening on sandstones**. Earth Surface Processes and Landforms, v. 29, p. 1473-1485; Wray, R.A.L. (1997) **A global review of solutional weathering forms on quartz**. Earth-Science Reviews, v. 42, p. 137-160; Young, R.W., Wray, R.A.L. and Young, A.R.M. (2009) **Sandstone Landforms**, Cambridge University Press, Melbourne; Goudie, A. and Seely, M. (2011) **World Heritage Desert Landscapes.** IUCN, Gland.

d) Consultations: Nine external reviewers consulted. Extensive consultations were conducted during the field mission with approximately 80 stakeholders in 12 separate meetings.

e) Field Visit: Kyung Sik Woo and Zoë Wilkinson, September 2010 (joint mission with ICOMOS).

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

Wadi Rum Protected Area (WRPA) is nominated as a mixed World Heritage property and is located in the southern part of Jordan close to the border with Saudi Arabia, around 290 km south of Amman and 60 km northeast of the coastal city of Aqaba. The evaluation below by IUCN concerns the natural values of the property, whilst the cultural aspects of the nomination will be evaluated in parallel by ICOMOS.

The total area of WRPA is 74,200ha. The property extends approximately 42km from north to south and approximately 33km from east to west. A buffer zone of c.5km in width, with some excepted areas, surrounds the nominated area and is stated as having a total area of 60,000 ha.

Wadi Rum is a major feature within the Hisma desert lying to the East of the Jordan Rift Valley and south of the steep escarpment of the central Jordanian plateau. Its natural values include desert landforms developed within continental sandstones. These landforms have been developed under the influence of a combination of various controlling factors such as lithology, tectonic activities (including rapid uplift, numerous faults and joints) and surface processes (including various types of weathering & erosion associated with desert climate as well as humid climates in the past), representing million years of ongoing landscape evolution.

Lithologically, Wadi Rum is dominated by two main formations: the lowest and oldest basement complex of Precambrian granitoid rocks and a great thickness of

Lower Cambrian to Middle Ordovician quartz sandstones, separated by the unconformity. In addition, Quaternary sediments are represented by alluvium and wadi sediments such as alluvial fans, alluvium sands and sand dunes and mudflats. Sands cover extensive areas along most of the wadis where they form distinctive sandy plains, sometimes with sand dunes.

The area is well known for its spectacular landforms presenting an exceptional combination of features resulting from drainage incision, severe weathering by salt, biological, and other processes, and the undermining of steep sandstone cliffs by these weathering processes. The resulting landscape contains a range of narrow gorges, natural arches, towering cliffs, ramps, massive landslides, and dramatic cavernous weathering forms.

This highly varied desert landscape is the result of the interplay between complex geological controls that have fluctuated considerably over a long period. The area has been uplifted and exposed in a tectonically active region. The area as a whole is still rising, and generally, the long-term average uplift (around 70mm/1000 years) is greater than the rate of erosion. Concentrated erosion along fault lines has cut through an excess of 700m of sandstone to create an exceptional network of corridors and canyons. Deep exploitation of fault lines has produced the wide and straight wadis, which in many instances several hundred meters wide, and are blanketed with loose sand sheets and dunes of various colours.

Each rock formation displays its own distinctive morphology depending upon lithology, susceptibility to tectonic forces and types of cements. The Salib Formation is typified by relatively gentle slopes littered with debris, due to its close spaced joints. It shows a characteristic step-like morphology. The Umm Ishrin Formation is typified by rock falls of large masses along widely spaced vertical joints making it the major cliff former. It is characterized by spectacular towers of varying heights and width. Colour variation on the surface (rust red to yellow to almost pure white) is also caused by dissolution of internal calcite cements and secondary mineralization such as calcites and iron-hydroxides. Grain by grain weathering has produced tafoni on some cliffs. The extremely friable Disi Formation is characterized by smooth dome-like rounded weathered surfaces which were developed mainly due to exfoliation along pressure-relief joints. In this formation, there are several examples of natural rock arches. The Umm Sahm Formation, highly fractured and jointed, forms distinctive pyramidal caps with step-like morphology similar to the Salib Formation.

3. COMPARISONS WITH OTHER AREAS

The natural values of the property have been nominated under natural criteria (vii) and (viii), alongside cultural criteria that are considered in the evaluation by ICOMOS.

The comparative analysis presented in the nomination was regarded as inadequate by many reviewers, and IUCN has requested and received additional comparative analysis from the State Party. IUCN has also augmented the comparative analysis with input from a range of global reviewers, and in collaboration with reviewers identified with the International Association of Geomorphologists (IAG) and the International Union of Geological Sciences (IUGS).

In relation to its natural beauty, Wadi Rum is recognised globally as a superlative desert landscape. The desert scenery of Wadi Rum can be regarded as iconic, and illustrates a series of dramatic and varied landfoms that are excellent examples of the various components of desert geomorphic systems. Key attributes of the aesthetic values of the property include the diversity and sheer size of its landforms, together with the mosaic of colours, vistas into both narrow canyons and very large wadis, and the scale of the cliffs within the property. Its associations with the writings of T.E. Lawrence, stressed strongly in the nomination, have ensured a high profile for the property and have reinforced its reputation of the area as a classic desert landscape both globally, and within the Arab States.

Reviewers note that there are other pleasing landscapes which display similar landscape features in a number of locations across northern Africa, and the Middle East. Close analogues of the nominated property are to be found in the Central Sahara in Gebel Acacus (Libya) and in the inscribed property of Tassili n'Ajjer (Algeria), though the tectonic setting in these cases is very different. There are similar landscapes in adjacent areas of Saudi Arabia, but these have to date been little studied. The sandstone landscapes of the Colorado Plateau in the USA, displaying large cliffs, natural arches and groundwater sapping features are equally well known global examples of desert landscapes. The dramatic niche and columnar weathering in Rum is however not present to anything like the same extent in these properties. The sandstone landscapes of China are not comparable in terms of lithology and, especially, climatic conditions, and present very different aesthetic values. IUCN also notes that the cultural values of the property are cited by a number of IUCN reviewers as a significant element of its landscape importance. Those values are part of the assessment of the area as a nominated cultural landscape, which is undertaken by ICOMOS. On balance IUCN considers that there is a case for the application of criterion (vii) to the property.

Comparisons in relation to criterion (viii) have some parallels to the consideration of criterion (vii) regarding comparable areas. A number of reviewers are supportive of inscription under this criterion, as well as criterion (vii), although on the basis of a significant global review it is also stated that the rock, landscapes and other geomorphic processes of Wadi Rum, whilst impressive and good examples, are not necessarily unique or the best examples in the world, and other examples either duplicate or may surpass the values of the nominated property. The most recent comparative study in relation to criterion (viii) is a study commissioned by IUCN on World

Heritage Desert Landscapes, which has been completed in parallel with the present nomination. This study selects Wadi Rum as one of the 15 most significant desert properties currently included on the Tentative Lists of States Parties to the Convention, in relation to the potential to demonstrate Outstanding Universal Value, noting the importance of its sandstone mountains and valleys with remarkable natural arches, the world's most spectacular networks of honeycomb weathering features and very large landslide features caused by undercutting of slopes by groundwater sapping and salt weathering as key features. Other noted sites include Band-E-Amir (Afghanistan), Las Parinas (Argentina), Les Lacs d'Ounianga (Chad) and San Pedro de Atacama (Chile) as possible gap sites in relation to the World Heritage List when viewed in relation to deserts globally. The study also notes 9 sites that are not included on tentative lists in the USA, United Arab Emirates, Pakistan, Australia, Chad and China that also have high potential for recognition of their earth science values.

IUCN sought further information from the State Party regarding the comparative analysis of the property during its evaluation process. Comparative material on the geological rock succession of the area was provided which indicates regional significance in this regard. However the information that has been provided on the geomorphological values in the nomination and supplementary information is mostly descriptive material, with little analysis of the significant geomorphological features of the property. IUCN therefore considers that the case for the application of criterion (viii) is more finely balanced than that for criterion (vii), and is not yet fully convincing. Arguably the internationally renowned geomorphological values of the property are also appropriately recognised under criterion (vii), embracing the diversity, and aesthetic aspects of the property, that combine with the particular concentration of geomorphological values within a protected landscape setting.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

WRPA was first established as a protected area in 1997 in response to a report by IUCN and the Jordanian Royal Society for the Conservation of Nature (RSCN) that proposed a network of protected areas to conserve the desert landforms and ecosystems along with their associated cultural values.

The nominated property lies within the Aqaba Special Economic Zone (ASEZA) which is part of the greater Aqaba Governorate. Created in 2001 as economic development initiative for Jordan, ASEZA is a liberalised low tax duty free and multi-sector development zone that is financially and administratively autonomous. WRPA was designated as a Special Regulations Area in perpetuity in two phases. In 1997 54,000 ha were designated and in 2002 a further 18,000 ha were added.

