WHC-13/37.COM/INF.8B2

IUCN World Heritage Evaluations 2013

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

IUCN Report for the World Heritage Committee, 37th Session
Phnom Penh, Cambodia, 16 - 27 June 2013

United Nations Educational, Scientific and Cultural Organization

World Heritage Convention

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

Table of Contents

B. Mixed Properties

Page Nº

B1. New Nominations of Mixed Properties

B2. Minor Boundary Modifications of Mixed Properties

C. Cultural Properties

C1. New nominations of Cultural Landscapes

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		
Kenya	Mount Kenya-Lewa Wildlife Conservancy (800 Bis)	Extension	yes	–	yes	–	yes	yes	yes	part	yes	yes	yes	no	I
Namibia	Namib Sand Sea (1430)		yes	yes	yes	yes	yes	yes	yes	–	yes	yes	yes	no	I
China	Xinjiang Tianshan (1414)		yes	–	yes	–	yes	yes	yes	yes	yes	yes	yes	no	I
India	Great Himalayan National Park (1406)		no	–	–	part	part	part	yes	no	yes	yes	part	yes	D
Philippines	Mt. Hamiguitan Range Wildlife Sanctuary (1403)		–	–	–	part	no	part	yes	–	yes	yes	part	yes	D
Viet Nam	Cat Tien National Park (1323)		–	–	–	no	no	no	no	–	yes	no	no	no	NI
Italy	Mount Etna (1427)		no	yes	no	–	yes	yes	yes	–	yes	yes	yes	no	I

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**			
Mexico	El Pinacate and Gran Desierto de Altar Biosphere Reserve (1410)		yes	yes	–	yes	yes	yes	yes	–	yes	yes	yes		no	I
Tajikistan	Tajik National Park (Mountains of the Pamirs) (1252 Rev)	Deferred nomination	yes	yes	–	no	yes	yes	yes	–	yes	yes	yes		no	I
Guinée Bissau	Archipel des Bijagós – Motom Moranghajogo (1431)	Mixed site	part	–	part	part	no	no	part	–	no	no	no		yes	D
Lesotho	Sehlabathebe National Park (985 Bis)	Extension / Mixed site	yes	–	–	yes	yes	yes	yes	–	yes	part	part		no	I
Canada	Pimachiowin Aki (1415)	Mixed site	–	–	part	–	no	no	yes	–	yes	yes	yes		yes	D
Russian Federation	Sviyazhsk Complex (1419)	Mixed site	no	–	–	–	no	no	part	–	yes	no	no		no	NI

KEYS

yes	met	I	inscribe / approve
part	partially met	NI	non inscribe
no	not met	R	refer
–	not applicable	D	defer

ALPHABETICAL INDEX

IUCN FIELD EVALUATORS

Site	Name
Pimachiowin Aki	David Mihalic
Xinjiang Tianshan	Pierre Galland and Andrew Scanlon
Archipel des Bijagós – Motom Moranghajogo	Wendy Strahm and Djafarou Tiomoko
Great Himalayan National Park	Graeme Worboys
Mount Etna	Bastian Bertzky
Mount Kenya-Lewa Wildlife Conservancy	Roger Porter
Sehlabathebe National Park	Moses Mapesa
El Pinacate and Gran Desierto de Altar Biosphere Reserve	Doris Cordero and Tilman Jaeger
Namib Sand Sea	Peter Howard and Darlington Munyikwa
Mt. Hamiguitan Range Wildlife Sanctuary	Naomi Doak
Sviyazhsk Historical, Architectural, Natural and Landscape complex	Kalev Sepp
Tajik National Park (Mountains of the Pamirs)	Sarango Radnaaragchaa and Les Molloy
Cat Tien National Park World Heritage Site	Tobias Garstecki and Leigh Vickery

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
April 2013

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 1700 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 2012-13 IUCN has continued to work on the Upstream Process, as will be debated in the relevant item on the Committee's agenda.

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 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 almost 130 external reviews in relation to the properties examined in 2012 / 2013.

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 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. **UNEP-WCMC datasheets**. IUCN commissions UNEP-WCMC to carry out a comparative analysis for all properties nominated under the biodiversity criteria (ix) and (x). These documents are very useful to the Panel review. Following inscription, datasheets are compiled with WCMC.

5. **Communities.** IUCN has enhanced its evaluation processes through the implementation of a series of measures to evaluate stakeholder and rights holder engagement during the nomination process (see below for further details)

6. **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 additional IUCN has continued to promote additional dialogue with States Parties on the conclusion of its panel process, to allow for discussion of issues that have been identified and to allow more time to prepare discussions at the World Heritage Committee.

In the technical evaluation of nominated properties, global biogeographic classification systems such as Udvardy's biogeographic provinces and the terrestrial, freshwater and marine ecoregions of the world are used to identify and assess comparable properties at the global level. These methods make comparisons of natural properties more objective and provide 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 these systems are used as a basis for comparison only and do not imply that World Heritage properties are to be selected based on these systems. In addition, global conservation priority-setting schemes such as WWF's Global 200 Priority Ecoregions, Conservation International's Biodiversity Hotspots, Birdlife International's Endemic Bird Areas and Important Bird Areas, Alliance for Zero Extinction sites, IUCN/WWF Centres of Plant Diversity 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.

The evaluation process is also aided by the publication of a series of reference volumes and thematic studies. In early 2012 a resource manual on the preparation of World Heritage Nominations was published, under joint lead authorship of IUCN and ICOMOS, and has provided further details on best practices, including the key resources that are available to support nominations.

Following up on its report to the Committee in 2012, IUCN also concluded a review of its World Heritage evaluation processes in relation to questions related to communities and rights, considering both the focus on Communities in the 40th anniversary year of the World Heritage Convention, and significant concerns that

have been raised by external observers of the Convention, including at the UN Permanent Forum on Indigenous Issues. IUCN members adopted a specific resolution on these matters at the IUCN World Conservation Congress in 2012, and this resolution *(WCC-2012-Res-047-EN Implementation of the United Nations Declaration on the Rights of Indigenous Peoples in the context of the UNESCO World Heritage Convention)* is available at the following address: http://www.iucnworldconservationcongress.org/member_s_assembly/resolutions/. IUCN has implemented a range of improved practices within its evaluation process in 2012 in response to these reviews and reflections, which are focused on the inclusion of a specific section headed "Communities" within each evaluation report, to ensure transparency and consistency of IUCN's advice to the World Heritage Committee on this important issue. These new measures include a standard screening form for all evaluation missions, additional consultation with networks specialised in this field, and including an expert advisor in the membership of the IUCN World Heritage Panel. IUCN will continue with these new practices in its work in the 2013 nomination cycle.

In addition, IUCN has updated its format for field evaluation reports, to include specific questions on communities, and to also clarify a range of questions and expectations of feedback from evaluators to ensure consistency of reports from field missions.

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 – non-voting)
- 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-WCMC 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 Assistant. Information on the members of the IUCN World Heritage Panel is posted online at the following link: http://www.iucn.org/about/work/programmes/wcpa_worldheritage/our_work/wcpa_nomination/

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. Inaddition, 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 2012 / 2013

13 nomination dossiers and 1 minor boundary modification were examined by IUCN in the 2012 / 2013 cycle, involving 13 field missions. These comprised:

- 9 natural property nominations (including 6 new nominations, 1 deferred nomination and 2 extensions);
- 4 mixed property nominations (all new nominations), where joint missions were undertaken with ICOMOS, except for one site where the missions took place separately;
- 6 cultural landscape nominations (all new nominations); 3 were commented on by IUCN based on internal and external desktop reviews and 3 were not commented on,
- 1 minor boundary modification.

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.

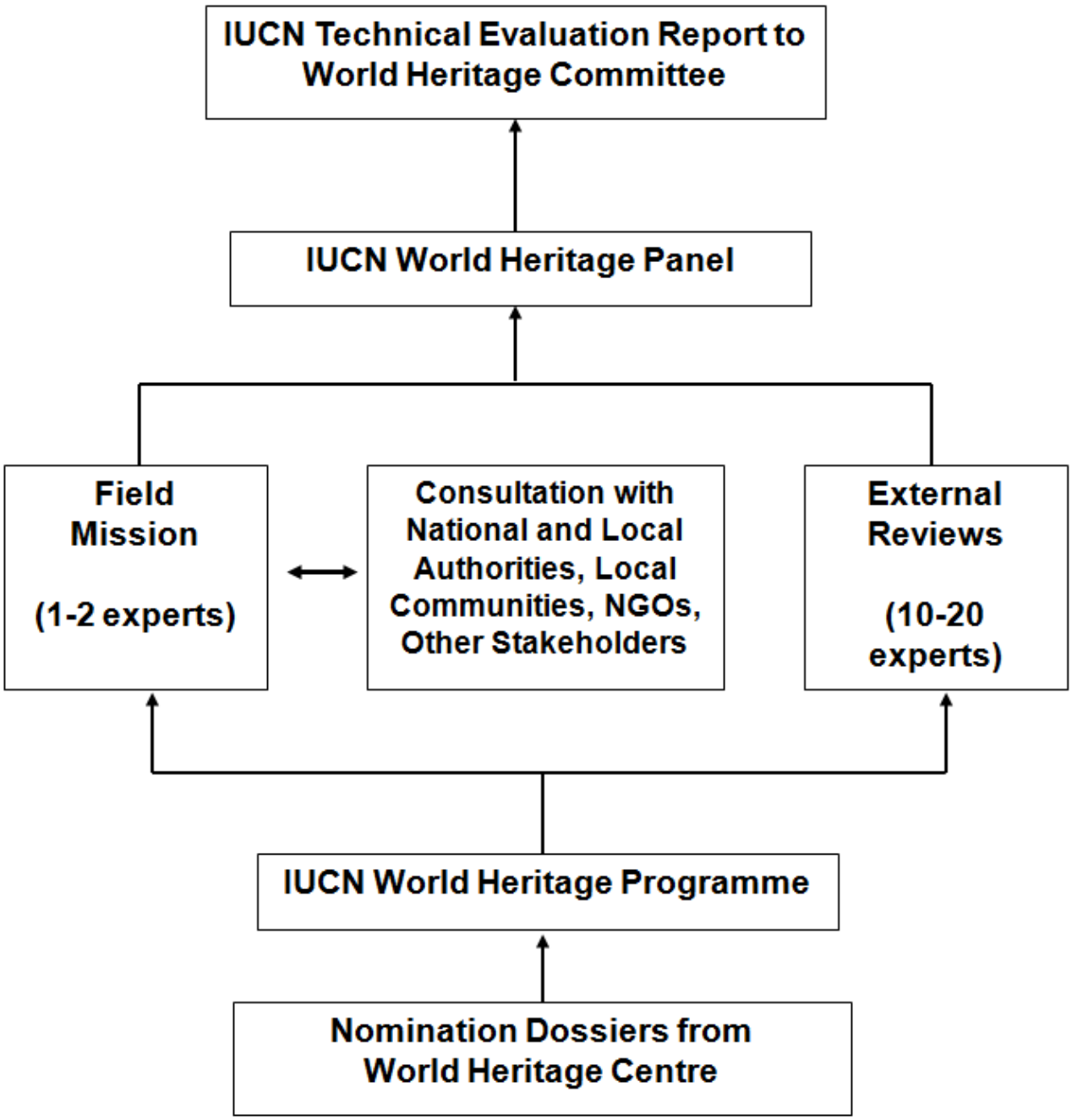
7. RECOMMENDATIONS TO THE WORLD HERITAGE COMMITTEE

In the 2012 / 2013 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 2013, 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

MOUNT KENYA – LEWA CONSERVANCY
(Extension of Mount Kenya National Park / Natural Forest)

KENYA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

MOUNT KENYA-LEWA WILDLIFE CONSERVANCY (KENYA), PROPOSED EXTENSION OF MOUNT KENYA NATIONAL PARK / NATURAL FOREST (KENYA) – ID No. 800 bis

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To approve the extension under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meets natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

Background note: The Mount Kenya National Park / Natural Forest World Heritage site was inscribed in 1997. The Committee inscribed this property under natural criteria (vii) and (ix) as one of the most impressive landscapes of Eastern Africa with its rugged glacier-clad summits, Afro-alpine moor lands and diverse forests, which illustrate outstanding ecological processes (21COM VIII.A, 1997). A number of subsequent UNESCO/IUCN monitoring missions recommendations and Committee decisions have recognized the importance of establishing extensions to the property to add areas and values in lowland ecosystems as well as enhance ecological connectivity to foster wildlife movement and buffer climate change (UNESCO/IUCN Missions, 2003 and 2008); (26COM 21.B14, 2002; 27COM 7B.4, 2003; 33COM 7.B3, 2009; and 35COM 7B.2, 2011).

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

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 to clarify the boundaries and protected areas included within the nomination and to update on the status of the overall joint management plan for the property. A reply was received before the deadline of 28th February 2013.

c) Additional literature consulted: Conservation Action Plan 2013-2018 for the Greater Lewa Conservation Area. Lewa Wildlife Conservancy, July 2012. Lewa Wildlife Conservancy: **Management Plan 2008-2010**. Lewa Wildlife Conservancy, March 2008. Lewa Wildlife Conservancy: **Strategic Plan 2008-2013**. Lewa Wildlife Conservancy, October 2007. Lewa Wildlife Conservancy: **Annual Report 2011**. **The Lewa Standard**. Lewa Wildlife Conservancy, February 2011. **Lewa Wildlife Conservancy – Code of Conduct**. **Deed between Bill Woodley Mount Kenya Trust and Lewa Wildlife Conservancy and Ngare Ndare Forest Trust and Marania Limited and Kisima Limited** relating to the establishment and maintenance of a fenced elephant corridor and buffer zone. Dated 30 November 2011. Greater Lewa Conservation Area: **Vision for Conservation Success**. The Nature Conservancy. Lewa News. **Newsletter No. 33** May 2012. **Lewa Standard** February 2011.

d) Consultations: 12 external reviewers. The mission met with representatives of the Kenyan Government, Lewa Wildlife Conservancy, and a range of International Agencies. Discussions were also held with site managers and local community members. A meeting of interested and affected parties was also conducted.

e) Field Visit: Roger Porter, 22 - 26 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The proposed extension consists of the Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve (LWC-NNFR) located in northern Kenya in the Laikipia plains and northern foothills of Mount Kenya. The nominated property is surrounded by a complex of other protected lands that form a buffer zone. The field evaluation and subsequent State Party information has confirmed that the nominated core area comprises 19,834 ha (Lewa Wildlife Conservancy & Ngare Ndare Forest Reserve) with a buffer zone of 69,339 ha made up of nine protected lands. The proposed extension is connected to the Mount Kenya National Park / Natural Forest (Mount Kenya) via a narrow 9.8 km elephant corridor traversing farming land and located in the buffer zone.

The southern part of the nominated property comprises the foothills and steep valleys of the lower slopes of Mount Kenya (5,199 m asl) at an altitude greater than 2,300 m asl. This area is linked ecologically (i.e. biological corridors) by several steep valleys that extend southward traversing through a narrow belt of relatively flat agricultural land. These slopes become more gradual before giving way to a relatively vast volcanic Laikipia plain in the central area of the site. The plain extends to the hills in the north through which steep river valleys are found.

Rivers and underground streams flow from the Mount Kenya – Kenyan Highlands northwards and form part of the Ewaso Nyiro River system. Three of these rivers are perennial and flow through the site; these are the Ngare Ndare, Ngare Sergoi, and western Marania rivers. The western Marania River originates as a spring on the site. However, there are some 20 major perennial springs that emerge and flow on the ground surface within the site and provide an important integral hydrological connection between Mount Kenya and the proposed extension of the site.

A marked climatic gradient exists between Mount Kenya with its glaciers and snow fields at high elevations in the south, and the northern area of the LWC-NNFR also extending further north to Samburu National Park. The southern area experiences the tropical climate of the Kenyan Highlands whereas the LWC-NNFR and northern areas have the semi-desert climate of Eastern Kenya.

Mount Kenya is characterized by several different vegetation belts or zones (closed forests types to about 3,400 m asl, a bamboo zone, heath land and Afro alpine moorlands at higher altitudes) occurring at different elevations from the top of the mountain with no vegetation, to the lower slopes of the buffer zone with its *Juniperus procera – Sitpa dregeana* Tall Forest. Transformation of the forest has occurred within a narrow area between the northern boundary of the nominated property's buffer zone and the buffer zone of the proposed LWC-NNFR extension. The entire Ngare Ndare Forest Reserve and the southern area of LWC have an extensive belt of J*uniperus procera – Sitpa dregeana* Tall Forest in excellent condition.

At lower elevations the trees and shrubs of the *Juniperus* forest community become more widely spaced and grade into the *Acacia drepanolobium* thicket and open woodland, and *Acacia tortilis* thicket communities as well as the extensive *Pennisetum stramineum* grasslands in the central areas of LWC. These vegetation types form part of the East Africa Savannah Grasslands of the Afro-Tropical realm. Thus of particular significance is that LWC-NNFR lies at the ecotone or ecological transition zone between the Afro Tropical Montane ecosystem and its associated biodiversity and that of the semi-arid East African Savannah Grasslands. That is, the area lies at the interface of the Afromontane and Somali biomes and within the Somali – Maasai Center of Endemism. There are 11 major vegetation types in the LWC. Generally, *Acacia sayal* and *A. drepanolobium* are the dominant woody plant species at elevations above 1650 m asl where as *Acacia mellifera, A. tortilis, A. nilotica* and *Commiphora spp* are dominant below the 1650 m contour. The vegetation changes along the river courses and wetland areas. *Acacia xanthophloea* is the dominant tree species whereas two extensive swamp areas contain a variety of wetland species e.g. *Typha domingenisis, Echinochloa spp. Cyperus dives.* and *Pennisetum spp.*

With the application of protection and conservation measures since 1995 the native fauna has recovered within the LWC including many threatened plant and animal species. There is now a full complement of viable populations of all the large mammal species. Of particular importance has been the recovery of the black rhinoceros (genetically diverse) with a current population of 74 animals and a recruitment rate above that of the national average. Capture and translocation of black rhinos from LWC has been used to re-stock other protected areas in Kenya. Grevy's zebra are listed as critically endangered species and LWC holds about 17 % (approximately 440 animals) of the world's population.

LWC lies within the traditional movement or migration route of the African elephant population of the Mount Kenya – Somali / Maasai ecosystem and has always been the traditional dry season feeding area for elephants. Generally animals move away from the mountain when climatic conditions are cold and wet to the lowland Laikipia plain area where higher temperatures and drier conditions prevail. They return to the highlands and mountain when conditions are too dry in the plains regions. Some of the elephants migrate from the northern rangelands through LWC-NNFR and finally into the Mount Kenya World Heritage Site.

This migration route became blocked as a result of agricultural land use and the construction of the main A2 road. Various measures to manage human-wildlife conflict were implemented with marginal success until an agreement struck between the owners of the Kisima and Mariana farms and LWC to construct an elephant movement corridor of 9.8 km long over these properties to link Mount Kenya to NNFR and LWC. This corridor follows a natural drainage valley with natural vegetation of forest and grassland area that provides both food and cover for the animals. The corridor has an electrified fence and passes under the busy A2 road through an underpass. The elephant corridor has been operational since December 2010 and a system of monitoring has confirmed that the corridor has proved highly successful given that more than 400 elephant movements have been recorded through the underpass since January 2011 and these animals have re-established their original movements that now extends northwards over some 250 km from Mount Kenya to Samburu National Park and the Matthew's Range. The corridor also facilitates the movement of other species.

Although the LWC-NNFR properties are enclosed by an electrified elephant-proof fence that ensures the security of the two species of rhinos and other animals, gaps in the fence on traditional elephant paths allow for elephants to move freely into and out of the LWC to and from the adjoining conservancies that comprise the buffer areas. Elephant are now able to move from Mount Kenya (population of some 2000) via LWC and disperse all the way north over land under integrated management of domestic stock and wildlife by the Northern Rangeland Trust, to Samburu National Park, Shaba National Reserve and Buffalo Springs, and even further north to the Matthew's Range.

LWC has a very rich biodiversity of different ecosystems (forest, grassland, woodland, thicket and wetland), plant species, animal species, and landscapes. The property contains 249 plant species including 20 endemics; 9 species of amphibians all of which have not been recorded in the existing Mount Kenya site; 28 species of reptiles of which 85.7% have not been recorded in the Mount Kenya site; 429 bird species including 14 Red Listed species, 22 Afro-tropical and 56 Palaearctic migrant species, and several East African endemics. 34 species of mammals have been recorded with 82% of these not found in the Mount Kenya site.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier provides a comparative analysis which is based on the extended Mount Kenya World Heritage Site, in other words, including the LWC-NNFR addition. The analysis concludes that the Mount Kenya – LWC-NNFR property compares favorably to several African World Heritage Sites as well as a number of other sites which protect iconic threatened species such as Chitwan (Nepal) and Noel Kempff (Bolivia). There are six mountain systems in Africa currently on the World Heritage list. Four of these are mountain ranges including the Simien Mountains in Ethiopia - criteria (viii), Mount Nimba transboundary site between Guinea and Côte d'Ivoire - criteria (ix) and (x), Rwenzori Mountains in Uganda - criteria (vii) and (x), and the Ukhahlamba Drakensberg mixed site in South Africa - criteria (vii) and (x). Two mountains are stand-alone extinct volcanoes; Mount Kilimanjaro in Tanzania - criterion (vii) and Mount Kenya in Kenya - criteria (vii) and (ix). The Mount Kenya-LWC is most directly comparable to three other World Heritage Sites that are located in the East African region.

IUCN notes that as an extension to an existing property the most significant question is regarding the degree to which the proposed extension adds to the already recognized Outstanding Universal Value of Mount Kenya. In this regard the LWC-NNFR extension is scenically very different and also encompasses a more ecologically intact World Heritage site which adds ecotone areas and the additional ecosystems of the lower foothills and arid habitats of the Somali – Maasai Center of Endemism. The addition of LWC-NNFR brings an additional set of ecosystems and biodiversity that have, to date, not been part of the existing Mount Kenya site by incorporating the lower lying scenic arid habitats of high biological richness and diversity. These additional areas also add further to the values of Mount Kenya that contrast with properties already inscribed on the World Heritage List.

IUCN also notes that the extension follows past recommendations of the World Heritage Committee as noted in the Background Note above.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

The Government of Kenya, through the Kenya Wildlife Service (KWS), has promoted the formation of wildlife conservancies amongst owners of large tracks of land especially amongst local communities as a long-term strategy to increase range for biodiversity conservation and management in the country. LWC is managed for the conservation of biological diversity and thus has met the national legal requirements for designation as a conservancy.

The National Land Policy of the Ministry of Lands (Session Paper No.3 of 2009) recognizes the establishment of wildlife corridors for the purpose of biodiversity conservation and to support critical wildlife migration and dispersal areas. The policy embodies principles of consultation and co-management with local communities and individual land owners in the establishment of such corridors. This policy aspires to achieve an integrated and comprehensive approach to the management of natural resources through participatory environmental action plans by communities and individuals living near environmentally sensitive areas in order to take into account cultural and socio economic issues; identification, mapping and gazetting of critical wildlife migration, dispersal areas, and corridors; and through supporting the development of wildlife sanctuaries and conservancies in partnership with local communities and individuals living contiguous to the parks. The above policy led to the decision to establish a corridor and underpass on the Nanyuki Meru A2 road, in order to secure a safe movement of elephants between LWC and Mount Kenya.

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

4.2 Boundaries

The boundary of LWC-NNFR is fenced by an electrified elephant proof fence. Buffer areas have been established with the Leparua Conservancy in the north, Borana Conservancy and Il Ngwesi Group Ranch in the west. A 200 m wide buffer zone runs along the inside of the fence on the southern boundary of the Ngare Ndare Forest Reserve and includes the Elephant Corridor that links the area to Mount Kenya. The eastern boundary also has a 200 m wide buffer zone that lies inside the fence and provides an added layer of protection between LWC and the neighbouring Ntumburi community area. The ecological contiguity of the overall Mt Kenya-LWC-NNFR property is therefore contingent on the maintenance of the narrow elephant corridor. IUCN recalls past monitoring mission recommendations and Committee decisions calling for broader extensions to the property which would go beyond this LWC-NNFR extension, and thus further extensions to the property are desirable in addition to the present proposal.

IUCN notes the critical importance of maintaining a viable elephant corridor within the buffer zone, however considers that the boundaries of the nominated property meet the requirements of the Operational Guidelines.

4.3 Management

LWC is managed by a Board of Trustees consisting of seven members. The day to day administration and protection is undertaken by a Chief Executive Officer (CEO) who is in charge of a 306 strong staff complement that undertakes various duties ranging from wildlife security, research, community outreach, conservation marketing and enterprise. The full-time staff consists of field rangers, radio operators, an anti poaching unit, workshop and works staff, and accountants. There is a fully established research station in LWC manned by 4 full time staff members headed by a Senior Scientist. There are 20 professional and 115 technical staff with impressive levels of qualifications supported by 171 maintenance employees that together make up a well-trained and skilled management team at LWC.

Staff and visitors to LWC are bound by a 'Code of Conduct' that specifies the rules regarding the various activities that may be undertaken within the area such as camping, walking, game viewing, as well as covering safety aspects. The 'Lewa Standard' aims at ensuring that LWC continues as a model for conservation, provides a high quality tourism experience, and attracts dedicated philanthropic support.

LWC is a commercial venture which generates its income for its conservation operations through donations and internally generated revenue, conservation fees and other diversified tourism related ventures to meet an annual budget requirement of USD 3.2 million. Long term financial provision has also been made with the establishment of an endowment fund that currently has USD 5 million which will grow to over USD 20 million in the next few years. Returns from the endowment fund will be used to 'top-up' annual budgets into the future as and when required.

Both the LWC and the Ngare Ndare Forest Reserve have individual management plans, although these are based on different timeframes. The Lewa Wildlife Conservancy Management Plan 2008-2010 aims to ensure that LWC's core conservation and community operations are maintained and sustained. These are mainly to ensure that LWC becomes more self-sustainable; improves, cares for, and maintains the wildlife and habitats (with special emphasis on endangered species); incorporates and improves internal systems and efficiencies. The Ngare Ndare Forest Reserve Plan 2007-2012 has a goal to foster and ensure conservation of the biological, ecological, environmental and socio cultural values of Ngare Ndare Forest in perpetuity, in order to protect the natural forest and water catchment areas, and to improve the living standards of the surrounding communities through sustainable agro forestry.

The two management plans for LWC and Ngare Ndare Forest Reserve are specific to their respective areas of jurisdiction. However, three institutions require close coordination to manage the serial property. These include KWS and KFS as well as the LWC managed through a Board of Trustees. KWS and KFS are signatories to the Mount Kenya Ecosystem Management Plan which provides an overarching management planning framework. It is essential that the separate management plans applying to the components of the property are harmonised in terms of management approaches and timeframes.

LWC employs a well trained and equipped field ranger force housed in pickets strategically located near the perimeter of the protected area. Five law enforcement patrol areas are designated and ground patrols are undertaken daily. A light aircraft is also regularly used in aerial surveillance. In addition the 140 km perimeter electric fence is checked by a team of fencers. A rapid reaction team is on stand-by and is mobilized in cases of emergency. Two trained tracker dogs are used to follow up on poaching incidents and have been successful in locating the criminals thus leading to their eventual convictions. LWC has also established close cooperation with KWS, Kenyan Police, the Anti-stock Theft Unit and work with local County Councils and community leaders.

Fire is used as a management of vegetation in LWC and unplanned fires are treated as disasters. Measures have been put in place to control these, including firebreaks and signage to caution visitors against starting fires. Fire is a constant major threat in the high altitude moorlands of Mount Kenya as well as to the lower lying forest areas in the west and north of the mountain. The capacity to control fires by KFS and KWS staff has been enhanced through additional fire equipment and training.

Systematic and regular animal census (monitoring of numbers and breeding performance, etc) of populations of key species is undertaken and include two rhino species, elephant, Grevy's zebra and all large predators. Elephant moving into or out of LWC are monitored and reports of elephant outside LWC in rural settlements are followed up immediately and the animals herded back. Movements of elephants through the corridor underpass are recorded using a variety of techniques.

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

4.4 Community

Various cooperative programmes exist between LWC and the neighbouring communities including support to several local schools; provision of job opportunities and employment; provision of health care; support of potable and irrigation water; forestry and women micro-credit schemes; controlled dry season livestock grazing inside LWC by local communities; and community based ecotourism. These programmes have been successful in building support by local

communities for LWC and their outreach programmes. The evaluation mission noted good levels of trust and a harmonious relationship that has been credited to the successful solving of the elephant – human conflict that had plagued the people of this region for many years.

LWC also runs a conservation education programme that targets 17 local schools. LWC also supports school groups from the entire northern Kenya area and from other regions of the country so that these children may learn about conservation and community development activities undertaken by LWC.

4.5 Threats

The threat to biodiversity and potential impact of climate change on natural systems is still largely unknown, however, recent droughts and high temperatures are a threat to the survival of both flora and fauna found in the region. The rate of desertification, degradation of water sources including the shrinkage of glaciers on Mount Kenya is accelerating. This may be compounded by invasions of pastoralists in their endeavours to subsist and maintain their livestock by gaining access to grazing and water. The LWC-NNFR by establishing the corridor and regional linkages via several conservancies to link with Samburu National Park, Shaba National Reserve and Buffalo Springs to the north and beyond to the Matthew's Range is a significant proactive intervention to mitigate climate change impacts on the biodiversity of this region of East Africa providing mobility for biodiversity to adapt to changing temperature and rainfall regimes.

Mount Kenya-LWC-NNFR is located in an area of high population growth resulting in challenges including conflict that needs to be resolved or managed. LWC has developed an amicable relationship with neighbouring communities and ensures that they receive benefits from the protected area. One of the threats is overgrazing and over extraction of forest and non-forest products. This matter is addressed through Community Forest Associations that determine harvest limits according to Participatory Forest Management Plans (PFMP) and as required by the Forest Act of 2005.

No new development project proposals are known at present. Should a development proposal arise it would be subject to the undertaking of an Environmental Impact Assessment. All developments prior to 2000 are subject to an Environmental Audit in terms of the requirements of the Environment Management and Coordination Act of 1999. This law has ensured compliance with the rules and regulations and has ensured environmental sustainability.

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

5. ADDITIONAL COMMENTS

5.1 Serial nomination

IUCN notes that the subsequent information provided by the State Party confirms that the elephant corridor has the status of a buffer zone to the property which means from a technical perspective this qualifies as a serial extension to the property. Given the close proximity of the two components and the linkage via the elephant corridor IUCN has not evaluated this property via its normal three questions for serial properties, but notes that the inscription should explicitly note that the connectivity provided by the elephant corridor is essential to the property, as extended. Ideally the elephant corridor should be included and recognized in the inscribed property.

5.2 Name of the Property

IUCN recommend that the name of the property should remain as the Mount Kenya National Park/Natural Forest to accommodate future extensions within the lower natural forests, in order to achieve broader ecological connectivity and coherence.

6. APPLICATION OF CRITERIA

The Mount Kenya – Lewa Wildlife Conservancy nominated property has been nominated under criteria (vii) and (ix), as an extension of the Mount Kenya National Park/Natural Forest.

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
The outstanding natural beauty in the visual contrast and diversity of landscapes between the Kenyan Highlands with Mount Kenya looming over the flat, arid, grassland and sparse wooded plains of LWC-NNFR is of outstanding aesthetic importance. The proposed extension secures outstanding middle and long distance viewscapes of Mount Kenya itself.

IUCN considers that the nominated property, including the proposed extension, meets this criterion.

Criterion (ix): Ecosystems / communities and ecological / biological processes
The LWC-NNFR extension brings an additional set of ecosystem processes and biodiversity that are currently not part of the Mount Kenya World Heritage Site by incorporating the lower lying, scenic foothills and arid habitats of high biological richness and diversity. Of particular significance and value is that LWC-NNFR lies at the ecotone or ecological transition zone between the Afro Tropical Montane ecosystem and its associated biodiversity and that of the semi-arid East African Savannah Grasslands. It thus provides for a more ecologically intact World Heritage site especially in its incorporation of the complete and diverse range of outstanding ecological processes. LWC-NNFR also lie within the traditional migration route of the African elephant population of the Mount Kenya – Somali/Maasai ecosystem and has always

been the traditional dry season feeding area for elephants.

IUCN considers that the nominated property, including the proposed extension, meets this criterion.

IUCN notes that there remains significant potential for further extensions to the property.

IUCN further notes that the current property of Mount Kenya National Park/Natural Forest does not have a Statement of Outstanding Universal Value (SoOUV), as the preparation of a retrospective SoOUV was postponed given the discussion of the possible extension. Thus IUCN has prepared a proposed SoOUV for the whole property as extended in the recommended draft decision below. The State Party may wish to further discuss this ahead of the consideration of this nomination by the World Heritage Committee.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Approves the extension of **Mount Kenya National Park/Natural Forest, Kenya**, through the addition of the Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve, under natural criteria (vii) and (ix);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

Mount Kenya straddles the equator about 193 km north-east of Nairobi and about 480 km from the Kenyan coast. At 5,199 m, Mount Kenya is the second highest peak in Africa and is an ancient extinct volcano. There are 12 remnant glaciers on the mountain, all receding rapidly, and four secondary peaks that sit at the head of the U-shaped glacial valleys. With its rugged glacier-clad summits and forested middle slopes, Mount Kenya is one of the most impressive landscapes in East Africa. The evolution and ecology of its afro-alpine flora also provide an outstanding example of ecological processes.

The property includes the Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve (LWC-NNFR) to the north. The two component parts of the property are connected via a wildlife corridor which is part of the buffer zone for the property, and which provides vital connectivity for elephants moving between Mount Kenya and the larger conservation complex of the Somali/Maasai ecosystem. The LWC-NNFR extension incorporates the forested foothills and steep valleys of the lower slopes of Mount Kenya and extends northwards onto the relatively flat, arid, volcanic soils supporting grassland and open woodland communities on the Laikipia plain.

Criteria

Criterion (vii)

At 5,199 m, Mount Kenya is the second-highest peak in Africa. It is an ancient extinct volcano, which during its period of activity (3.1-2.6 million years ago) is thought to have risen to 6,500 m. The entire mountain is deeply dissected by valleys radiating from the peaks, which are largely attributed to glacial erosion. There are about 20 glacial tarns (small lakes) of varying sizes and numerous glacial moraine features between 3,950 m and 4,800 m asl. The highest peaks are Batian (5,199 m) and Nelion (5,188 m). There are 12 remnant glaciers on the mountain, all receding rapidly, and four secondary peaks that sit at the head of the U-shaped glacial valleys.

With its rugged glacier-clad summits and forested middle slopes, Mount Kenya is one of the most impressive landscapes in East Africa. This setting is enhanced by the visual contrast and diversity of landscapes created between the Kenyan Highlands and Mount Kenya looming over the flat, arid, grassland and sparse wooded plains of the Lewa Wildlife Conservancy extension to the north.

Mount Kenya is also regarded as a holy mountain by all the communities (Kikuyu and Meru) living adjacent to it. They use the mountain for traditional rituals based on the belief that their traditional God Ngai and his wife Mumbi live on the peak of the mountain.

Criterion (ix)

The evolution and ecology of the afro-alpine flora of Mount Kenya provides an outstanding example of ecological processes in this type of environment. Vegetation varies with altitude and rainfall and the property supports a rich alpine and subalpine flora. Juniperus procera and Podocarpus species are predominant in the drier parts of the lower zone (below 2,500 m asl). Cassipourea malosana predominates in wetter areas to the south-west and north-east. Higher altitudes (2,500-3,000 m) are dominated by bamboo and Podocarpus milanjianus. Above 3,000 m, the alpine zone offers a diversity of ecosystems including grassy glades, moorlands, tussock grasslands and sedges. Continuous vegetation stops at about 4,500 m although isolated vascular plants have been found at over 5,000m.

In the lower forest and bamboo zone mammals include giant forest hog, tree hyrax, white-tailed mongoose, elephant, black rhinoceros, suni, black-fronted duiker and leopard. Moorland mammals include the localized Mount Kenya mouse shrew, hyrax and common duiker. The endemic mole-rat is common throughout the northern slopes and the Hinder Valley at elevations up to 4,000 m. Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve enhance the species diversity within the property including being home to the largest resident population of Grevys' Zebra in the world. An impressive array of birdlife includes green ibis (local Mount Kenya race); Ayres hawk eagle; Abyssinian long-eared owl; scaly francolin; Rüppell's robin-chat;

numerous sunbirds (Nectariniidae); the locally threatened scarce swift; and near endemic alpine swift.

The Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve component of the property incorporates lower lying, scenic foothills and arid habitats of high biological richness and diversity. The component lies at the ecological transition zone between the Afro Tropical Mountain ecosystem and the semi-arid East African Savannah Grasslands. Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve also lie within the traditional migration route of the African elephant population of the Mount Kenya – Somali/Maasai ecosystem and has always been the traditional dry season feeding area for elephants.

Integrity

The serial property comprises Mount Kenya National Park managed by the Kenya Wildlife Service (KWS) and parts of the Mount Kenya Forest Reserve managed by the Kenya Forest Service (KFS). Both these protected areas are designed to protect the main natural values and the watershed of the mountain above the 2,000 - 2,500m elevations. To the north the property is connected via a 9.8 km elephant corridor to the Lewa Wildlife Conservancy and Ngare Ndare Forest Reserve (LWC-NNFR) which adds lowland drier ecosystems and habitats and a suite of additional species to the property. The corridor is within the buffer zone but critical to maintain ecological connectivity between the two components of the property. Despite a number of threats to the property, wildlife populations, though reduced from the years prior to the first inscription of the property on the World Heritage List, are still considered healthy.

The boundaries of the property on the main area of Mount Kenya are limited to the upper reaches of the mountain above the montane forest zone and most of the forest destruction, illegal grazing, poaching and other human activities which impact the broader ecosystem are occurring outside the property, in the area of forest/national reserve that serves as a 'buffer zone'. Understanding and mitigating these threats to the broader ecosystem is important because they impact the long-term viability of the property.

Climate change is probably one of the most serious long-term threats to the site. Glaciers are melting fast and appear destined to disappear altogether within a few decades. As the climate warms the vegetation zones can be expected to shift higher up the mountain. For example, the lower parts of the bamboo zone (which occur at the lower limit of the property) will likely gradually be replaced with mixed montane forest. It is essential that the threat of climate change is buffered through enhanced connectivity and ensuring that natural habitats covering the full range of altitude are maintained as a continuum, thus providing ecosystem resilience and allowing for adaptation to the inevitable change. The LWC-NNFR by establishing the corridor and regional linkages via several conservancies to link with Samburu National Park, Shaba National Reserve and Buffalo Springs to the north and beyond to the Matthew's Range is a significant proactive intervention to mitigate climate change impacts on the biodiversity of this region of East Africa providing mobility for biodiversity to adapt to changing temperature and rainfall regimes.

Protection and management requirements

The property's legislative framework is generally sound and provides for adequate protection of the site. The most relevant legislation is provided by the Wildlife Act, the Environment Management and Coordination Act (1999), the Water Act (2002), and the Forest Act (2005). The Government of Kenya, through KWS has promoted the formation of wildlife conservancies amongst owners of large tracks of land especially amongst local communities as a long-term strategy to increase range for biodiversity conservation and management in the country. LWC is managed for the conservation of biological diversity and thus has met the national legal requirements for designation as a conservancy. In addition the National Land Policy of the Ministry of Lands supports the establishment of corridors for biodiversity conservation.

Three institutions require close coordination to manage the serial property. These include KWS and KFS as well as the Lewa Wildlife Conservancy managed through a Board of Trustees. KWS and KFS are signatories to the Mount Kenya Ecosystem Management Plan which provides an overarching management planning framework. It is essential that the separate management plans applying to the components of the property are harmonised in terms of management approaches and timeframes.

More sustainable management of various sections of the forest has been supported through the establishment of Community Forestry Associations (CFAs) and the production of operational forest management plans and related agreements signed between KFS and the CFAs.

There is a major problem with crop damage caused by elephant, buffalo and other large mammals moving into fields along the lower boundary of the Mount Kenya National/Forest Reserve. Various attempts have been made to mitigate this human-wildlife conflict problem by fencing and construction of other barriers to stop animals moving out of the reserve. These have had mixed results, nevertheless, as experience has shown elsewhere, effective and well considered fencing is likely to be the best option for mitigating human/wildlife conflict in such a densely populated landscape.

Past threats from commercial tree plantation development and associated cultivation/habitat destruction have been alleviated through long term efforts. Government policy not to convert any more natural forest for plantation development has significantly reduced the threat to the property from plantation development and associated cultivation in the adjacent buffer zone. Nevertheless, the ecological consequences of the failed plantation development activities of past decades remain. Areas which were cleared for plantations, but never planted, have been colonised by grasses and are being maintained as

open grazing lands, rather than being allowed to revert to natural forest.

Threats from illegal logging, grazing, poaching and tourism are being managed and appear to be stable notwithstanding on-going issues. Continued monitoring and effective management of these issues will be needed. Fire is a major threat, especially in the high altitude moorlands of the World Heritage property. The threat is exacerbated by the increasing number of people living around the periphery of the forest, and making daily incursions up the mountain to graze livestock and collect non-timber forest products. Stakeholders have jointly developed a Mount Kenya Hotspot Strategic Fire Plan to guide future fire preparedness within the ecosystem.

The maintenance of the 9.8km elephant corridor connecting Mount Kenya to the lowland areas of the LWC-NNFR is critical to provide a contiguous link between the two components of the property, thereby supporting wildlife movements and buffering against climate change impacts. It is also critical to explore other opportunities to create connectivity within the larger ecosystem complex to enhance the ecological viability of the property.

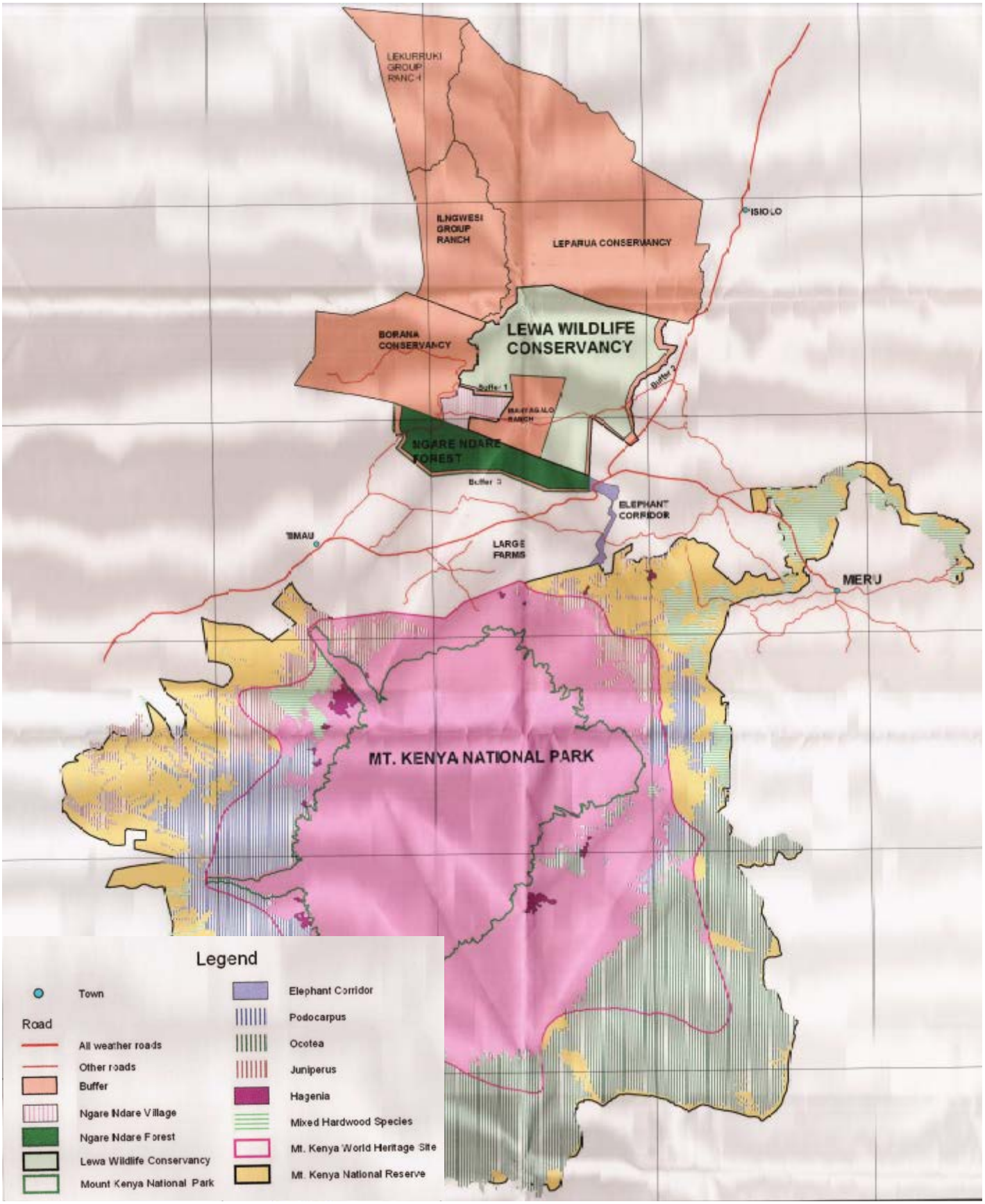
4. Emphasizes the critical importance of maintaining the wildlife and elephant corridor between the Lewa Wildlife Conservancy - Ngare Ndare Forest Reserve and the Mount Kenya National Park/Natural Forest World Heritage Site as vital to conservation connectivity and the viability of the property's Outstanding Universal Value;

5. Commends the State Party of Kenya for enhancing the ecological connectivity and habitat diversity of the Mount Kenya National Park/Natural Forest through this serial extension;

6. Encourages the State Party to consider further extension of the boundary of Mount Kenya National Park/Natural Forest World Heritage Site, so as to include the lower natural forests and to achieve broader ecological connectivity and coherence.

7. Recommends that the name of the property remain Mount Kenya National Park/Natural Forest to accommodate future extensions.

Map 1: Proposed extension and buffer zone



AFRICA

NAMIB SAND SEA

NAMIBIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

NAMIB SAND SEA (NAMIBIA) – ID No. 1430

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meets natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information: IUCN requested supplementary information following the first meeting of the IUCN World Heritage Panel in December 2012, and a reply was received from the State Party prior to 28th February 2013.

c) Additional literature consulted: Extensive literature reviewed in nomination and in desk reviews. Example references include: Bluck, B.J., Ward, J.D., Cartwright, J. & Swart, R. 2007. **The Orange River, southern Africa: an extreme example of a wave-dominated sediment dispersal system in the South Atlantic Ocean**. Journal of the Geological Society, London 164: 341-351; Dingwall, P., Weighell, T., Badman, T. 2005. **Geological World Heritage: A Global Framework.** A contribution to the Global Theme Study of World Heritage Natural Sites. Protected Area Programme, IUCN. 51pp.; Eckardt F.D. and Spiro B., (1999). **The origin of sulphur in gypsum and dissolved sulphate in the Central Namib Desert, Namibia**. Sedimentary Geology 123, 255-273.; Goudie, A.S. and Eckardt, F. (1999). **The evolution of the morphological framework of the Central Namib Desert, Namibia, since the Early Cretaceous**. Geografiska Annaler 81A, 443-458.; Goudie, A. and Seely, M. (2011). **World Heritage Desert Landscapes: Potential Priorities for the Recognition of Desert Landscapes and Geomorphological Sites on the World Heritage List**. Gland, Switzerland: IUCN. 44pp.; Livingstone, I., Bristow, C., Bryant, R.G., Bullard, J., White, K., Wiggs, G.F.S., Baas, A.C.W., Bateman, M.D. and Thomas, D.S.G. (2010). **The Namib Sand Sea digital database of aeolian dunes and key forcing variables**. Aeolian Research, 2, 93-104. ; Walden J., White K. and Drake N.A., (1996). **Controls on dune colour in the Namib Sand Sea: preliminary results**. Journal of African Earth Sciences 22, 349-353.; Ward J.D., (1988). **Eolian, fluvial and pan (playa) facies of the Tertiary Tsondab Sandstone Formation in the Central Namib Desert, Namibia**. Sedimentary Geology 55, 143-162.; Ward J.D., Seely M.K. and Lancaster N., (1983). **On the antiquity of the Namib**. South African Journal of Science 79, 175-183.

d) Consultations: 24 external reviews. The field mission met with a range of representatives of the State Party and partners, including representatives of the technical services of the State Party, the focal point for World Heritage, local government, non-governmental organisations, private sector tourism operators and the Chief of the indigenous Topnaar community.

e) Field Visit: Peter Howard and Darlington Munyikwa, 16-26 September 2012

f) Date of approval: April 2013

2. SUMMARY OF NATURAL VALUES

The nominated property, the Namib Sand Sea (NSS) lies at the heart of the Namib, a coastal fog desert on Africa's South Atlantic coast in Namibia. NSS encompasses an area of 3,077,700 hectares with a further 899,500 hectares (outside the nominated area) designated as a buffer zone. Both the nominated property and buffer zone lie within the Namib-Naukluft Park (4,976,800 ha).

The property is primarily composed of two dune systems, an ancient (semi-consolidated) one overlain by a younger active one. The dune fields make up 84% of the area, with the remainder composed of a variety of other geomorphic features including gravel plains and gramadullas (8%), coastal pans/flats (4%), rocky hills at the fringes (3%), inselbergs within the sand sea (1%), a coastal lagoon, endorheic pans, ephemeral rivers and rocky shores. The outstanding attributes of the sand seas are derived from interactions between the land, the ocean and the atmosphere. Strong winds from various directions, linked to rain and fog, have an overriding influence on the area and define its key attributes.

Unlike most of the world's dune fields (which are derived from local bedrock in situ), the NSS is derived from material transported from afar. Sand is carried to the NSS from the interior of southern Africa by river, ocean current and wind. This three-part 'conveyor system' begins with erosion of material in the headwaters of the Orange River which is carried into the South Atlantic, where it is picked up and driven northwards by strong ocean currents. Deposited as beach sand it is then mobilised and transported inland by wind where it creates the diversified aeolian (wind derived) desert landforms and features of the NSS.

The virtual absence of moisture, dust and atmospheric pollutants in the hyper-arid climate results in exceptional visibility and remarkable clarity of the landscape features by day and the dazzling southern hemisphere sky at night. The aesthetic qualities of the dunescapes are enhanced by colour variations across the erg, which range from red to deep orange to light yellow.

The sand sea flora and fauna have developed unique adaptations to sustain life in the hyper-arid, ever-changing conditions of the dune fields. Most remarkably, plants and animals have developed highly distinctive morphological, physiological and behavioural adaptations to condense and harvest fog as the primary source of water in this hyper-arid environment. In the dunes, well-oxygenated subsurface sand offers swift escape for suitably-adapted "swimming" and "diving" invertebrates, reptiles and mammals. Although the sand sea habitat exhibits relatively low levels of overall species richness, certain taxa of the sand sea fauna and flora show high levels of endemism. Eight species of plant (53% of the sand sea total), 37 arachnids (84%), 108 insects (52%), 8 reptiles (44%), a bird (11%) and two mammals (17%) are known only from Namib sand sea habitats.

3. COMPARISONS WITH OTHER AREAS

The property has been nominated under all four natural criteria (vii), (viii), (ix) and (x), and IUCN's evaluation has benefitted from a particularly strong response from external reviewers. In the nomination dossier the State Party draws comparisons with six other coastal fog deserts bordering on cold oceanic currents in North and South America, Australia, the Arabian Peninsula, and Africa. It also draws on relevant sources to compare the nominated area with existing desert World Heritage sites nominated under each of the criteria. It recognises that the existing World Heritage list has relatively few desert properties, and there are few deserts anywhere in the world which have been as intensively studied as the Namib Sand Sea. The resulting paucity of data from other areas limits the scope for rigorous comparative analysis in respect of some of the values and phenomena represented in the nominated property.

On the basis of a broad global comparison of coastal fog deserts, the NSS is exceptional as being the only one which contains extensive areas of sand dunes influenced by fog. The closest equivalent desert elsewhere in terms of situation and climate is the Atacama Desert on the Pacific Coast of South America, but it does not exhibit the same aeolian land form features and is comparatively devoid of life.

In terms of criterion (vii) concerning natural phenomena and beauty, the comparative analysis shows that the NSS is the product of a three-part 'conveyor system' which transports sand from the interior of southern Africa to the coast, where it is carried northward by strong oceanic currents and picked up by wind to create the extensive aeolian dune systems of the nominated property. There are no comparable examples of this type of large-scale 'conveyor system', which can be regarded as a superlative natural phenomenon.

In respect of the other component of criterion (vii) – exceptional natural beauty and aesthetic importance – the nomination dossier is richly illustrated with photographs that convey a sense of the spectacular desert scenery and natural beauty of the large dunes and (most especially) the rich array of habitat interfaces where dunes, seasonal rivers and coastal elements interact. Although aesthetic values are clearly subjective, the wealth of photographic books, films and other art-works that have been produced on the area, together with the number of visitors travelling to see it, indicates a widespread appreciation of its natural beauty. The nominated property is exceptional in relation to:

- the diversity and scale of the dune formations;
- the pattern of colouration across the erg; and
- the contrast of textures, colour and form amongst different landscape elements in areas where different habitats meet, such as those associated with the intrusion of seasonal rivers (e.g. at Sossus Vlei) or coastal features (e.g. Sandwich Harbour).

The geological processes that continue to shape the NSS landscape [criterion (viii)] have created a unique desert environment composed of two super-imposed dune systems. Both have been built up from material eroded from the interior of southern Africa and transported for up to 3,000 km by river, ocean currents and wind. The comparative analysis shows that this three-part 'conveyor system' is a geological process with no comparable examples elsewhere. Although the nominated area does not encompass the whole of this conveyor system, it covers a major part of the area of deposition where the aeolian elements of the ongoing geological processes are at play.

In terms of the scale and complexity of ongoing geological processes the State Party's comparative analysis notes that no other dune landscape has a comparable diversity in such a relatively small area. It provides a checklist of 25 geomorphic features of which 23 are featured in the NSS, far more than any other of the 14 inscribed World Heritage sites worldwide, with which it is compared. In an African context, the NSS (an area of 30,777km^2) is only about half the size of the two largest existing World Heritage properties in the Sahara (Air and Tenere, Niger – 77,000 km^2; and Tassili n'Ajjer, Algeria – 72,000 km^2); is similar in size to another Saharan site (Tadrart Acacus, Libya); and substantially larger than other desert properties including Banc d'Arguin (12,000 km^2), Lake Turkana (1,614 km^2) and the Lakes of Ounianga (628 km^2).

In terms of ecological processes [criterion (ix)], two underlying features of the NSS contribute to its Outstanding Universal Value – the rarity of coastal fog deserts at a global scale, and the property's ecological isolation in an area remote from other African deserts. Although there are 109 properties listed worldwide under criterion (ix) (25 of them in Africa) there is no

other comparable coastal fog desert. The extraordinary morphological, physiological and behavioural adaptations of the complex biota of the NSS to life in unconsolidated sand and reliance on fog as a water source are as unique as the physical environment in which they have evolved. Furthermore the ecological isolation of the area for millions of years has resulted in levels of endemism and evolutionary processes amongst certain taxa comparable to those of oceanic islands where evolutionary processes are more widely recognised, such as the Galapagos, Seychelles and Socotra, or isolated ancient lakes such as Lakes Malawi and Baikal.

The comparative analysis of biodiversity values [criterion (x)] shows low levels of overall species richness particularly in respect of the sand sea habitat that constitutes the core element of the nomination. Although such comparisons are severely constrained by lack of information (particularly for invertebrate groups), the NSS ranks 14th (out of the 16 properties for which comparable data are available) for plant species richness, 5th out of 16 for vertebrate richness, 3rd out of 4 for invertebrate richness, 7th out of 8 for number of endemic plants and 5th out of 13 for number of endemic vertebrates. This suggests that the nominated property is broadly similar by these measures to other desert World Heritage properties. Comparisons are made with 15 other desert and semi-desert World Heritage properties listed under criterion (x) in terms of what is known of their species richness and levels of endemism. There is however, a high degree of endemism in certain taxa of the sand sea fauna and flora with 8 species of plant (53% of the sand sea total), 37 arachnids (84%), 108 insects (52%), 8 reptiles (44%), a bird (11%) and two mammals (17%) known only from the sand sea habitats. The property is of outstanding importance for the in-situ conservation of an unusual array of endemic species uniquely adapted to life in a hyper-arid desert environment in which fog serves as the primary source of water.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is state-owned land and lies within the Namib–Naukluft Park (which is itself an integral part of the planned Namib-Skeleton Coast National Park). It is managed by the Ministry of Environment and Tourism, based on the Nature Conservation Ordinance (1975).

Protection of the area dates back over a century. The legal establishment of the Namib-Naukluft Park, encompassing the NSS, has involved seven different stages starting in 1907 and culminating in 1986. Much of the area that is now included in the Park was previously designated as diamond areas and closed to public access. Some abandoned settlements and mining equipment on the coastal plains bear testimony to this era, but the impact of past mining activities on the property's Outstanding Universal Value is considered negligible.

Whilst the Nature Conservation Ordinance provides for the conservation of nature and establishment of game parks and nature reserves, a number of other bodies of legislation are relevant to management of the NSS including the Environment Management Act (2007), Minerals (Prospecting and Mining) Act (1992), Namibian Tourism Board Act (2000), National Heritage Act (2004), and Water Resources Management Bill (2004). It is of some concern that activities that would be incompatible with World Heritage status are currently being undertaken in other parts of the Namib-Naukluft Park, including uranium mining and large-scale water extraction, however these will not be pursued within the nominated area. The protection status of the property needs to be assured through rigorous application of national laws within Namibia.

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 fall within the Namib-Naukluft Park, encompassing about 60% of the Park. They have been carefully designed to embrace as much as possible of the pristine sand sea habitats within the park, whilst excluding areas of the park that might be subject to future mining, abstraction of water or high-impact tourism activities (such as recreational quad-bike use). The boundaries of the property follow natural features where possible, using the coast-line to define the western boundary, and the Kuiseb River as its northern boundary (excluding a section near its mouth where water abstraction is likely). Meanwhile, the eastern and southern boundaries are simply 'lines in the sand', designed to allow an area of sufficient size outside the property (but still within the park) to be allocated for uses that may not be compatible with World Heritage status.

The nominated property is surrounded by a buffer zone of variable width along its northern, eastern and southern boundaries. This buffer zone (8,995 $km^{2)}$ lies entirely within the Namib-Naukluft Park, and its eastern and southern boundaries extend to the boundary of the park. Furthermore, the eastern boundary of the park borders on large-scale private land-holdings that are increasingly given over to tourism, game-ranching and other land-uses that enhance the ecological viability of the wider landscape. These private properties serve effectively as a useful 'outer buffer zone' (although this is not formally recognised or supported by legislation). The State Party provided, on request, a detailed explanation of the rationale for the boundaries of the buffer zone.

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

4.3 Management

NSS falls within the Namib-Naukluft Park and is managed by the Ministry of Environment and Tourism through the Directorate of Regional Services and

Parks Management. There is no specific budget or dedicated staffing for the NSS, but the Namib-Naukluft Park receives an annual operational budget allocation equivalent to about US$ 850,000 and has a permanent staff of 28. Additional government funds may be allocated for capital expenditure within the park according to specific needs. This level of funding is barely adequate for a park of this size, but has been relatively stable and has been increased progressively over the past five years.

Two draft Management Plans are included in the nomination dossier, one for the 'Namib-Naukluft Area of the Namib-Skeleton Coast National Park' (i.e. the Namib-Naukluft Park) and another for the NSS. The latter aims to facilitate the smooth and proper management of the NSS through close cooperation between the Ministry of Environment and Tourism and other related government organisations, decentralized local and regional governments, traditional societies, local communities, bodies engaged in tourism, research and Non Governmental Organisations. The plan addresses the issues of conservation, research, monitoring, enforcement, education, traditional practices and cultural heritage resources.

The draft park management plan includes a provisional zoning plan, with different areas of the NSS (and wider park) identified as strict nature reserve, wilderness, day-visitor use, tourism 4x4 and lodge concessions, and monuments (old diamond-mining areas). IUCN recognizes that considerable efforts have already been invested in developing these draft plans, and considers that there is an urgent need to integrate the two plans, clearly identifying the priority actions that can be realistically undertaken within existing budgetary and staffing constraints so that they can become operational. In supplementary information, the State Party confirmed that the zoning scheme is under the final stage of consultation, and that it is envisaged that an operational management zoning map for the Namib Sand Sea and its buffer zone should be in place by June 2013.

The property benefits from an exceptional research and management facility in the form of the Desert Research Station in Gobabeb, which has also played a notable role in the coordination of the present nomination. Continued and increased support for this facility as a key contributor to the quality of management of the property appears essential.

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

4.4 Community

The indigenous Topnaar community, now living in scattered settlements along the Kuiseb River, has used the land and resources of the NSS for centuries. They are a nomadic people who have traditionally moved to new areas within their forbidding landscape as dictated by changing conditions and resource availability. Their livelihoods depend on exploitation of the area's natural resources and include subsistence farming (rearing animals and gardening), hunting, and harvesting of wild fruits, notably wild !nara melons. Today, many of their traditions are being lost, and most of their settlements are occupied by the very old and very young, as most adults of working age opt for paid employment in nearby centres. Consultations between the IUCN mission team and the Topnaar community Chief indicate broad support for the nomination of the NSS property, but continuing concern over access to cultural sites within the property, and the lack of formal recognition for land and resource-use rights. The need to address these matters is recognised in the draft NSS Site Management Plan, and IUCN sought additional information on both consultation, consent and management measures in the supplementary information requested from the State Party.

The current legislation does not recognise the rights of local communities residing in nature reserves and game parks. The IUCN evaluation team met with the Topnaar community Chief Kooitjie, and was told of community support for the nomination, and concerns to gain formal recognition of ancestral rights to land and resources. Issues of particular concern include preferential access to the benefits of tourism, recognition and protection of community culture and unrestricted access to Topnaar cultural sites.

The Topnaar maintain a limited number of livestock (mainly cattle and goats) which are grazed within the northern fringes of the property, and harvest other renewable natural resources for subsistence use (notably the wild !nara melon fruits). They have a limited hunting quota for animals that are shot by Ministry staff for distribution of meat between community members. Topnaar community resource use rights are not formally recognised inside the property and although present *de facto* levels of off-take and management practices may be within sustainable limits, there is a need to reach a formal agreement on traditional use of resources.

4.5 Threats

Tourism is developing much faster than the capacity to manage it. In 2011 there were more than 135,000 visitors (focused primarily on the Sesriem/Sossus Vlei area), supported by a network of approximately 60 tourism lodges on private land outside the property. The Directorate of Regional Services and Parks Management has only 28 staff whose responsibilities include conservation, monitoring and law enforcement (e.g. adherence to speed limits, control of off-road driving, flying heights, camping restrictions, waste management, etc) and revenue collection. In addition to heavy daily visitor traffic to the Sossus Vlei and Sandwich Harbour areas, there are 7 active 4x4 concessions which allow convoys of vehicles to make multi-day traverses of the NSS with overnight camping at stipulated sites. These convoys are rarely accompanied by law-enforcement officials due to lack of staffing.

Although the nature of the terrain across most of the property limits access by visitors, there are some potentially damaging impacts of tourism. These are already being experienced in some areas and include off-road driving, noise pollution from low-flying sight-seeing aircraft, litter and sanitation problems, unauthorised camping, overcrowding and disturbance of critical wildlife habitat (e.g. notably a vulture breeding colony).

There is a clear need for a more strategic approach to tourism planning to disperse visitor use (e.g. away from the Sossus Vlei area), improve basic infrastructure at heavily-used sites and enhance the visitor experience with better interpretation and education facilities.

Although there are no active mining operations within the nominated property, diamond mining has been undertaken in the coastal zone of the NSS periodically since the early 1900s and some abandoned infrastructure remains to this day. Substantial discoveries of uranium have been made in recent years on gravel plains north of the property but the prospects for significant new finds of diamonds, uranium or other minerals within the property are considered limited. In recognition of this, the State Party's cabinet passed a landmark decision in February 2012 (after submission of the nomination dossier) to cease all prospecting within the nominated area and terminate all current Exclusive Prospecting Licenses (EPLs). IUCN sought additional details and confirmation on this matter in supplementary information, and the State Party confirmed that all EPLs will expire by mid-January 2014, after which they will be extinguished. This decision signifies a commendable level of commitment by the State Party to preserve the integrity of the property.

There is significant infrastructure within the buffer zone to the north of the property associated with the provision of education and health services, large-scale water extraction (to supply the nearby town of Walvis Bay), granite quarrying and emerald mining. The impact of these activities within the buffer zone is not fully documented and requires ongoing attention, but resource use within the property itself is limited by the harsh and inhospitable nature of the desert environment and the difficulties of access.

There are some invasive plants and animals, including 11 species of plants, 1 fish, 2 birds, 2 mammals and 12 invertebrate species noted by the State Party in the nomination dossier. Most of the invasive plants are carried into the property by ephemeral rivers and are difficult to eliminate due to regular re-infestation during each flooding cycle.

In a country as dry as Namibia, water resources have special significance and there is a real possibility that any surface water and subterranean aquifers associated with the property will be used, with unknown ecological consequences. In particular the ephemeral rivers which arise in the western escarpment and drain into the property (or along its borders) are threatened by the possibility of upstream impoundments. Furthermore, extraction of subterranean water supplies from the Kuiseb River valley (which is already happening at a significant scale to supply the nearby town of Walvis Bay) may alter the ecology of the Ramsar-designated wetlands at Sandwich Harbour (as well as other attributes of the nominated property). These potential threats need to be explicitly recognised and developments that are likely to impact the property must be subject to rigorous Environmental Impact Assessment (EIA) and mitigation procedures.

In summary, IUCN considers that present threats to the property are being adequately addressed and the nominated property meets the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Upstream process

IUCN notes that the nomination has received support from both the upstream process supported by the World Heritage Committee, and the programme of support for nominations in Africa coordinated by the African World Heritage Fund, in partnership with UNESCO and the Advisory Bodies to the Convention (which included a course hosted at Gobabeb). IUCN has been pleased to be associated with this process, and notes that its success in this case can be attributed to the strong technical engagement of the State Party in the nomination, and in dialogue with UNESCO and IUCN on questions and issues related to the nomination.

5.2 Future nominations in the Namib Desert

IUCN notes the potential for further nominations within the Namib Desert and raised this issue with the State Party in its request for supplementary information. In particular IUCN noted that there would be a logical argument to consider further nominations as extensions (including serial extensions) of the present property. The State Party has provided a detailed statement on this matter in its supplementary information, and notes, inter alia, that the attributes and values in the nomination dossier are specific to the NSS, although some of them are also individually, but not collectively, applicable elsewhere. The NSS is thus nominated as a distinct site, and not to represent the greater Namib Desert.

6. APPLICATION OF CRITERIA

The Namib Sand Sea has been nominated under criteria (vii), (viii), (ix) and (x).

Criterion (vii): Superlative natural phenomena and/or natural beauty and aesthetic importance
The nominated property is the world's only coastal desert that includes extensive dune fields influenced by fog. This alone makes it exceptional at a global scale, but it also represents a superlative natural phenomenon on account of the three-part 'conveyor system' which has produced the massive dune field from material transported over thousands of kilometres from the interior of the African continent by river erosion, ocean currents and wind. Most dune fields elsewhere in the world are derived from bedrock eroded in situ. The age, extent and height of the dunes are outstanding and the property also exhibits a range of features that give it exceptional aesthetic qualities. The diversity of dune formations, their ever-changing form and the range of colour and texture create landscapes of outstanding natural beauty.

IUCN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features.
The property represents an exceptional example of ongoing geological processes involving the formation of the world's only extensive dune system in a coastal fog desert through transport of material over thousands of kilometres by river, ocean current and wind. Although the nominated area encompasses only the aeolian elements of this ongoing geological process the other elements of the 'conveyor system' are assured. The diversity of the ever-changing dune formations, sculpted by pronounced daily and seasonal changes in dominant wind directions is also exceptional at a global scale within such a relatively small area.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecosystems / communities and ecological / biological processes
The property is an exceptional example of ongoing ecological process in a coastal fog desert where plant and animal communities are continuously adapting to life in a hyper arid environment. Fog serves as the primary source of water and this is harvested in extraordinary ways while the ever-mobile wind-blown dunes provide an unusual substrate in which well-oxygenated subsurface sand offers respite and escape for 'swimming' and 'diving' invertebrates, reptiles and mammals. The outstanding combination and characteristics of the physical environment – loose sand, variable winds and fog gradients across the property – creates an ever-changing variety of micro-habitats and ecological niches that is globally unique on such a scale.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species
The property is of outstanding importance for the in-situ conservation of an unusual array of endemic species uniquely adapted to life in a hyper-arid desert environment in which fog serves as the primary source of water. These are mostly invertebrate animals and display a range of very rare behavioural and physiological adaptations to the desert environment where they live that contributes significantly to the property's Outstanding Universal Value.

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-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Inscribes the **Namib Sand Sea, Namibia**, on the World Heritage list under natural criteria (vii), (viii), (ix) and (x);

3. Adopts the following Statement of Outstanding Universal Value:

Brief Synthesis
The Namib Sand Sea (NSS) lies along the arid African coast of the South Atlantic lying wholly within Namibia's Namib-Naukluft Park. It covers an area of 3,077,700 hectares, with an additional 899,500 hectares designated as a buffer zone.

NSS is a unique coastal fog desert encompassing a diverse array of large, shifting dunes. It is an outstanding example of the scenic, geomorphological, ecological and evolutionary consequences of wind-driven processes interacting with geology and biology. The sand sea includes most known types of dunes together with associated landforms such as inselbergs, pediplains, and playas, formed through aeolian depositional processes. It is a place of outstanding natural beauty where atmospheric conditions provide exceptional visibility of landscape features by day and the dazzling southern hemisphere sky at night.

Life in the fog-bathed coastal dunes of the Namib Sand Sea is characterised by very rare behavioural, morphological and physiological adaptations that have evolved throughout its specialist communities. The large number of endemic plants and animals are globally-important examples of evolution and the resilience of life in extreme environments.

Criteria
Criterion (vii)
The nominated property is the world's only coastal desert that includes extensive dune fields influenced by fog. This alone makes it exceptional at a global scale, but it also represents a superlative natural phenomenon on account of the three-part 'conveyor system' which has produced the massive dune field from material transported over thousands of kilometres from the interior of the African continent by river

erosion, ocean currents and wind. Most dune fields elsewhere in the world are derived from bedrock eroded in situ. The age, extent and height of the dunes are outstanding and the property also exhibits a range of features that give it exceptional aesthetic qualities. The diversity of dune formations, their ever-changing form and the range of colour and texture create landscapes of outstanding natural beauty.