The entirety of the nominated property falls within the jurisdiction of Regulation No. 24 for the Development of the Wadi Rum Area (2001). This legislation is focused preserving the natural and cultural heritage, allied with development of tourism. This legislation prohibits construction (with the exception of within the existing boundaries of Rum village) mining and extraction activities, hunting, introduction of alien species, driving off designated roads, habitat destruction, pollution and timbering. The regulations provide an outline of governance arrangements including the composition and role of the Wadi Rum Area Committee. The regulations also specify that the requirement for an environmental management plan for Wadi Rum and an outline of items to be included in this, which is reportedly a unique and helpful situation in Jordan. The regulations for Wadi Rum allow for sustainable use of natural resources for the local people.

It is also important to note the traditional ownership of the area now defined as Wadi Rum by the local Bedouin. Long established traditional boundaries cross Wadi Rum and are well known and their validity is respected by both the Bedouin and the current management team of the nominated property (although this has not always been the case). From the evidence presented to the evaluation mission it seems that these two approaches to land ownership, tribal and legal, are currently co-existing without major issues.

A buffer zone of 5km surrounding the nominated area has been defined with a total area of 60,000ha. The buffer zone is not included within the nominated area. The buffer zone abuts the Saudi Arabian border for approximately 3km. Regulation of activities within the buffer zone falls under Regulation 21 for the Protection of the Environment in the Aqaba Special Economic Zone (2001) which includes provisions for Environmental Impact Assessments.

IUCN considers the protection status of the nominated property meets the requirements set out in the Operational Guidelines

4.2 Boundaries

The boundaries of the nominated property have been clearly defined. The boundaries set out in the initial nomination align with those of the Wadi Rum with the exception of a linear exclusion running North - South from the village of Shakriyeh to the village of Rum. IUCN requested further information from the State Party on this excision of part of WRPA from the nominated area. In response the State Party notes that the boundary of the nominated area has been "re-adjusted to include the full size of the protected areas as defined in the Wadi Rum protected area by-law and without the exclusion of the land strip form the visitor centre to Rum village." A revised map has been submitted and noted by the World Heritage Centre.

The buffer zone to the nominated property appears to be adequately configured to address threats to the nominated area arising from outside its boundaries. Jebel Burdah is one notable massif that lies outside the property and is included within the buffer zone. This area could be considered as a possible future extension of the nominated property, notably to protect a well-known rock arch.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines.

4.3 Management

The primary plan guiding the management and development program of WRPA is the ASEZA land use plan which covers the whole governorate of Aqaba.

In 1998 the Ministry for Tourism and Antiquities (MTA) delegated management of Wadi Rum to the RSCN. MTA however retains responsibility for cultural assets within the property. Management authority for Wadi Rum was transferred from the RSCN to the newly created ASEZA in 2001. The Wadi Rum Area Management Unit within ASEZA has the sole authority for implementation and enforcement of the regulatory framework.

In 2010 a new national committee was established, headed by Jordan's Minister for the Environment, and has been tasked with both the nomination and the preparation of a new management plan for the property. This Committee establishes national oversight of the management of the property.

To date one management plan has been produced for the property by the previous managers RSCN using IUCN guidelines. This plan was established covering the period of 2003 to 2007 and was later extended to 2010. IUCN requested further information from the State Party on the status of the new plan. The State Party response indicates that a full draft including in relation to associated tourism development and visitor management plans is expected to be complete by the end of March 2011, and the plan is expected to be finalized by the end of June 2011. The management plan will include a specific conservation plan for both the natural and cultural heritage of the area, and will be integral to the annual budgetary allocation of ASEZA. The State Party also commits that a special business plan for the area will be developed as part of the management planning process. Covering the costs of the implementation of the management will be primarily the responsibility of ASEZA, supported by its national and international partners and donors agencies.

Support to the development of management capacity has been provided from both national agencies, and international support, including via a significant aid project supported by the USA. There are approximately 75 staff in the management team for the property, the majority of whom are local Bedouin people. Whilst few have tertiary qualifications, however a fairly good level of technical capacity amongst the staff has been built up through on the job training. With local people as staff, local stakeholder participation is well facilitated. Law enforcement is carried out by Ranger patrols operating both within Wadi Rum and outside it in the buffer zone. An earth scientist position is recommended to be added to the staff team given the natural values of the property.

WRPA receives significant financial support for its management (operational budget reported at c.USD1.3million in 2009) and is stated to be the best funded protected area in Jordan. A special Wadi Rum Development Fund was established in 2001 with the aim of ensuring financial and institutional sustainability. Currently income from the property goes to the national treasury and then is reimbursed to the ASEZA in the form of an annual budget. IUCN understands from discussions during the evaluation mission that this situation is proposed to be changed to enable Wadi Rum to achieve more autonomy and sustainable financing for its operations. With tourism numbers growing over the past few years to around 300,000 visitors annually currently entrance fee income is fairly secure.

In response to a request from IUCN for further information on the buffer zone, the State Party noted that a special review of the Wadi Rum Protected Area bylaw and associated regulations is expected to be finalized and legally endorsed by the end of June 2011. The State Party notes this will include a set of new and amended regulations and articles to ensure the enhanced control and the minimal impacts of the development activities currently taking place or planned for the future.

IUCN notes that past efforts at monitoring the property have been carried out but that impacts were limited due to staff capacity. It is recommended that a new pragmatic and targeted Research and Monitoring plan is developed to include monitoring and research programs for the earth science values of the property. Research partnerships with universities within Jordan and internationally could assist this process.

IUCN considers the management of the nominated property comes close to the requirements in the Operational Guidelines, but notes that the management plan for the property has not been completed and therefore has not been reviewed during the evaluation process. IUCN notes the importance of the completion of the revised management plan and buffer zone regulations in providing the necessary framework for the future management of the property.

4.4 Threats

Low population density and lack of development impacts have helped maintain WRPA in relatively pristine condition. Nevertheless there are a number of significant threats which require careful and increased attention.

Visitor pressure and car tracks
As tourism grows, visitor pressure will continue to be a pressure in the future. Jeep safaris are of particular concern and appear to be having the biggest impact on the values of the property. Although a lot of progress has been made through improving vehicle quality and licensing tour operators, the overall level of vehicles (estimated between 500 to 1000 operating in the area) exceeds safe limits. A single track network has been designed between the main visitor sites but is virtually impossible to enforce. The visual impact of the jeep tracks is significant, with additional impacts on vegetation and on cultural values. Disturbance of wildlife by excessive jeep safaris is a significant issue. The managers are aware of the magnitude of the issue and are committed to tackling it in the new management plan. Specialist advice on reducing erosion effects is also being sought. Reducing jeep numbers has to occur combined with promotion of more sustainable tourism activities such as camel trekking, walking and rock climbing.

Rum Village and other accommodation
Encroachment of the Village of Rum within the Wadi Rum is a minor problem but requires vigilance. Two recent incursions where houses were being built beyond the agreed zone have been stopped and legal cases are underway. Major tourism developments within WRPA are not permitted. Current accommodation outside of Rum Village is limited to desert camps run by local Bedouin in conjunction with the Wadi Rum management team. These camps aim to be as sustainable as possible. A limited amount of self guided tourists also sleep out in the desert but with limited impact. A local consultation process has just started for a major new luxury "eco-camp" to the north of the property.

Visitor safety issues
There is no emergency management plan for visitor safety at Wadi Rum. This is a serious concern particularly for rescue of climbing tourists from cliffs which currently relies on the goodwill of the very few local Bedouin people who are trained in rescue techniques, who use their own equipment. Rescue arrangements need formalisation with adequate training and dedicated rescue equipment. A rescue post could logically be combined with an office location for climbing and walking promotion within the redeveloped fort complex. Additional training and accreditation for the provision of climbing guiding tourism services is also required, and would benefit from international assistance.

Groundwater exploitation
Extensive and growing extraction from the fossil aquifer of Disi has the potential to lower the water table threatening natural springs in the property. Monitoring of water tables as well as water quality via a series of bores should be established as soon as possible.

Firewood collection
Local people gather firewood and carry out some limited grazing. Monitoring of this should continue in order to ensure the use remains low level and sustainable by local communities only, and to evaluate alternatives with these communities for fuel.

In summary, IUCN considers the nominated property meets the conditions of integrity as outlined in the Operational Guidelines, the need to both complete the management plan and regulations for the buffer zone, and to act on key threats, notably the off-road vehicles that are significant areas of concern.

5. ADDITIONAL COMMENTS

Although the evaluation of cultural values of this mixed nomination will be carried out by ICOMOS, IUCN notes that the interwoven natural and cultural attributes in a lived-in desert environment are an important contributor to its aesthetic values. Human occupation has also been influenced by natural changes, being closely related to palaeoclimate, and the availability of water, including from one of Jordans largest aquifers – the Southern Desert Disi ground water basin. The Bedouin tradition of climbing certain mountains for hunting is also an important aspect of the cultural history of the property. Although hunting is now banned, the Bedouin still follow the old climbing routes. Provision of climbing tourism services offers an opportunity for this knowledge to be translated into opportunities for sustainable livelihoods.