Criterion (viii)
The property represents an exceptional example of ongoing geological processes involving the formation of the world's only extensive dune system in a coastal fog desert through transport of material over thousands of kilometres by river, ocean current and wind. Although the nominated area encompasses only the Aeolian elements of this ongoing geological process the other elements of the 'conveyor system' are assured. The diversity of the ever-changing dune formations, sculpted by pronounced daily and seasonal changes in dominant wind directions is also exceptional at a global scale within such a relatively small area.

Criterion (ix)
The property is an exceptional example of ongoing ecological process in a coastal fog desert where plant and animal communities are continuously adapting to life in a hyper arid environment. Fog serves as the primary source of water and this is harvested in extraordinary ways while the ever-mobile wind-blown dunes provide an unusual substrate in which well-oxygenated subsurface sand offers respite and escape for 'swimming' and 'diving' invertebrates, reptiles and mammals. The outstanding combination and characteristics of the physical environment – loose sand, variable winds and fog gradients across the property – creates an ever-changing variety of micro-habitats and ecological niches that is globally unique on such a scale.

Criterion (x)
The property is of outstanding importance for the in-situ conservation of an unusual and exceptional array of endemic species uniquely adapted to life in a hyper-arid desert environment in which fog serves as the primary source of water. These are mostly invertebrate animals and display a range of very rare behavioural and physiological adaptations to the desert environment where they live that contributes significantly to the property's Outstanding Universal Value.

Integrity
The boundaries of the property encompass all the elements of the Namib Sand Sea that exemplify its Outstanding Universal Values. These elements are well conserved and included at a scale appropriate to maintaining ongoing dynamic processes. The large size of the area (30,777 km^2) ensures that all the active and underlying (fossilized) dune formations and features, causative processes and ancillary habitats are included. The extensive dune-scapes are unspoilt and continuously refreshed and maintained by wholly natural processes. Because of its vast size, difficulty of access and current management within the protected Namib-Naukluft Park (49,768 km^2), the Namib Sand Sea is well conserved and in an excellent, undamaged state. Permanent visitor and management infrastructure is non-existent within the boundaries of the property and visitation is restricted to small, temporary point locations that have no measurable effect on the area.

Protection and management requirements
The Namib Sand Sea has been under conservation management for more than 50 years with well-established management and resource allocation systems, based on regularly revised and updated management plans and long-term budgetary planning. Prior to establishment of conservation management, the area was protected for its potential as a diamond-mining area, but this was never realised. Key management issues today include managing the increasing demand for visitor access to pristine areas and precluding mineral exploration rights that would impact on the values and attributes of the area. There is potential for serial extension of the Namib Sand Sea beyond the Namib-Naukluft Park and beyond national borders to include other significant dune systems within other protected areas of the larger Namib Desert.

4. Commends the State Party for its landmark decision to terminate all existing mineral exploration licenses within the property, thus eliminating the threat of any future mining operations that would affect its integrity;

5. Requests the State Party to provide a finalized management plan and map showing the intended zonation of the property and the institutional arrangements for its implementation and monitoring to the World Heritage Centre by 31st December 2013;

6. Considers that inscription of the property on the World Heritage List provides an opportunity to further enhance a number of protection and management arrangements for the property and therefore requests the State Party to:

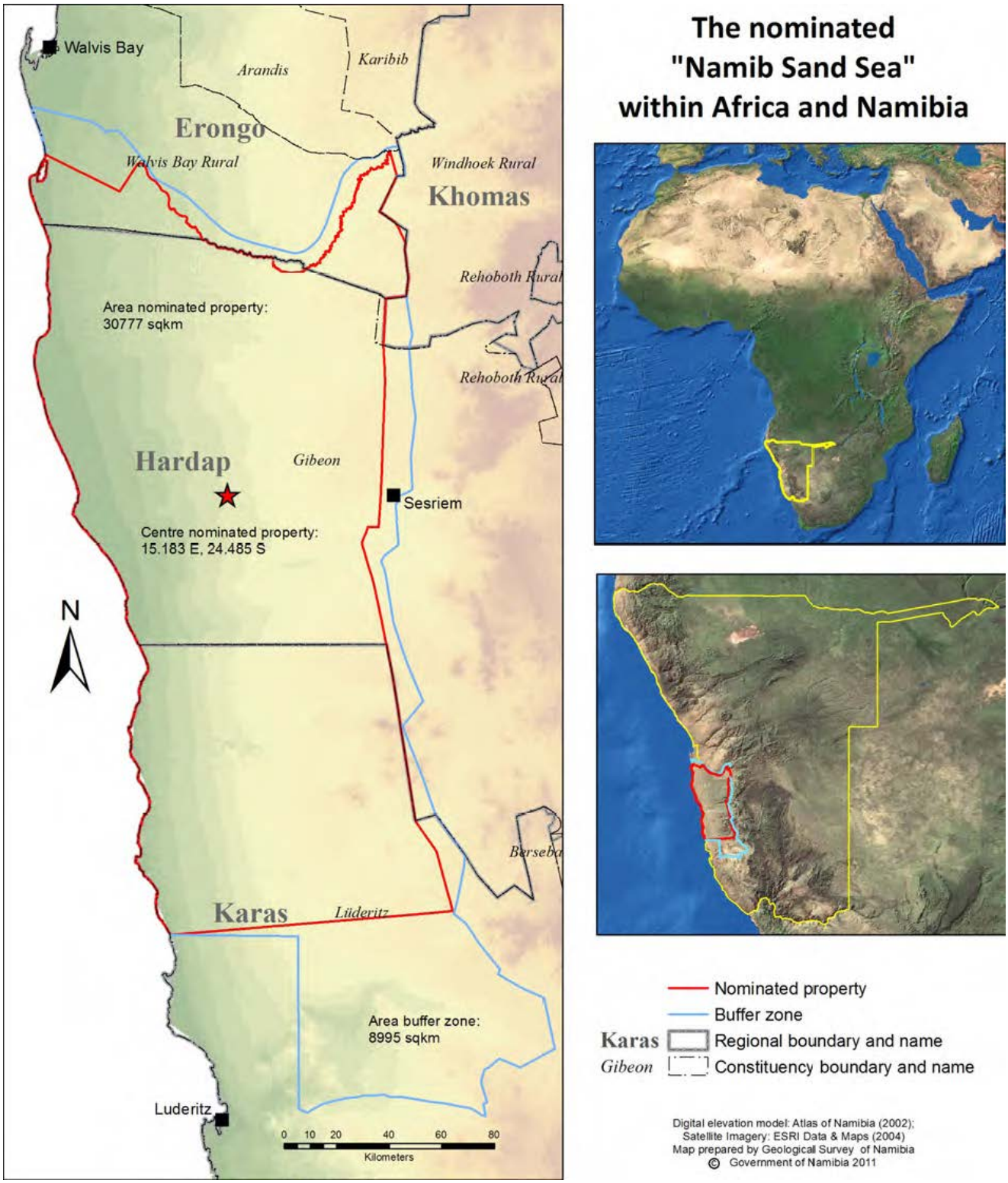
a) confirm as soon as possible, through a letter to the World Heritage Centre, the termination of all remaining mineral prospecting licenses within the property at the earliest opportunity, noting that none of these old licences will be activated, and all will be extinguished by the end of January 2014;
b) strengthen further participatory management arrangements with the indigenous peoples with rights related to the property, including to maintain traditional access and sustainable use of natural resources within the property and its buffer zone;
c) improve visitor interpretation facilities to foster an appreciation of the unique values of the property;
d) establish and implement a long-term programme to monitor key ecological and management effectiveness indicators and the State of Conservation of the property;
e) strengthen management capacity in terms of financial and human resources, including the highly effective support provided to the property by the Gobabeb Training and Research Centre;

f) enhance arrangements for the identification, allocation, management and monitoring of tourism concessions; and
g) further strengthen efforts to control and eliminate invasive alien species within the property;

7. Further requests the State Party to provide a report to the World Heritage Centre by 1st February 2015 on progress in implementing the above recommendations for possible consideration by the World Heritage Committee at its 39th session in 2015;

8. Encourages the State Party, and neighbouring States Parties, to consider options to nominate further outstanding areas of the Namib Desert, including the potential for nominations to form serial extensions of the present property.

Map1 : Nominated property and buffer zone



ASIA / PACIFIC

XINJIANG TIANSHAN

CHINA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

XINJIANG TIANSHAN (CHINA) – ID No. 1414

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meets natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: Following the IUCN evaluation mission the State Party provided additional information, notably to propose the amended boundaries to link two of the components of the property. Following the IUCN World Heritage Panel meeting the State Party was requested to provide supplementary information on 20 December 2012. The information was received on 27 January 2013. IUCN requested advice from the State Party to confirm the proposed boundary changes and the area of the nominated property; provide advice on measures to ensure connectivity and effective coordination between the property's components; confirm commitments to review the overall management plan; and to elaborate on proposals for managing grazing and local communities in association with the nominated property.

c) Additional Literature Consulted: A range of references and relevant IUCN thematic studies were consulted. Selected additional references included: Appleton, M.R. et al. (2012) **Biodiversity**: **Delivering results in Europe and the CIS**. UNDP, Bratislava, Slovakia. BirdLife International (2012a) Important Bird Areas factsheet: **Bayanbulak and Kaidu River Valley**. Downloaded from http://www.birdlife.org on 21/11/2012. BirdLife International (2012b) Important Bird Areas factsheet: **Bogda (Tian Chi)**. Downloaded from http://www.birdlife.org on 21/11/2012. BirdLife International (2012c) Important Bird Areas factsheet: Gongliu spruce forest. Downloaded from http://www.birdlife.org on 21/11/2012. BirdLife International (2012d) Important Bird Areas factsheet**: Mount Tuomuer Nature Reserve**. Downloaded from http://www.birdlife.org on 21/11/2012. Conservation International (2012) **Mountains of Central Asia**. Hotspot description. Online: http://www.conservation.org/where/priority_areas/hotspots/europe_central_asia/Mountains-of-Central-Asia/Pages/default.aspx Farrington, J.D. (2005) **A Report on Protected Areas, Biodiversity, and Conservation in the Kyrgyzstan Tian Shan**. Online: http://www.snowleopardnetwork.org/bibliography/Farrington_2005.pdf Feng, Y. et al. (2003) **The endemic species and distribution in Xinjiang**. Acta Botanica Boreali-Occidentalia Sinica 23(2): 263-273. WWF (2012) Ecoregion descriptions. Online: http://worldwildlife.org/biomes Xu, X. et al. (2012) **Natural Heritage value of Xinjiang Tianshan and global comparative analysis**. Journal of Mountain Science 9(2): 262-273.

d) Consultations: 6 external reviewers. The mission met with numerous individuals representing national and state legislative bodies and government institutions, line agencies, the house of traditional leaders, research institutes, non-governmental organizations, private companies and a broad range of resource users.

e) Field Visit: Pierre Galland and Andrew Scanlon, 20 July – 07 August 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The Tianshan mountain system in Central Asia is one of the seven largest mountain ranges in the world. It is aligned almost east-west, with a total length of 2,500km and an average width of 250-350km, widening to 800kms at its maximum. The Tianshan mountain range extends from the eastern Xingxingxia Gobi in Hami, Xinjiang to the western Kyzylkum Desert in Uzbekistan, encompassing the four countries of China, Kazakhstan, Uzbekistan and Kyrgyzstan. Together with the Altai Mountains in the north, the Kunlun Mountains in the south and the Pamir in the west, the Tianshan makes up the mountainous backbone of Central Asia. It is the largest mountain chain in the world's temperate arid region, and is also the largest isolated east-west stretching mountain range globally. It is surrounded by six deserts, including the Taklimakan Desert, which is notable as one of the world's largest and highest deserts, and is notable for its large arrays of dune forms, its large bounding alluvial fans, its pluvial lakes, and its ability to produce large numbers of dust storms. The Tianshan mountain range is composed of a series of mountains and inter-mountain basins. Trans-meridionally, it can be divided into the eastern Tianshan Mountains in China and the western Tianshan Mountains in the neighbouring countries of Kazakhstan, Uzbekistan and Kyrgyzstan.

The east-west length of the Xinjiang Tianshan Mountains is 1,760km, with Tomur (7,443m a.s.l.) as its highest peak. The Xinjiang Tianshan Mountains in China accounts for two thirds of the whole mountain chain and presents unique physical geographic features. There are three sections, the North, Middle and the South Tianshan Mountains, more than 20 subsidiary mountain ranges and 10 inter-mountain basins or valleys. Xinjiang Tianshan is nominated as a serial site comprising four components: Tomur, Kalajun-Kuerdening, Bayinbuluke and the Bogda Mountain System. The State Party in supplementary information have confirmed the joining of the Kalajun-Kuerdening sections to improve integrity. The property, as revised, includes components which represent the spectrum of landscape diversity within the much larger Tianshan Mountain system. The nominated property comprises a core area totalling 606,833 ha with buffer zones of 491,103 ha which lay outside the nominated core. Table 1 details the components of the property and their buffer zones showing areas.

Table 1: Area of the nominated property components and their buffer zones (hectares)

No	Property Component	Area of the nominated property	Area of the buffer zone
1	Tomur	344,828	280,120
2	Kalajun-Kuerdening	113,818	89,346
3	Bayinbuluke	109,448	80,090
4	Bogda	38,739	41,547
	Total	**606,833**	**491,103**

The nominated property contains a scenically beautiful series of areas, including spectacular snow-capped mountains and glacier-capped peaks, undisturbed forests and meadows, clear rivers and lakes and red bed canyons, reinforced by the combination and contrast between the above-mentioned mountain elements and the vast deserts. Tomur-Khan Tengri area within the nominated property is one of the three largest mountain glacier distribution areas within Central Asia, and boasts the most complete altitudinal natural zones on the south slope of the Tianshan extending down to lower elevations and the edge of the Taklimakan Desert. The Kalajun-Kuerdening component displays concentrations of the endemic Schrenk's Spruce *(Picea schrenkiana)*, along with large areas of wild fruit forest and montane steppe and meadow areas. The Bayinbuluke component is the outstanding representative of a high inter-montane basin in the Tianshan, with typical alpine meadows and alpine wetlands. Finally the Bogda component encompasses the physical features of the eastern part of Tianshan, with the most typical altitudinal natural zones and snow-capped mountains, glaciers, lakes, rivers, forests and meadows coexisting in a relative small area.

The nominated property extends across a large area and shows great differences in elevation, resulting in complicated and varied local climates. Located amidst deserts, the huge mountain range is an obvious natural boundary that modifies the regional airflow, resulting in large differences in physical geography between the north and south slopes. Temperature differences between different areas are high and so is the annual temperature range.

Lakes in the Tianshan Mountains in Xinjiang are mainly distributed in the inter-mountain basins, depressions and river-ends. With the different elevations of the inter-mountain basins, lakes are distributed on different terraces. Youerdusi Basin, in the nominated property, is a high inter-montane basin, with an elevation of 2,400-2,600 m. The Kaidu River meanders through the basins forming graceful landscapes. In the center of the basins, there are wetlands and lakes with an area of about 1,370km², providing excellent habitat (including for breeding) for swans and other birds.

The formation and development of the geology and landforms of the Tianshan Mountains in Xinjiang are the outcome of the interaction of internal and external processes. Three stages of development were experienced, including a folding and upheaval stage, followed by an erosion stage and a block uplifting. Landforms of the modern Tianshan Mountains are based on fault blocks. Under the effects of various exogenous forces since the Quaternary period, such as glaciation and fluviation, as well as drying and erosion, many kinds of landforms have developed in the nominated property, including fault blocks and basins, the grand mountainous plains and terrace landforms, as well as typical modern glacial landforms, ancient glacial landforms and red bed canyons.

During the erosion and planation of the ancient Tianshan Mountains, extremely thick red lake-river sediments of the Paleogene period and Neogene period were deposited in the depression basins in the piedmont on the south slope of Tomur Peak. These have been subject to weathering processes to create various spectacular landforms within the nominated property.

There are 15,953 glaciers in the whole Tianshan mountain range with a total area of 15,416km^2 and an ice volume of 1,048km^3. On a global scale, the Tianshan Mountains have relatively abundant mountain glaciers. The nominated property samples a significant proportion of this glacial field with 9,081 glaciers (9,236km^2), accounting for 57%, 59.9% and about 90% respectively of that of the area, volume and number of glaciers in the entire Tianshan mountain system.

The nominated property sits within Udvardy's Palaearctic Biogeographic Realm and belongs to the Pamir-Tianshan Highlands Province. The component parts of the nominated property include all the typical mountain altitudinal natural zones of a temperate arid zone. In Tomur, there is a complete range of altitudinal zones on the south slope of Tianshan, from the ice-snow zone to warm temperate desert zone across an elevation drop from 7,443m to 1,450m. In Bogda, there is a range of altitudinal zones on the north slope of Tianshan, from the ice-snow zone to mountain steppe

zone across an elevation drop from 5,445m to 1,380m. Important ecological types of the Tianshan Mountains represented in the property include mountain evergreen coniferous forest ecosystem, mountain deciduous coniferous forest ecosystem, mountain deciduous broad-leaved forest ecosystem, prairie ecosystem (including meadow-steppe ecosystem, dry steppe ecosystem, desert steppe ecosystem, and alpine steppe ecosystem), meadow ecosystem (including alpine meadow ecosystem, sub-alpine meadow ecosystem and montane meadow ecosystem), evergreen coniferous fruticose ecosystem, deciduous broad-leaved fruticose ecosystem, desert ecosystem and wetland ecosystem.

The nominated property contains a series of important habitats for relict species, numerous rare and endangered species as well as endemic species. The property is reported as containing 2,622 species of vascular plants and 550 species of vertebrate animals. There are 94 relic plant species from before the Quaternary Glaciation, 110 species of rare and endangered plants and 367 species of rare and endangered animals. There are 118 species of endemic plants and 22 species of endemic animals in the nominated property.

Xinjiang Tianshan provides an outstanding representation of biological and ecological evolution on the Pamir-Tianshan Highlands. Xinjiang Tianshan extends across the Eurasian forest floristic sub-region and Asian desert floristic sub-region. Its features of altitudinal vegetation distribution, significant differences between north and south slopes, and diversity of flora, all illustrate the biological and ecological evolution of the Pamir-Tianshan Highlands. Due to its special location and climate, the Kalajun-Kuerdening component became a refuge for relic species in the Paleogene period. There are large areas of wild fruit forest with 52 species of wild fruit trees.

The geographical distribution of fauna in Xinjiang Tianshan belongs to the Palearctic Realm, the Central-Asia Subrealm, the Mongolia-Xinjiang Region and Tianshan Mountain Sub-region. The nomination dossier reports 102 mammal, 370 bird, 32 reptile, 6 amphibian and 40 fish species, although UNEP's World Conservation Monitoring Centre (WCMC) notes that these figures appear inflated and may include sub-species. The Tianshan Mountains in Xinjiang act as a barrier for some species exchange between the Altai Mountains in the north and Kunlun-Altun Mountains in the south, while serving as a bridge for other species. Birds and mammals belonging to the Palaearctic region dominate the fauna of Xinjiang Tianshan, and mammals recorded in the nominated property include Elk *(Cervus elaphus),* Roe Deer *(Capreolus capreolus),* and Grizzly Bear *(Ursus arctos).*

3. COMPARISONS WITH OTHER AREAS

Xinjiang Tianshan has been nominated under criteria (vii) and (ix) and the nomination dossier includes a detailed comparative analysis of the property relative to 13 other mountainous World Heritage sites analysing the relative values of these areas against these two criteria. The comparative analysis also reviews the site against several IUCN thematic studies and global prioritizing mechanisms. The comparative analysis provided in the nomination was published as a paper in a peer reviewed journal thus lending further support to the nomination.

Currently the only property inscribed on the World Heritage List within the Central Asia Mountains is the Golden Mountains of Altai (Russian Federation) located in another Udvardy biogeographical province. Two properties, Nanda Devi and Valley of Flowers National Parks and Sagarmatha National Park in the Himalayan province, are also relevant regarding comparisons; however, they belong to another biogeographical province and to another Biodiversity Hotspot (Himalaya), and therefore cannot be directly compared with respect to criteria (ix). There are currently no listed properties from Udvardy's Pamir-Tianshan Highlands biogeographical province. However, the Tajik National Park (TNP) which occurs in the same Province is on the Tentative List of Tajikistan and nominated in 2012/13. TNP is located in the Pamir Mountains, which are located at a crossroad between Hindu Kush, Himalaya-Karakoram, Kunlun and Tianshan. Both this nomination and the TNP are representative of the Global 200 Ecoregion: Middle Asian Montane Steppe and Woodlands. Both properties are part of the Mountains of Central Asia, one of the 34 Global biodiversity hotspots as defined by Conservation International, with 27% of plant endemism and 57% of amphibian endemism. Endemism in mammals and birds is very low (< 2%). The nominated property provides contrasting but equally spectacular mountain features as TNP, with a greater range of landscapes, but a smaller and more dispersed set of component parts. Xinjiang Tianshan provides a greater and more diverse representation of ecosystems than TNP.

Great Himalayan National Park is also nominated for consideration in 2013. It lies in the Himalayan region and is more closely related to the existing Nanda Devi – Valley of Flowers World Heritage property (India). Whilst this property is in the same regional proximity to Xinjiang Tianshan and shares some landscape features similar to those mentioned for the Central Asian Mountains, it is in a different Udvardy Province within the Western Himalaya.

Comparisons may also be made between the nominated property and other regional mountain systems:

- The Altai Mountains belong to another biogeographical province with flora dominated by Siberian Old World and Holarctic elements, while the forest ecosystems are Euro-Siberian Taiga. Altitudinal range (1,000 – 3,000m, with one peak reaching 4,500m) is less than Xinjiang Tianshan. In the Altai, xeric deserts and steppes are better developed while forests and meadows less so. However the forests in Altai are more diverse with more tree species. The topography of the Altai is

gentler with fewer glaciers and the landscape less spectacular than in the nominated property.

- The Karakorum Mountains (eastern part of the Himalayan range) are very different from Tianshan in terms of biodiversity, altitudinal zones, natural landscapes, and belong to another biogeographical province. The Chinese part of Karakorum (northern slope) belongs to the Tibetan province of Udvardy. Because of the dryer climate, the plant diversity is much lower. The flora is dominated by Central Asian elements, but also includes elements from the Qinghai-Tibet Plateau. Dominant tree species are different (*Juniperus* in Karakorum – *Picea* in Tianshan). The fauna is also quite different; the Karakorum includes wild Yak, Tibetan antelope, blue sheep and Tibetan wild-ass, while Tianshan has red deer, argali and ibex.

- The Kunlun Mountains separate the Tarim Basin and the Taklimakan Desert in the north from the Tibetan plateau in the south. They lie far away from monsoon influence and are not influenced by oceanic currents. They have drier climate with only ca. 100 higher plant species, mostly dwarf shrubs. The flora is dominated by Central Asian elements and lack relic species. The fauna belong to the Qinghai- Tibet Plateau province (similar species as in Karakorum). Altitudinal vegetation zones however are different from Tianshan (more xeric with many shrubs). The landscape is characterized by desert steppe element very different from the altitudinal zones of Tianshan.

- The Northern and Western Tianshan in Kazakhstan and Kyrgyzstan appear to be very similar to Xinjiang Tianshan regarding vegetation, fauna and scenery, but offer a less sharp contrast between temperate mountain zones and surrounding deserts. Xinjiang Tianshan appears to offer more representative elements of the whole range. It is important to note that the nominated property encompasses the highest mountain and most extensive glacier fields in the Tianshan range, and as a serial site it captures a range of ecosystems and communities representative of the Tianshan Mountains and Taklimakan Desert.

In conclusion the nominated property within the Tianshan Mountains of Xinjiang is located at the intersection of Central Asia, Mongolia, Siberia, and China–Himalaya. The transition in natural and geologic environments has provided the opportunity for the various flora types to interact and specialize. Thus, the nominated property is characterised by transition species and many species of plants are spatially concentrated. In comparison with the Altai Mountains, Kunlun Mountains and Altunshan Mountains within Xinjiang Uygur Autonomous Region, Xinjiang Tianshan has a more abundant flora, totalling 2,622 species of wild vascular plants. Based on available information, the property supports a high percentage of the species within the Mountains of Central Asia biodiversity hotspot. This hotspot encompasses the Pamir and the Tianshan mountain ranges and is not yet represented on the World Heritage List. The corresponding Udvardy biogeographical province, Global 200 priority ecoregion and Centre of Plant Diversity have all been identified as gaps on the World Heritage List as well.

IUCN notes that the 2005 thematic study for Central Asia, whilst still quite relevant, did not consider China, Russian Federation, India, Pakistan and Afghanistan. Given the fact that three properties have been nominated in 2012/13 within the mountainous systems of Inner Asia, and a number of other properties exist on Tentative Lists, it would be timely to revisit and broaden this comparative study to achieve greater clarity on comparative values and the potential for serial site configurations.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

All components as presented in the nomination file are protected via a range of national laws and regulations governing protected areas, wildlife, grassland management and use of water resources, and benefit from a high level of protection, including strict protection zones. In addition to national laws, the property is subject to a number of local laws and regulations at the level of the Xinjiang Uygur Autonomous Region and/or Aksu and Changji Hui Autonomous Prefectures.

For the most part, the nominated property comprises existing protected areas. In relation to proposal of the State Party to revise the nomination and merge the Kalajun and Kuerdening components, the State Party in supplementary information has confirmed that the People's Government of Xinjiang Uygur Autonomous Region approved the decision to include the area in Kalajun Provincial Park in January 2013 and that the Ministry of Housing and Urban-Rural Development (MoHURD) has started the declaration of the Kalajun Provincial Park as a national nature reserve.

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

4.2 Boundaries

The boundaries of the components are mostly based on existing protected areas, with the exception of the merging of the Kalajun-Kuerdening component, as noted above, and which improves the overall integrity of the nomination. The boundaries follow a clear rationale in terms of capturing key features to ensure representativeness as well as aligning to landscape features such as ecological zones and ridge lines. The development of this nomination has reviewed boundaries to ensure that the property encompasses a wider variety of landforms and greater altitudinal range to include inter-montane basins, natural features and greater scenic diversity. Buffer zones are present around all the components, with sufficient size and

design to bolster the property's resilience against external impacts.

IUCN notes the concerns from some reviewers that the nominated property is still small relative to the very large size of the Tianshan Mountains as one of the 7 largest mountain systems in the world, and thus further extensions of the property could be considered. In addition IUCN is aware that there have been some active discussions regarding nominations by States Parties elsewhere in the Tian Shan, although IUCN was not able to determine the possible timescales for such nominations to be submitted for consideration by the World Heritage Committee. There would therefore also be merit for further discussion between the States Parties in the Tianshan regarding the scope to build on the present nomination through transnational approaches.

IUCN considers that the boundaries of the nominated property meet the requirements set out in the Operational Guidelines, but could be further improved through future extensions to the property, including possible transboundary extensions and relevant cooperation.

4.3 Management

All component parts of the property have highly qualified management staff and adequate funding. A Management Plan was drafted for the property in 2012 and presented with the nomination file. However, it is largely a repetition of the nomination and not prescriptive enough to guide the integrated management of this serial property with several geographically distant components. Whilst all components have management plans, there is a need for a specific overall management plan. The State Party in supplementary advice have confirmed their commitment to developing a comprehensive management plan governing all four components of the property in an integrated manner by 2014.

The staffing levels which have been applied to the nominated property are impressive. 652 staff are noted across the 4 components with a majority (377) deployed in the more heavily visited Bogda component. A very significant investment of resources has been made in the property (equivalent to USD 185 million in 2012). The State Party has advised that an average of USD 106 million will be allocated for the property over the next 5 years.

The State Party in supplementary information has advised that a hierarchical national-to-local level management system will be established for the property, with oversight provided at the highest level by the National Commission of UNESCO within MoHURD, then by regional and prefecture level authorities and finally by site level administrators. A structure will be established within MoHURD to ensure unified management of all four components.

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

4.4 Community

The mission noted that whilst local authorities are closely involved in the nomination process and management of the property, this is as part of the general national and provincial governance systems in China. IUCN requested further information on the processes of community engagement undertaken during the nomination process, and this was provided by the State Party.

Supplementary information notes that consultations were held with herdsmen communities regarding relocation and that the majority of community members supported relocation as it involved "improvements in housing, healthcare, education, transport, information and other public services" as well as allocations of farmland, alternative pasturelands etc. However, the State Party also notes that this view was not universally shared: some herdsmen did not want to change their traditional nomadic lifestyles and were worried about their capacity to earn income if they did so. The State Party concludes by affirming a desire to achieve sustainable traditional utilization in natural World Heritage sites and a willingness to work with others to achieve this balance. IUCN welcomes this advice, and the willingness of the State Party to engage further in considering approaches that could better reflect and recognize the links between people and nature within the property, and recommends further dialogue is pursued on this issue.

The IUCN evaluation mission also noted plans to hire local herdsmen as staff engaged in basic management, patrolling and interpretation at the property.

4.5 Threats

In general the property is not subject to significant existing threats. There is no hunting, no forest exploitation and very limited grazing and medicinal plants collection impacting upon the property. The boundaries of components have been designed in order to avoid mining areas and potential transportation corridors which are planned.

The Xinjiang Uygur Autonomous Region has a very low population density and little development pressure. There is some influx from other provinces, but with little or no impact on the mountain areas. The State Party in supplementary information has confirmed that tourism across the property is currently averaging 1,566,000 visitors p.a. with most visits to the more developed Bogda component. However, annual growth is forecast at between 6.4 to 11% and overall capacity capped at 9,500,000 visitors p.a. Whilst tourism growth is inevitable and will become very likely should the site be inscribed, it will be critical to manage this growth in an environmentally sensitive manner and with a view to benefits returning to local communities. A well-thought out tourism strategy will be necessary and the impacts of tourism carefully monitored and managed. For example, demand for 4WD vehicle access into the sensitive high mountain meadows could lead to far

greater erosion than that from traditional herdsmen and grazing.

There is an on-going debate regarding the policy on grazing within the property. Some scientists have raised concerns that blanket ban on grazing within the property may result in ecological changes and a net loss of biodiversity. Grazing as a livelihood issue also relates to the relationship with local communities and traditional nomadic herdsmen. Supplementary information from the State Party indicates that the policy for grazing throughout the region (i.e. beyond the nominated property) is to progressively exclude grazing from environmentally sensitive areas. Furthermore, in terms of the nominated property, the policy is that grazing will be excluded from core areas by 2015, but allowed to a limited extent in buffer zones. However, the report notes that there are mixed views by stakeholders on the exclusion of grazing, including concerns from some relocated nomadic herdsmen. The report also notes that based on studies by the Bayinbuluke Grassland Biology Research Station of the Chinese Academy of Sciences a total exclusion of grazing would reduce biodiversity. The report goes on to state that grazing options will be reviewed with a view to including sustainable grazing in the 2014 management plan. IUCN would encourage an open view on grazing pending further assessment of its impacts on biodiversity and consideration to accommodating sustainable resource use within the property.

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

a) What is the justification for a serial approach?

The nomination notes that, given the vastness of the Tianshan Mountains in Xinjiang and the significant differences in physical geography and biological features in different parts, no single component can completely represent its Outstanding Universal Value. The development of this nomination and selection of component parts was carried out over a three year period with much attention to the representativeness of natural features such as geological features, ecological features and natural landscapes, as well as the integrity of the natural environment, the level of negative impact from human activities, and the current protection and management status. IUCN considers that the selection of components represents a spectrum of diverse landform types and biological values which together make the case for Outstanding Universal Value under criteria (vii) and (ix).

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

Xinjiang Tianshan shares functional linkages by virtue of the fact that:

- The four nominated component parts are located in the same mountain chain of Tianshan, with similar tectonic background and geological evolution processes;
- The four nominated component parts belong to the same biogeographic province, that is, the Pamir-Tianshan Highlands biogeographic province, and they have significant similarities in natural geographical features;
- The natural heritage values show commonality, that is, the same arid temperate montane climate condition in Eurasian hinterland;
- They sample an altitudinal difference averaging 4,000m for each component, and similar vertical natural zones. They all belong to desert-oasis-mountain ecosystems of the arid temperate zone. The nominated components together provide a good diverse representation of the ecosystems of Tianshan Mountains in Xinjiang.

c) Is there an effective overall management framework for all the component parts of the nominated property?

The document presented as "Management Plan" does provide a few elements regarding the overall management frameworks but is not sufficient. An organogram presented in the plan shows the structure which was set up for the nomination preparation but this needs to be replaced with a suitable operational coordination body. As noted above, the State Party in supplementary information has advised on plans to establish a hierarchical management system with an associated structure aimed at unified management of all four components.

5.2 Nomination process

IUCN notes that the State Party has taken a strongly consultative process in considering this nomination. A constructive and open dialogue was maintained with IUCN on “upstream” support prior to the nomination being submitted. Through this process several World Commission on Protected Area experts were engaged from 2010 to help to refine the nomination resulting in an improved site configuration. Nevertheless a number of recommendations raised during this process remain to be considered, notably the need to progressively expand the areas of the Tianshan under protection, including in neighbouring countries; and the potential to accommodate sustainable use of the nominated area by local communities.

6. APPLICATION OF CRITERIA

The Xinjiang Tianshan has been nominated under natural criterion (vii) and (ix).

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

The Tianshan is a large mountain range in Central Asia stretching over more than 2,500 kilometers. It is

the largest mountain chain in the world's temperate arid region, and the largest isolated east-west mountain range globally. The Xinjiang portion of the Tianshan runs east-west for 1,760km and is a mountain range of outstanding natural beauty. The Xinjiang Tianshan is anchored in the west by the highest peak in the Tianshan, Tomur Peak at 7,443 meters, and in the east by Bogda Peak at 5,445 meters. The range is surrounded by six deserts, and the nominated property extends into one of these: the Taklimakan Desert, which is notable as one of the world's largest and highest deserts, known for its large arrays of dune forms, its large bounding alluvial fans, its pluvial lakes, and its ability to produce large numbers of dust storms. The beauty of the Xinjiang Tianshan lies not only in its spectacular snow-capped mountains and glacier-capped peaks, beautiful forests and meadows, clear rivers and lakes and red bed canyons, but also in the combination and contrast between the mountain elements and the vast deserts. The stark difference of bare rocks on its south slope and luxuriant forest and meadow on the north creates a striking visual contrast of environments which are hot and cold, dry and wet, desolate and luxuriant – and of exceptional beauty.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecosystems / communities and ecological / biological processes

Xinjiang Tianshan is an outstanding example of ongoing biological and ecological evolutionary process in a temperate arid zone. The landforms and ecosystems have been preserved since the Pliocene epoch because of the Tianshan's position between two deserts and its Central Asian arid continental climate, which is unique among the world's mountain ecosystems. Xinjiang Tianshan has all the typical mountain altitudinal zones of a temperate arid zone, reflecting the moisture and heat variations at different altitudes, gradients and slopes. The property is an outstanding example for the study of biological community succession in mountain ecosystems in an arid zone undergoing global climate change. Xinjiang Tianshan is also an outstanding representative of biological and ecological evolution in the Pamir-Tianshan Highlands. Altitudinal vegetation distributions, significant differences between north and south slopes, and diversity of flora, all illustrate the biological and ecological evolution of the Pamir-Tianshan Highlands. The property is also an important habitat for relic species, and numerous rare and endangered species, as well as endemic species. It is representative of the process whereby the original warm and wet flora has gradually been replaced by modern xeric Mediterranean flora.

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-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Inscribes the **Xinjiang Tianshan, China,** on the World Heritage List under natural criteria (vii) and (ix);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

Xinjiang Tianshan is a serial property consisting of four components totaling 606,833 hectares, with buffer zones totaling 491,103 hectares located in the People's Republic of China in the Xinjiang Tianshan, the eastern portion of the Tianshan mountain range. The four components are located along the 1,760 kilometers of the Xinjiang Tianshan, a temperate arid zone surrounded by Central Asian deserts. The property was nominated under criterion (vii) for its outstanding beauty and superlative natural features and criterion (ix) for capturing a range of biological and ecological processes.