6. APPLICATION OF CRITERIA

Wadi Rum Protected Area has been nominated under natural criteria (vii), (viii), as well as in relation to cultural criteria.

Criterion (vii): Superlative natural phenomena and aesthetic importance
Wadi Rum is recognised globally as an iconic desert landscape, renowned for its spectacular series of sandstone mountains and valleys, natural arches, and the range of narrow gorges, towering cliffs, massive landslides, and dramatic cavernous weathering forms displayed. Key attributes of the aesthetic values of the property include the diversity and sheer size of its landforms, together with the mosaic of colours, vistas into both narrow canyons and very large wadis, and the scale of the cliffs within the property. The property displays, in a protected setting, an exceptional combination of landforms resulting from drainage incision, severe weathering by salt, biological, and other processes, and the undermining of steep sandstone cliffs by these weathering processes, together with the world's most spectacular networks of honeycomb weathering features.

IUCN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features
Wadi Rum is one of the best known desert landscapes, and provides an internationally well known demonstration of a wide range of desert processes and landforms. Its

landforms include many examples of the components of desert geomorphic systems, resulting from the interplay of changing environmental conditions, varied lithology, uplift, faulting, weathering and erosion over tens of millions of years. The landscapes and other geomorphic processes of Wadi Rum, whilst impressive and good examples, are not necessarily unique or the best examples in the world and other examples either duplicate or may surpass the values of the nominated property. Comparative analysis has not provided a compelling case for inscription under this criterion, and further consideration of this criterion is required by the State Party.

IUCN considers that the nominated property may have potential to meet this criterion, but this has not been fully demonstrated at the present time.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2,

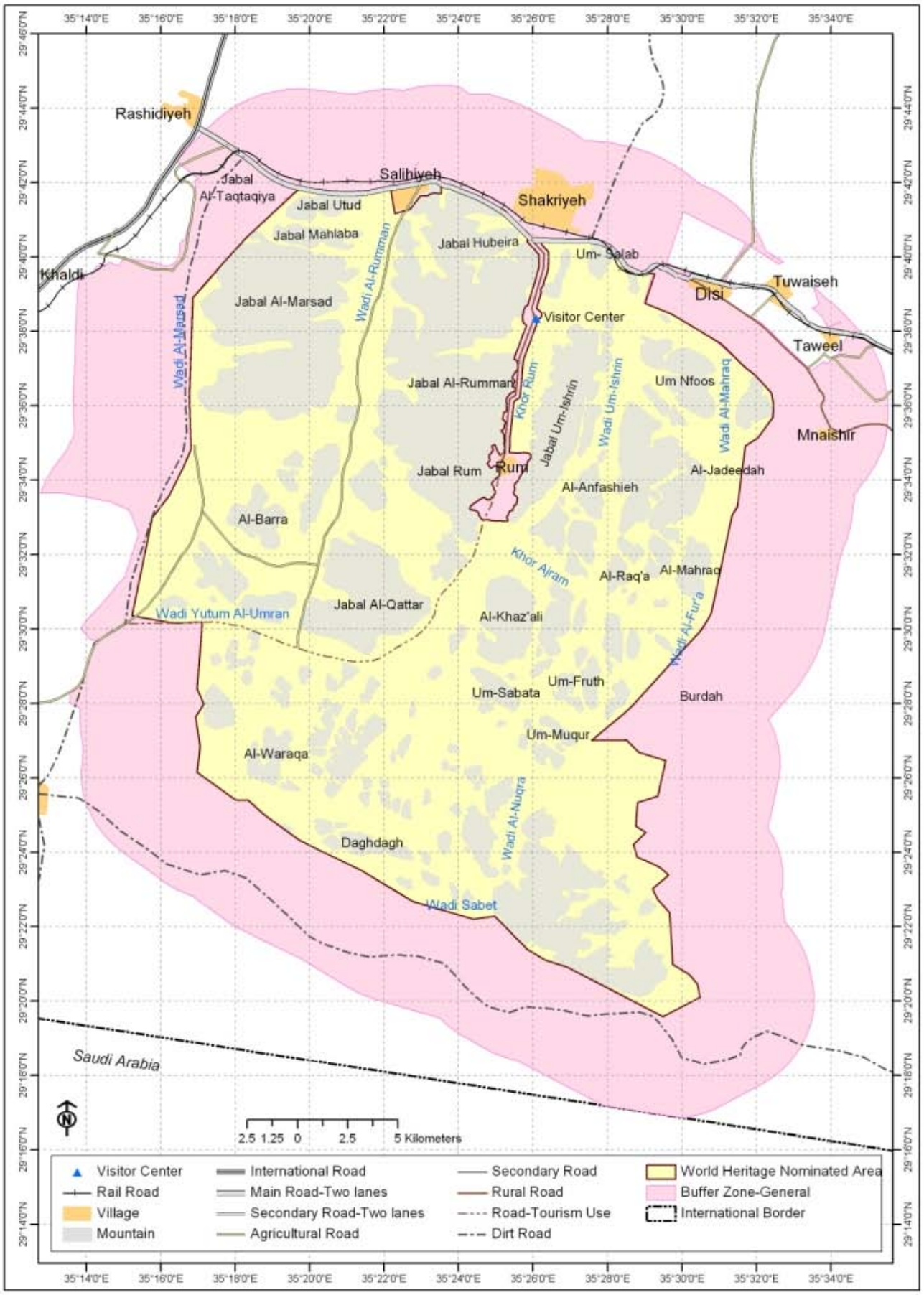
2. Refers back the nomination of the Wadi Rum Protected Area to the World Heritage List, in order to allow the State Party to strengthen the comparative analysis of the nomination in relation to criterion (viii), and to address issues related to protection and management of the property referred to below.

3. Requests the State Party to finalise the revision of the management plan for the property, and the revised and strengthened regulations for its buffer zone as soon as possible, in order to assure the protection of its values;

4. Also requests the State Party to ensure that the new management plan provides effective policies, backed by the necessary staff and financial resources, to enable effective management of the property and its buffer zone, including the regulation of development activities, tourism infrastructure and facilities, and the regulation and management of vehicles within the property;

5. Recommends the State Party to also include within the revised management plan provision for additional and appropriately trained staff within the management unit for the property focused on research, protection and presentation of the geological and geomorphological values of the property, engagement of national and international research institutions in the management system for the property, and the establishment of effective monitoring of its values.

Map 1: Revised map provided during the evaluation mission



LATIN AMERICA / CARIBBEAN

BLUE AND JOHN CROW MOUNTAINS NATIONAL PARK

JAMAICA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

BLUE AND JOHN CROW MOUNTAINS NATIONAL PARK (JAMAICA) – ID No. 1356

IUCN RECOMMENDATION TO 35th SESSION: Not to inscribe the property

Key paragraphs of Operational Guidelines:
77 property does not meet natural World Heritage criteria.

1. DOCUMENTATION

a) Date nomination received by IUCN: 15 March 2010.

b) Additional information officially requested from and provided by the State Party: No additional information was requested or obtained from the State Party.

c) Additional Literature Consulted: Brown, C. Edwards, S. (2005). **Situation Analysis of Jamaica's Protected Areas System**. Centre for Park Management, Washington, D.C. Chai, S.-L., Tanner, E., McLaren, K. (2009). **High rates of forest clearance and fragmentation pre- and post-National Park establish-ment: The case of a Jamaican montane rainforest**. Biological Conservation 142. Hodges, M. (ed.). (2008). **Guide to the Blue and John Crow Mountains.** The Natural History Society of Jamaica, 205 pp. Jamaica Conservation and Development Trust (JCDT). (2010). **Draft 2011 - 2016 Blue and John Crow Mountains National Park Management Plan**. Johnson, T. H. (1988). **Biodiversity and conservation in the Caribbean: profiles of selected islands**. International Council for Bird Preservation, Monograph No. 1, Cambridge, UK. Levy, S. & Koenig, S. (2009). **Jamaica**. In: C. Devenish, D. F. Díaz Fernández, R. P. Clay, I. Davidson & I. Yépez Zabala (Eds.) **Important Bird Areas Americas: Priority Sites for Biodiversity Conservation**. BirdLife International, Quito, Ecuador. Lyew-Ayee, P. (2010). **The Cockpit Country of Jamaica: An Island within an Island**. In: Migon, P. (ed.). (2010). **Geomorphological landscapes of the World**. Springer. The Nature Conservancy. N.d. Parks in Peril. Blue and John Crow Mountains National Park. www.parksinperil.org. United States Climate Change Science Program. (2008). **Weather and Climate Extremes in a Changing Climate. Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands.** Department of Commerce, NOAA's National Climatic Data Center, Washington, D.C., USA.

d) Consultations: Four external reviewers were consulted. The technical evaluation mission met with senior representatives of the State Party, including the Minister of Youth, Sports and Culture, representatives from relevant ministries, departments, academic institutions and nongovernmental organisations, community groups and stakeholder representatives, as well as the UNESCO National Committee.

e) Field Visit: Joerg Elbers and Angel Cabeza (joint mission with ICOMOS), September 2010.

f) Date of IUCN approval of this report: 29 April 2011.

2. SUMMARY OF NATURAL VALUES

Blue and John Crow Mountains National Park, comprising 48,650 hectares or 4.4% of Jamaica's land surface, has been nominated under both natural and cultural criteria. This IUCN evaluation focuses on the natural values, whilst evaluation in relation to cultural World Heritage criteria is being carried out by ICOMOS.

Jamaica belongs to the Greater Antilles in the Western Caribbean. The island's terrestrial physiography is dominated by two major mountainous units, the Main Block and the Eastern Mountain Mass. The nominated property is located in the latter, just north of the capital Kingston.

Parts of three mountain ranges are covered by the nomination. The most prominent range of these, encompassing roughly two thirds of the nominated property, are the Blue Mountains, a rugged chain of peaks with a central ridge of rock running northwest to southeast. Blue Mountain Peak, at 2,256 m.a.s.l., is the highest point in Jamaica. This contrasts sharply with the lowest point of the park at only 150 m.a.s.l., resulting in extremely steep slopes and a noteworthy gradient and diversity of climatic and ecological conditions. Smaller parts of the Port Royal Mountains, while not reflected in the nomination's name, are located within the park's boundary. This range runs almost parallel to the western Blue Mountains and is likewise a rugged and precipitous mountain area, peaking at around 1,540 m.a.s.l.

The John Crow Mountains are a coastal ridge, formed by a strongly tilted limestone plateau, which rises gently from the east and dips towards the north-east. This mountain range covers 19.5% of the park and runs parallel to the Eastern coast of Jamaica rising to an elevation of 1,140 m.a.s.l. The Rio Grande Valley separates the northeast side of the Blue Mountains from the John Crow Mountains but the ranges join at Corn Puss Gap at 640 m.a.s.l.

The bio-geological history of the mountain ranges, differences in altitude, rock chemistry and climatic conditions have combined to produce a diversity of ecosystems and habitats described to be one of the greatest in Jamaica. The nominated area is widely recognized as one of the two most valuable larger sized terrestrial areas of conservation interest along with Cockpit Country further west in inland Jamaica.

Jamaica has a particularly high degree of endemism in the island's terrestrial and freshwater ecosystems. Jamaica has for example 27 endemic reptile species, 20 endemic amphibian species and ranks fifth among the world's islands with the highest percentage of endemic flora. The nominated area is one of the key areas where these phenomena are pronounced and displayed in an enormous altitudinal gradient and protected by a comparatively high degree of formal and natural protection.

The moist forests of the Greater Antilles maintain an exceptionally distinctive insular flora and fauna, with many unique families, genera and species. These large islands have long been isolated from surrounding continents and have retained several relict taxa in addition to evolving many unique groups. Several of the primitive and ancient lineages that still survive in the Greater Antilles are now extinct on nearby continents. As a function of its ruggedness and partial impenetrability of the terrain, the nominated property is among the last remaining areas of relatively large, contiguous natural forest in Jamaica. The nominated property harbours one third of Jamaica's remaining natural forests and contains forest types found nowhere else on the island. This is because the mountain peaks in the park rise to the highest elevations on the island and encompass a great diversity of conditions and mixture of rocks.

The park is home to 275 endemic vascular plant species, of which 87 can only be found within its boundaries. A recent evaluation indicates between a degree of endemism of close to 40 % for flowering plants in the national park.

The area is one of the most biologically diverse on the island and has been identified as one of the two centres for plant biodiversity in Jamaica. As one of the few remaining large areas of natural forest, and as it is under active protection, the property is a critical habitat for the flora and fauna that make the Caribbean one of the world's 34 biodiversity hotspots as identified by Conservation International.

Apart from bats, the Hutia or Coney (*Geocapromys brownii*), a large rodent, is Jamaica's only native terrestrial mammal. This species is now restricted to remote karstic areas, hills and mountains, where it is threatened by habitat loss, hunting, and predation by introduced mammals such as mongoose. The nominated property provides critical habitat for the species.

Jamaica has 29 or 30 endemic land bird species, more than any other oceanic island in the world. The park is especially important as a habitat for all of these species and can therefore be said to have the highest number of endemic land bird species among sites in the oceanic islands of the world. The park is also an important wintering ground for migratory bird species both from the Northern and Southern Hemispheres. These endemic and migratory birds, jointly with resident non-native birds, comprise an outstanding assemblage of 220 species of birds in the park.

Numerous endemic species of reptiles and amphibians also inhabit the area. Many are limited in their entire global extent to particular habitat types within the park. Some, like the Jamaica Boa or Yellow Snake, along with five species of locally endemic frogs, have been listed as vulnerable, threatened, endangered or critically endangered by IUCN.

Blue and John Crow Mountains National Park is one of two remaining habitats for the endemic and globally significant Giant Swallowtail Butterfly. This butterfly is the largest in the Western Hemisphere and second largest in the world.

While renowned for their rich floral and faunal diversity and high degree of endemism, the Jamaican forests have suffered from massive deforestation except in a few inaccessible places. The indisputable values have been compromised to a degree that raises serious integrity concerns.

3. COMPARISONS WITH OTHER AREAS

In addition to cultural criterion (vi) Blue and John Crow Mountains National Park has been nominated according to natural criteria (ix) and (x). The comparative analysis presented by the State Party in the nomination dossier has been complemented by advice from the UNEP-World Conservation Monitoring Centre and via IUCN reviews.

The nominated property is among the key areas within an island recognized as a Global 200 priority ecoregion and part of the Caribbean Islands biodiversity hotspot, a classification that also recognises degree of threat and the urgency of conservation efforts. This hotspot suggested by Conservation International consists mainly of the Greater Antilles, Lesser Antilles and the Bahamas; Cuba, Hispaniola, Jamaica and Puerto Rico. Existing World Heritage properties within this hotspot include Alejandro de Humboldt National Park (Cuba) and Morne Trois Pitons National Park (Dominica). Due to the high degree of local endemism the case can be made that the nominated property differs significantly in terms of conservation values.

Consistent with the above priority-setting exercises the nominated protected area has been identified as one of

the two Jamaican Centres of Plant Diversity along with Cockpit Country.

Furthermore, Jamaica has been identified as a critical Endemic Bird Area. Mid- to high-altitude forests represent a key part of the Jamaica Endemic Bird Area. Jamaica is important for a number of restricted-range species as well as a large number of migratory birds from North and Central America. Jamaica also has the highest number of endemic species of any Caribbean island, and a very distinct avifauna with five endemic genera: *Pseudoscops, Trochilus, Loxipasser, Euneornis and Nesopsar*. All the restricted-range species occur in forest habitats and, although most species occur in both the lowlands and mountains, many are altitudinal migrants which breed only in the mid- to high-level forests. The nominated property also contains two of Jamaica's fifteen Important Bird Areas. These are internationally important for example for the Endangered Jamaican Blackbird and the Vulnerable Ring-tailed Pigeon. In total, 27-28 of Jamaica's 29-30 endemic bird species occur in the nominated property.

Two of Jamaica's five Alliance for Zero Extinction (AZE) Sites are within the nominated property. One of these is triggered by the Critically Endangered *Eleutherodactylus alticola*, an amphibian species entirely confined to the area around Blue Mountain Peak. The other AZE site is triggered by the remote possibility that the possibly extinct Jamaican Petrel (*Pterodroma caribbaea*) may still occur in the John Crow Mountains.

Based on the species numbers provided in the nomination, the nominated area harbours more bird species than any natural World Heritage property in the Caribbean. However, Cockpit Country in Jamaica and Alejandro de Humboldt (Cuba) boast more plant species, including more endemics. Also, Cockpit Country, Alejandro de Humboldt and Desembarco del Granma (both Cuba) have a more diverse herpetofauna than Jamaica's Blue and John Crow Mountains National Park.

The nomination dossier does not contain a comparison with the Cockpit Country Forest Reserve in west-central Jamaica, likewise a Centre of Plant Diversity, an Alliance for Zero Extinction site and an Important Bird Area. Cockpit Country supports as many of the island's endemic bird species as the nominated property. There is evidence that Cockpit may feature similar values of at least comparable scale. The similarities raise the question of a possible serial approach.

Cockpit Country is a Forest Reserve, i.e. under differing jurisdiction and is found in most references on Jamaican conservation priorities. It is the type area for Cockpit karst landscapes. There are other karst landscapes of this kind in the Caribbean and elsewhere but there are indications in the literature that Cockpit may be the most dramatic and extensive.

The literature suggests Jamaica's Cockpit Country as another location of remarkable endemism, in fact often mentioned jointly with Blue and John Crow Mountains National Park as the key areas of international significance. Most of Jamaica's 550 fern species are said to occur in Cockpit Country, possibly a world record. Cockpit also appears to have the highest diversity of amphibians and reptiles on the island.

The geomorphological values and related scenic value, as well as a similarly high degree of endemism make Cockpit country a competitor or possible complement. As John Crow and Blue Mountains, the area is also of archeological and historical interest for its significant Taino artefacts and importance in the Maroon culture. A more in-depth comparison between Cockpit Country and the nominated property seems helpful, including consideration of the appropriateness and viability of a possible serial site comprised of the two areas.