The property has outstanding scenic values and many superlative natural features – from red bed canyons to high peaks and glaciers to beautiful wetlands, meadows and steppe. The visual impact of these features is magnified by the stark contrasts between the mountain areas and vast Central Asian deserts, and between the dry south slopes and the much wetter north slope. Xinjiang Tianshan is also an outstanding example of ongoing biological and ecological evolutionary process in a temperate arid zone. Altitudinal vegetation distributions, significant differences between north and south slopes, and diversity of flora, all illustrate the biological and ecological evolution of the Pamir-Tian Shan Highlands. Xinjiang Tianshan has outstanding biodiversity and is important habitat for relic species, and numerous rare and endangered species, as well as endemic species. It provides an excellent example of the gradual replacement of the original warm and wet flora by modern xeric Mediterranean flora.

Criteria

Criterion (vii)

The Tianshan is a large mountain range in Central Asia stretching over more than 2,500 kilometers. It is the largest mountain chain in the world's temperate arid region, and the largest isolated east-west mountain range globally. The Xinjiang portion of the Tianshan runs east-west for 1,760km and is a mountain range of outstanding natural beauty. The Xinjiang Tianshan is anchored in the west by the highest peak in the Tianshan, Tomur Peak at 7,443 meters, and in the east by Bogda Peak at 5,445 meters. The range is surrounded by six deserts, and the property extends into one of these: the Taklimakan Desert, which is notable as one of the world's largest and highest deserts, known for its large arrays of dune forms, its large bounding alluvial fans, its pluvial lakes, and its ability to produce large numbers of dust storms. The beauty of the Xinjiang Tianshan lies not only in its spectacular snow-capped mountains and glacier-

capped peaks, beautiful forests and meadows, clear rivers and lakes and red bed canyons, but also in the combination and contrast between the mountain elements and the vast deserts. The stark difference of bare rocks on its south slope and luxuriant forest and meadow on the north creates a striking visual contrast of environments which are hot and cold, dry and wet, desolate and luxuriant – and of exceptional beauty.

Criterion (ix)
Xinjiang Tianshan is an outstanding example of ongoing biological and ecological evolutionary process in a temperate arid zone. The landforms and ecosystems have been preserved since the Pliocene epoch because of the Tianshan's position between two deserts and its Central Asian arid continental climate, which is unique among the world's mountain ecosystems. Xinjiang Tianshan has all the typical mountain altitudinal zones of a temperate arid zone, reflecting the moisture and heat variations at different altitudes, gradients and slopes. The property is an outstanding example for the study of biological community succession in mountain ecosystems in an arid zone undergoing global climate change. Xinjiang Tianshan is also an outstanding representative of biological and ecological evolution in the Pamir-Tianshan Highlands. Altitudinal vegetation distributions, significant differences between north and south slopes, and diversity of flora, all illustrate the biological and ecological evolution of the Pamir-Tianshan Highlands. The property is also an important habitat for relic species, and numerous rare and endangered species, as well as endemic species. It is representative of the process whereby the original warm and wet flora has gradually been replaced by modern xeric Mediterranean flora.

Integrity
The property is a serial property consisting of four components totaling 606,833 hectares, with buffer zones totaling 491,103 hectares. The four components include: Tomur, Kalajun-Kuerdening, Bayinbuluke and Bogda. The four components follow the boundaries of existing protected areas, except in the case of the Kalajun-Kuerdening component, where two parks have been merged. The boundaries of the various components follow prominent natural features including ridgelines, rivers, vegetation zones, etc.

The property is representative of the many superlative features and ecological processes in the Xinjiang Tianshan. The property includes spectacular landscapes from red bed canyons to the highest peaks and largest glaciers in the entire range, to highly scenic and ecologically rich alpine meadows, to areas of rivers, lakes and wetlands. The property captures the full range of altitudinal zones of a temperate arid zone and the evolutionary processes of the Pamir-Tian Shan highlands.

The area benefits from a very low degree of threat. There are no permanent inhabitants in the property. Extractive industries and infrastructure development is limited in the region and does not exist within the property. There is no record of invasive species. The entire property is legally protected and all of the components have buffer zones.

Protection and management requirements
The components of the property range from IUCN Categories I-IV, though several of the units, including the largest component (Tomur) are managed as Category Ia. The property has been under conservation management for some time. The Tomur Peak National Nature Reserve in particular has been under conservation management since 1985. A broad range of environmental and natural resource use laws governs and the property therefore benefits from a high level of legal protection.

Each of the components has a management plan, and a management plan also exists for the property as a whole. A new management plan for the whole property will come into effect in 2014. The property has an adequate staff and is well funded. Extensive research has been conducted in the property giving park staff a strong knowledge base to work from.

Special attention needs to be given to ensuring effective management planning and coordination across the components of the property which are geographically well separated from each other. Future efforts should focus upon opportunities to extend or add to the property to increase its size and integrity given the overall very large scale of the Tianshan Mountain Range system. This should also consider initiatives with neighbouring countries to consider transnational opportunities to extend protection of the Tianshan system.

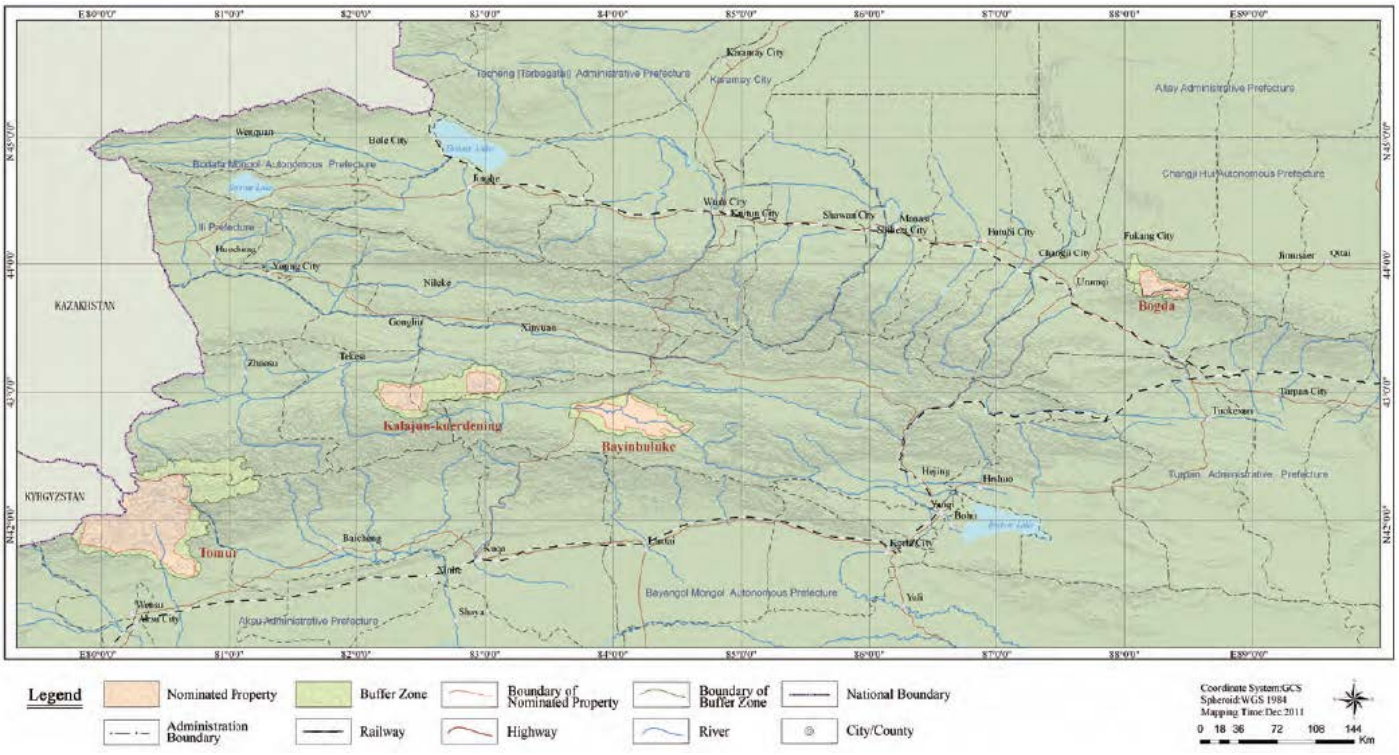
Attention should also be given to working with IUCN and other partners to better understand the implications of grazing on the natural ecosystems of Tianshan and to explore the potential of integrating local communities and in particular traditional herdsmen into the management of the property.

4. Requests the State Party to:

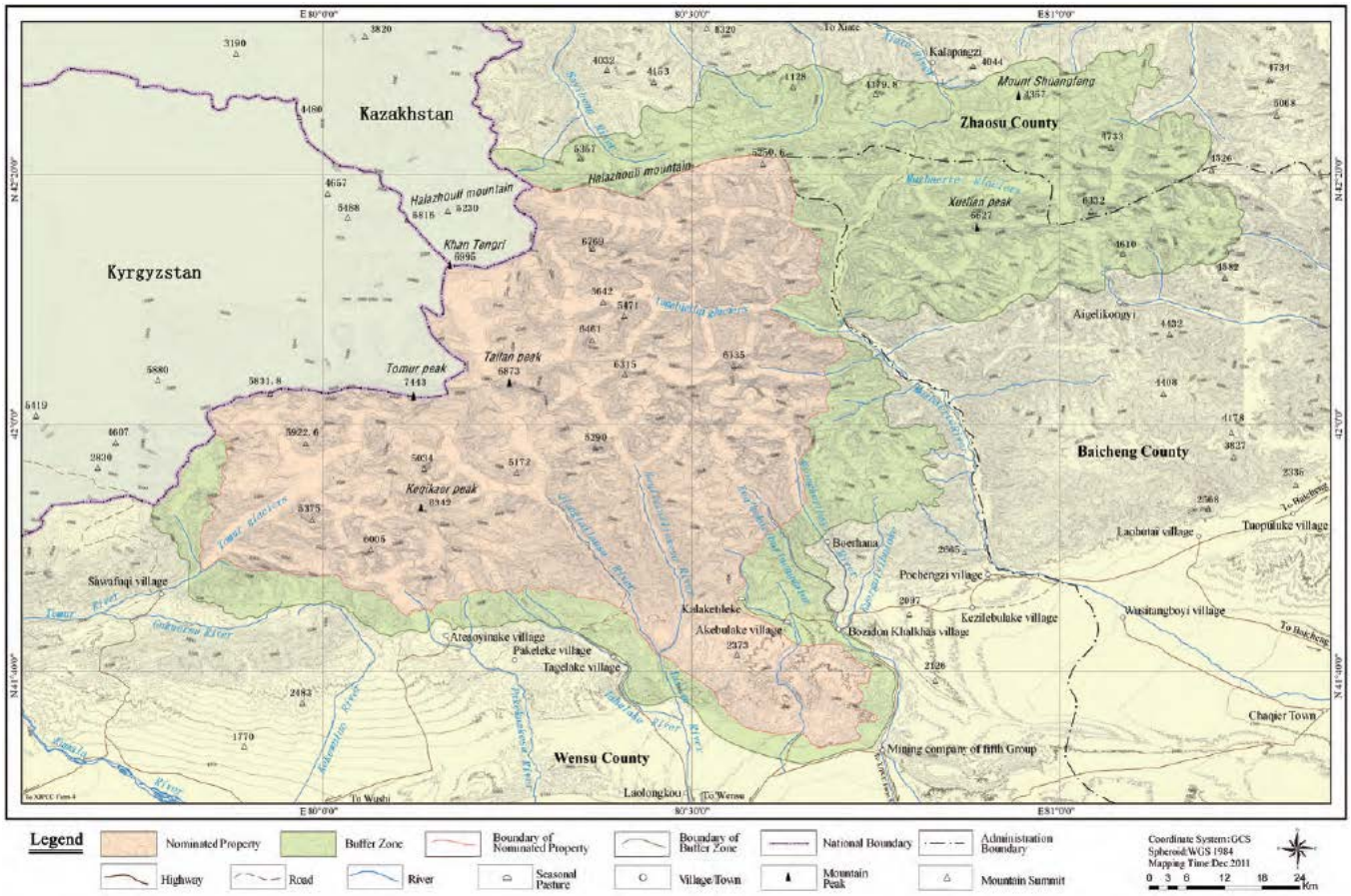
a) complete a revised management plan for the entire property by 2014;
b) complete gazettal and legal protection of the areas merging Kalajun and Kuerdening;
c) consider progressive extensions and additions to the property noting the relative small size given the very large size of the Tianshan range;
d) initiate collaboration with neighbouring countries to explore the potential for a transnational serial nomination;
e) work with IUCN and other partners to explore the potential of integrating local communities and in particular traditional herdsmen into management of the property; and
f) cooperate with neighbouring State Parties, the World Heritage Centre and the Advisory Bodies to undertake a regional comparative biodiversity and geodiversity study of Inner Asian high mountains and deserts and to conduct a regional expert workshop with a view to developing opportunities for future transnational potentially serial nominations.

Map 1: Nominated property location in China

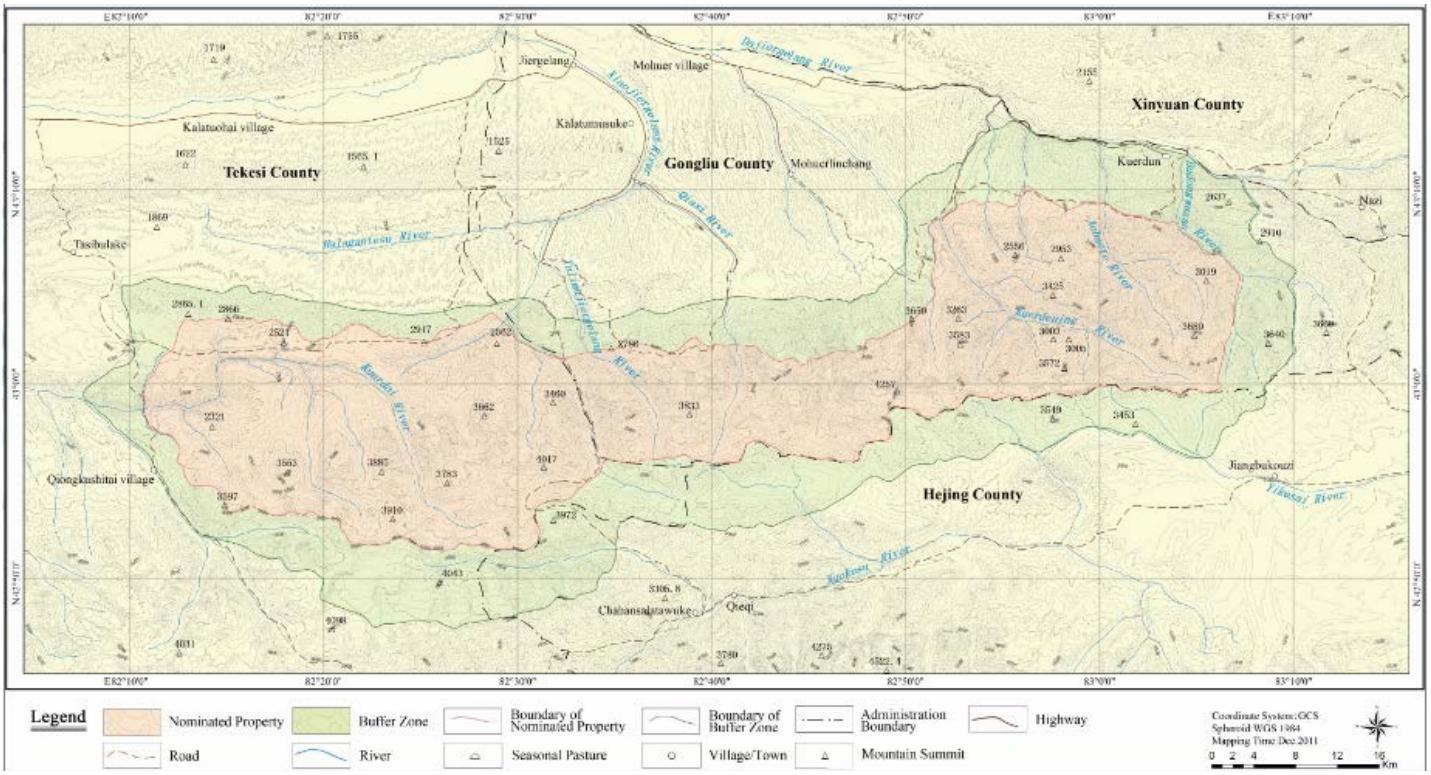
Map 2: Nominated property and buffer zone



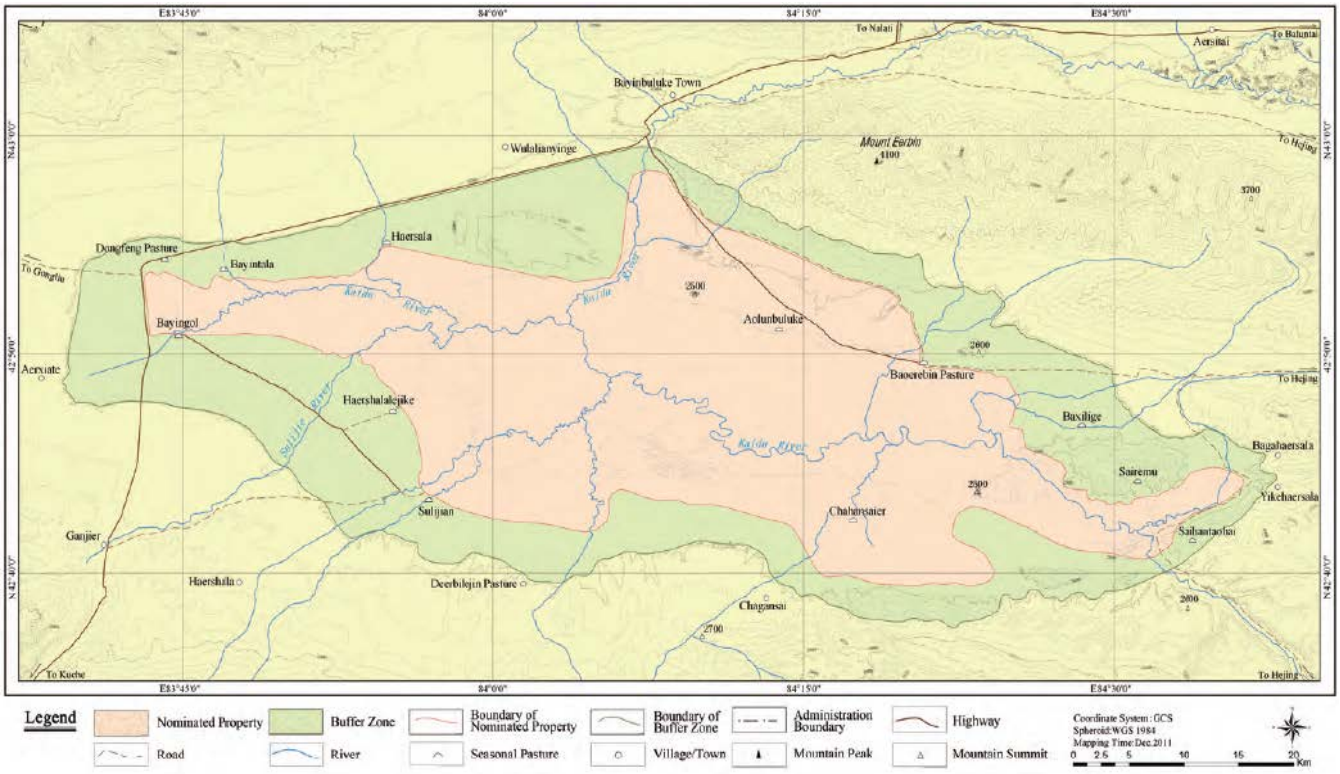
Map 3: Tomur component



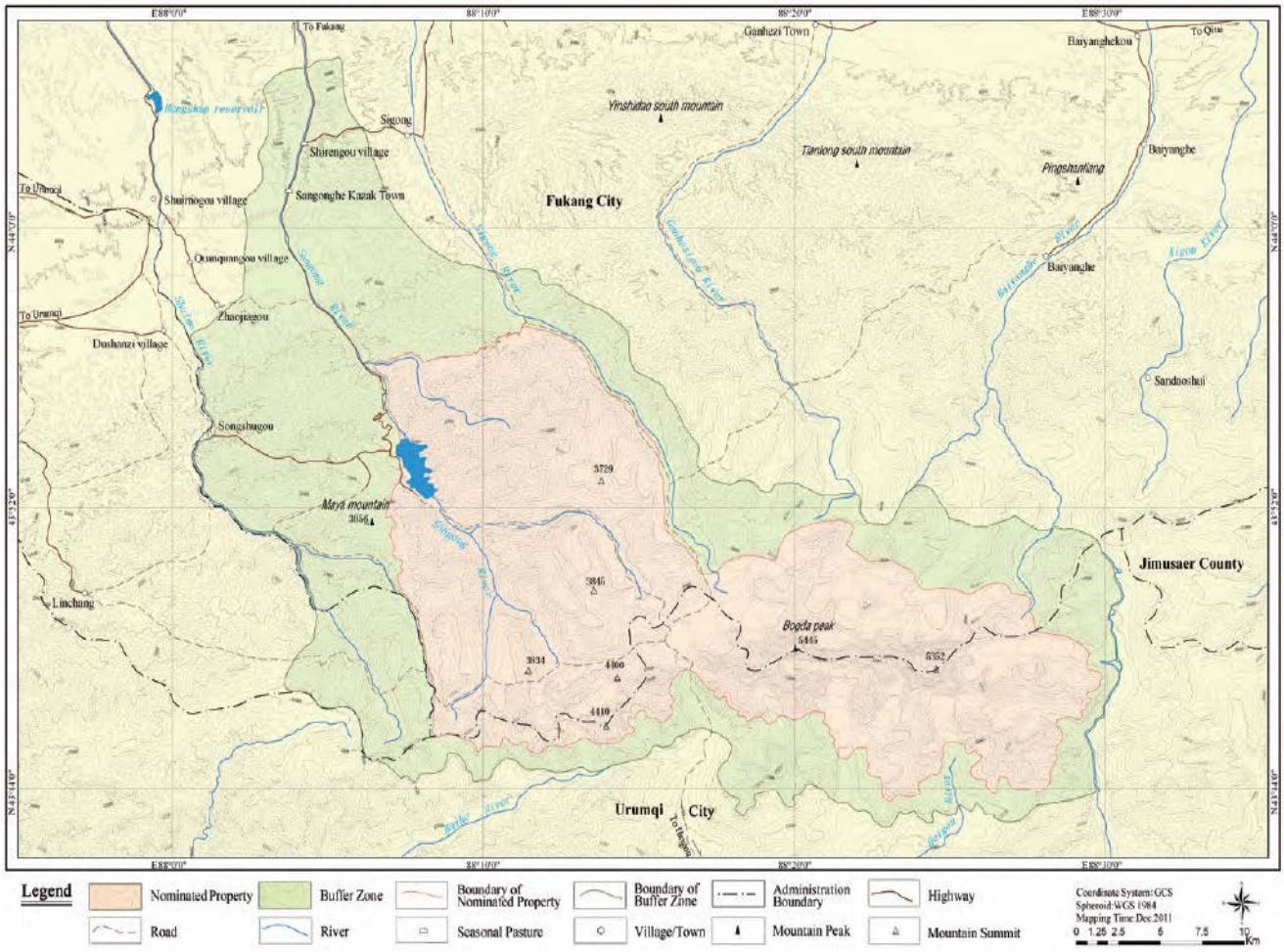
Map 4: Kalajun-Kuerdering component



Map 5: Bayinbuluke component



Map 6: Bogda component



ASIA / PACIFIC

GREAT HIMALAYAN NATIONAL PARK

INDIA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

GREAT HIMALAYAN NATIONAL PARK (INDIA) – ID No. 1406

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination under natural criteria.

Key paragraphs of Operational Guidelines:
Paragraph 78: Nominated property does not meet integrity or protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: During the course of the field evaluation, additional information was informally requested on several integrity issues and on the evidence base for a range of claims regarding the value of the nominated property. Following the IUCN World Heritage Panel meeting, the State Party was requested to provide supplementary information on 20 December 2012. The information was received on 11 February 2013. IUCN requested additional information from the State Party on the Outstanding Universal Value of the property and the basis of comparison with other sites; on intentions and timetables for additions to the nominated property; and on the levels of community support for the nomination and a range of rights issues noting reported concerns and matters raised directly by stakeholders with IUCN.

c) Additional information consulted : A range of literature consulted, including material prepared in support of the nomination, and for the IUCN evaluation mission. Additional selected literature included: **Conservation across landscapes: India's approaches to biodiversity governance**, United Nations Development Programme, New Delhi; Miller, J.R.B. (2010) **Survey of Western Tragopan, Koklas Pheasant, and Himalayan Monal populations in the Great Himalayan National Park**, Himachal Pradesh, India, Indian BIRDS Vol 6, No 3, pp60-65; Olsen et al (2000) **The Global 200: A representation approach to conserving the Earth's distinctive Ecoregions**, WWF; Pandey, S. (2003) **Environmental justice study on human-animal conflict in and around the Great Himalayan National Park, Himachal Pradesh**, Winrock International India; Pandey, S. (2007) **Linking ecodevelopment and biodiversity conservation at the Great Himalayan National Park, India: lessons learned**, Biodiversity Conservation; Pandey, S. (2012) Pandey, S. and Wells, M.P. (1997) **Ecodevelopment planning at India's Great Himalayan National Park for biodiversity conservation and participatory rural development**, Biodiversity and Conservation (6) pp1277-1292; Tucker, R. (1999) **The historical development of human impacts on Great Himalayan National Park**, FREEP-GHNP 04/14, Wildlife Institute of India, Dera Dun; Singh,S. (1999) **Assessment of floral and habitat diversity, and collection of baseline data to monitor vegetation of GHNP Conservation Area**, Indian Institute of Remote Sensing, Dehra Dun; Singh, S.K. and Rawat, G.S. (1999) **Floral Diversity and Vegetation Structure in Great Himalayan National Park, Western Himalaya**, FREEP-GHNP, Wildlife Institute of India, Dehra Dun; Vinod, T.R. and Sathyakumar (1999) **Ecology and conservation of mountain ungulates in Great Himalayan National Park, Western Himalaya**, FREEP-GHNP 03/10, Wildlife Institute of India, Dehra Dun; Zurick et al., (2005) **Atlas of the Himalaya**, International Centre for Integrated Mountain Development (ICIMOD), Hillside Press, Kathmandu. BirdLife International (2012) **Important Bird Areas factsheet: Great Himalayan National Park**. Downloaded from http://www.birdlife.org on 16/11/2012 Conservation International (2012) **Himalaya. Hotspot description**. Online: http://www.conservation.org/where/priority_areas/hotspots/asia-pacific/Himalaya/Pages/default.aspx WWF (2012) **Ecoregion descriptions**. Online: http://worldwildlife.org/biomes

d) Consultations: 7 external reviews. The mission had extensive consultations with representatives of the Government of India; the Government of Himachal Pradesh; NGOs; local community groups including Women's Credit Groups; Friends of GHNP; a local organisation: SAHARA; and a range of scientists, experts and individuals.

e) Field visit: Graeme Worboys, 03-16 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The Great Himalayan National Park (GHNP) is located in the western part of the Himalayan Mountains in the Kullu District of the State of Himachal Pradesh, India. The 75,400 ha GHNP was formerly declared in 1999 and the declared Park coincides with the nominated World Heritage property. It is nominated as a serial property with two separate component parts which form the Park, separated by the 9,000 ha Sainj Wildlife Sanctuary. GHNP includes the upper (5,000-6,000 m a.s.l.) mountain glacial and snow melt water source origins of the westerly flowing Jiwa Nal, Sainj and Tirthan Rivers and the north-westerly flowing Parvati River which are all headwater tributaries to the River Beas and subsequently, the Indus River. This water is of vital importance to downstream users. GHNP protects entirely the rapidly descending Jiwa Nal and

the Tirthan Rivers and their associated valleys downstream to about 2,000 metres.

The GHNP nomination recognises a 26,560 ha buffer zone on its western boundary which is not part of the nominated property, but is planned and managed in conjunction with GHNP. The Ecodevelopment Zone (or Ecozone) includes 2,300 households in 160 villages and a population of about 15,000 to 16,000 people. The Ecozone lies at the lower altitude, westerly end of the Jiwa Nal, Sainj and Tirthan Rivers between about 1,300 to 3,000 m a.s.l. and consequently includes important overwintering habitats for many species. As noted above, GHNP is interconnected by the 9,000 hectare Sainj Wildlife Sanctuary and is further extended to the south by the 6,100 ha Tirthan Wildlife Sanctuary. The combination of conservation areas comprising the two Wildlife Sanctuaries, the Ecozone and GHNP has been recognised as the "Great Himalayan National Park Conservation Area". The GHNP is provided additional protection by being surrounded by protected areas. They are the 50,300 ha Rupi Bhabha Wildlife Sanctuary to the south and east; the 67,500 ha Pin Valley National Park to the east; the 71,000 ha Khirgana National Park to the north and the (disjunct) 6,100 ha Kanawar Wildlife Sanctuary with its connecting corridor to the west.

GHNP is at a junction of Udvardy's Palaearctic and Indo-Malayan Biogeographic Realms and its essentially undisturbed habitats reflect complexity, through the intermixing of species from these two Realms. The property displays distinct broadleaf and conifer forest types forming mosaics of habitat across steep valley side landscapes. It is a compact, natural and biodiverse protected area that includes 25 forest types. At altitudes less than 2,500 m, the Park includes West Himalayan broad-leaved and coniferous forests. These temperate forests are parts of the WWF Global 200 Ecoregion "Western Himalayan Temperate Forests". GHNP is floristically one of the richest sites in the Western Himalayas supporting 805 higher plants, 25 ferns, 192 lichens, 12 liverworts and 25 moss species. Some 58% of the angiosperms of GHNP are endemic to the Western Himalaya. There are more than 250 species of medicinal plants native to the Himalaya found within GHNP, with 36 threatened species and 10 of these being globally threatened. GHNP is also reported to be one of the most important sites for medicinal plant conservation in the Western Himalayas (in terms of numbers of species and populations) and the mission was informed that it has the greatest concentration of medicinal plants known for all of the Himalayas. The diverse flora is important for animals with understory wild berries supporting many birds and mammals such as primates and bears. There are food nuts generated by broadleaf species that include walnuts, horse chestnuts and hazelnuts. Oaks are also important food sources including *Quercus semecarpifolia* that provide acorns for birds and rodents. Dense understory clumps of hill bamboo provide habitat and cover for pheasants and other birds. Tree species particularly impacted by people outside of the Park, the Himalayan Mulberry (*Morus serrata*) and the Indian Birch (*Betula alnoides*) are found in their natural condition within the Park.

GHNP includes the full range of West Himalayan montane ecosystems from 1,900 m (temperate) to 6,000 m (alpine and above). The forests include many old growth stands and characteristically include a rich understory. The mission was informed that old growth forests include some of the tallest Himalayan Fir trees (*Abies pindrow*) in the world at >60m in height.

There are 31 species of mammals recorded for GHNP, with prominent mammals being the Blue Sheep (*Pseudois nayaur*), Snow Leopard (*Uncia uncia*), Common Leopard (*Panthera pardus*), Himalayan Brown Bear (*Ursus arctos*), Asiatic Black Bear (*Ursus thibetanus*), Himalayan Tahr (*Hemitragus jemlahicus*), Himalayan Musk Deer (*Moschus chrysogaster*) and the Serow (*Nemorhaedus sumtraensis*). In 2012, there were no domestic livestock, shepherds nor poaching within GHNP and the alpine pastures protect healthy catchments and provide grazing for herds of native Bharal Blue Sheep. At the tree-line, a diversity of habitats supports high densities and increasing numbers (since 1999) of the Himalayan Musk Deer. Snow Leopard breed within GHNP and feed on these two ungulate prey species. The Himalayan Tahr is found at and below the tree-line and the nominated property reportedly sustains the largest regional population of Tahr, with GHNP being a major breeding area for this species.

For birds, there are 209 species recorded, though no species are unique to the nominated property. GHNP falls within the "Western Himalaya" globally important Endemic Bird Area identified by BirdLife International in recognition of the importance of this area for rare and endangered species including the Western Tragopan pheasant (*Pucrasia macrolopha*). The mission was informed that GHNP has the largest breeding population and best conservation sample of this species globally. Researchers advise that the nominated property is also important for its numbers of individual bird species with important species such as the Cheer Pheasant (*Pavo cristatus*), Red-headed Vulture (*Sarcogyps calvus*), Long-billed Thrush (*Zoothera monticola*) and White-throated Tit (*Apus pacificus*) breeding there. There are five pheasant species found within the Park, with the endangered Western Tragopan pheasant and its breeding dependent on the undisturbed habitats found in GHNP. Fifty species of birds are migratory to the Park in summer.

The nomination dossier reports 12 reptile species and 9 amphibian species. Invertebrate populations include 125 recorded insect species including 44 species of butterfly. Eleven species of earthworm and 14 species of molluscs are known here. Detailed information on the reptile, amphibian and invertebrate fauna of GHNP are lacking as these taxa remain poorly studied in the Western Himalayas.

In summary GHNP forms the core of a larger area of surrounding protected areas which form an island of undisturbed environments in a greater Western Himalayan landscape. The diversity of species present is rich (though not the richest for the Himalaya); however it is the abundance and health of individual

species populations supported by healthy ecosystem processes where GHNP demonstrates its outstanding regional significance for biodiversity conservation. The nomination dossier claims GHNP is the most important gene pool of Western Himalayan flora and fauna, particularly for species of special concern.

3. COMPARISONS WITH OTHER AREAS

GHNP is nominated under criteria (vii) and (x). With respect to criterion (vii) the nomination dossier argues the Park's outstanding scenic values and diversity of high quality natural environments contribute to outstanding natural beauty and aesthetics. The nomination highlights the area's remoteness and lack of development which underpin its wilderness character. The nomination notes that the area displays *"classical Himalayan mountain features, from deep river-cut, V-shaped valleys to dramatic, upthrust peaks, (and) all offer immense natural beauty"*.

Nepal's Sagarmatha National Park is inscribed under criterion (vii) and includes as superlative and exceptional natural beauty, dramatic mountains; glaciers; deep valleys and majestic peaks including the world's highest, Mount Sagarmatha (Mount Everest) at 8,848 metres and 7 associated peaks over 7,000 metres. The Sagarmatha National Park mountains are higher, the valleys deeper and the glaciers larger than features found at GHNP.

India's Nanda Devi and Valley of Flowers National Parks is also inscribed under criterion (vii) reflecting the presence of India's second highest mountain, (Nanda Devi West) at 7,817 metres; spectacular features including glaciers, moraines; alpine meadows; a high altitude Himalayan Valley (the Valley of the Flowers), a deep gorge, and the area also has a remote wilderness character. These attributes are similar to many of GHNP's values, but the mountains are higher, glaciers are bigger and there is the presence of a large and aesthetic high mountain valley.

The Himalayas are a unique physiographic and biodiversity feature of Earth and a Conservation International Hotspot. They harbour an extraordinary 10,000 plant species, from tropical to temperate, from alpine to tundra; 300 mammal species, 977 bird species, 176 reptiles, 105 amphibians and 269 types of freshwater fish. A third of all plants and reptiles are endemic, as are 40% of all amphibians.