While reportedly threatened by logging, agriculture and mining, the area appears to maintain exceptional conservation values in terms of landscape beauty, geology and biodiversity.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The lands in the nominated property have been vested in the Commissioner of Lands in Trust for the Government of Jamaica. In the parishes of St. Andrew and Portland, very small parcels of land within the park's boundary are privately owned.

Building upon much earlier management efforts the site has been legally protected as a Forest Reserve since 1939, declared under the Forest Act of 1937. The Forest Reserve is managed by the Forestry Department, created in 1942 as an independent institution and converted to Executive Agency status in 2008. In 1993 the Blue and John Crow Mountains Forest Reserve was declared Jamaica's first terrestrial national park, through the Natural Resources Conservation Order, under the Natural Resources Conservation Authority Act of 1991. The 1997 Policy for Jamaica's System of Protected Areas approved by Cabinet is applicable.

The nominated property enjoys a high degree of natural protection in the higher elevations with much more vulnerable lower elevations bordering agricultural lands used commercially and for subsistence. The intactness of forests appears more closely related to their location and accessibility rather than management. In the lower elevations, the protection is currently not effectively preventing further loss of the particularly valuable and vulnerable forest areas.

IUCN considers the protection status of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.2 Boundaries

The nominated park is large by Caribbean standards. The park has clearly defined boundaries, indentified as a series of geographic coordinates and interconnecting lines. However, there is no demarcation of these boundaries in the field, a situation which should be addressed by management.

The area declared as a Forest Reserve is identical with the National Park established decades later. Inside the property a zonation is missing. A zonation could respond to the natural values and integrity but could also help to manage cultural values.

The management plan for the park makes provisions for a community buffer zone of one kilometre around the park boundary encompassing an area of 26,711 ha but there is no legal basis for implementation. The buffer zone appears critical, as it is bordering the park's most vulnerable areas (altitudes). The unclear status in relation to the protected area and the lack of management authority is a challenge to effective park management.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines but protection and management to enforce the acceptance of the boundaries is insufficient.

4.3 Management

The classification of IUCN as national park implies management of the area in as natural a state as possible. At the same time, the Forestry Department carries out forest management practices in the lower, accessible areas of the Forestry Reserve according to the Forest Act 1996 raising important questions about the overall management approach.

The Natural Resources Conservation Authority (NRCA) delegated the management of the nominated property to national NGO Jamaica Conservation and Development Trust (JCDT). Since the area is also a Forest Reserve, a co-management agreement was signed in 2000 between NRCA, JCDT and the Forestry Department. The management agreement sets out objectives for the protection and management of the Park's natural heritage, including the preparation of management plans to cover specific time periods.

The technical staff consists of the Acting Park Manager, who is simultaneously Executive Director of JCDT, and only six professional park rangers.

The park is managed on the basis of Management Plan for 2005 - 2010, prepared in 2004/2005 by JCDT and approved by NRCA. Following up on the expired older management plan, a draft management plan 2011-2016 has been elaborated, which clearly presents threats and their root causes. The Management Plan contains six main programmes: Conservation, Enforcement and Compliance, Education and Public Involvement, Recreation and Tourism, Monitoring and Evaluation, and Governance and Administration. Local communities settled in the buffer zone of the park have been involved in the preparation of the 2005 - 2010 and the draft 2011 - 2016 Management Plan. The draft explicitly emphasises that the conservation programme includes natural and cultural heritage. Given a financial deficit, such an expansion of tasks appears unrealistic.

The draft 2011- 2016 Management Plan includes 11 priority management intervention areas for ecosystem restoration. All but one of these areas are situated in the outer, mostly lower and accessible parts close to the park boundary. One area is situated in the centre of the western Port Royal Mountains which under this Management Plan has been designated as a Sustainable Use Zone.

One main challenge is the lack of financial allocations from the government. The conservation and management of the nominated property is financed through the annual budget managed by JCDT. In 2008, the total income amounted to 30 million Jamaican dollars (roughly USD 350,000): the Government of Jamaica and the main donor, Environmental Foundation of Jamaica (EFJ), contributed with 14 million Jamaican dollars with the remaining more than 50 % from grant funding, corporate sponsorship, donations and endowments, as well as the operation of the Park's recreation areas. The draft Management Plan 2011 - 2016 mentions the EFJ may soon be disbanded. JCDT appears compelled to carry on major fundraising efforts to maintain a minimum budget for the park management. Governmental resources are described to be stretched due to competition with newly established protected areas and increasing commitments to international environmental obligations not accompanied by increasing budget.

In the nomination document the Enforcement and Compliance Programme describes park rangers conducting regular patrols, which cover all of the parks potential access points every two months. The field visit indicated that the park rangers may focus the bulk of their time on the attendance of the Holywell Recreational Area, a visitor centre on the south-western park border close to Kingston.

While the scope of management is commendable it appears to be beyond existing resources. There is also a lack of clarity as regards coordination with Forestry staff and other governmental sectors and corresponding roles. The private land owners, communities and commercial private sector activities in the vicinity of the park and in the buffer zone appear crucial for the future of the park.

In the absence of guaranteed governmental support to maintain minimum standards there is an insecurity of future funding. A sufficient park management as listed in

the Management Plan requires an adequate allocation of funds and an increase of national park staff.

IUCN considers the management of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.4 Threats

Deforestation and forest degradation
Deforestation and forest degradation are well-documented both longstanding and acute threats. The issues overlap with agricultural encroachment and invasive alien species but also hunting and uncontrolled collection of forest products.

From the nomination document it is not clear to what extent the nominated property includes intact primary or secondary forest as opposed to deforested or degraded areas. The nomination notes, however, that the proportion of remaining natural forest is closely linked to altitude as stated hereafter: In the lowest sections of the park, less than 10% of the area has retained natural vegetation. At middle altitude, about 50% of the area has remained natural, and at higher altitudes more than 80% of the area has remained natural.

Relevant research papers suggest that only the montane forest in the most remote, inaccessible and steep part of the Jamaican island has survived undisturbed whereas forest at lower elevations has suffered and continues to suffer from logging and conversion. Unfortunately, other references provide evidence that the forests at lower elevations might be biologically more diverse.

The Port Royal Mountains, the westernmost of the three mountain ranges covered by the nomination, are dominated mostly by timber plantations. There are also reports about ongoing decline in forest cover. Forest clearance appears to have occurred at high levels both before and after the establishment of the national park. Meanwhile fragmentation has continued after the establishment of the protected area and manifests itself in increasingly smaller and more vulnerable fragments.

In a participatory analysis carried out by JCDT as a contribution to the elaboration of the 2005 - 2010 Management Plan, communities identified a lack of education and awareness about the National Park, lack of knowledge to implement sustainable livelihoods, limited employment, inadequate resources impacting the quality of park management and lack of vision on the part of community members as major obstacles.

Agricultural encroachment
The forests within and around the nominated property are threatened by conversion to agriculture, both small-scale shifting cultivation and large-scale cultivation of coffee and other cash crops, and including the establishment of informal settlements and unregulated use of water. Due to the lack of demarcation and resources for an effective control of the park's boundaries, the border areas are vulnerable to encroachment and slash and burn through small-scale farmers but also from commercial agriculture. There are reported to be consistently high deforestation rates in the Jamaican Moist Forests ecoregion. A further threat mentioned by local community members at Millbank is destructive fishing in water courses, commonly known as river poisoning.

Alien Invasive Species
Alien invasive species include wild boar, mongoose, rats and plants such as *Pittosporum undulatum*, *Hedychium gardneranum* and *Bambusa vulgaris*. The impacts of introduced wild boar on forest regeneration and ground nesting birds are well documented on other islands, e.g. on the Hawaiian archipelago, and have been identified by JCDT as a research gap.

Climate Change
Due to the effects of global warming, higher and stronger incidence of hurricanes is expected in the Caribbean. In 1988, Gilbert, an extremely powerful hurricane, traversed the entire island from east to west. Gilbert was the second most intense hurricane ever observed in the Atlantic basin; it created general widespread destruction in Jamaica. Traces of the destruction caused by Gilbert may still be observed today throughout the park. Major hurricanes also hit the area in 2004 and 2005.

In summary, IUCN considers the nominated property does not meet the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

Jamaica has a high potential to meet biodiversity criteria under the World Heritage Convention but there are strong concerns about the integrity of the fragmented and degraded landscapes. A comparison with Cockpit Country which has comparable values, and may have additional geological values under criterion (viii), would help to better understand the overall potential. Parts of the present nomination in combination with a consideration of Cockpit Country might provide a stronger basis for a World Heritage nomination.

6. APPLICATION OF CRITERIA

The Blue and John Crow Mountains have been nominated under criteria (ix) and (x).