The nearest existing biodiversity World Heritage sites to GHNP are the Nanda Devi and Valley of Flowers National Parks World Heritage Site and Keoladeo National Park (KNP) World Heritage site, both in India, and Chitwan National Park in Nepal, although KNP is not comparable in terms of values. The comparative analysis presented within the nomination dossier scanned 30 similar mountain environments around the world before reducing its comparative analysis focus to the Himalayas. The dossier's comparative analysis concluded that the intersection of Indo-Malayan temperate broadleaf forests and temperate coniferous forests to Palearctic mountain grasslands, shrublands and steppes in dramatic mountain escarpment environments are not found in these sites. The nomination dossier notes that GHNP, when combined with its surrounding protected areas, samples the full range of important Western Himalayan environment types, and the complex intermixing at GHNP of Western Himalayan flora and fauna communities including both Indo-Malayan and Palaearctic elements. Reviewers note that the relative poverty of such ecosystems elsewhere in the Western Himalayas makes the GHNP highly important for the study of mid-altitude ecosystems. Directly comparable sites along the Himalayas were identified in the nomination dossier, however comparative assessments were made based on integrity and management, rather than comparative assessments of the relative intrinsic natural values.

The climate and environments of the Himalayas are not uniform, with wet conditions in the east and drier conditions in the west. Distinctly different assemblages of plants and animals have consequently evolved for the Eastern and Western Himalaya and both areas have been recognised for their special conservation status. The Eastern Himalayas includes 4 Global 200 Ecoregions, critical landscapes of international biological importance, 4 World Heritage sites, 2 Endemic Bird Areas, and several global centres for plant diversity. The Western Himalaya includes part of Conservation International's Himalayan Hotspot; WWF's Western Himalayan Temperate Forest Global 200 Ecoregion; the Tibetan Plateau Steppe Global 200 Ecoregion and part of BirdLife International's "Western Himalaya" Endemic Bird Area (EBA 128).

Important claims have also been made about the significance of GHNP for the conservation of the threatened Western Tragopan, assessed in the IUCN Red List as vulnerable. This species is known from upper temperate forests from Eastern Pakistan to Uttarakhand with global population estimates of between 2,500-3,500 birds. Five populations are known from Kohistan, Kaghan valley, Kishtwar, Chamba, Kullu and an area east of the Satluj River. The Western Tragopan is known to be present in a number of protected areas in Pakistan including Chitral Gol National Park, Machiara National Park, and the Palas Valley. The State Party in supplementary information advises that the property includes the best protected populations of Western Tragopan in a small part of the total global distribution (400 individuals which is 10% of the estimated global population). Whilst a notable conservation value, IUCN notes that inscription of biodiversity World Heritage sites should not overemphasise one iconic species.

Comparative analysis undertaken by UNEP's World Conservation Monitoring Centre (WCMC) concludes that the property supports a substantial portion of the species in the Himalaya biodiversity hotspot: 8% of the plant species, 10% of the mammals, 21% of the birds, 7% of the reptiles and 9% of the amphibians. There are several endemic species and globally threatened species. The biodiversity levels of the property and the surrounding protected areas appear to match those of

the Nanda Devi and Valley of Flowers National Parks, the only natural World Heritage site in the western Himalayas, and match or exceed those of several other high-mountain World Heritage sites. The Western Himalayan Temperate Forests in the property have been identified as a priority ecoregion that is not yet represented on the World Heritage List.

The State Party in supplementary information provided additional details on the comparative analysis of this property and the evidence base used to reach conclusions. This information confirms that among sites within the Western and Northwestern Himalayas, Nanda Devi (National Park) is the most comparable site, but has a more eastern faunal and floral composition, and lacks the lower altitude zones which are considered to make GHNP important. IUCN notes that supplementary information reports on the larger Biosphere Reserve area of Nanda Devi (640,700ha) as opposed to the inscribed Nanda Devi and Valley of the Flowers World Heritage site (71,783 ha). That said the two areas are quite comparable in species richness with the key difference being that GHNP protects lower altitude valley ecosystems and demonstrates more Palaearctic – Indo-Malayan elements. IUCN concurs with the conclusion that Nanda Devi and Valley of the Flowers World Heritage site is the closest comparison amongst currently listed sites, and this property is only a few hundred kilometres distant from GHNP, also in the Western Himalayas. Nanda Devi is inscribed under criteria (vii) and (x), which are the same criteria proposed for GHNP. Nanda Devi and GHNP are of a similar size and, as UNEP-WCMC points out the biodiversity levels and species richness of both, properties are similar. Other properties such as the Three Parallel Rivers (China) in the wetter Sichuan Highlands and Khangchendzonga National Park (India) are in the wetter Eastern Himalayas so less direct comparison with GHNP can be made regarding biodiversity criteria. IUCN also notes that the 2012 nominations for Tajik National Park (Tajikistan) and the Xinjiang Tianshan (China), whilst in different biogeographic provinces to the nominated property, are also relatively close and have been nominated on the basis of biodiversity criteria.

In conclusion the Outstanding Universal Value of the nominated property under criterion (x) remains to be demonstrated in particular in comparison to the relative nearby Nanda Devi and Valley of the Flowers World Heritage site, also in the Western Himalayas. IUCN notes that a regional comparative study, perhaps conducted with the support of the International Centre for Integrated Mountain Development (ICIMOD), would help to 1) fully assess the relative values of the nominated property against other sites in the Himalayas and adjacent mountain regions; 2) fully assess its relative natural condition to understand if it is the best protected site in the best condition to conserve Western Himalayan biodiversity, with a view to 3) assessing potential candidate areas and boundary configurations in this region, including potential serial nominations/extensions of existing properties.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

The 75,440 ha GHNP was formally declared as a national park in 1999 under the provisions of the 1972 Indian Wildlife Protection Act. The Government of Himachal Pradesh owns and manages the Park. It has been reserved as two disjunct sections. In 2012, there was a process in place to add the intervening lands to GHNP, the 9,000 ha Sainj Wildlife Sanctuary and additional lands further to the south, the 6,100 ha Tirthan Wildlife Sanctuary. The GHNP is protected on its western side by the presence of the 26,560 ha Ecodevelopment Zone (or Ecozone) that abuts the Park. The combined Ecozone, GHNP, Sainj Wildlife Sanctuary and Tirthan Wildlife Sanctuary have been called the Great Himalayan National Park Conservation Area (GHNPCA) and this 117,100 ha area is administered by GHNP management. It is also the subject area of the 2010-2020 Management Plan prepared by the Park. GHNP is provided a high degree of protection through an effective management regime.

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

4.2 Boundaries

The boundaries of GHNP offer both geographic and legal protection. The high, 4,000 to 6,000 m mountains that lie to the north, east and south are difficult to access and so provide natural geographic protection. In addition, the status of these surrounding lands as protected areas (Khirganga National Park, Pin Valley National Park and Rupi Bharbha Wildlife Sanctuary respectively) provides legal protection. This combined area, with GHNP at its centre, is 285,440 ha. It is the single largest area of formal protection for the entire Himalayas after Jigme Dorji National Park in Bhutan.

The boundaries of GHNP follow mountain ridges, apart from their western boundaries that are based on practical, essentially north-south lines that delineate the western limit of the Park. The northern section of GHNP protects the Jiwa Nala Valley and the southern section protects the upper Sainj and Tirthan River Valleys. The western boundaries are clearly identified at key river-side entry points and this boundary is patrolled.

The National Park, being split into two sections, has boundary and management weaknesses. A large part of the southern aspect of the Sainj River Valley is excluded from the more protective national park status and the otherwise contiguous habitat of notable species such as Western Tragopan, Musk Deer and others falls across two types of protected area: National Park and Wildlife Sanctuary. Wildlife Sanctuaries in theory offer less protection (under the Wildlife Protection Act, national parks are managed free of human habitation and agriculture or other use, while some human use is permitted in wildlife sanctuaries).

These issues are being addressed by the Himachal Pradesh State Government. In 2010, the Sainj and Tirthan Wildlife Sanctuaries were legislatively notified for future merger with the GHNP. This decision to establish national park status invokes a careful and sensitive process of compensation including identifying prior habitation, traditional grazing and other rights. In addition GHNP is actively involved in establishing opportunities for people with traditional rights in the Ecozone. Once the process is completed, it will establish a consolidated 90,540 ha GHNP with more complete protection for four river valleys (the Jiwa Nala, Sainj, Tirtha and Palachan Rivers) and a more consolidated protection of Western Tragopan and Musk Deer habitats and the habitats of many other species. The State Party in supplementary information has advised that the timetable for the addition is anticipated to be relatively short and the likelihood of addition high; however, there appear to be significant rights issues to resolve therefore this may be a more protracted process. IUCN considers that the active process to consider the boundaries of adjoining areas argues clearly for such work to be considered and completed, prior to possible nomination to the World Heritage List. In this regard the nomination appears somewhat premature.

IUCN considers that the boundaries of the nominated property require amendment to include the addition of the Sainj and Tirthan Wildlife Sanctuaries to create a larger and contiguous nominated property.

4.3 Management

The two sections of GHNP are professionally managed as an IUCN Category II reserve by the Forestry Department of the State of Himachal Pradesh, India. A comprehensive management plan for the GHNP Conservation Area has been prepared for the period 2010-2020. The plan includes appropriate conservation, protection and management effectiveness requirements for the Park. It also includes management prescriptions for the Ecozone and the Sainj and Tirthan Wildlife Sanctuaries. The Park employs 71 permanent staff including 40 personnel for patrolling and nursery duties along with a number of temporary staff. A District Forestry Officer is accountable for the management of the Park and three uniformed Range Officers (Forestry Rangers) and Deputy Rangers supervise uniformed Forest Guards. Rangers and Forest Guards maintain checkpoints near the Park and at the Park entrances, and undertake regular “beats” (patrols) within the Park. There is no road access and access is achieved by a 10 km hike through the Ecozone to Park entrance gateways. One gateway is in the Sainj Valley and the other is in the Tirthan Valley. Any access to the Park is strictly controlled by permit.

As a result of work to resolve compensation of traditional rights, human impacts to GHNP have been greatly reduced and natural systems restored. The Park’s management is based on strong links between science, monitoring and active management. Regular species monitoring has identified increasing species populations, as well as the need for interventions, such as the closure of visitor access to some Western Tragopan breeding sites in response to population declines.

Financial resources for the Park are adequate. In 2012 GHNP had an annual salary budget equivalent to USD 347,966. Annual operational funds in 2012 included USD 126,366 for flora and fauna conservation, with capital funds totalling USD 63,146. The Parks also receives support from the Biodiversity Conservation Society (USD 37,986).

The Ecozone includes 160 villages and 13,297 people that have historically had some economic dependence on the resources of the land incorporated into the Park. The GHNP, NGO’s and the villagers are involved in creating alternative sources of economic well-being and collaborating on innovative environmental education and benefit sharing programmes. IUCN considers consultation processes and opportunities for community input to management planning should be continued and enhanced. Furthermore, that effort continues toward innovative management frameworks to optimise the community benefits from ecologically sustainable ecotourism.

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

4.4 Community

The management of the park has taken notable steps to work with the community over many years. The evaluation mission received a strong message that GHNP staff support a synergy between the Park and local people which reinforces the links between investment in local livelihoods and successful conservation of biodiversity in the Park. There are evident efforts to respect beliefs and sacred sites by GHNP. In terms of use of the park, prior to park establishment, about 2,500 people collected herbs and mushrooms from the Park and about 35,000 sheep and goats grazed the Park. The transition between use and conservation in GHNP has aspired to be a socially responsible and phased process. It has included compensation for traditional rights and further (continuing) investments in the Ecozone designed to support people. Successful response strategies have included the empowerment of the poor, given that rural poor are the most dependent on forest resources for livelihood needs, with women being the poorest.

Nonetheless there remain concerns and a number of community engagement and rights areas where there is scope for improved practice. For example community groups are seeking improved opportunities and processes for formally participating in the review and development of the GHNP Management Plan and for formal processes for contributing inputs to the on-going management of the Park (including reviews of performance). There is no mechanism for joint or co-management for GHNP and whilst the creation of the Biodiversity Conservation Society is a positive move, its role remains advisory and does not have formal decision-making powers that direct the

governance/management of the protected areas. Women's groups (WSCG's) met during the mission expressed strong support for the ecotourism schemes. They advised of an urgent need to develop a framework for managing ecotourism within the Ecozone and GHNP to guarantee economic benefits were returned and equitably distributed to the community.

The evaluation mission detected positive support for the nomination; however, IUCN received representations from some indigenous groups raising concerns. The State Party supplementary information suggested that these concerns were revisiting issues from the time of Park gazettal, and that there had been consideration of the rights settlement provisions of the Forest Rights Act and the community engagement structures/processes in place. The State Party also noted that the resolution of rights issues associated with people within the Sainj and Tirthan Wildlife Sanctuaries is underway with a view to eventual addition of these properties to the GHNP. Reviewers noted that whilst there is evidently a responsive attitude by the GHNP managers, that there is a need for an open, mediated discussion to resolve the issues raised and with enhanced levels of consultation than those undertaken to date.

In conclusion IUCN recognises that the GHNP authorities are clearly sensitive to community engagement and rights processes and that good open and responsive approaches have been evident. However, as concerns and complaints raised by indigenous peoples in relation to the nomination are not fully resolved, it appears to be highly prudent to allow further time to consider these issues, including the conclusion of the processes related to the addition of other areas to the nominated property.

4.5 Threats

The Western Himalayas are under enormous pressure from human activities from traditional livelihoods such as grazing, hunting, and the collection of medicinal plants and impacts such as temperate cash crops, commercial forestry, tourism and hydro power development. GHNP and the surrounding protected areas are bounded by areas modified by humans and the pace of development in the Western Himalayas is increasing. There were historic impacts to the Park however, the nomination notes that these prior adverse effects on GHNP are being managed through an increasingly effective stake-holder accepted strategy of encouraging sustainable livelihood adoption in the buffer zone and a legally-accomplished termination of prior rights within the Park itself.

Human-wildlife interactions are an issue in some cases. GHNP is committed to assist villagers impacted by protected wildlife and responds to incidents including providing compensation.

Himachal Pradesh banned hunting within the state in 1982 and specifically within GHNP in 1984. Localised poaching aided by snares, dogs and guns occurs in some villages in the Sainj Wildlife Sanctuary; however, the greatest threats come from organised (non-local) poachers. Effective anti-poaching actions were taken in 2012 by the Park despite continued pressures.

The annual average visitor numbers to the Park are very low (700 to 1,000 per annum). Access to trekking routes within the Park is managed using a permit system and it is guided by wildlife population monitoring and research. Trekking routes within the Tirthan Valley (for example) recently closed in deference to declining Western Tragopan numbers.

Illegal medicinal plant collection occurs within the Park. Responses by GHNP include the employment of forest guards, regular patrols, education (such as through a Street Theatre) and the establishment of nurseries and the alternative cultivation of herbs for sale in the Ecozone.

At the time of the mission, major hydroelectric developments were being constructed within the Ecozone in the Sainj Valley but well downstream from the Park. GHNP staff participate in minimising any possible impacts to the Park from construction operations including the presence of large numbers of construction employees in the vicinity of GHNP.

In summary, IUCN considers the addition of Sainj and Tirthan Wildlife Sanctuaries and the continued responsible, careful and sensitive process of dealing with people's traditional rights as important to strengthen the integrity of the nomination.

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

IUCN notes that the nominated property comprises two geographically separated areas, and is therefore clearly a nomination of a serial property. IUCN notes that the nomination does not note this aspect, and has not specifically addressed various aspects of serial nominations as called for within the Operational Guidelines (Paras 113, 137-139).

When IUCN evaluates a serial World Heritage nomination it asks the following questions:

a) What is the justification for the serial approach?

It is not clear that a serial approach is justified or desirable considering that the two component parts of the property are part of a single declared protected area, and are connected by an area which possesses additional values and is thus proposed for addition to the nominated area in the reasonably near future. The planned addition of the Sainj and Tirthan Wildlife Sanctuaries will significantly enhance the value of GHNP for biodiversity conservation as a contiguous highly protected area that will allow the effective conservation management of important habitats and endangered species such as the Western Tragopan and the Musk Deer.

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

The functional linkages of the two components are related to their status as two parts of GHNP; however their integrity would clearly be enhanced if they were part of a single, contiguous conservation unit.

c) Is there an effective overall management framework for all the component parts of the nominated property?

Yes, as two elements of a single National Park they are subject to the same protection status and management systems.

6. APPLICATION OF CRITERIA

The Great Himalayan National Park (GHNP), India has been nominated under criteria (vii) and (x).

Criterion (vii): Superlative natural phenomena or exceptional natural beauty and aesthetic importance
GHNP is a scenically very attractive natural area. Its undisturbed mountainous landscapes extend from 1,900 metres to 6,110 metres; it includes evidence of prior glaciations; its glaciers and forests feed unpolluted mountain streams; and its diversity of environments extend from rocky ice covered landscapes to alpine grasslands to coniferous forests and to mixed broadleaf and coniferous forests. The GHNP is undoubtedly an area of natural beauty; however, the nominated property is considered typical and representative of many high altitude mountains systems in other parts of the world. IUCN considers that more exemplary Himalayan mountainous scenery is represented by existing World Heritage properties.

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

Criterion (x): Biodiversity and threatened species
GHNP is of significance for the conservation of Western Himalayan biodiversity. It is located in steep Himalayan mountain environments at the junction of the Indo-Malayan and Palearctic Biogeographic Realms and protects important biodiversity within the "Western Himalayan Temperate Forests" globally significant ecoregion. GHNP also protects part of Conservation International's Himalaya "biodiversity hot spot" and is part of the BirdLife International's Western Himalaya Endemic Bird Area. The Park is home to 805 vascular plant species, 192 species of lichen, 12 species of liverworts and 25 species of mosses. Some 58% of its angiosperms are endemic to the Western Himalayas. The Park also protects some 31 species of mammals, 209 birds, 9 amphibians, 12 reptiles and 125 insects. GHNP provides habitat for 4 globally threatened mammals, 3 globally threatened birds and a large number of medicinal plants. However, the Outstanding Universal Value of the property is not clearly demonstrated and distinguished particularly in comparison with the relatively nearby Nanda Devi and Valley of Flowers National Parks World Heritage site.

The serial nature of the nomination is not clearly justified and the planned addition of the Sainj and Tirthan Wildlife Sanctuaries, and other adjoining areas, would significantly enhance the value of GHNP for biodiversity conservation, as a contiguous highly protected area that will allow the effective conservation management of important habitats and endangered species such as the Western Tragopan and the Musk Deer.

IUCN considers that the nominated property, in combination with other adjoining areas, has potential to meet criterion (x), however this requires further consideration and study.

7. RECOMMENDATIONS

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

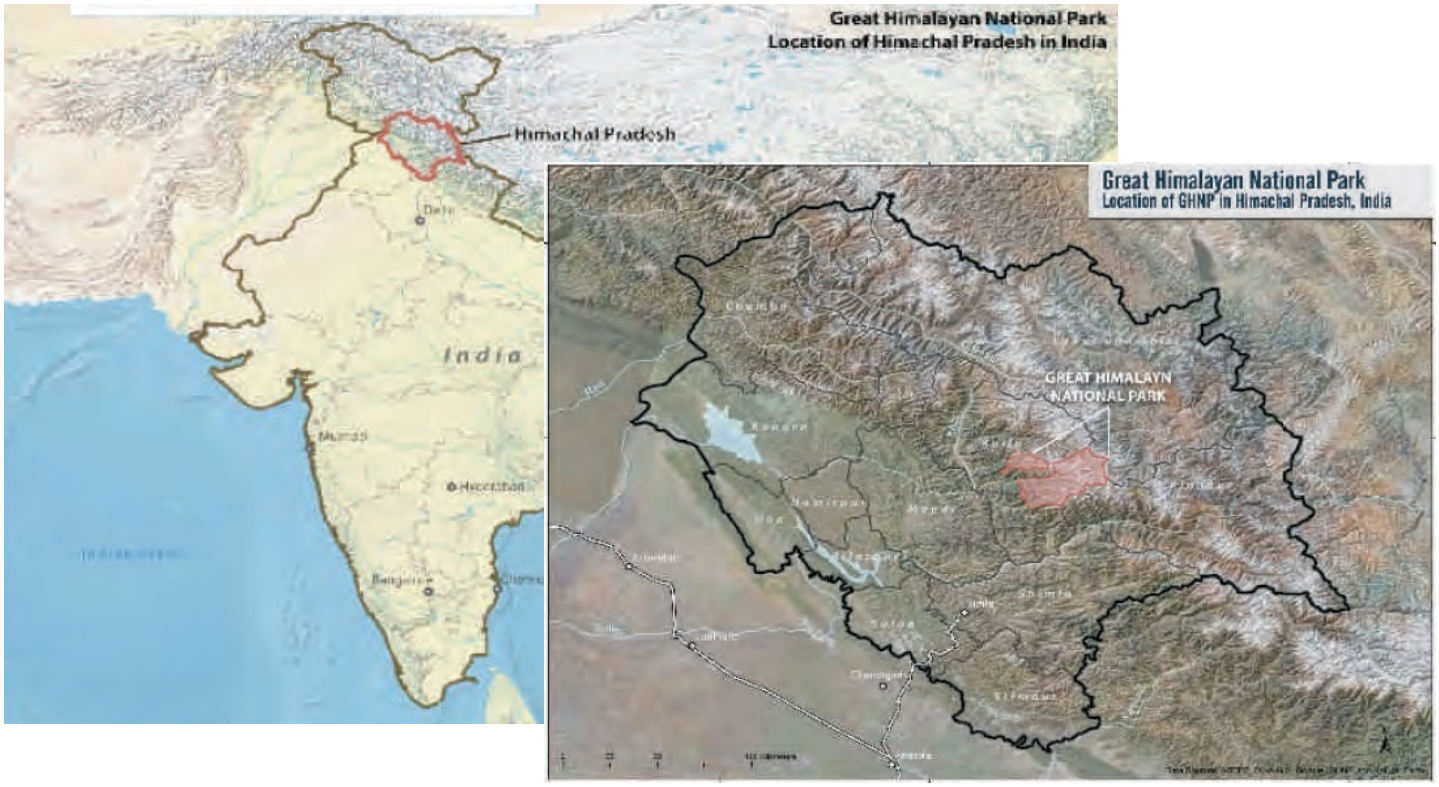
The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

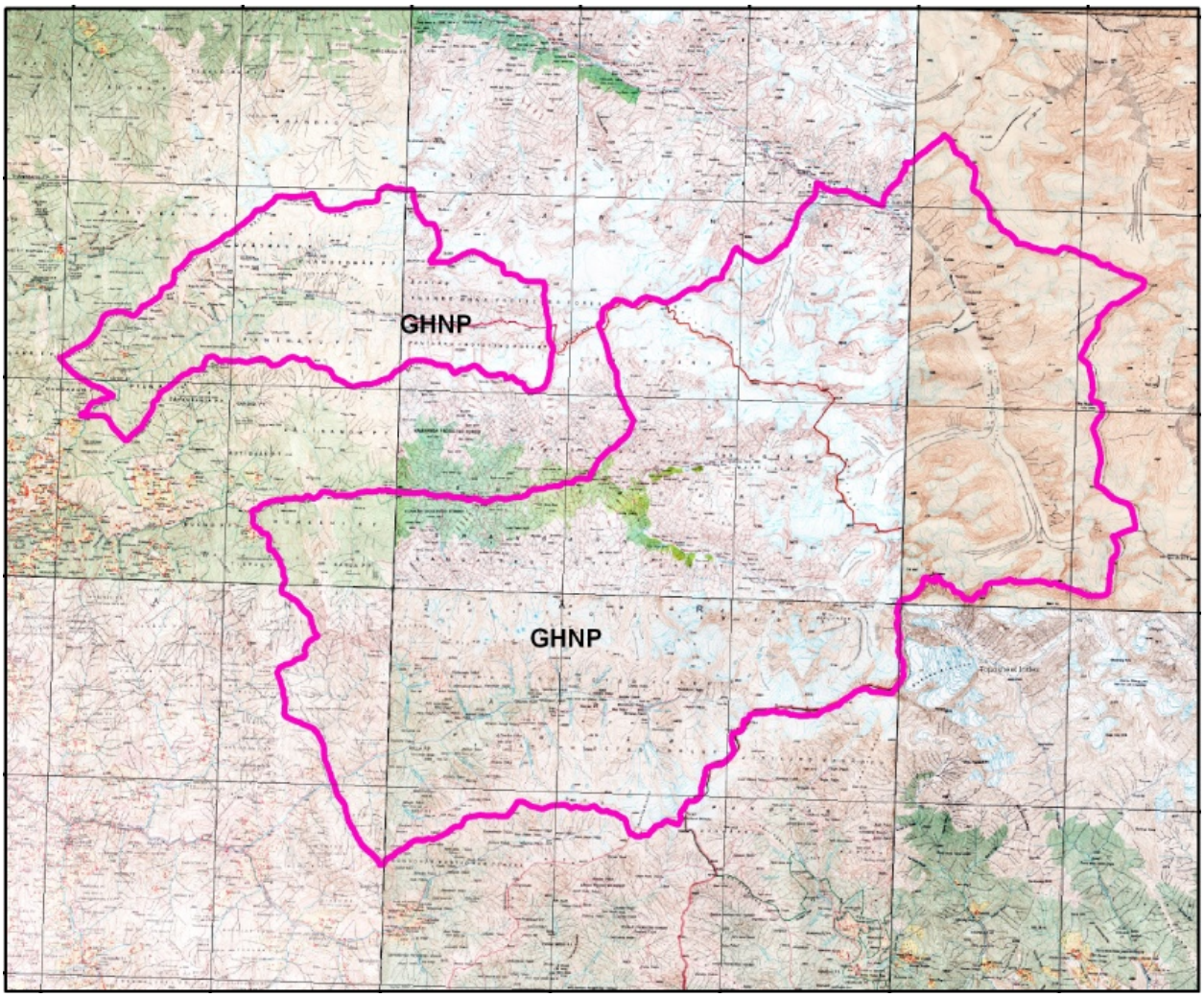
2. Defers the nomination of the **Great Himalayan National Park, India,** in order to allow the State Party to:

a) finalize the addition of Tirthan and Sainj Wildlife Sanctuaries to the nominated property to create a single area thereby increasing the overall size of the property and improving its integrity and potential to meet World Heritage criteria;
b) continue to resolve rights based issues with respect to local communities and indigenous peoples in the property including the Tirthan and Sainj Wildlife Sanctuaries;
c) confirm the outstanding universal value of an enlarged property through further detailed comparative analysis of the values of the property with reference to other sites within the Western Himalayas and, in particular, the Nanda Devi and Valley of the Flowers National Parks World Heritage site;
d) consider undertaking a comparative study with the support of the IUCN and other partners such as the International Centre for Integrated Mountain Development (ICIMOD) to fully assess the relative values of the nominated property against other sites in the Himalayas and adjacent mountain regions with a view to assessing potential World Heritage candidate areas and boundary configurations in this region, including potential serial nominations/extensions; and
e) continue longer term plans to progressively increase the size of the nominated property with the addition of other surrounding protected areas to form an aggregated property that potentially includes the Rupi Bhabha Wildlife Sanctuary, Pin Valley National Park, Khirganga National Park and the Kanawar Wildlife Sanctuary.

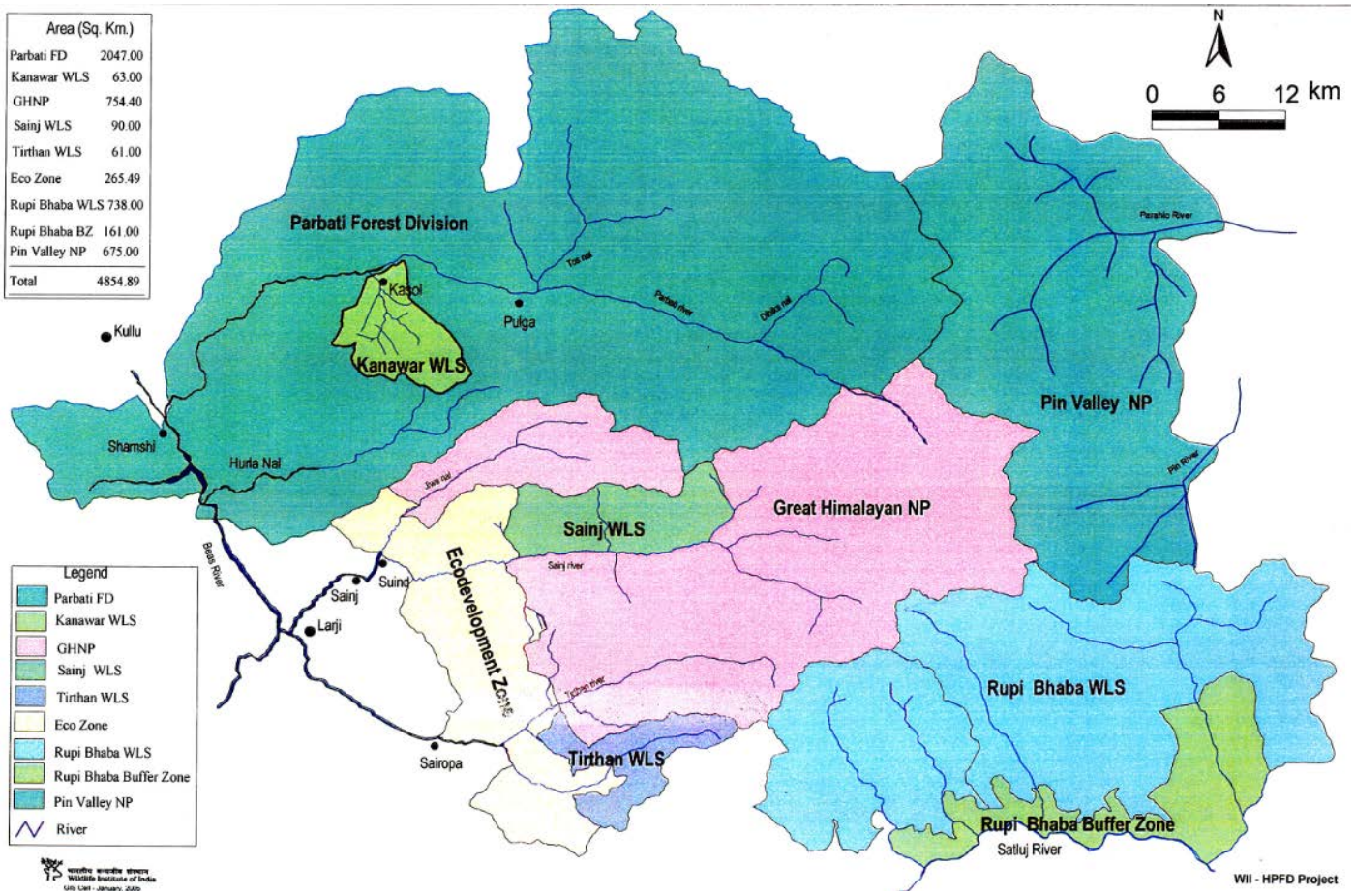
Map 1: Nominated property location in India



Map 2: Nominated property and buffer zone



Map 3: Great Himalayan Conservation Landscape



ASIA / PACIFIC

MOUNT HAMIGUITAN RANGE WILDLIFE SANCTUARY

PHILIPPINES

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

MOUNT HAMIGUITAN RANGE WILDLIFE SANCTUARY (PHILIPPINES) ID No. 1403

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination under natural criteria.

Key paragraphs of Operational Guidelines:
78 Nominated property does not meet integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: Following the IUCN World Heritage Panel meeting the State Party was requested to provide supplementary information on 20 December 2012. The information was received on 28 February 2013. IUCN requested advice from the State Party on commitments to extend the property to include additional habitat and on future additions to the nomination on Mindanao; on mining threats and their management; and on increased and longer term financing of the property.

c) Additional literature consulted: Amoroso, V., Aspiras, R., & Polizon, J. J. (2007). **Participatory inventory and distribution of endangered, endemic and economically important plants in the Hamiguitan Range Wildlife Sanctuary, Davao Oriental. A Progressive Philippines Anchored in Science: Building a Culture of Science in the Philippines. 29th National Academy of Science and Technology Annual Scientific Meeting, 29. MetroManila.** Amoroso, V., Obsioma, L., Sales, E., Ates, F., Orreno, H., Arlalejo, J., et al. (2007). **Biodiversity Assessment and Conservation of Hamiguitan Range and Its Environ, Davao Oriental.** Udvardy, M. (1975). **A Classification of the Biogeographical Provinces of the World**. IUCN-WCPA. (2006). **Enhancing the IUCN Evaluation Process of World Heritage Nominations: A contribution to achieving a credible and balanced World Heritage List.** UNESCO (2008). **'World Heritage and Biodiversity No.49'** http://whc.unesco.org/en/review/49/. IUCN, Gland, Switzerland; Hilton-Taylor, C. (compiler) (2009) **IUCN Red List of Threatened Species.** Ambal, R.G.R. et al. (2012). **Key Biodiversity Areas in the Philippines: Priorities for Conservation**. Journal of Threatened Taxa 4(8): 2788–2796. Amoroso, V.B. et al. (2009) **Inventory and conservation of endangered, endemic and economically important flora of Hamiguitan Range, southern Philippines**. Blumea 54: 71–76. Amoroso, V.B. and R.A. Aspiras (2011) **Hamiguitan Range: A sanctuary for native flora.** Saudi Journal of Biological Sciences 18: 7-15. Amoroso, V.B. et al. (2012) **Diversity and Status of Plants in Three Mountain Ecosystems in Southern Mindanao, Philippines**. Asian Journal of Biodiversity 3 (1). Beukema, W. (2011) **Herpetofauna of disturbed forest fragments on the lower Mt. Kitanglad Range, Mindanao Island, Philippines**. Salamandra 47 (2): 90-98. BirdLife International (2012a) **Endemic Bird Area factsheet: Mindanao and the Eastern Visayas**. Downloaded from http://www.birdlife.org on 26/11/2012 BirdLife International (2012b) **Important Bird Areas factsheet: Mount Hamiguitan Range Wildlife Sanctuary.** Downloaded from http://www.birdlife.org on 26/11/2012 Conservation International (2006) **Philippines. Conservation Outcomes**. Online. conservation International (2012) **Philippines. Hotspot description**. Online. Peterson, A.T. et al. (2000) **Distribution of the birds of the Philippines: biogeography and conservation priorities**. Bird Conservation International 10: 149-167. WWF (2012) **Ecoregion descriptions**. Online.

d) Consultations: 4 external reviews. The mission included extensive consultations with stakeholders and officials from the various managing agencies responsible for the property. These included officials both in the provinces surrounding the site (Mati City, Municipality of San Isidro and the Municipality of Governor Generoso, Protected Area Management Board (PAMB), Protected Area Superintendents Office (PASO), Bantay Gubat) and in Manila (UNICOM, Department of Environment and Natural Resources, Department of Tourism). In addition the mission consulted in detail with members of the scientific community who have worked and conducted research within and around the property including various specialists from contributing Academic Institutions and NGOs. Numerous discussions were held with members of local communities and organizations including a specific stakeholder meeting organized to meet with community representatives.

e) Field Visit: Naomi Doak, 6 - 15 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The Mount Hamiguitan Range forms a north-south running mountain ridge in the southeastern part of the Eastern Mindanao Biodiversity Corridor, within the Indomalayan Realm (Udvardy 1975). It is located in the southern most part of the Philippines on the island of Mindanao, north of Indonesia and west of the

Marianas Islands in the South Pacific. The nominated property, Mt. Hamiguitan Range Wildlife Sanctuary (MHRWS), straddles two municipalities and one city; San Isidro Municipality, Governor Generoso Municipality and the City of Mati in the Province of Davao Oriental. The nominated property totals approximately 7,133 ha comprising a core area of 6,349 ha and a buffer zone of 784 ha. The MHRWS is protected through several protected area regulations and is a component of the Philippines' National Integrated Protected Areas System (NIPAS).