Criterion (ix): Ecological processes
The Blue and John Crow Mountains National Park is of national and regional importance for the conservation of Jamaica's highly endemic flora and fauna, in particular as regards the island's terrestrial and freshwater ecosystems. Most of Jamaica's 29-30 endemic bird species occur in the nominated property. A range of endemic species of reptiles and amphibians also are found within the area. Many are limited in their entire

global extent to particular habitat types within the nominated property. However, the ongoing deforestation and degradation, especially of the vulnerable and particularly valuable forests in the lower altitudes, represent significant long term impacts on integrity in relation to this criterion. Other localities in Jamaica appear to have equal or greater potential in securing the conservation of the biodiversity values represented within the property. As nominated, the area does not secure coverage and protection of the biological and ecological values even though areas in Jamaica appear to have potential to meet natural criteria, including criterion (ix).

IUCN considers that the nominated property does not meet this criterion.

Criterion (x): Biodiversity and threatened species

The Jamaican forests have suffered from massive deforestation except in a few inaccessible places. These are recognized as internationally important for example for the Endangered Jamaican Blackbird and the Vulnerable Ring-tailed Pigeon. Critically Endangered amphibian species *Eleutherodactylus alticola* is entirely confined to the area around Blue Mountain Peak. The Jamaica Boa or Yellow Snake along with five species of locally endemic frogs have been listed as vulnerable, threatened, endangered or critically endangered by IUCN.

There is a remote possibility that the Jamaican Petrel (*Pterodroma caribbaea*) may still occur in the John Crow Mountains even though it is believed to be extinct.

John Crow and Blue Mountains National Park is one of two remaining habitats of the endemic, globally endangered Homerus Swallowtail Butterfly (*Papilio homerus*), which is the largest butterfly in the Western Hemisphere and second largest in the world.

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopt the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC-1/35.COM/8B and WHC-1/35.COM/INF.8B2,

2. Decides not to inscribe the **Blue and John Crow Mountains National Park (Jamaica)** on the World Heritage List under natural criteria (ix) and (x);

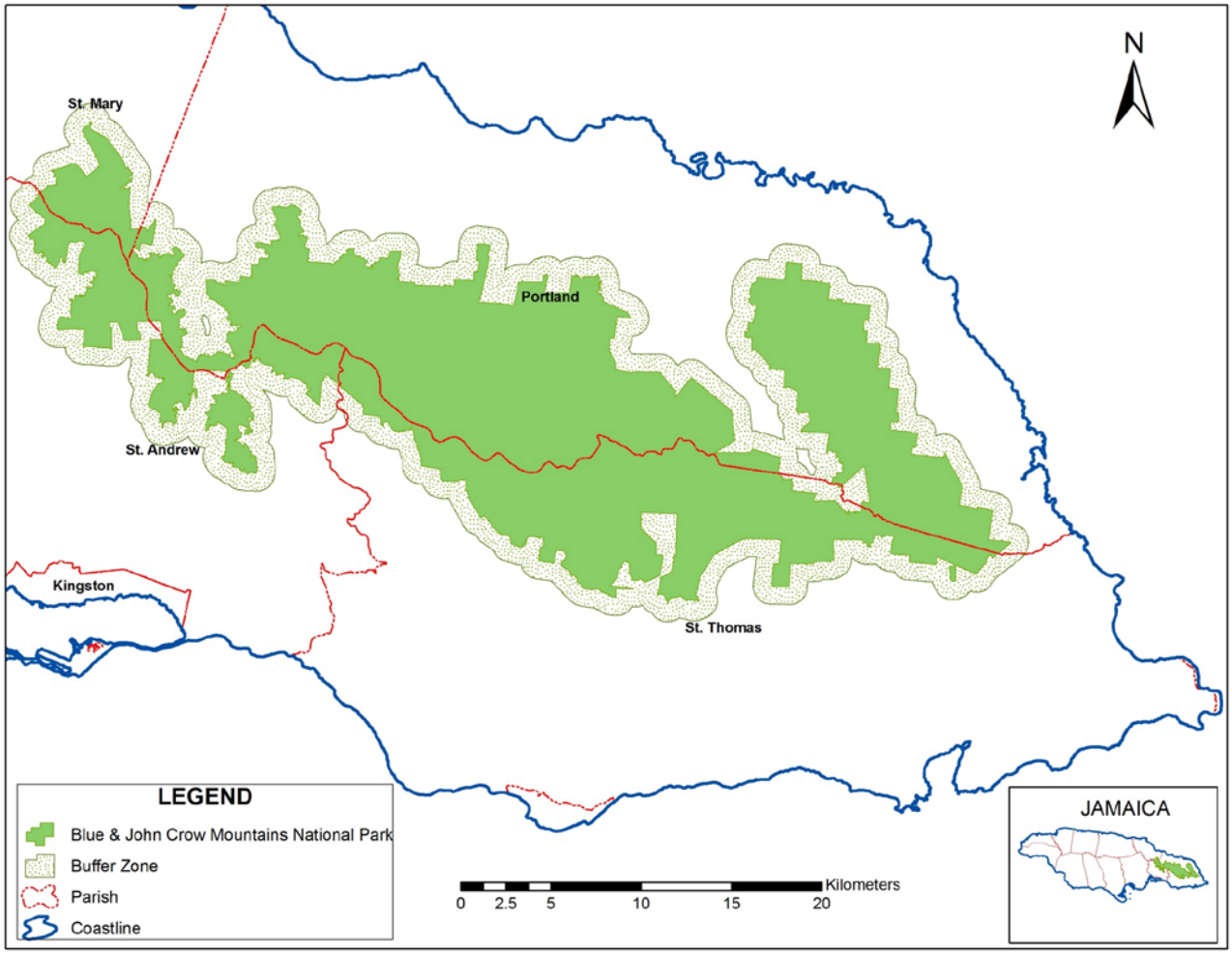
3. Notes the national and regional biodiversity importance of the nominated property and encourages the State Party to strengthen the management of the site to address threats to its values, including agricultural encroachment both for subsistence and commercial purposes, alien invasive species, unregulated non-timber products harvesting, fires and poaching;

4. Requests the Advisory Bodies and World Heritage Centre to provide support, if required by the State Party, in order to assist it to identify and prioritise Jamaican sites which have the strongest potential for nomination to the World Heritage List, including an assessment of the potential of the Cockpit Country Forest Reserve;

5. Encourages the State Party to consider experience elsewhere with environmentally friendly forms of coffee production, including certification schemes and compensation schemes for water provision for industry, drinking water and agriculture.

Map 1: Nominated property location in Jamaica

Map 2: Nominated property and buffer zone



B. MIXED PROPERTIES

B2. BOUNDARY MODIFICATIONS OF MIXED PROPERTIES

ASIA / PACIFIC

KAKADU NATIONAL PARK

AUSTRALIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

KAKADU NATIONAL PARK (AUSTRALIA) – ID No. 147

1. BACKGROUND INFORMATION

Kakadu National Park is a mixed World Heritage property inscribed under criteria (i), (vi), (vii), (ix) and (x) in the Northern Territories of Australia. It has been inhabited continuously for more than 40,000 years by the indigenous peoples of this area and most of the Park's land is owned by traditional owners and leased back to the National Park for its management. This archaeological and ethnological site contains cave paintings, rock carvings and other cultural features. Its natural values include an exceptional example of a complex of ecosystems, including tidal flats, floodplains, lowlands and plateaus, and it provides a habitat for a wide range of rare or endemic species of plants and animals. The property was inscribed in three stages of nomination in 1981, 1987 and 1992 and is under joint management by the National Park Service and the traditional landowners represented in the Northern Land Council.

2. BRIEF SUMMARY OF PROPOSAL

The proposal is to include the enclave known as the Koongarra Project Area in the property. Koongarra is situated in the eastern part of Kakadu National Park and is completely surrounded by the World Heritage property. With 1,228 ha, it would comprise less than 1% of the existing 1.98 million ha World Heritage property.

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

As it concerns the inclusion of land into the existing World Heritage property, the proposal is considered in its relation to the criteria under which the property is inscribed and its contribution to the integrity, protection and management of its values. IUCN's comments relate to the natural criteria. ICOMOS will evaluate this proposal for minor boundary modification in relation to cultural criteria.

Koongarra is of high ecological importance within the Kakadu area. It lies in the catchment of Nourlangie Creek which drains into the Ramsar listed wetlands of the Woolwonga Reserve and South Alligator River. It is situated near Nourlangie Rock, a major cultural attraction in the propery which is visited by 90% of the 230,000 tourists who visit Kakadu annually. The inclusion of this enclave (one of three in Kakadu) within the property would strengthen the integrity, protection and management system of the property. Known uranium deposits had led to its exclusion from the National Park and World Heritage site in 1981 with the *Koongarra Project Area Act*. The proposal to now include the enclave within the property follows a request by the World Heritage Committee in 1998 to prevent mining in the park and specific recommendations by IUCN for the Koongarra area (WHC-98/CONF.203/INF.18).

The State Party's proposed boundary modification responds to a request by Djok traditional land owner Jeffrey Lee, supported by the Northern Land Council and Kakadu Board of Management, to integrate this area into the Kakadu National Park and World Heritage property. In supplementary information provided by the State Party to IUCN, the Northern Lands Council confirms the deep wish of its represented landowners to use the land traditionally and their commitment to never consent to mining. It is also planned to establish an outstation within Koongarra. Under the *Australian Government's Aboriginal Land Rights (Northern Territory) Act 1976*, approvals of mineral exploration licence applications cannot be granted without the approval of the traditional Aboriginal owners of the area.

IUCN notes that Koongarra is not yet part of the National Park although this has been requested by the owner. In the supplementary information requested by IUCN, the State Party confirms that the process to include Koongarra in the National Park and thus add an additional layer of protection in the *Environment Protection and Biodiversity Protection Act 1999* is under way. IUCN encourages the State Party to finalize this process so that Koongarra can be fully managed under the provisions of the existing Kakadu National Park Management Plan 2007-2014.

IUCN considers that the proposal to include the Koongarra Project Area in the property meets the requirements for approval as a minor boundary modification of the property.

4. OTHER COMMENTS

None.

5. RECOMMENDATION

IUCN recommends that the World Heritage Committee adopt the following decision:

The World Heritage Committee,

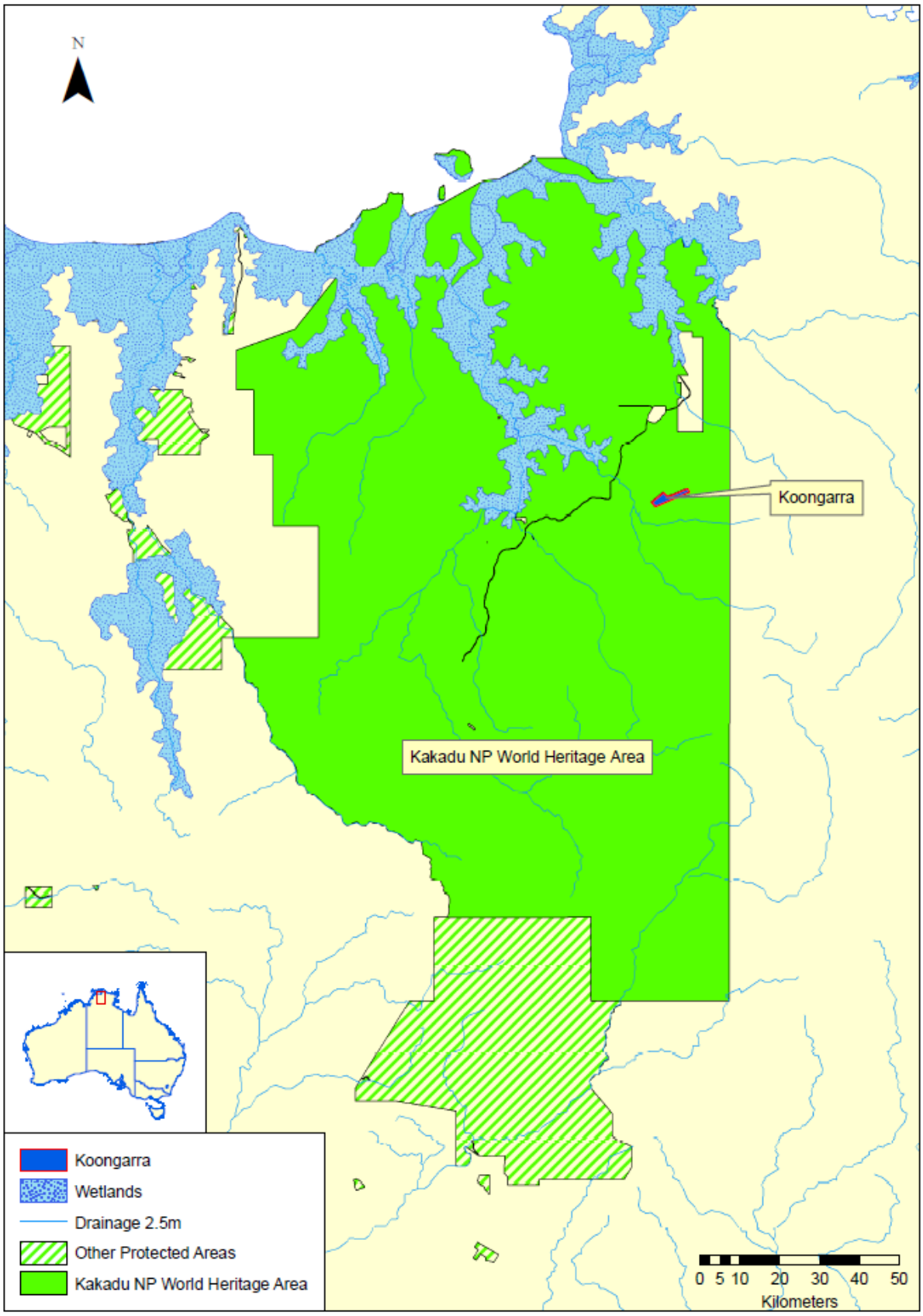
1. Having examined Documents WHC-11/35.COM/8B and WHC-11/35.COM/INF.8B2, and recalling its consideration of this property at the time of its original nomination as outlined in Decisions Documents WHC-22COM VII.28, WHC- 29COM 8B.9 and WHC-98/CONF.203/INF.18, including in relation to the Koongarra Project Area and other areas;

2. Approves the minor boundary modification of **Kakadu National Park (Australia)**, to include the Koongarra Project Area (1,228 ha), in order to strengthen the integrity of the inscribed property and support its effective protection and management;

3. Commends the State Party on its efforts to integrate the Koongarra Project Areas into Kakadu National Park which will involve an absolute prohibition of mining through the application of the Environment Protection and Biodiversity Protection Act 1999, and requests the State Party to expedite this process as soon as possible, in collaboration with the traditional landowners of the property;

4. Notes with appreciation the commitment of the State Party, and the traditional land owners, to not permit any mining within the property, as extended through the addition of the Koongarra project area.

Map 1: Nominated property and Koongarra location



C. CULTURAL PROPERTIES

C1. NEW NOMINATIONS OF CULTURAL PROPERTIES

AFRICA

OKE IDANRE CULTURAL LANDSCAPE

NIGERIA

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

OKE IDANRE CULTURAL LANDSCAPE (NIGERIA) – ID No. 1332

IUCN provided the following comments based on desk review and additional questions discussed at the ICOMOS World Heritage Panel in December 2010.

The nominated site is located on a remote plateau at 914 m altitude in a rugged landscape with natural features including steep cliffs, slopes, valleys, caves and ridges. The natural setting of the site and its isolation has assisted the protection of cultural traditions and spiritual practices by the Idanre people of the Yoruba ethnic group who claim this site as their ancestral and spiritual home. IUCN notes that natural values are intrinsically linked to the beliefs associated with the property, including the natural and spiritual powers in the forms of magical trees, water bodies and rock structures as symbolic representations of gods. Ceremonies include regular pilgrimages to the landscape in veneration of the spirits believed to be residing there. It is not clear whether the nominated area or buffer zones are recognised protected areas.

The nomination reports that due to the remoteness of the site some of the industrial wood trees that are endangered and almost extinct in the rain forests of Nigeria can still be found in this area and about 50% of the trees have medicinal value and are widely used by the Idanre community. There is a long tradition of healing with herbal products that is still being extensively used by the Idanre communities. Many plant species are stated to be of medicinal use, but relatively limited details or status information is provided on these. IUCN notes that the property includes a partial list of key species however it is not clear the extent to which the species named are present in the property or in buffer zone or the wider region. There are several species where names are unclear and thus some questions over identification exist. The species noted are mostly of local and national biodiversity conservation significance. The relatively small area of the property is unlikely to be adequate for conservation of species without considering their protection in the wider surrounding area.

The nomination states that there are plans to reintroduce native flora and fauna, but details are not specified regarding these plans and these plans should be carefully considered regarding the choice of species.

ARAB STATES

PEARLING, TESTIMONY OF AN ISLAND ECONOMY

BAHRAIN

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

PEARLING, TESTIMONY OF AN ISLAND ECONOMY (BAHRAIN) – ID No. 1364

IUCN has requested an external review of this nomination. IUCN notes that one component of the nominated property is a marine protected area covering three oyster beds. Legal protection is provided through an interim protection decree, whilst formal declaration of protection was anticipated in 2010. It is anticipated that the MPA would be managed by the Commission for the Protection of Marine Resources, Environment and Wildlife (PCPMREW). The area appears to include important biodiversity of values of national and possibly regional significance, and a survey undertaken in 2009 found the beds to be in excellent conditions. Thus the main framework for the effective management of the natural component of the property appears to be clear. Assurance of implementation of the new protective measures and maintenance of an effective management for this component should be one element of the ongoing management system for the nominated property.