The MHRWS has a generally warm and wet climate characterized by an even rainfall distribution throughout the year and the lack of a lengthy dry season. Relatively small annual temperature ranges coupled with high and constant relative humidity levels means a relatively stable climate. An undulating property that belongs to the Philippine Bio-geographic Zone 14 (Central Mindanao), which is considered to have the highest land-based biological diversity in terms of flora and fauna per unit area, it is the only protected forest noted for having a large and unique area of "pygmy" forest with century old trees thriving in a highly basic ultramafic soil. The variety of habitats contained within the property combined with the undulating landscape yield globally unique species of flora and fauna.

The property has an elevation range of 75 – 1,637 m a.s.l and runs roughly North-South along the Pujada Peninsula. Created as a product of magmatic and tectonic actions generated by the subduction of the Philippine Sea Plate, the tectonic collision resulted in an uprising of ocean crust, creating the mountain range. The resulting rocks, associated with the oceanic crust, are a mixture of sedimentary and ultramafic rocks containing metallic elements that render the soil unfavourable for normal vegetation growth. Containing rich deposits of nickel, iron and cobalt at elevations above 500 m, the soil has been found to contain high levels of laterite characterized by higher levels of iron, nickel and cobalt and lower levels of silica and alumina.

Despite the unfavourable soil conditions, within the nominated property, five vegetation types characterize the site; agro-ecosystems on lower elevations, dipterocarp forests, montane forests and mossy forests on higher elevations and mountain slopes, and mossy-pygmy forests on the highest windswept mountaintops. There are 957 species of flora belonging to 427 genera and 166 families including 723 angiosperms, 27 gymnosperms, 164 ferns and allies, 17 mosses, 13 liverworts, and 13 lichens. Thirty-five of the plant species are critically endangered, endangered or vulnerable and 163 are found only in the Philippines. The level of endemism in plant species has been found to increase with elevation with globally threatened species such as five species of Shorea [*S. astylosa* (CR, IUCN Red List 2008)*, S. polysperma* (CR, IUCN Red List 2008)*, S. contorta* (VU, IUCN Red List 2008)*, S. guiso* (VU, IUCN Red List 2008)*,* and *S. negrosensis* (VU, IUCN Red List 2008)] all found within the property. MHRWS is also home to 8 species of *Nepenthes*, accounting for 58% of all *Nepenthes* species occurring in the Philippines with 3 of these identified as being endemic to Mt Hamiguitan: *N. micramphora, N. peltata* and *N. hamiguitanensis*.

The property is home to 423 species of fauna; 15 species of non-flying mammal, 11 flying mammals, 108 bird species, 33 reptile species, 18 frog species, 142 butterflies, 31 dragonflies and damselflies, 46 spiders, 4 earthworms and 15 nematode species. Of the total 423 species of fauna 124 are endemic to the Philippines, 39 endemic to the island of Mindanao and five are endemic to the property. The relatively small area of the property is home to a total of 341 endemic species amongst a total of 1,380.

15 of the 108 recorded bird species are on the IUCN Red List (2008; Critically Endangered – 2 species, Endangered – 1 species, Vulnerable – 11 species, Near-threatened – 1 species). This total includes 2 species of birds which are listed as Critically Endangered, the Philippine Eagle (*Pithecophaga jefferyi*) and Philippine Cockatoo (*Cacatua haematuropygia*). In addition to the 15 birds included on the IUCN Red List (2008) the property is also home to another 70 threatened faunal species; 2 Endangered (EN), 21 Vulnerable (VU) and 1 Near-threatened (NT). Sixteen species of amphibians have been recorded within the site, of these 12 are endemic and 6 are globally vulnerable. There are 142 butterfly species, 3 of which are considered new and 44 of which are endemic; 2 eastern Mindanao endemics, 16 Mindanao endemics, 22 Philippine endemics and 4 site endemic species.

Portions of the property, specifically the dipterocarp and montane forests, were previously subjected to selective logging operations up until late in the 1980s. Other habitat types within the property were spared from logging operations, namely the mossy and the mossy-pygmy forest, because the trees were too small to provide significant commercial benefits. Threats in and around the property also include illegal collection of wildlife.

3. COMPARISONS WITH OTHER AREAS

To properly understand the relative values of the nominated property it is necessary to assess the values of the MHRWS against comparable biological sites. The nomination dossier includes a comparative analysis focused on the significance of the property including the ecological specialization shown by the species found in the site and its potential importance to conservation studies because of its levels of endemism and the ecological features.

The nomination dossier reviews an appropriate array of five relevant sites including the Giant Panda Sanctuary (China); Keoladeo National Park (India); Dong Phayayen-Khao Yai (Thailand); Rwenzori Mountains (Uganda); and Mount Kitanglad Natural Park (Philippines) and draws favourable concludions on MHRWS's relative high concentration of species (including rare species and endemics) in a "significant biogeographic region of the Philippines." Of the sites

included in the comparison conducted by the State Party, perhaps the most similar is the Dong Phayayen-Khao Yai Forest Complex (DPKY-FC). This World Heritage property was inscribed on the World Heritage List under Criteria (x) and, similar to the MHRWS, is home to critical habitat for species conservation. Both sites are found at similar elevation and are also similar in regards to the terrain and number of vegetation types. As with the other properties compared to MHWRS, DPKY-FC is significantly larger in regards to the total area. Despite this both sites harbor comparable levels of endemism and species diversity.

Further comparative research was undertaken to compliment the State Party's comparative analysis by focusing on a broad set of issues for comparable protected areas. The research considered twelve comparable properties: Garajonay National Park (Spain); Vallee de Mai Nature Reserve and Aldabra Atoll (Seychelles); The Laurisilva of Madeira (Portugal); Three Parallel Rivers (China); Alejandro de Humboldt National Park (Cuba); Galapagos Islands (Ecuador); Lord Howe Island (Australia); East Rennell (Solomon Is.); Juan Fernandez Islands (Chile); Kermadec Islands (NZ); and the Ryukyu Islands (Japan). The following issues were examined: characteristic biome; key values and significance; flora and fauna; tourism and habitation; and threats to the protected areas. The comparative analysis included sites of significantly larger area and in many cases corresponding larger numbers and diversity of species. As such in the majority of cases when considering the level of endemism and biodiversity as a measure of species density per unit of area, MHRWS often showed comparable if not higher levels of endemism. The analysis also revealed differences in the sites in regards to both topology and the nature of the contained diversity. A number of the sites included in the comparison are home, at some point, to significant numbers of migratory species while the species and diversity within the MHRWS is primarily terrestrial with many represented species having restricted ranges or exhibiting habitat specificity.

The closest biodiversity World Heritage property is the Puerto-Princesa Subterranean River inscribed also under criterion (x). MHRWS supports a high percentage of the bird (20%), amphibian (20%), mammal (16%), reptile (14%) and plant (10%) species within the Philippines biodiversity hotspot. This hotspot is only represented on the World Heritage List by Puerto-Princesa on Palawan Island in the western Philippines, which supports quite a different set of species and ecosystems compared to the nominated property on Mindanao Island. Overall less than 0.1% of the hotspot area is on the World Heritage List. The terrestrial and freshwater Global 200 priority ecoregions and Endemic Bird Area represented by the nominated property have all been identified as gaps on the World Heritage List and the rainforests of southern Mindanao Island have long been noted as having potential World Heritage quality (IUCN CNPPA 1982); however, given the fragmented nature and high local endemism levels of the remaining lowland and mountain forests on Mindanao, their full range of biodiversity values cannot be represented by a single site. It is therefore not surprising that the Philippine Tentative List includes several other forest sites on Mindanao: Mount Apo, Mount Malindang Range and Mount Matutum.

In conclusion the nominated property exhibits high global concentrations of endemism in a small area; is within a previously identified biodiversity gap on the World Heritage List; and coincides with a number of globally significant priority areas including a Conservation International Key Biodiversity Area (KBA), and BirdLife International Important Bird Area (IBA) in view of the significant bird population in its boundaries.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is state owned and managed by a number of Government agencies including national Government agencies, Provincial level agencies and local community organizations with the Department of Environment and Natural Resources (DENR) assigned as its administrator. The property is protected through a range of national and provincial legislation including the Republic Act 9303 (2004) declaring MHRWS; the National Integrated Protected Area System governing National Parks; Community-Based Forestry Management Agreements (CBFMA) and Certificates of Stewardship Contracts (CSC). The laws defining and affecting the property provide for a complementary and generally harmonized suite of protection including instruments for co-management of the areas surrounding the property. The laws control development within the boundaries of the property and are consistent in their objectives to protect the key values of the property. Agro-forestry operations intersperse with remnants of the natural forests within the buffer zone and are covered by CBFMAs and CSCs.

The property is zoned under a system providing a Strict Protection Zone and a Multi-Use Zone. The majority of the core zone (excluding 474 hectares) is classified as Strict Protection Zone with human activities limited to scientific studies and visitor entries requiring strict guidance by the protected area rangers and Bantay Gubat. The boundaries of the property are delineated under legal instruments which ensure protection and management of the site and prevent physical interventions, such as logging, mining exploration or surveying for energy resources. Enforcement responsibilities are shared between national and local governments in partnerships with local stakeholders including local and indigenous communities living in the periphery of the property.

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 align with zoning boundaries under the NIPAS and are appropriately located to include natural forest and significant features and habitat whilst excluding developed areas, agricultural lands and secondary growth forests to a large degree. The evaluation mission noted some concern regarding the extent of inclusion of known nesting habitat of the Philippine Eagle within the nominated property. Areas outside of the nominated property were identified as important habitat for the eagle. In addition the zone boundaries within the National Park have been drawn quite rigidly based on science and without sufficient recognition of the dynamics between the adjacent habitats. This approach can make the boundaries between the core and buffer zone and the buffer zone and adjacent areas, potentially difficult to manage. The State Party has advised in supplementary information that it proposes to progressively extend the core zone of nominated property to create a Wildlife Sanctuary to protect Philippine Eagle habitat and are undertaking legal, consultative processes which will move toward gazettal and demarcation.

The property has been nominated with a buffer zone. However, this buffer zone, whilst it surrounds the entire property, is relatively small in area. As such IUCN further recommended consideration to future rationalization and expansion of the buffer zone to enhance integrity and facilitate more effective management. The local community and the Local Government Unit surrounding and including large areas of the property, with territorial jurisdiction over the property have initiated protection and preservation measures and have gone so far as to declining proposals for mining in areas neighboring the property. The State Party has advised that they plan to also extend the buffer zone around the current nomination and the proposed wildlife sanctuary noted above.

An additional issue regarding boundaries relates to unresolved land claims by indigenous peoples which the State Party advised in supplementary information. More information is provided below under 4.4 Communities.

IUCN considers that the boundaries of the nominated property require adjustment to address a number of significant issues including the addition of critical Philippine Eagle nesting habitat, and enhanced buffer zones, and thus do not currently meet the requirements set out in the Operational Guidelines.

4.3 Management

The 2012 MHRWS Management Plan is overseen by the MHRWS PAMB and enacted by the MHRWS PASO together with the “Bantay Gubat” personnel from the three municipalities with territorial jurisdiction over the property. The Management Plan and an ecotourism business plan cover the property and include controls in regard to monitoring and visitor activities. The plan deals with a range of issues that are critical to the integrity of the property such specifying adequate financing for management, how access should be managed and how alien invasive species should be controlled. It is an umbrella plan within which detailed management actions should be designed and implemented. Management activities are detailed for the different stakeholders and zones within the property. However, a detailed plan for co-management structures, especially between national Government agencies and local communities could be outlined in more detail, especially in regards to the management of potential impacts from tourism if the site is more opened up for tourism. The plan is up to date and based on scientific knowledge.

Strong links and dialogue between researchers, managers and local indigenous communities benefit the management of the property. Particularly commendable is the role of the local, indigenous communities through the “Bantay Gubat” and the Scientific Community through local research institutions and NGOs. The approach to co-management and research is adaptive and management oriented, working towards finding solutions to on ground conservation challenges while providing livelihood solutions for local communities. Cooperation is driven through participation of stakeholders on the PAMB, which meets regularly and includes representatives from all relevant stakeholders. The current consultation and coordination structures appear to be effective and further co-management arrangements between government agencies and the local communities should be developed over time to foster more empowered stakeholder engagement in management.

Law enforcement is underpinned by a number of legal instruments as outlined above. The site mission was informed that breaches within the property, including illegal removal of timber or wildlife as well as access to the property without permits, may incur prosecution; however, it appears that at present few serious incidents occur, or they remain undetected. The level of community involvement in the provinces surrounding and including the property also helps to ensure that small breaches and incidents are reported to the relevant agency. There is a need for increased resources, including staffing levels to enforce the laws and deal with anticipated increased access and tourism.

Comprehensive business planning including mechanisms for sustainable financing has not yet been undertaken for the MHRWS. There is an urgent need to undertake business planning in regards to access to the site, community-based activities such as guided tours, and sustainable financing mechanisms to ensure continued resources for and expansion of the Bantay Gubat. The property is presently closed to visitors in response to concerns over critical habitats and any re-opening of the property should be carefully considered and appropriately planned to ensure limited impact on habitats and the design and implementation of sustainable tourism. Local communities are engaged in the management of the site; however, a more entrepreneurial approach could be developed to create additional income that could be

used to feed back into growing community and NGO conservation actions. An impact fee or conservation contribution could be charged to reinforce the special nature of the property while assisting in ensuring financial stability for local communities and the Bantay Gubat system of Community forest guards while also providing funds for continued capacity building and training.

Despite recent increases in staffing and resources and an obvious commitment from Provincial authorities to the management of the property staffing levels, resources and capacity remain low. Currently USD 583,000 p.a. is being spent on management with current funding coming from a combination of sources, including the national government and the Provincial governments of Davao Oriental and the three municipalities of MHRWS. Up until 2011 the budget for salaries of the Bantay Gubat were not assured and even now relies upon annual budget commitments from the management agencies. Staff numbers have increased but remain inadequate for comprehensive management of the property, and funding is insufficient for long-term stability in management. The State Party in supplementary information has detailed funding commitments for the next five years as well as budget submissions which are in train.

Of special note are the efforts and commitment of the "Bantay Gubat" and the Porters Association as well as that of the broader local and indigenous communities who agreed to a voluntary closure of the property in recent years to ensure its conservation and to limit impacts from tourism. Such efforts are to be commended. However, given the commitment of local communities and the potential impacts from increased visitation, the benchmarks for such a decision in the past need to be considered for future closures and a detailed timeline for opening access to the property should be developed so as to ensure adequate resources, capacity and management structures are in place to limit any future impacts on the values of the property.

IUCN considers the management of the nominated property mostly meets the requirements set out in the Operational Guidelines; however there are concerns noted below regarding overlapping land claims that require further consideration.

4.4 Community

Discussions with community representatives during consultation meetings in Mati City, Davao Oriental, as well as during general conversations during the IUCN mission, confirmed that consultation has taken place on the nomination process. The nomination process for the MHRWS has been adequately promoted locally amongst the communities and Provincial level authorities and with National level Government Agencies. It was clear from the attendance and comments at the stakeholder meeting from local community representatives that there is notable support for the nomination of the property. The communities appear motivated by their pride and passion for the property and expressed a strong desire to maintain their current lifestyles, including significant involvement in the management and continued conservation of the property.

Impressive levels of local community and NGO involvement are evident, most notably in the Municipality of San Isidro. Local NGOs such as the Philippine Eagle Foundation are doing quality research work in cooperation with other academic institutions and the Government agencies. Local community organizations such as the Porters Association and the Bantay Gubat association are actively involved in research and management.

IUCN requested advice from the State Party on reports of overlapping land claims by indigenous peoples within the property and its buffer zone. The State Party in supplementary information noted that they were unaware of these claims at the time of nomination. Advice from the National Commission for Indigenous Peoples (NCIP) confirmed claims totaling 30,000ha significantly overlapping with the nominated area, buffer zone and proposed extensions. IUCN consider that information on these claims is required, to ensure there is a common understanding among all stakeholders to ensure the protection and conservation of the property. Given the late information about these claims it has not been possible to consider this information during the evaluation process.

4.5 Threats

Without doubt development in areas adjoining the property presents the most immediate and potential future threat to the MHRWS. There are some good quality stands of dipterocarp forest remaining within the buffer zone of the property which are relatively free of invasive species and represent reasonably high quality habitat but are currently covered by mining leases. There has been noteworthy progress made in terms of management and agreement between mining lease holders. The local authorities advised the mission that they had been in discussion with the mining company and had come to agreement in regards to rotation and protection of important habitat. In addition a number of the political areas covering the property have declined offers for mining lease arrangements. An Industrial Forest Management Agreement (IFMA) also exists just outside the property and has the potential for impacts on the buffer zone and there is an excellent programme of collaborative management helping to address and plan for potential impacts from mining activities adjacent to the property. Academic institutions, Government agencies, at both national and local levels, NGOs and communities are working together to address these issues. The State Party has advised that there are several small mining operations (11) and a larger company Asiatic Management Corporation (AMCOR) with whom constructive relationships have been developed. AMCOR relinquished 7,000ha to provide for the Philippine Eagle habitat. Mining activity is downslope from the nominated property; however, there are numerous mining concessions pushing up against the MHRWS and the proposed addition. No new concessions should be entertained and any mining

activity outside of the site should be subject to strict environmental impact assessment.

The discovery of the "pygmy forest" contained within the property by a group of researchers in 1993 led to an increase in the interest and desire of nature enthusiasts and mountaineers to visit the property. In 2009, it was estimated that around 2,500 visitors made the climb to the pygmy forest. The MHRWS Management Plan recognizes the need for an ecotourism business plan specific to the property and in light of this not being in place the PAMB of MHRWS issued Resolution 2010-02, closing the property indefinitely to visitors, other than researchers, until such time as a responsive visitor management program is put into place. As such current access to the property remains limited to research and scientific purposes. Given the indefinite closure of the property visitor impacts are minimal; however, a general increase in pressure to provide access and in visitation could follow World Heritage inscription, thus potentially increasing demand for access while also impacting on direct sources of pressure on the property, including pollution from tourism activities.

The property is well protected through a strict access control regime within the core zone and through the requirement of all visitors to be accompanied by porters and Bantay Gubat. Many areas within the core zone remain unexplored and off-limits to visitors. Guided access in sensitive areas will assist in ensuring carrying capacity limits are respected. However, a specific Ecotourism Master Plan that includes an assessment of the carrying capacity of the property and the trails that would be used, as well as a detailed timeline for ensuring adequate controls on tourism numbers before the property is opened to visitation, is required.

Monitoring of impacts from tourism activities should be conducted to detect any impact on key species in anticipation of increased visitation. Business planning and the introduction of an impact fee for guided tours should be considered to manage numbers and provide a benefit flow to the local community. 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.

MHWRS is not currently subject to detectable significant impacts from climate change. Nonetheless there are likely impacts of climate change on species compositions, ranges, seasonal cycles, habitat preferences and the like. Changes to weather patterns and a higher frequency and intensity of natural disasters such as landslides, storms and droughts could impact the property in the future. Research and enhanced capacity on climate change should be developed to better understand species specific impacts; vulnerability to natural disasters; and contingency planning requirements. Community awareness programmes should also be developed on climate change and responses.

In summary whilst the nominated property is at risk from both direct and indirect impacts from activities outside the buffer zone, it is currently subject to solid legal protection and has a sound planning framework that recognizes the range of potential impacts and is attempting to consider these in both the legal protection and on the ground management of the property. Nevertheless significant concerns regarding boundaries and the large overlapping indigenous land claims should be resolved.

In summary, IUCN considers the nominated property does not meet the conditions of integrity and protection and management requirements as outlined in the Operational Guidelines given concerns regarding boundaries and unresolved land claims by indigenous peoples, which require further consideration.

5. ADDITIONAL COMMENTS

None.

6. APPLICATION OF CRITERIA

The Mount Hamiguitan Range Wildlife Sanctuary has been nominated under natural criterion (x):

Criterion (x): Biodiversity and threatened species
MHRWS displays high levels of endemism in a very concentrated area and protects the globally unique biodiversity of remaining lowland and mountain forests on the island of Mindanao. The property is home to 957 species of flora including 171 endemics, 3 of which are site endemic. It is also home to 423 species of fauna with 124 endemics, 5 of which are found only in the MHWRS. The range of species includes globally significant species including critically endangered flora and fauna. The site has developed in semi isolation with species adapted to the unique soil conditions and elevations to create a series of discrete terrestrial habitats such as the pygmy forest. The property is home to a number of critically endangered, endangered, threatened and vulnerable species, including 72 threatened faunal species, and displays high level of endemism for amphibians, mammals and butterflies. High levels of endemism are also evident in regards to plant species, including 5 species of rare and endemic *Shorea* and 58% (8 species) of *Nepenthes* species occurring in the Philippines, 3 of which are site endemic.

IUCN considers that the nominated property has the potential to meet this criterion subject to integrity issues being addressed.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

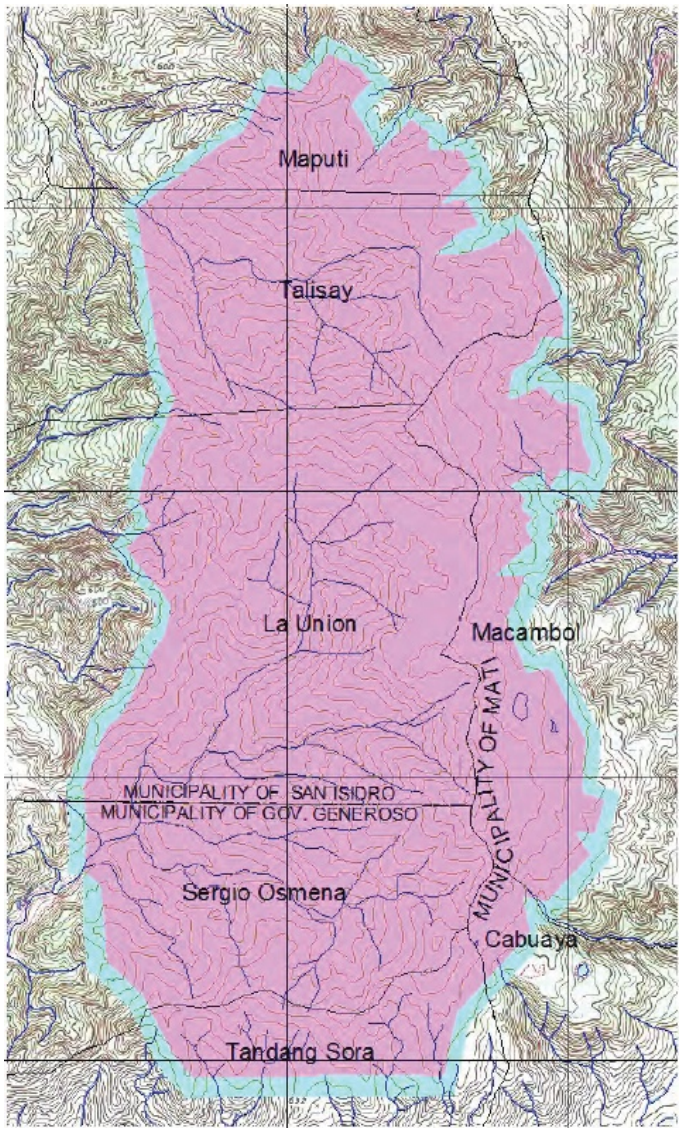
2. Defers the **Mount Hamiguitan Range Wildlife Sanctuary, Philippines,** taking note of the potential for this property to meet criteria (x), in order to allow the State Party to:

a) work with the National Commission for Indigenous Peoples (NCIP) to resolve any outstanding land claims to ensure there is broad based support for the nomination of the property and that any future use of the area does not compromise the Outstanding Universal Value of the property;
b) finalise a Memorandum of Understanding with stakeholders to secure cooperation on the protection and management of the property;
c) consider future expansion of the property to include important nesting habitat for endangered species such as the Philippine Eagle and to furthermore expand the buffer zone in order to enhance the integrity of the property;
d) prepare a detailed Visitor and Tourism Management Plan as a sub plan to the Management Plan in recognition of the potential for increasing pressure for access and higher numbers of park visitors. Such a plan should be prepared in consultation with local communities to anticipate and plan for the impact of opening the site to increased visitation and to ensure that local people share in the benefits of future tourism use of the site;
e) develop and implement a research and monitoring programme to assess and adapt to the impacts of climate change on the property; and
f) consider the progressive nomination of further serial extensions to the property, to include other significant reserves on Mindanao.

3. Commends the State Party, and the range of stakeholders in the nominated property for their commitment to this nomination, and encourages the State Party to resubmit the nomination, with appropriate assistance from IUCN.

Map 1: Nominated property location

Map 2: Nominated property and buffer zone



ASIA / PACIFIC

CAT TIEN NATIONAL PARK

VIET NAM

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

CAT TIEN NATIONAL PARK (VIET NAM) – ID No. 1323

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: Not to inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
Paragraph 77: Nominated property does not meet relevant World Heritage criteria.
Paragraph 78: Nominated property does not meet integrity or protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: The field evaluation mission noted a number of questions from the State Party during its visit and proposed these could be raised by the State Party with IUCN via a letter; however no further information was received.

c) Additional literature consulted: A wide range of literature and published surveys consulted, selected references include: BirdLife International (2012). **Endemic Bird Area factsheet: South Vietnamese lowlands.** BirdLife International (2004). **Cat Tien National Park**. In: Sourcebook of existing and proposed protected areas in Vietnam. Second edition. Hanoi: BirdLife International in Indochina and the Ministry of Agriculture and Rural Development. Blanc, L., Maury-Lechon, G., and Pascal, J. P. (2000). **Structure, floristic composition and natural regeneration in the forests of Cat Tien National Park, Vietnam: an analysis of the successional trends.** Journal of Biogeography 27(1): 141 ff. Brook, S., Van Coeverden de Groot, P., Mahood, S. and Long, B. (2011). **Extinction of the Javan Rhinoceros (*Rhinoceros sondaicus*) from Vietnam.** WWF Report VN 2011. Evans, T. (2007). **"Overview of Seima Biodiversity Conservation Area, eastern Cambodia"**. Wildlife Conservation Society Cambodia. Harman, P. and Jarvis, J. (2011). **Cat Tien National Park Eco-tourism Development Strategy 2011-2015**. SNV 2011. Kusnetsov, A. N. and Kusnetsova, S.P. (2011). **Structure of the forest ecosystem at Cat Tien National Park**. Tuonova, In: T. A. (Ed.) **Structure and functions of the soil community of a tropical monsoon forest** (National Park Cat Tien, southern Vietnam). Moscow: Russian Academy of Sciences. 277 pp (in Russian). Monastyrskii, A. L. (2012). **Vietnam-Russia Tropical Centre Research Activity in Cat Tien National Park 1987-2012**. PPT presentation at the workshop "Biodiversity and conservation of Cat Tien National Park", 23 September 2012. Murphy, D. (2001). **Mammal observations in Cat Tien National Park, Vietnam, in 2000-2001**. CTNP Technical Report No. 35. Cat Tien: Cat Tien National Park Conservation Project. Murphy, D. (2004). **The Status and conservation of the Javan Rhinoceros, Siamese crocodile, Phasianidee & Gaur in Cat Tien National Park 2004**. Cat Tien National Park Conservation Project Technical Report No. 50 May 2004. Ngyyen, V. O'Kelly et al., (2012). **Identifying conservation successes, failures and future opportunities; assessing recovery potential of wild ungulates and tigers in eastern Cambodia**. PloS one 7(10): e40482. Pahl, K. R. (2011). **Natural History of the Siamese Crocodile (*Crocodylus siamensis*) in Cat Tien National Park, Vietnam.** Cologne and Bonn: Cologne Zoo, Museum Koenig, Bonn University and IUCN SSC Crocodile SG. 45 pp. Pham Huu Khanh (2011). **Research on the habitats' distribution characteristics and ecological relationships of Gaur (Bos gaurus H.Smith, 1827) population in the Cat Tien National Park for conservation and management**. PhD dissertation, Vietnam Forestry University, Hanoi, 131p. Scotson, L. (2008/2009). **Wild bear population status Cat Tien National Park Vietnam Asiatic Black Bear *Ursus thibetanus* & Malayan Sun Bear *Helarctos malayanus***. Free the Bear Fund Inc. 2009. Tan, P. (2010). **Resource Management and Visitor Impact Monitoring Program of Cat Tien National Park** WWF Vietnam 2010. Tuoi Tre (2011). **Experts say No to Dong Nai hydro-projects.** Downloaded from http://www.tuoitrenews.vn/cmlink/tuoitrenews/society/experts-say-no-to-dong-nai-hydro-projects-1.39830 on 20/10/2012. UNDP (2011). UNDP Project Document: PIMS 3965: **Removing barriers hindering protected area management effectiveness in Viet Nam.** Government of the Socialist Republic of Viet Nam, UNDP and GEF. 67 pp. Varma, S., Dang, Nguyen Xuan, Van Thanh Tran and Sukumar, R. (2008). **The elephants *Elephas maximus* of Cat Tien National Park, Vietnam: status and conservation of a vanishing population**. Oryx 42(1):92-99.

d) Consultations: 8 external reviews. The mission met with representatives of the Dong Nai Province People's Committee; the Binh Phuoc Province People's Committee and its relevant Departments, and a representative of the Lam Dong Province. Meetings were also held with the Director and staff of Cat Tien National Park (CTNP). The mission also met with the Vietnamese National Commission for UNESCO, representatives of other State organizations, municipalities and communes, and various scientists.

e) Field Visit: Tobias Garstecki and Leigh Vickery, 17-27 September 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The nominated property is located entirely in Dong Nai Province, southern Viet Nam, about 100 km northeast of Ho Chi Minh City. The evaluation mission confirmed that the nomination covers a much smaller geographic range than stated in the nomination dossier. The nominated property occupies 8,000 ha in the centre of the Nam Cat Tien section of Cat Tien National Park (CTNP). This section is one of three sections of the national park. On its northwestern border, which is also the border between Dong Nai and Binh Phuoc provinces, it is contiguous with the Tay Cat Tien Section. This and another section (Cat Loc section in Lam Dong Province) are not part of the nominated property.

The nominated property is surrounded by a buffer zone of 37,000 ha, which consists of the remaining part of Nam Cat Tien sector and the entire Tay Cat Tien Sector of CTNP. Representatives of the State Party emphasized during the IUCN mission that this buffer zone is not part of the nominated property. In this report, IUCN refers to "Cat Tien National Park" (CTNP) only when writing about the entire national park, to distinguish it from the (smaller) "nominated property", which comprises only about 11% of the national park's overall area of 73,878 ha.

CTNP is designated as a National Park under Vietnamese law and was designated a UNESCO Biosphere Reserve, initially the Cat Tien BR in 2001, and later extended as the Dong Nai Biosphere Rerserve in 2011. The site also has Ramsar Site status (Bau Sau [Crocodile Lake] Wetlands and Seasonal Floodplains) designated in 2005. The nominated property is situated in the lowlands of southern Viet Nam, at the foot of the Central Highlands. Its topography is characterized by low, gentle hills up to an altitude of ca. 300 m a.s.l. The Dong Nai River forms the eastern boundary of the Nam Cat Tien sector of CTNP, without directly bordering the nominated property. The numerous streams that originate in the nominated property drain into this river. The lowlands in the north of the area are poorly drained and support extended swamps and lakes, which are fed by seasonal flooding of the Dong Nai River. This is the result of flow reversal of the Dak Lua stream during flooding. Flooding occurs during the rainy season (April to November), which is typical of the tropical monsoon climate of the area.

CTNP supports a wide variety of habitat types, including primary and secondary lowland evergreen forest dominated by Dipterocarps; primary and secondary lowland semi-evergreen forest, dominated by *Lagerstroemia* species; freshwater wetlands with open lakes and seasonally inundated grasslands; flooded forest; and a range of secondary habitat types, including grassland and areas dominated by bamboo. The tropical monsoon forests of CTNP grow on different soils developed on basalt rocks, shales and sandy river deposits under variable hydrological regimes, including long-term inundation. The forest stands are complex in structure, with three to five vertical tree storeys distinguished. The proportion of primary and secondary forest within the nominated property is the subject of ongoing debate but is not made clear within the nomination dossier. Similarly the mix of habitat types within the nominated property is not clearly documented in the dossier.

Neither the nomination dossier nor the scientific literature provide species numbers specifically for the nominated property, because neither past monitoring activities nor scientific surveys have focused exclusively on this small part of CTNP. Usually, species numbers for either the entire park or individual subsections (e.g. Nam Cat Tien or Cat Loc sections) have been reported. For many species that are known to occur within the overall park, occurrence within the nominated property might be inferred from the concentration of their habitats inside the nominated property (e.g. for most wetland species). However, this is certainly not the case for all species. Therefore, the species numbers of vascular plants and fauna given in the nomination dossier are almost certainly an overestimate of the actual species number within the nominated property. This concern has been reinforced by a number of expert reviewers. IUCN concludes that an estimate of species numbers of vascular plants and fauna within the nominated property is not currently available, and cannot be inferred based on the available information. Therefore, further discussion of species numbers, including in comparison to other sites, refers to numbers for CTNP as a whole, noting these overestimate those of the nominated property by an unknown margin.

As noted above it is difficult to assess accurate species data for taxonomic groups within the nominated property. For example, Table 1 compares the species numbers by taxonomic group listed in the nomination dossier with those of BirdLife International (2004). According to this comparison, the species numbers for specific taxonomic groups according to the nomination are up to 30% higher than the 2004 maximum estimates including unconfirmed species, and the total vertebrate number is 9% higher. Although 24 vertebrate species and 40 butterfly species (including several species new to science) have been recorded in CTNP in recent years, and more are likely to be found in the near future, the species numbers listed in the nomination dossier appear to be maximum estimates even for the entire park. This is particularly true for fish diversity, which would be further reduced if only the nominated property would be considered and the ichthyofauna of the Dong Nai River, which borders the park but not the property, would be excluded.

According to the nomination dossier, 26 globally threatened plant species grow in the entire CTNP, among them 5 globally critically endangered and 9 globally endangered species. The nomination dossier further lists 23 plant species endemic to Viet Nam.

Table 1. Comparison of species numbers of various taxonomic groups at Cat Tien National Park according to the nomination dossier and BirdLife International (2004).

Taxonomic group	Species Nos (nomination dossier)	Species Nos ***confirmed only*** (BirdLife International 2004)	Species Nos ***including unconfirmed*** (BirdLife International 2004)
Vascular plants	**1,610**	**> 1,300**	**-**
Mammals	113	76	108
Birds	348	320	339
Reptiles	89	74	83
Amphibians	45	35	39
Fish	168	99	130
(Insects)	826	435*	439*
Total vertebrates	**763**	**604**	**699**

*butterflies only

Similar inaccuracies were noted for globally threatened and restricted range animal species. The nomination dossier lists 56 globally threatened animal species for the entire CTNP, among them 3 (globally) critically endangered species (Javan Rhinoceros, White-shouldered Ibis and Siamese Crocodile) and 14 globally endangered species. However, the Javan Rhinoceros was reported extinct from the Cat Loc section of CTNP, where it had been rediscovered in the early 1990s, in 2011. The White-shouldered Ibis was not encountered during a waterfowl monitoring programme in 1999-2004 and it has never been seen by a professional birding guide who has been working in the area for the last ten years, and who was interviewed during the evaluation mission. The same is true for the globally endangered White-winged Duck. Among the mammals, park staff were unable to confirm the presence of Tiger, Leopard, Clouded Leopard, Asian Golden Cat, Hog Deer, wild Water Buffalo and Banteng inside the park, although the latter has reportedly been documented in Vinh Cuu Reserve near CTNP in 2012. If all these factors are taken into account, the number of globally critically endangered animal species in the park decreases to 1, and that of globally endangered species to 9. The overall number of globally threatened species including lower threat categories might decrease by a similar proportion in comprehensive analysis. Table 9 of the nomination dossier lists 47 animal species endemic to Viet Nam or Indochina. Independent of the question whether all of these species currently occur at CTNP, this list overstates the number of restricted range species in the park. More than half of the mammal species listed also occur beyond Indochina, and the same may be true for other taxonomic groups.