The nomination presents a clear understanding of the pressures facing the nominated property, and the means by which they are to be addressed. Amongst these pressures, the nomination notes that there is oil and gas exploration being undertaken in the region, and that exploration and possibly exploitation is foreseen in the buffer zone of the marine component. The protection of the pearl beds should be a clear priority in relation to such activities, and IUCN considers that both exploration and exploitation would be better located outside of the marine buffer zone that has been established. The marine component of the property should not be subject to exploration or production activities for oil and gas. IUCN recommends that proposals for exploration and exploitation in the region around the property should be assessed for their impact on the marine component and its buffer zone, and should the property be inscribed such activities should include prior consultation via the UNESCO World Heritage Centre, in line with the procedures outlined in the Operational Guidelines.

IUCN notes that tourism pressures related to the property include potential impacts from marine tourism including unauthorized collection of oysters and coral. IUCN considers that an effective system of regulations, supported by an adequate on-water presence to ensure enforcement is required, taking particular account of any increased pressures that might result from inscription on the World Heritage List.

ASIA / PACIFIC

WEST LAKE CULTURAL LANDSCAPE OF HANGZHOU

CHINA

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

WEST LAKE CULTURAL LANDSCAPE OF HANGZHOU (CHINA) – ID No. 1334

IUCN undertook a desk review of this cultural landscape nomination, and provided additional input to ICOMOS in relation to questions raised at the ICOMOS World Heritage Panel, which IUCN attended.

IUCN notes that whilst the nomination includes areas with a high degree of intervention in the natural landscape, the natural hills and waters and their natural and semi-natural systems, and wild species of fauna and flora are integral components of the West Lake Landscape, providing the "canvas" on which has been superimposed the designed landscape including elements, such as causeways, islands, bridges, pavilions, terraces, and distinctive flora were added as the culture of the area evolved. IUCN notes the documentation of the evolution of this landscape that is presented in the nomination including records in literature and poetry, and the explanation of its cultural meaning.

The natural aspects of the landscape that are most critical in relation to its protection and conservation relate to protection of vegetation and the management of water as key components of the visual quality of the property. One significant challenge is likely to be in relation to the protection of water quality considering the large and growing urban area that abuts part of the property and the other land-uses that take place in the catchment of the lake. IUCN welcomes the adoption of regulations to adopt electric motored boats for use on the lake which address one particular source of pollution. IUCN recommends that any plans for urban development in areas surrounding the property and its buffer zone, include very careful attention is paid to the management of urban drainage and the management of waste water, in order to maintain and enhance the water quality of West Lake. This should include the management of surface water runoff, including that which arises in storm conditions. IUCN recommends that ICOMOS clarify the water quality status of West Lake, the means of its long-term protection and the likelihood of increases in its quality, as this information is not fully documented in the nomination.

ASIA / PACIFIC

PETROGLYPHIC COMPLEXES OF THE MONGOLIAN ALTAI

MONGOLIA

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

PETROGLYPHIC COMPLEXES OF THE MONGOLIAN ALTAI (MONGOLIA) – ID No. 1382

IUCN provided the following comments to ICOMOS based on desk review of this cultural landscape nomination.

IUCN considers that the nomination document sets out a clear rationale for considering this property as a cultural landscape, as a "combined work of man and nature". The three components included in this serial nomination are located in the Altai Mountains of western Mongolia. The nomination emphasizes how they complement each other as a cultural landscape in which rock art, surface monuments, sacred mountains and the larger physical context are expressively integrated. The imagery shows the character of early hunting traditions, herding, horse and camel riding and the final expansion of steppe and the herding dependency in the Eurasian steppe. IUCN notes that there are other sites in the region and worldwide which also demonstrate this interaction.

The nominated components are all state property, one of them is wholly within a nationally designated protected area, and one is partly in such an area. Due to its remoteness, there has been relatively little human impact on the natural landscape. Some of the land has traditionally been used by herding communities. Grazing might be increasing in the coming years due to climatic impacts. There is a proposed management plan for this serial property, and IUCN recommends ICOMOS confirm that there has been effective consultation with the herding communities in the process of its preparation.

IUCN notes that parts of the nominated property located in an area that has been suggested for transboundary cooperation in the Altai mountain range. There is an existing natural World Heritage Site in this region, the Golden Mountains of Altai, located in the Russian Federation. China has proposed another site in the Altai mountains on its tentative list. ICOMOS may wish to have regard to this broader picture in considering its evaluation of the nomination.

EUROPE / NORTH AMERICA

LAND OF CAVES AND HIDING IN THE JUDEAN LOWLANDS

ISRAEL

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

LAND OF CAVES AND HIDING IN THE JUDEAN LOWLANDS (ISRAEL) – ID No. 1370

IUCN provided brief comments to ICOMOS on this cultural landscape nomination on the basis of desk review, and following additional questions discussed at the ICOMOS World Heritage Panel in December 2010.

IUCN considers that the nomination document provides a clear rationale for the landscape of the property to be considered as a "combined work of man and nature". The nomination focuses on the values of the property as an example of traditional human settlement that utilized the specific natural characteristics of the land and built artificial caves in the soft sediments of the area. The natural features of this ancient landscape, ridges, hilltops and streambeds, have changed very little in recent times. It is considered a relict landscape.

The nominated property is in a region characterized by traditional land use, mostly agriculture. Most of the archeological sites are located in two protected areas: the Bet Guvrin National Park and the Adulam Grove Nature Reserve. It is not clear to IUCN why only part of the National Park is included in the proposed property, the other half being in the buffer zone, as this adds to management complexity. The Nature Reserve is fully included in the property. The other archaeological sites are located in a large area established for natural forest conservation under a National Master Plan. A biosphere reserve has also been proposed in this region and there is a military base in the site. The property's eastern boundary runs near to the 1949 armistice border.

Threats to the property include fires and development. Tourism mostly concentrates on a specific touring route that leads tourists to specifically chosen excavated and developed caves that show the different uses of the caves for storage, water catchment, hiding, burial and other functions.

There are a range of different organizations responsible for the property, and with a range of management plans. It is not made fully clear in the nomination how governance and coordination of overall management system for the property will be provided and assured, and IUCN recommends ICOMOS give additional consideration to this issue during its evaluation of the property.

LATIN AMERICA / CARIBBEAN

COFFEE CULTURAL LANDSCAPE

COLOMBIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

COFFEE CULTURAL LANDSCAPE (COLOMBIA) – ID No. 1121

IUCN joined ICOMOS for the evaluation mission to this nominated cultural landscape. IUCN provides the following comments to ICOMOS based on the mission observations and a desk review.

a) IUCN notes that the nomination document sets out a clear rationale for the consideration of the property's landscape as a "combined work of man and nature". The nomination highlights the importance of coffee cultivation as a very important economic activity for local communities. IUCN notes that there are other similar natural landscapes in the region, and in other settings worldwide, which also demonstrate this type of relationship. Furthermore, the nomination document underlines the cultural, social and natural aspects that make this landscape unique.

b) The natural values of the landscape have been changed and little is left of the original vegetation across most of the area. The last remnant natural forest, including bamboo forest, protects biodiversity while conserving upper watersheds and riverbanks. An important effort has been carried out in the Quindío Department to restore natural forest creating biological corridors among protected areas, which retain natural values within the landscape including ecosystem services. An important collection of flora, located in the Quindío Botanical Garden, comprises most of the threatened plant and trees – including palms – species as well as others with social and economic value for local stakeholders. The National Center for Bamboo Studies (Centro Nacional para el Estudio del Bambú-Guadua) Center, also in the Quindío Department, holds an important collection of native bamboo species.

c) It is noted that shade grown coffee is the traditional system and supports significantly higher levels of biodiversity. IUCN questions, therefore, why plantations with open grown coffee are included in the nomination. It is further noted that climate change is a threat to the values of the landscape and mitigation and adaptation measures should be important components of site management.

d) The rationale used to define the nominated property boundaries is based mainly on cultural and coffee production attributes. The proposed boundaries, in most parts of the nominated property do not consider natural attributes as protected areas, upper watersheds and remnant natural forest. There is an active series of national and local protected areas within the region and in its boundaries holding a rich biodiversity, specially related with birds. IUCN considers that an integrated management system, including the local environmental authorities (Corporaciones Regionales Autónomas), would be required to ensure that there is an effective overall approach to the management of the property natural assets. Protection of the natural values of the property should be a central objective in the management system for the property.

e) The basis for protection of some of the area natural values is customary law and governance integrates customary and formal protection and management in a complementary and consistent fashion is a way to address it. Local inhabitants seem to be well prepared to participate effectively in governance and decision making regarding their natural landscape conservation.

f) Different agro forestry systems that combine coffee production with shade species –including plantain – and soil management and conservation techniques were seen within the landscape. The coffee production process is been adapted to use a minimal water quantity and water treatment systems are placed in most farms. Several certifications schemes are used, including seven "sustainable coffee labels", which require that the coffee is cultivated without the use of chemicals or emphasize social aspects or a combination of both. An emphasis is put in the production of special coffees which integrates the environmental conservation, economic equity and social responsibility concepts. Most coffee production areas have hedges as boundaries. IUCN notes the positive trend in terms of conservation of coffee production.

g) Mining, which was an important economic activity in the past centuries, was mentioned as a new threat to the landscape. No official information is available on this and it is recommended ICOMOS investigate this issue further.