Despite the fact that both total species richness and the number of globally threatened and restricted range species of fauna are overestimated in the nomination dossier, overall species richness and the richness of functional groups per area is high in CTNP, as a consequence of its considerable habitat diversity. CTNP also remains an important stronghold of several globally threatened species and groups such as the Siamese Crocodile, Gaur, as well as several globally threatened pheasants and primates. CTNP is also home to all three trigger species of the Southern Viet Nam Lowlands Endemic Bird Area. The Biosphere Reserve and Ramsar Site status of CTNP recognizes the international significance of these values.

3. COMPARISONS WITH OTHER AREAS

Apart from the challenge of defining the precise species numbers for the smaller component of CTNP which has been nominated, the comparative analysis submitted in the nomination dossier is not informative because it compares CTNP to sites that belong to different biomes and/or ecosystems.

Additional comparative analysis conducted by the UNEP World Conservation Monitoring Centre (UNEP-WCMC) shows that CTNP supports a substantial portion of the species in the Indo-Burma biodiversity hotspot and up to 13% of the plant species, 30% of the mammal species, 37% of the bird species, 27% of the reptile species, 29% of the amphibian species and 21% of the freshwater fish species in Viet Nam. However, this assessment is based on data for the whole of CTNP and a number of species are either reported as extinct or their local conservation status is unknown. CTNP also includes a number of endemic species and globally threatened species, including the Critically Endangered Siamese Crocodile and the Vulnerable Gaur. UNEP-WCMC conclude that whilst CTNP has comparable reported biodiversity levels similar to several other Vietnamese National Parks (apart from the biologically rich forests of Phong Nha-Ke Bang National Park and the adjoining Him Nam No National Protected Area in PDR Lao). However, this is heavily qualified by the fact that potential integrity issues may prevent the nomination of a larger area which is likely to be necessary to represent and support the globally significant biodiversity values of the whole park.

Since there are no reliable estimates of the species richness of the nominated property as opposed to the entire CTNP, data for the latter have been used for a further comparative analysis summarized in Table 2. Four sites, which partly belong to the same ecosystem type and biogeographic region as CTNP, were chosen for comparison.

Wet Tropics of Queensland, Australia - criteria (vii), (viii), (ix) and (x): This property is of outstanding importance for the concentration, diversity and endemism of primitive Gondwanan flora which records eight major stages in the earth's evolution during 35 million years of isolation. With regard to criterion (x), the Queensland wet tropics are most outstanding in terms of their flora: 2,845 species of vascular plants

have been recorded in 1,037 genera and 221 families, 75 of the genera being endemic to Australia and 50 restricted to the area itself. However, there is also a rich fauna typical of the Australian tropics including various globally threatened species. The species richness of flora within this area, which is more than 10 times the size of CTNP, is more than twice the conservative estimate for the latter used in Table 2. Faunal diversity is only slightly higher while the fauna itself is very different from that of CTNP.

Dong Phayayen – Khao Yai Forest Complex, Thailand - criterion (x): This complex of five protected forests in southern Thailand contains all the major rainforest habitat types of eastern Thailand and some of the region's largest remaining populations of many tropical forest species which are under pressure elsewhere, including a number of globally threatened animal species. The diversity of plants of this area is almost twice that of CTNP. Overall vertebrate species number is similar to that of CTNP, but Dong Phayayen – Khao Yai Forest Complex holds a number of globally threatened and iconic large vertebrate species including Tiger and Banteng that are most likely extinct in CTNP.

Gunung Mulu National Park, Malaysia - criterion (vii), (viii), (ix) and (x): Gunung Mulu National Park is the most intensively studied area of tropical karst in the world. Both above and below ground the Park has a wide range of endemic animals and plants in seventeen vegetation zones, including many globally threatened rainforest species. Although the site is mostly known for its caves and cave fauna, only 200 of its overall fauna are cave species. Gunung Mulu National Park has a comparable plant species richness and a lower vertebrate species richness than CTNP although it is much larger than the latter. Among the invertebrates, the butterfly fauna of the park is much less diverse than that of CTNP.

Seima Biodiversity Conservation Area, Cambodia: This area, which is situated only about 100 km distant from CTNP, is approximately 98% covered by natural vegetation and contains a high diversity of forest types with a similarly diversified fauna. This includes a number of large and globally threatened vertebrates including Banteng and White-shouldered Ibis. However, the existence of other key species that have been reported from the site, particularly Tiger, is unlikely. The area lacks the wetland element of CTNP, which may be one of the reasons that overall species richness is much lower there than at CTNP, particularly in relation to its significantly larger surface area.

Table 2. Comparison of the area, species richness and number of globally vulnerable, endangered and critically endangered species of CTNP with those of comparable tropical rainforest sites in South East Asia and Australia. The comparison is based on species number estimates including unconfirmed records (the intermediate of the three estimates in Table 1, from BirdLife International 2004) for the entire CTNP as no estimate of the species richness of only the nominated property is possible.

Site	CTNP (whole national park, not only the nominated property)	Queensland Wet Tropics, Australia	Dong Phayayen – Khao Yai Forest Complex, Thailand	Gunung Mulu National Park, Malaysia	Seima Biodiversity Area, Cambodia
Area (ha)	70,548	864,420	615,500	52,864	292,690
Vascular plants	**>1,300**	**2,845**	**2,500**	**1,500**	**?**
Tree species	80	?	?	284	?
Mammals	108	110	112	81	93
Birds	339	314	392	270	334
Reptiles	83	151	200	55	60
Amphibians	39	58		76	
Fish	130	80	?	48	?
Total vertebrates	699	714	702	530	487
Butterflies	470	?	?	281	?
Globally threatened animal species					
CR	1	4	2	0	3
EN	9	4	11	3	9
VU	10-20	4	17	20	21

Based on this analysis IUCN considers that the floral species richness of the flora of CTNP does not provide a clear basis for Outstanding Universal Value under World Heritage criterion (x). In terms of plant biodiversity, CTNP appears of national and regional (Indochina) than of global importance. IUCN notes that the richness of Viet Nam's lowland evergreen forests is generally considered similar at the generic level but lower at the species level than that of other parts of southeastern Asia including Indonesia and Malaysia.

The above analysis shows that the species richness of vertebrates is at a similarly high level than that of some of the most species-rich rainforest sites inscribed in the World Heritage List, and much higher than that of another comparable site in Cambodia.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is protected as part of a national park of national importance under Vietnamese law. 35,000 ha of protected forest at Nam Cat Tien was decreed in 1978 with the area upgraded to national park in 1992. The Tay Cat Tien and Cat Loc sectors were added to CTNP in 1998. This decision also transferred management responsibility for CTNP from the Provincial People's Committee to the Ministry of Agriculture and Rural Development (MARD). The legal basis of the designation of CTNP derives from the Law of Forest Protection and Development (2004), the Biodiversity Law of the Socialist Republic of Viet Nam (2008), and Decree No. 117/2010/ND-CP (2010) of the Prime Minister on the organization and management of the special use forest system.

The specific managing authority of CTNP is its Management Board and all the land within the Park is state owned.

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

4.2 Boundaries

The boundary of the nominated property does not coincide with that of CTNP or any of its existing management zones. Instead, it encloses the catchment of the wetlands around Bau Sau and other lakes in the northern part of the nominated property, which according to the nomination occupies exactly 8,000 ha of the Nam Cat Tien sector of CTNP. Like the entire area of CTNP, this catchment eventually drains into the Dong Nai river. It likely understood that the boundary for the nominated property was defined in order to include only the best preserved parts of CTNP, and to exclude some areas with agricultural encroachment which have now apparently been resolved. The buffer zone is identical with the remaining part of the Nam Cat Tien sector and the entire Tay Cat Tien section of CTNP.

The boundaries of the nominated property create a number of serious issues. Firstly, as detailed above the nominated property encloses only a small part of CTNP, the biodiversity of which has not been studied separately from that of the park as a whole, making it difficult to evaluate the relative values of this area. Secondly the nominated property does not represent the full habitat diversity of CTNP. Not all of the soil types of the park – and by implication not all of the vegetation types with their associated specialist fauna – are represented in the nominated property. Many fauna (including large mammals like Gaur) concentrate around the wetlands inside the nominated property during the dry season but disperse throughout larger areas during the wet season, and some high conservation value species (e.g. Asian Elephant) occur along the southern periphery of CTNP but have not been confirmed in the nominated property at all. In addition, 8,000 ha is considered too small an area to support viable populations of larger mammals, such as large cats. Lastly the proposed boundaries have no management meaning because most of the surrounding nominated buffer zone is managed in exactly the same way as the proposed property itself.

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

4.3 Management

The management capacity of CTNP has in the past been considered one of the highest of all protected areas of Viet Nam, partly as a result of strong project investments such as by the CTNP Conservation Project. Since the discontinuation of this project in 2004 and the decline in other project activities, management support has been reduced dramatically and overall management capacity may also have declined, according to some experts.

The management plan that was submitted with the nomination dossier has been written specifically for this purpose and is not identical with the legally binding and practically implemented *"Sustainable Conservation and Development Plan for Cat Tien National Park 2010-2020"* (currently approved to 2015). This master plan comprises ten management programmes on forest protection, ecosystem management, research, fire prevention, eco-tourism, wild animal rescue, infrastructure improvement, human resources, procurement, and buffer zone development, respectively. The submitted management plan does not meet the standards of international best practice in protected area management planning. Its goals and objectives are not consistent with the key biodiversity values identified in the nomination dossier (e.g. narrow focus on Siamese Crocodile), the administration structure is incorrectly depicted, and no specific management actions are described. This document would be insufficient to guide the management of the nominated property.

The 2012 annual budget of the entire CTNP is ca. USD 1.58 m. Assuming equal spending throughout the park, this would imply an annual budget of the nominated property of ca. USD 174,000, or ca. USD22 per ha. While the budget is sufficient to maintain the core staff and infrastructure of the park there are a number of core management areas, such as the monitoring of biodiversity values, which have not been carried out continuously because of insufficient funds. It is likely the law enforcement is also constrained by the availability of funds. It is also noteworthy that tourism provides a relatively high 15% of the CTNP's income, which means that the park is relatively dependent on tourism.

CTNP has 175 staff, among them 134 rangers, 10 staff in the technical department, 7 in the administration and six in the financial department. Eight staff deal with tourism management and services. Staff qualification appears adequate, with particularly technical staff generally competent and at least 1 technical staff with

a relevant PhD and extensive knowledge of the biodiversity of the park and its conservation.

The main law enforcement activity at CTNP is patrolling to detect the illegal presence of people inside the park or illegal activities such as natural resource use. Each of the 14 ranger posts in the Cat Tien sectors patrols a defined area. In addition there is a mobile patrolling unit. Whilst a patrolling and law enforcement system is in place, it has not been fully effective in deterring illegal natural resource use inside CTNP. This conclusion was further supported by reports about some continued illegal fishing in the lakes of the nominated property, and direct observation by the mission of a number of small trails leading into the park from its southern boundary, west of Ta Lai settlement. According to rangers, most of these are used for collection of bamboo shoots, but they would also offer access to poachers.

Presently the Cat Tien National Park receives around 20,000 visitors per year, comprising both international and domestic tourists. A 'Sustainable Conservation and development plan for Cat Tien National Park 2010-2020' has set the target of 5,000 international visitors and 25,000 domestic visitors per year by 2020. The CTNP has also produced a Cat Tien National Park Ecotourism Development Strategy 2011-2015. The development of tourism opportunities is motivated around alleviating the high levels of poverty experienced in surrounding villages, while at the same time contributing to conservation of the natural assets by providing local communities with alternative sources of income. There are also aspirations to position the park as a major educational centre providing information on the biodiversity of the region and need to preserve this. CTNP has also produced a 'Resource Impact and Visitor Impact Monitoring Program'. The program is based on the "limits of acceptable change" approach and is intended to develop a resource management program for CTNP. A key challenge facing the CTNP Eco-tourism strategy is that visitor accommodation, tourist aspirations and tour operator drivers are focused on and around the nominated area in the CTNP, which is one of the most sensitive areas.

While there have been some monitoring activities in the framework of past projects such as the Cat Tien Conservation Project in the early 2000s, no systematic monitoring programme for conservation status of wildlife, threats and pressures, or the effectiveness of conservation efforts is currently being implemented on a regular basis. CTNP staff acknowledged the lack of systematic monitoring and stated insufficient funding as the main cause.

In conclusion the basis of a functional management regime for CTNP exists, but several other typical elements of an effective management system are missing (monitoring system, feedback mechanisms, including the necessary resources). There is also doubt if tourism inside CTNP, and particularly around Bau Sau Lake, is managed in a way that avoids pressures on the biodiversity values of the nominated property.

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

4.4 Community

There are a number of ways in which local communities are engaged in the management of CTNP including monthly coordination meetings with Duong Pho District, to which CTNP belongs, and reportedly with other district and municipal administrations such as the Nam Cat Tien commune. This coordination focuses on buffer zone development, cooperation in law enforcement, and similar issues. At the same time, the CTNP forest protection project provides funding to local inhabitants, including recently resettled people, to support the ranger service. However, there is no formal local stakeholder consultation board or similar consultation mechanism with people living in the vicinity of CTNP. Natural resource use by local inhabitants is forbidden, although the 2008 Law on Biodiversity in theory allows a limited degree of natural resource use inside certain areas of national parks.

Local people appeared to have been consulted about the World Heritage nomination, although there are some issues regarding relocation of people from the park including Stieng and Chau Ma people. Although both rights holders and duty bearers acknowledged consultation and consent did take place, some relocated families had limited or no opportunities for continuing their previous livelihoods. Government decisions (Decision 08-CT by the Board of Ministers dated 13/01/1992, and Decision 09/2001/QD-BNN-TCCB dated 13/02/2011) confirm an intention to resettle significant numbers of people when setting up the CTNP. However, relocating this number of people posed no small challenge, not the least being finding suitable areas to relocate to and financing the cost of such an undertaking. The government appears to have gone to considerable lengths to ensure that relocated families have been assisted and supported through the resettlement process. The mission's impression is that the resettlement was voluntary, in as much as all those relocated were former migrants with no customary or cultural claim to the land in the park. However, it was not possible for the mission to speak with a representative cross section from the whole community.

4.5 Threats

Poaching is a current threat to the nominated property. The Javan Rhinoceros, which adorns the code of arms of CTNP, was reported extinct from its only known area of occurrence on the Asian mainland in CTNP's Cat Loc section in 2011. This was attributed to poaching. Although Cat Loc section is not part of the nominated property, this highlights the general importance of poaching as a threat to the biodiversity of CTNP and the fact that other key species may also be under risk from poaching. However, there seems to be less poaching in the Cat Tien sections of CTNP than in Cat Loc section (17 versus 46 cases detected in 2011), and Siamese Crocodile, Gaur as well as

pheasant populations were observed to be affected by poaching but relatively intact in 2004. The fact that the Siamese Crocodile population at Bau Sau Lake appears much stronger than that of Bau Ca Lake, which does not have a ranger station and is nearer to the park's border, suggests that the ranger presence at Bau Sau is at least partly effective as a deterrent against poachers. Continued and possibly extended efforts are needed to control this threat at CTNP including the nominated property.

Some illegal fishing continues in the lakes that form the centre of the nominated property, such as Bau Ca Lake, and this may have a negative impact on the Siamese Crocodile population there. The rangers at Bau Sau Ranger Station have boats to patrol on water but this may not be sufficient to deter fishing on other lakes. In addition, reportedly some fishermen use lighter boats that enable them to escape among the dense macrophyte stands when detected.

There is some illegal tree felling, collection of bamboo shoots and rattan, and also collection of other plant resources inside CTNP and patrolling and other law enforcement efforts need to be continued and strengthened to prevent damage to the biodiversity values of the site. However, none of the globally threatened species of CTNP appears to be threatened with local extinction by illegal logging and wild plant collection currently.

The mission observed extensive sand quarrying along the Dong Nai River to the north of the nominated property, between the Cat Tien and Cat Loc sections of CTNP. This was also mentioned as a problem by CTNP staff. This is likely to mainly affect the Dong Nai River itself, but not the nominated property which does not border the river. It may also impact ichthyofauna at the wetlands inside the nominated property including catadromous/anadromous species, and would need further study; but overall its impact on the biodiversity values of the property is considered limited.

The area of greatest tourism interest includes Crocodile Lake (Bau Sau) and surrounding watershed, described as a "diverse topography (lakes, wetlands, mountains, grasslands and streams), rich in biodiversity, diverse forest types". This area is also identified as one of the most sensitive areas for being able to withstand use. Therefore any tourism activity within the nominated area poses major challenges to the protection and management of the biodiversity, especially large mammals which are sensitive to human presence and disturbance (scent, noise, activity). It has already been noted by park staff that local tourists pose the biggest risk to the biodiversity.

Herbicide use during the Viet Nam War prior to 1975 might still affect the integrity of the biodiversity values although it happened several decades ago. The evaluation mission received conflicting information regarding the extent to which the area that is now CTNP was affected by herbicides. The park's staff stated that impact on the Nam Cat Tien and Tay Cat Tien sections was minimal while both BirdLife International and some international experts stated that the area had been heavily impacted.

There are plans to construct two hydropower stations on the Dong Nai River approximately 35 km north and upstream of the nominated property, directly on the border of Cat Loc section of the CTNP. These plans are not mentioned in the nomination dossier although they have been discussed widely and controversially in the Vietnamese media, and were addressed by several stakeholders contacted during the evaluation mission. If constructed, these dams may alter the flow regime of the Dong Nai River, and may reduce flooding in the area north of the nominated property. This in turn may reduce or switch off the seasonal flow reversal of the Dak Lua River which feeds the wetlands in the heart of the property, thereby reducing (to an unknown degree) overall water input and hence the viability of these wetland ecosystems. It appears that no reliable assessment of the potential impact of these hydropower projects on the hydrology and conservation status of the property exists currently, and that the possibility of negative impacts on the biodiversity values of the nominated property including the Siamese Crocodile cannot be excluded.

The invasive alien Giant Mimosa (*Mimosa pigra*) was observed regularly in the northern periphery of Nam Cat Tien section of CTNP, outside the buffer zone of the nominated property. This species has reportedly also affected some wetland areas inside the nominated property and is a potential threat to all wetland areas. The same is true for other invasive alien species such as the Water Hyacinth, which means that these should be intensely monitored. While there are efforts at Bau Sau Lake to control overgrowth of lakes with macrophytes in general, no dedicated control programmes of invasive alien species were reported to the evaluation mission.

Data on the current conservation status of key biodiversity values of CTNP is variable and comprehensive monitoring programmes are not in place. Given the list of current and potential threats it is important that more systematic and prioritized monitoring programmes are implemented to inform management interventions.

Although it did not happen inside the nominated property or the surrounding sectors of CTNP, the recent local extinction of the Siamese Crocodile due to poaching suggests significant integrity deficits for the entire national park. Gaur and Siamese Crocodile populations have a more favourable conservation status, and the same may be true for pheasants and primates, but concerns regarding the integrity of the biodiversity values of the property particularly in relation to poaching and poorly regulated tourism remain. In addition, there is a potential – and potentially serious – threat from the planned Dong Nai hydropower projects to ecosystem function and hence the biodiversity 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

None.

6. APPLICATION OF CRITERIA

Cat Tien National Park has been nominated under criterion (x).

Criterion (x): Biodiversity and threatened species
The nominated property contains only a small part (11%) of Cat Tien National Park (CTNP), and the species richness of this fragment is unknown but probably significantly lower than that of the entire area of CTNP. It is therefore unlikely that the nominated property contains all the reported globally significant species in viable numbers in such a small area. As nominated, such a small area is also insufficient to conserve many of the threatened species for which CTNP is known, and this is especially the case in the light of the notable range of threats to CTNP that also affect the nominated property. The species richness of vertebrates at CTNP as a whole (rather than the nominated property) is similar to that of some of the most species-rich rainforest sites already inscribed in the World Heritage List, and the number of globally threatened animal species is at a similar level to that of comparable World Heritage sites. As nominated the property neither meets criterion (x), nor corresponds to the relevant integrity and protection requirements under this criterion.

IUCN considers that the nominated property does not meet criterion (x).

7. RECOMMENDATION

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

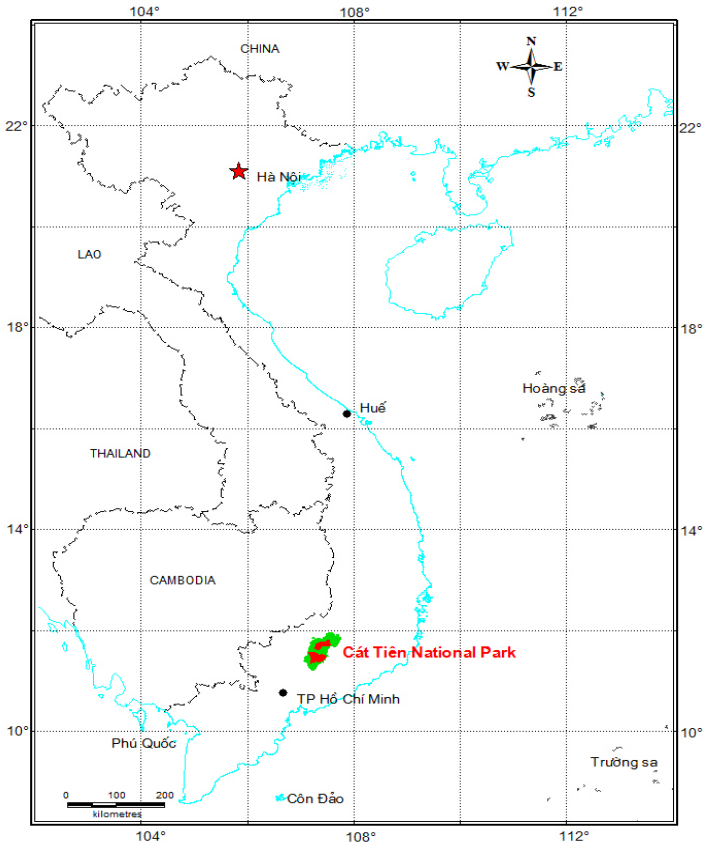
The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

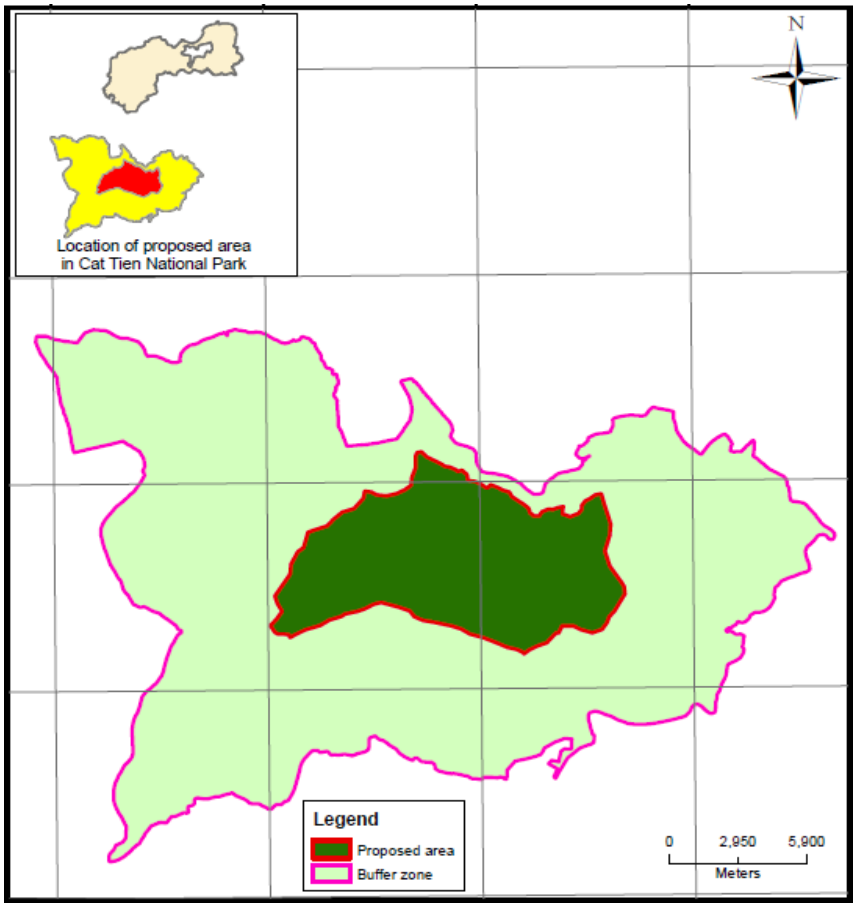
2. Decides not to inscribe the nomination of **Cat Tien National Park, Viet Nam,** under natural criteria;

3. Takes note that the nomination covers part of the larger protected area of Cat Tien National Park, which is also recognised as a UNESCO Biosphere Reserve, and a Ramsar Site, and recommends the State Party to utilise these existing forms of international recognition of the property to build stronger protection measures and management plans for this site, and to take action against key threats such as hydroelectric power development; quarrying; unregulated tourism; and, in particular, including effective action to urgently counter illegal trade and poaching which has seriously impacted on the natural values of this park.

Map 1: Nominated property location in Viet Nam



Map 2: Nominated property and buffer zone



EUROPE / NORTH AMERICA

MOUNT ETNA

ITALY

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

MOUNT ETNA (ITALY) – ID No. 1427

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meets natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: Following the field visit, IUCN requested supplementary information on 11 October 2012 and a reply was received from the State Party on 25 November 2012.

c) Additional literature consulted: Branca, S. et al. (2011) **Geological map of Etna volcano, 1:50,000 scale**. Italian Journal of Geosciences 130: 265-291; Branca, S. et al. (2011) *Geological evolution of a complex basaltic stratovolcano: Mount Etna, Italy*. Italian Journal of Geosciences 130: 306-317. De Beni, E. et al. (2011) **^{40}Ar/^{39}Ar isotopic dating of Etna volcanic succession**. Italian Journal of Geosciences 130: 292-305. Dingwall, P. et al. (2005) *Geological World Heritage: A Global Framework*. IUCN, Gland, Switzerland. Giusso del Galdo, G. & Brullo, S. (2012) **Flora und Vegetation des Ätna.** Pages 162-192 in: K. Gratzl (ed.) Ätna: Der höchste aktive Vulkan Europas. Weishaupt Verlag, Gnas, Austria. Grabherr, G. & Messerli, B. (2011) **An Overview of the World's Mountain Environments**. Pages 8-14 in: Austrian MAB Committee (ed.) **Biosphere Reserves in the Mountains of the World: Excellence in the Clouds**? Austrian Academy of Sciences Press, Vienna, Austria. Médail, F. (2008) **A natural history of the islands' unique flora**. Pages 26-33 in: C. Arnold (ed.) Mediterranean Islands. Survival Books, London, UK. Médail, F. & Quézel, P. (1999) **Biodiversity Hotspots in the Mediterranean Setting Global Conservation Priorities**. Conservation Biology 13: 1510-1513. Mercurio, R. & Spampinato, G. (no date) **Monitoring in the strict natural reserve of the Mount Etna Park**. Ediguida, Nicolosi, Italy. Poli, E. (1965) **La vegetazione altomontana dell'Etna**. Memoria n. 5 di Flora et Vegetatio Italica, Gianasso Editore, Roma, Italy. Poli Marchese, E. (1991) **Pianti e fiori dell'Etna**. Sellerio Editore, Palermo, Italy; Poli Marchese, E. & Patti, G. (no date) *Carta della vegetazione dell'Etna*. Institute of Plant Biology and Ecology, University of Catania, Italy. Siebert, L., Simkin, T., and Kimberly, P., 2010, **Volcanoes of the World, 3rd ed**. Berkeley: University of California Press, 568 p. Smithsonian Institution (2012) **Online information of the Global Volcanism Programme**; Vogiatzakis, I.N. & Griffiths, G.H. (2008) *Island Biogeography and Landscape Ecology*. Pages 61-81 in: I.N. Vogiatzakis et al. (eds.) Mediterranean Island Landscapes. Springer Science + Business Media B.V. Wood, C. (2009) **World Heritage Volcanoes**. IUCN, Gland, Switzerland.

d) Consultations: 14 external reviewers were consulted. Extensive consultations were conducted during the field mission including with representatives of management agencies, administrators in municipal, state and federal governments, representatives of academic institutions and nongovernment and tourism operators.

e) Field Visit: Bastian Bertzky, 1-5 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The nominated property "Mount Etna" encompasses the 19,237 ha core zone of Etna Park, a regional nature park on the eastern coast of Sicily (Italy), the largest Mediterranean island. The nominated property is surrounded by a 26,220 ha buffer zone which is not included in the nominated area. Reaching 3,335 m above sea level, Mount Etna is the highest mountain in Italy south of the Alps, the highest mountain in the central Mediterranean and the highest mountain on any Mediterranean island. The nominated property covers the highest areas of Mount Etna and is not inhabited. Mount Etna is recorded as the most active stratovolcano, in terms of frequency of eruptions in the world. It is the highest active volcano within the geographic limits of Europe.

Mount Etna is a large basaltic composite volcano covering an area of 1,178 km^2 from sea level up to over 3,300 m. The volcano is characterized by almost continuous eruptive activity from its summit craters and fairly frequent lava flow eruptions from craters and fissures on its flanks. This volcanic activity has been documented at least 2,700 years. Scientific documentation of Mount Etna's volcanic phenomena dates back to the 17th century. In the 19th century, renowned European scientists such as Charles Lyell and Sartorius von Waltershausen carried out systematic studies, and Waltershausen's map from the mid 19th century became the first geological map of a large active volcano in the world. Since then Mount Etna has become one of the best-studied and monitored volcanoes in the world. It is considered a

natural laboratory for volcanologists, geophysicists and other scientific disciplines.

Today's Mount Etna is the result of a complex eruptive history which can be traced back over 500,000 years. Central-type volcanic activity in the Etna region started over 100,000 years ago. From about 57,000 years ago, intense eruptive activity formed the 3,600 m high Ellittico stratovolcano. From about 15,000 years ago, primarily effusive activity formed the most recent Mongibello volcano whose 357 lava flows now cover 88% of the entire surface of Mount Etna. The largest explosive eruption of the Mongibello volcano in Holocene times occurred in 122 BC, causing great damage to the town of Catania, a coastal town which was also affected by a large, low-altitude flank eruption in 1669. The latest geological map of Mount Etna shows 122 lava flows for the historical period from 122 BC to the present. Today Mount Etna has four summit craters and dozens of cinder cones on its flanks. The most prominent morphological feature of Mount Etna is however the Valle del Bove, a large depression on the eastern flank of the volcano, which was created by a flank collapsed several thousand years ago and now provides a window into the volcano's history. Despite its frequent volcanic activity, very few people have been killed by eruptions of Mount Etna. In over 2,000 years, there have been less than 100 casualties that can be directly attributed to eruptions, largely because Mount Etna's eruptions are rarely violently explosive and its lava flows tend to move slowly enough to allow people to leave before the lava front arrives.

3. COMPARISONS WITH OTHER AREAS

IUCN's theme study on volcanoes (2009) showed there are already 27 World Heritage properties with active (Holocene) volcanoes. The study noted, however, that the World Heritage List does not yet contain many of the volcanoes that might be commonly recognised by the general public. The study concluded that "iconic volcanoes" are poorly represented on the List and identified a number of world-renowned volcanoes that could potentially help filling this gap. The study recommended considering inscription of these volcanoes based on their notoriety, scientific importance, and cultural and educational value. The iconic volcanoes identified by the study included Mount Etna, Santorini (Greece), Tambora (Indonesia), Mount Fuji (Japan), Paracutin (Mexico) and Mount St. Helens (USA). However, none of the iconic volcanoes identified are included on current Tentative Lists, except for Mount Fuji (under cultural criteria) and Mount Etna.

Mount Etna is nominated under criteria (vii), (viii) and (ix). Although criterion (viii) is most commonly used to recognize volcanic and other 'geoheritage' values, a number of volcanic World Heritage properties have also been inscribed under other natural criteria in recognition of their natural beauty, superlative phenomena and/or biodiversity values. Tongariro National Park (New Zealand), Jeju Volcanic Island and Lava Tubes (Republic of Korea), Pitons Management Area (Saint Lucia) and Teide National Park (Spain) are all inscribed under (vii) and (viii). Ujung Kulon National Park (Indonesia), which includes Krakatoa, and the Pitons, cirques and remparts of Reunion Island (France) are however inscribed under (vii) and (x). Finally, while the Volcanoes of Kamchatka (Russian Federation) are inscribed under all natural criteria, the Aeolian Islands (Italy) and Hawaii Volcanoes National Park (USA) are only inscribed under (viii).

In relation to criterion (vii), whilst Mount Etna is significant on a regional scale, on a global scale there are many volcanic sites inscribed on the World Heritage List that exceed the scale and scenic impact of Mount Etna under this criteria, including areas noted above. Furthermore, the proposed boundaries of the nominated property provide for the protection of approximately the top third of the cone whereas the bottom two thirds has been significantly impacted by human occupation resulting in a loss of natural attributes.

In relation to criterion (viii), Mount Etna stands out as one of the world's most active volcanoes. Despite the number of comparators already included on the World Heritage list (i.e. Sangay National Park, Ecuador; Teide National Park, Spain and Volcanoes of Kamchatka, Russian Federation), Etna is outstanding as it is the most active volcano globally (Siebert et al. 2011) in terms of frequency of recorded eruptions. Mount Etna has recorded at least 193 historical eruptions whereas Kilauea, a shield volcano within the Hawaii Volcanoes National Park, USA has the second most recorded eruptions.

Mt Etna has a long history of recorded eruptions, and due to its location, a long history of research. While most Holocene volcanoes were active only sporadically during the last millennia (e.g. Fuji, Krakatoa, Santorini, St. Helens, Tambora and Teide), Mount Etna has a history of over 3,000 years of almost continuous eruptions. This exceptional volcanic activity has been documented by humans for at least 2,700 years, making it one of the world's longest documented records of historical volcanism. For centuries, Mount Etna has attracted visitors including scientists and students, and today it is one of the best-studied and monitored volcanoes in the world (together with the volcanoes in the Hawaii Volcanoes National Park). This is also evident from the exceptional number of scientific studies of Mount Etna that have long influenced the fields of volcanology, geophysics, geology and geomorphology.

In summary, Mount Etna is an outstanding example of ongoing geological processes and volcanic landforms. In relation to all of the criteria noted in the IUCN volcanic theme study (notoriety, scientific importance, and cultural and educational value), Mount Etna is of global significance when compared to other volcanoes that are iconic for their scientific values. Nearby, the Isole Eolie (Aeolian Islands, Italy) have been inscribed only under criterion (viii) as an "outstanding record of volcanic island building and destruction and on-going volcanism". Etna has similar volcanic activity however its morphology and genesis are unrelated to the Aeolian Islands.

In relation to criterion (ix), comparative analysis by IUCN and UNEP-WCMC shows that Mount Etna supports important terrestrial ecosystems and communities. Isolated volcanoes, especially on islands, provide an interesting array of phenomena such as successions and reaction of biotic communities to recurrent disturbance. The study also noted that island volcanoes such as Mount Etna, Teide and the Hawaiian volcanoes host a unique endemic flora and fauna. Although there are unique ecosystems present at Mount Etna, the proposed property with boundaries limited to only the top one third of the stratocone significantly reduces the property's capacity to represent outstanding ecological and biological processes in the evolution and development of terrestrial ecosystems and communities of plants and animals. The proposed boundaries of the nominated property do not include the entire volcano and the ecological and biological processes at the base of the volcanoes have been negatively impacted by human occupation.

In summary, IUCN considers a case can be made for Mount Etna meeting criterion (viii), the case for the other nominated criteria is not compelling compounded by the fact that integrity requirements are not met.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Parco dell'Etna was established as a Regional Nature Park by Decree of the President of the Sicilian Regional Authority in March 1987. The Decree defined the boundaries of the park, subdivided the park area into four general zones, and determined the activities permitted / prohibited in each zone. The four zones are: A (integral reserve), B (general reserve), C (protection) and D (control). The nominated property encompasses only the most strictly protected part (Zone A) of Etna Park. In addition, nine Natura 2000 sites overlap the nominated property to various degrees, providing additional protection for 77% of the nominated area under European legislation.

The regulations provided within the Decree provide for adequate protection of the key values of the nominated property. Since the completion of a land acquisition process in 2010, 97.4% of the nominated property's area is in public ownership (region or communities). The remaining 2.6% (500 ha) is in private ownership and still used as traditional pistachio groves. In contrast, 56.6% of the buffer zone is privately owned.

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 (19,237 ha) are clearly defined and encompass the most outstanding values of the property in relation to criterion (viii). The small size of the nominated property, relative to the entire stratacone, does not capture features that would enable consideration for inscription under criteria (vii) nor (ix). Furthermore the ecosystems on the lower flanks of the volcano have been negatively impacted by human development activities. The nominated property includes very little infrastructure: a few forest / mountain tracks, a number of basic mountain shelters along the main forest tracks, and over 50 small seismic monitoring stations and an observatory. Funding has been secured for a complete overhaul of the observatory which is scheduled to start in 2013. The boundaries of Zone A are clearly marked on maps of the park and in the field (along forest tracks and trails).

The nominated property is surrounded by a buffer zone (26,220 ha) which consists of the park's Zone B and two tourism zones (classified as Zone C *Altomontane*) that predate the establishment of Etna Park. The tourism zones include accommodation (hotels, huts), car parks, restaurants, cafes, a cableway, chair and drag lifts for ski tourism, information points, and ticket kiosks for guided drives / hikes and horse / donkey safaris. These areas as well as the rest of the park area (Zone C *Pedemontane* and Zone D) are not suitable for natural World Heritage status as they do not meet the conditions of integrity and protection and management requirements at present.

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

4.3 Management

The management of the nominated property is coordinated by *Ente Parco dell' Etna* and carried out first and foremost according to the regulations of *Parco dell'Etna* provided in the Decree of the President of the Sicilian Regional Authority in March 1987. *Ente Parco dell' Etna* was established as the managing authority of Etna Park by Decree of the President of the Sicilian Regional Authority in May 1987. The management authority is led by the park president, or commissioner, who is Ente Parco's legal representative, appointed by the President of the Sicilian Regional Authority, and chairs the Park Council. The Park Council, a political body, includes the President of the Catania Provincial Authority and the mayors of the 20 towns that have a share in the park's territory. The park's Executive Committee, a technical body, is in charge of decisions concerning the park's budget, administration and management. The park director leads the day-to-day administration and management of Etna Park. The park receives technical and scientific advice from the Regional Advisory Body on Natural Heritage Protection (*Consiglio Regionale per la Protezione del Patrimonio Naturale, CRPPN*). Ente Parco manages the park, including the nominated property, in close cooperation with the Regional Authority of State Forests and the Regional Corps of Forest Rangers (*Corpo Forestale)*.

The management of Etna Park, including the nominated property, is guided by a long-term management plan and Triennial Intervention Programmes. Presently, the Triennial Program

2011/2013 is in force; however content related to criteria (viii) or the geological processes needs to be strengthened.

The management structure of the property is evolving such that the role for the government (in terms of funding and governance) is minimized with a non-government body to assume onsite management responsibility. Staffing and funding are adequate for current operations however they may be short of the levels required as World Heritage site. Ente Parco receives its annual core funding from the Sicilian Regional Authority. From 2006 to 2011, this support amounted to circa 4.5 million Euros per year, covering personnel and core management cost. In addition, Ente Parco receives substantial support from other sources including the Italian State and European Union, for management activities and interventions. Additional financial and technical support is needed for example to improve the environmental education and ecotourism facilities in the property, and tourism facilities in the buffer zone and wider park area. Although there are 48 staff members for managing the Ente Parco, at present there is limited human resource capacity with respect to volcanology or ecology in the staffing complement. The lack of onsite coordinated management presence creates some safety concerns and upgrading is required to improve the presentation of natural heritage values to the visiting public and to provide ease of access and ensure visitor safety.

Programming and interpretation is through private operators and coordinating the presentation of the natural heritage values through the managing organization is essential. Financial and technical support is required to improve educational and tourism facilities in the property. The park may want to consider implementing regular management effectiveness assessments and/or participation in relevant certification schemes (e.g. European Diploma of Protected Areas).

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

4.4 Community

IUCN notes that the World Heritage nomination was developed through a participatory process with support and involvement of many organizations and individuals. Overall the field visit confirmed overwhelming support for the World Heritage nomination from a wide range of stakeholders although concerns over potential restrictions were expressed by a concessionaire in the tourism zone (buffer zone). Some of the stakeholders would have liked to see a larger area included in the nomination; however, it was widely acknowledged that overall the nominated property represents the most outstanding values of Mount Etna, with integrity issues limiting a potentially larger nomination. IUCN also notes the cultural significance of Mount Etna. For more than 2,000 years, Mount Etna has played an important role in legends, folklore, literature and arts.

4.5 Threats

The nominated property has no permanent population, is free of roads, and its use restricted to research and recreation. Vehicle access to the limited network of forest and mountain tracks appears to be strictly controlled (e.g. through gates and fences) and is only permitted for park management purposes and authorised activities such as research and organized 4x4 drives on the main track from the tourism facilities in the buffer zone to the INGV observatory. Except for the above mentioned overhaul of the observatory, no construction projects are permitted or planned within the nominated property. For the past two years, public access to the top of Mount Etna has been officially prohibited for safety reasons, but this regulation has been difficult to enforce.

Many of the basic mountain shelters do not have toilets, thus creating a human waste problem which needs to be addressed. Organized recreational activities such as mountain biking and horse / donkey riding require advance authorisation. Although they appear to be limited at present, they need to be well monitored and managed to avoid negative impacts such as erosion and disturbance of wildlife.

No dogs are allowed in the nominated property and illegal hunting appears to be under control. Low-intensity grazing is permitted and occurs in parts of the nominated property in the summer season. Limited silvicultural interventions are implemented in the nominated property to reduce the risk from forest fires and maintain access routes. Climate change has the potential to increase the risk of forest fires in the region and impact the species and communities on Mount Etna. Natural hazards resulting from the volcanic activity of the nominated property will always pose a risk to certain features and facilities of the park and beyond. Overall, however, the Outstanding Universal Value of the nominated property is not threatened at present.

The buffer zone is less strictly protected and includes a public road network as well as large areas that are used for traditional agriculture and more intense grazing. As noted above, the tourism zones within the buffer zone include accommodation (hotels, huts), car parks, restaurants, cafes, a cableway, chair and drag lifts for ski tourism, information points, and ticket kiosks for guided drives / hikes and horse / donkey safaris. Some of these facilities do currently not meet international standards and require improvements. More generally, there seems to be potential for the park's visitor facilities to be further improved, taking into account best practice and lessons learned at other comparable World Heritage properties. However, the environmental impacts of potential developments need to be carefully assessed, monitored and controlled. Illegal hunting occurs more frequently in the buffer zone than in the nominated property. The nominated property and buffer zone are free from any industrial activity, garbage dumps and mining (quarries). Due to its location in a densely populated region, parts of the wider park area are threatened by urban expansion,

pollution including from illegal garbage dumping, and inappropriate development.

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

5. ADDITIONAL COMMENTS

The IUCN World Heritage Panel debated carefully the continued issue of the listing of volcanic World Heritage Sites, which has been the subject of past consideration by the World Heritage Committee. Whilst IUCN recommends inscription of Mount Etna, this inscription raises continued concern regarding the emphasis on volcanic listings, which are not in balance with other types of heritage. In addition there is an impression that there is a possible overemphasis of the concept of "iconic volcanoes" and also of nominations in Europe of volcanoes that are important examples of early scientific advances.

The IUCN World Heritage Panel noted that it would be desirable to revise the current thematic guidance on volcanic World Heritage areas, including a range of review input from all regions to better advise States Parties on priorities that will lead to a finite and regionally balanced list of the volcanic sites with the highest potential for inclusion on the World Heritage List.

6. APPLICATION OF CRITERIA

Mount Etna has been nominated under criteria (vii), (viii) and (ix).

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
Mount Etna is an imposing stratovolcano towering distinctively over the island of Sicily. The diverse and complex landscape around the central volcano, the colourful juxtaposition of volcanic substrates, forest and non-forest vegetation is combined with the far-reaching views over Sicily and the Mediterranean Sea. Although this volcano is significant on a regional scale, globally there are other volcanoes currently inscribed on the World Heritage List that have greater significance under this criterion. Mount Etna does not compare with many other volcanic sites which are larger (taller, wider), more complex, more dramatic and more pristine in terms of development up the flanks.

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

Criterion (viii): Earth's history and geological features
Mount Etna is one of the world's most active and iconic volcanoes, and an outstanding example of ongoing geological processes and volcanic landforms. The stratovolcano is characterized by almost continuous eruptive activity from its summit craters and fairly frequent lava flow eruptions from craters and fissures on its flanks. This exceptional volcanic activity has been documented by humans for at least 2,700 years – making it one of the world's longest documented records of historical volcanism. The diverse and accessible assemblage of volcanic features such as summit craters, cinder cones, lava flows, lava caves and the Valle de Bove depression have made Mount Etna a prime destination for research and education. Today Mount Etna is one of the best-studied and monitored volcanoes in the world, and continues to influence volcanology, geophysics and other earth science disciplines. Mount Etna's notoriety, scientific importance, and cultural and educational value are of global significance.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecosystems / communities and ecological / biological processes
As an isolated island volcano in the Mediterranean Basin biodiversity hotspot, Mount Etna supports important terrestrial ecosystems and communities, including a unique endemic flora and fauna. Mount Etna's frequent and intense volcanic activity makes it a natural laboratory for the study of ecological and biological processes such as adaptation, colonization, competition, disturbance, speciation and succession. However these values are secondary to the iconic values of Mount Etna for geosciences, and, due to the limited size of the nominated property (essentially the top third of the volcano) the significant ecological/biological processes are not captured within the proposed boundaries and the lower slopes have been negatively impacted by development.

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-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Inscribes **Mount Etna, Italy,** on the World Heritage List under criterion (viii);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis
Mount Etna World Heritage Site (19,237 ha) comprises the most strictly protected and scientifically important area of Mount Etna, and forms part of the Parco dell'Etna Regional Nature Park. Mount Etna is renowned for its exceptional level of volcanic activity, and the documentation of its activity over at least 2,700 years. Its notoriety, scientific importance, and cultural and educational value are of global significance.

Criteria
Criterion (viii)
Mount Etna is one of the world's most active and iconic volcanoes, and an outstanding example of ongoing geological processes and volcanic landforms. The stratovolcano is characterized by almost continuous eruptive activity from its summit craters and fairly frequent lava flow eruptions from craters and fissures on its flanks. This exceptional volcanic activity has been documented by humans for at least 2,700 years – making it one of the world's longest documented records of historical volcanism. The diverse and accessible assemblage of volcanic features such as summit craters, cinder cones, lava flows, lava caves and the Valle de Bove depression have made Mount Etna a prime destination for research and education. Today Mount Etna is one of the best-studied and monitored volcanoes in the world, and continues to influence volcanology, geophysics and other earth science disciplines. Mount Etna's notoriety, scientific importance, and cultural and educational value are of global significance.

Integrity
The boundaries of the property are clearly defined and encompass the most outstanding geological features of Mount Etna. The property includes very little infrastructure: a few forest / mountain tracks, a number of basic mountain shelters along the main forest tracks, and over 50 small seismic monitoring stations and a scientific observatory.

A buffer zone of 26,220 ha surrounds the property, including parts of Mount Etna Regional Nature Park, and two tourism zones. These tourism zones include accommodation (hotels, huts), car parks, restaurants, cafes, a cableway, chair and drag lifts for ski tourism, information points, and ticket kiosks for guided drives, hikes and horse/donkey safaris.

Protection and management requirements
The Parco dell'Etna (Etna Park) was established as a Regional Nature Park by Decree of the President of the Sicilian Regional Authority in March 1987. The property includes part of this Park, comprising the zone defined as an integral reserve. In addition, nine Natura 2000 sites overlap the property to various degrees, providing additional protection for 77% of the area under European legislation.

The regulations provided within the Decree provide for adequate protection of the key values of the property. Since the completion of a land acquisition process in 2010, 97.4% of the property's area is in public ownership (region or communities). In contrast, 56.6% of the buffer zone is privately owned.

The management of the property is coordinated by Ente Parco dell' Etna, established as the managing authority of Etna Park by Decree of the President of the Sicilian Regional Authority in May 1987, working in close cooperation with the Regional Authority of State Forests and the Regional Corps of Forest Rangers (Corpo Forestale). Management is guided by a long-term management plan and Triennial Intervention Programmes.

The property has no permanent population, is free of roads, and its use restricted to research and recreation. Vehicle access to the limited network of forest and mountain tracks appears to be strictly controlled (e.g. through gates and fences) and is only permitted for park management purposes and authorised activities such as research and organized 4x4 drives on the main track from the tourism facilities in the buffer zone to the INGV observatory. Except for possible maintenance of the observatory, no construction projects are permitted or planned within the property. Public access to the top of Mount Etna may be officially prohibited for safety reasons, although this regulation has been difficult to enforce. Organized recreational activities such as mountain biking and horse / donkey riding require advance authorisation. Although they appear to be limited at present, they need to be well monitored and managed to avoid negative impacts such as erosion and disturbance of wildlife. No dogs are allowed in the property and illegal hunting appears to be under control. Low-intensity grazing is permitted and occurs in parts of the property in the summer season. Limited silvicultural interventions are implemented in the property to reduce the risk from forest fires and maintain access routes. Climate change has the potential to increase the risk of forest fires in the region and impact the species and communities on Mount Etna. Natural hazards resulting from the volcanic activity of the property will always pose a risk to certain features and facilities of the park and beyond. Strengthened park visitor facilities are needed, taking into account best practice and lessons learned at other comparable World Heritage properties.

4. Commends the local, regional and national government authorities, park staff, forest rangers, cooperating scientists and scientific institutions, and non-governmental organizations for their commitment and support to the nominated property;

5. Requests the State Party to coordinate regional and national authorities to maintain and strengthen their support to the property, to further increase the management capacity of the property;

6. Recommends the State Party to review and update the management plan, to:

a) Strengthen harmonization between the various management organizations and private sector partners in the use of the proposed property to ensure that the outstanding geological features are not adversely impacted by increasing tourism pressures.
b) Strengthen mechanisms to monitor visitor use that balance the protection of natural heritage values with enhanced visitor experience and safety.
c) Encourage improved research and monitoring of the values with the inclusion of technical staff (geologist, geomorphologist and volcanologist) as an integral part of the management team on the site.
d) Encourage the exchange of management experience and promotion of scientific and

educational opportunities between Mount Etna and Isole Eolie (Aeolian Islands, Italy).

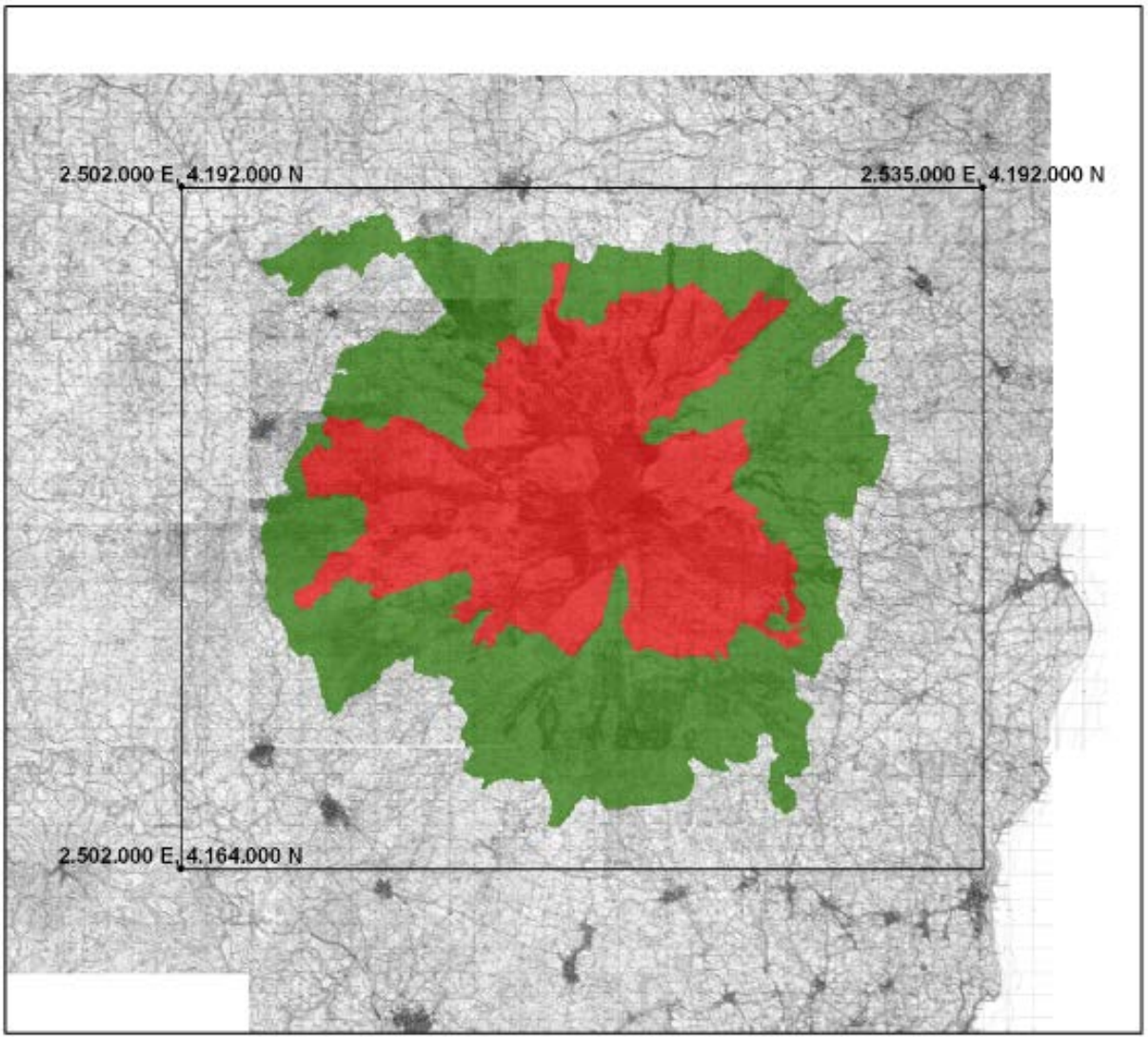
7. Also recommends the park, regional and national authorities work together with relevant funding and technical partners in order to enhance the visitor experience of the property. This should include improvements to the environmental education and ecotourism facilities in the property, and tourism facilities in the buffer zone and wider park area;

8. Encourages the State Party improve the integration of the property and its buffer zone into the wider landscape, to recognize and promote existing education, monitoring, research and training activities, and to improve the prospects for sustainable development of the region, including through possible adoption of experience from the UNESCO Man and Biosphere Programme;

9. Recalling its decision 31 COM 8B.12 of 2007, reiterates that "there is increasingly limited potential for further inscriptions of volcanic sites on the World Heritage List", and further requests IUCN to revisit and update its thematic study on "World Heritage Volcanoes", with input from reviewers expert in volcanic sites, to clearly articulate a short and appropriately balanced list of the strongest remaining candidate volcanic sites with potential for inscription on the World Heritage List.

Map 1: Nominated property location in Sicily, Italy

Map 2: Nominated property and buffer zone



LATIN AMERICA / CARIBBEAN

EL PINACATE AND GRAN DESIERTO DE ALTAR BIOSPHERE RESERVE

MEXICO

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

EL PINACATE Y GRAN DESIERTO DE ALTAR BIOSPHERE RESERVE (MEXICO) – ID No. 1410

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meets natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: IUCN requested in its letter of 20 December to the State Party the possibility to consider modifications of the boundary of the nominated property as to align it with the boundaries of the National Biosphere Reserve, to refine the buffer zones as to maximize their effectiveness to maintain the integrity of the nominated property, and to assess the potential to consider the eventual inclusion of the adjacent Bahía de Adair Ramsar site. The State Party provided an official response, supported by revised maps of the nominated property, outlining the revised boundaries of the nominated property.

c) Additional literature consulted: Chester, C.C. 2006. **Conservation across Borders**.Biodiversity in an Interdependent World. Island Press. Cohn, J.P. 2007. **The Environmental Impacts of a Border Fence**. BioScience 57(1). American Institute of Biological Sciences. Felger, R.S., Broyles, B., Ezcurra, E. 2005. **Dry Borders: Linking Nature Reserves across the Sonora – Arizona Border**. In: Mittermeier, R.A. Kormos, C.F., Mittermeier, C.G., Robles Gil, P., Sandwith, T. Besancon, C. 2005. **Transboundary Conservation: A New Vision for Protected Areas**. Goudie, A., Seely, M. 2011. **World Heritage Desert Landscapes: Potential Priorities for the Recognition of Desert Landscapes and Geomorphological Sites on the World Heritage List**. Gland, Switzerland. IUCN. Hayden, J.D. 1998. **The Sierra Pinacate**. Southwest Center Series. University of Arizona Press, Tucson. Hume, B. 2000. Water in the U.S.-**Mexico Border Area**. Natural Resources Journal, Vol. 40, No. 2. Marshall, L.G., Blake, C. 2009. **Land of Black Volcanoes and White Sands**. The Pinacate and Gran Desierto de Altar Biosphere Reserve. Environmental Education Exchange, Tucson, Arizona. Murguia, M. 2000. **El Agua en la Reserva de la Biosfera el Pinacate y Gran Desierto de Altar, Sonora, Mexico**: Comunidades, Vida Silvestre y la Frontera con Estados Unidos. IMADES. Natural Resources Journal, Vol. 40, No. 2.Salazar, J., Spalding, M. 2007. **Adjacent U.S.-Mexican Border Natural Protected Areas: Protection, Management, and Cooperation**. In: Van Schoik, D.R., Lelea, E., Cunningham, J., Salazar, J., Spalding, M., Brown, C., Czerniak, R., Buscaglia, C. Graizbord, C. de la Fuente, E., Singh, J. 2007. **The US-Mexican Border Environment. Transboundary Ecosystem Management**. Pp. 69-107. SCERP Monograph 15. Wood, C. 2009. **World Heritage Volcanoes: Thematic Study**. Global Review of Volcanic World Heritage Properties: Present Situation, Future Prospects and Management Requirements. IUCN, Gland, Switzerland.

d) Consultations: 13 external reviewers consulted by IUCN. The field evaluators met with representatives of governmental institutions CONALMEX (National UNESCO Commission), SEMARNAT (Ministry of Environment), SEP (Ministry of Education), CONANP (Protected Areas Agency under SEMARNAT), INAH (National Institute for Anthropology and History) and SRE (Ministry of Foreign Affairs) and with representatives of State and municipal governments in Sonora (Tourism, Environment, Forests, Environmental Attorney, Commission for Ecology and Sustainable Development). In the field, the mission was accompanied by CONANP headquarters staff, the Regional Director and the Director of the nominated property, as well as the entire park staff. The Director and staff of the contiguous Upper Gulf of California and Colorado River Delta Biosphere Reserve were also consulted. Further meetings were held with: Advisory Council of the Biosphere Reserve, representatives of the Tohono O'odham Nation, a representative of private landowners ("ejidos"). The field evaluators also met with non-governmental and academic institutions including the International Sonoran Desert Alliance (ISDA), Centro Intercultural de Estudios de Desiertos y Oceanos, Museo de la Universidad de Baja California,University of Sonora, Mexican Institute for Ecology (INE), Autonomous University of Mexico (UNAM),University of Arizona Tucson, Scripps Institution of Oceanography / University of California San Diego (UCSD), University of California Institute for Mexico and the United States (UC MEXUS).

e) Field Visit: Tilman Jaeger and Doris Cordero, 23-29 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

El Pinacate and Gran Desierto de Altar National Biosphere Reserve (EPGDABR) is located in the Sonoran Desert. The Sonoran Desert is one of four great North American deserts along with the Chihuahuan Desert, the Great Basin Desert and the Mojave Desert. Surrounding The Sonoran Desert extends across most of the Peninsula of Baja California, including large parts of the Mexican State of Sonora. On the United States of America side, the Sonoran Desert extends across the southernmost third of Arizona and a smaller area in South-Eastern California. The entire nominated property is in the Mexican State of Sonora. The nominated property, following the revision of the boundaries originally proposed in the nomination document, coincides with the National Biosphere Reserve and has a surface of 714,566ha surrounded to the East, South and West by a buffer zone of 763,631ha. To the North the nominated property aligns with the USA border.

EPGDABR is a large, relatively undisturbed protected area, part of a vast network of various conservation units on both sides of the international border between Mexico and USA. This complex, sometimes referred to as the “Greater Sonoran Desert Protected Ecosystem”, exceeds three million hectares and is considered the largest contiguous desert protected area complex in North America.

As reflected in the name of the nominated property, the diverse and visually stunning desert landscape of EPGDABR comprises two very distinct broad landscape types. To the East, there is a dormant volcanic area of around 200,000 ha, comprised of the Pinacate Shield, extensive black and red lava flows and desert pavement. The volcanic shield boasts a wide array of volcanic phenomena and geological formations, including a small shield-type volcano (Santa Clara). To the West towards the Colorado River Delta and South towards the Gulf of California, is the Gran Altar Desert, North America's largest field of active sand dunes and only active Erg dunes.The dunes can reach 200 meters in height and contain linear dunes, star dunes and dome dunes, displaying enormous and constantly changing contrasts in terms of form and color. The dunes originate from sediments from the nearby Colorado Delta and local sources. Besides, there are several arid granite massifs emerging like islands from the sandy desert flats, ranging between 300 and 650 m.a.s.l., which represent another remarkable landscape feature harbouring additional and distinct plant and wildlife communities.

The variety of landscapes is reflected in habitat diversity. The diversity of life forms across many different taxa is notable. Many species are endemic to the Sonoran Desert or even locally to (parts of) the nominated property. All feature sophisticated physiological and behavioural adaptations to the extreme environmental conditions. This includes for example the ability of the Pronghorn to feed on thorny cactus species or the extremely long seed dormancy of most plants. According to the nomination dossier, the subtropical desert ecosystem hosts more than 540 species of vascular plants, 44 mammals, more than 200 birds, over 40 reptiles, as well as several amphibians and even two endemic species of freshwater fish.

The biodiversity richness of this desert appears to be a product of a very unusual freshwater regime. At first sight, water seems almost non-existent in a place considered to be the driest in all of North America. However, despite minimal rainfall, the very particular bi-seasonal precipitation pattern favours localized but permanent water availability in so-called "tinajas", natural rain-fed water tanks in the lava or rock that capture and retain rainwater. Depending on precipitation patterns and the particular nature of the “tinaja”, some of them contain water year-round, thus serving as a crucial resource for wildlife. A small stretch of the otherwise intermittent Sonoyta River is likewise a permanent and ecologically important source of freshwater. This area is located in the Northeast of the nominated property and has been recognized as a Ramsar site. Furthermore, there is ecologically important air moisture input from the nearby Gulf of California. There are a number of Artesian wells to the South of the nominated property.

3. COMPARISONS WITH OTHER AREAS

EPGDABR has been nominated under natural criteria (vii), (viii) and (x). To justify this claim the State Party conducted an extensive comparative analysis. The central claim resulting from the comparative analysis is that the nominated property is home to a wide range of features all of which exist elsewhere but are not found in such a concentrated area. The main feature is the diverse geomorphology of the Gran Altar Desert and the exceptionally rich biodiversity contained in this subtropical desert ecosystem. The analysis compared a number of similar sites against key geomorphological criteria including the presence of Linear Dunes, Star Dunes and Dome Dunes. The analysis concludes that EPGDABR is unique due to the unusual coincidence of large-scale, extraordinary geomorphological desert features and an intact, biodiversity-rich ecosystem, all combined in a stunning landscape. The IUCN thematic study on World Heritage Desert Landscapes mentions EPGDABR highlighting the variety of its desert geological formations combined with impressive volcanic features and granite massifs.

It is noteworthy that there are two inscribed World Heritage properties in the Mexican part of the Sonoran Desert, both serial properties. These are the Whale Sanctuary of El Vizcaino on the Pacific Coast of Baja California and the Islands and Protected Areas of the Gulf of California. One of the components of the latter property (Upper Gulf of California and Colorado River Delta Biosphere Reserve) is very close to the nominated property but it is a restricted marine area. Therefore it can be argued that in both cases the justification for the inscription on the World Heritage List is primarily based on marine and coastal values. In terms of terrestrial biodiversity the key features of EPGDABR are sufficiently distinct to set the nominated

property apart from the existing World Heritage properties in the wider Sonoran Desert.

In relation to Criterion (vii) there is a strong case for exceptional beauty and aesthetics due to the grandeur, scale, intactness, diversity and the sharp visual contrasts of the desert landscape features. There is a rare ensemble of natural features ranging from the dark-coloured Pinacate Peaks at around 1200 m.a.s.l. across the lava flows and the variety of sand dunes all the way to the Gulf of California, only interrupted by rugged, lighter coloured granite ranges. The magnificent views remain essentially unspoiled.

In relation to criterion (viii) what stands out is the scale, huge variety and complexity of desert features. The geomorphology of the dunes is highly diverse, intact, of large scale and based on almost undisturbed ongoing processes. A key feature is the presence of very large star dunes which makes EPGDABR globally unique. In addition the nominated property and its buffer zones comprise 50% of the Greater Sonoran Desert Ecosystem which is of remarkable value in relation to the conservation of this globally important ecosystem.

There is an extraordinary diversity of life across many taxonomic groups characterized by the unexpected availability of freshwater and the presence of a mosaic of habitats, which justify the application of criterion (x). Different types of xerophytic brush dominate the vegetation but many other communities have been identified by scientists (9 to 10 types have been proposed). A widely used study found 560 species of vascular plants, including an endemic plant restricted to the volcanic shield. Even in the seemingly bare dunes 85 highly specialized (short-lived) plants were recorded, of which several are endemic. Four of the plants found in the nominated property enjoy special federal protection. As for fauna, 5 mammals, 15 birds and 22 reptiles occurring in the nominated property are federally protected, an indication of their national rareness. The endemic Sonoran Pronghorn deserves to be mentioned, as some of the last specimens roam in and through EPGDABR. Other highlights include endemic freshwater fish and very large maternity roosts of the migratory Lesser Long-Nosed Bat in lava caves. Their role as pollinators and seed dispersers is just one example of sophisticated plant-animal interactions in this fragile, harsh desert environment. Due to its largely unaltered condition, the nominated area serves as a rare baseline reference of the major scientific interest for the study of desert ecology and many other fields.

In conclusion, there is no doubt that EPGDABR is of major global significance. The mostly pristine and large scale of the nominated property covers half of one of the most globally significant desert ecosystems worldwide when compared to other desert ecosystems worldwide.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Besides well-documented historic use by indigenous peoples, human presence and use was extremely limited prior to the construction of Route 2 (connecting Baja California Peninsula with the Mexican mainland, completed in 1956) and Route 8 (connecting Arizona to the Gulf of California through Northern Sonora, completed in the 1940s) because access to the harsh and remote area was extremely difficult.

Starting in the late 1960s, the Mexican government allocated so-called "ejidos" in the Pinacate region. Ejidos are a form of communal land tenure promoted as a component of the Mexican agrarian reform. The expectation to establish agriculture and ranching was of little success when irrigation attempts proved costly and resulted in soil salinization. Even though irrigation efforts were abandoned over the years, most land tenure rights are formally still in place, including within the nominated property. Therefore, EPGDABR has a complex land ownership structure. However this does not appear to constitute a conservation challenge, as there are little incentive or practical options to economically benefit from the land, besides the legal limitations through the protected area status.

The formal conservation history of the nominated property started in 1979, when 28,660 ha were set apart for the Sierra del Pinacate Protected Forest Zone and Wildlife Refuge and then turned into an Ecological Reserve in 1982. El Pinacate y Gran Desierto de Altar Biosphere Reserve was nationally declared by Presidential Decree in 1993. Internationally, it was recognized as a UNESCO Biosphere Reserve jointly with the adjacent Bay of Adair under the name of Alto Golfo de California in 1993, later expanded to include the national Upper Gulf of California and Colorado River Delta Biosphere Reserve. Mexico's "General Law on the Ecological Equilibrium and Environmental Protection" of 1988 is fully applicable to the entire nominated property, regardless of ownership. This law and its regulations specify internal zonation and management requirements including for buffer zones. The buffer zones are considered protected areas according to Mexican legislation where local communities may only engage in activities which have taken place at the time of the establishment of the protected area and which are supportive of conservation and sustainable use.

The site’s large size, remoteness, harsh climate and terrain contribute to a high degree of natural protection. The large, contiguous conservation units, including in the United States of America, further contribute to the protection 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

As stated above, "Biosphere Reserves" are a protected area category according to Mexican legislation. Both "core zones" and "buffer zones" enjoy full formal protected area status in line with Mexico's "General Law on Ecological Equilibrium and Environmental Protection" (1988). The revised boundaries of the nominated property coincide with the boundaries of the National Biosphere Reserve which facilitates its conservation and management guided by the existing management plan. The integrity of the nominated property is enhanced by an extensive buffer zone that includes to the east extensive natural areas (161,737ha) with almost no human occupation and use due to the predominant extreme harsh desert conditions. To the south the buffer zone covers a portion (408,760ha) of terrestrial and coastal habitats protected by the Alto Golfo de California and Delta del Rio Colorado National Biosphere Reserve. To the west the buffer zone includes vast sand dunes fields (193,134ha) of El Gran Desierto de Altar with no human occupation and only occasionally visited by organized tours. Whilst the northern border of the nominated property aligns with the international border between Mexico and USA there are three protected areas in the USA: the Organ Pipe Cactus National Monument, Cabeza Prieta National Wildlife Refuge and the Barry M. Goldwater Range, which are effectively managed thereby contributing to the integrity and ecological connectivity of the nominated property.

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

4.3 Management

The nominated property is under the responsibility of the National Commission for Protected Natural Areas (CONANP), which is the agency in charge of all federal protected areas, under the Mexican Ministry of Environment and Natural Resources (SEMARNAT). The responsible Regional Directorate for the Mexican Northwest and the Upper Gulf Region operates out of the Sonoran state capital of Hermosillo. While the Federal Government formally manages EPGDABR, the State Government and local governments of the municipalities neighbouring EPGDABR, in addition to a committed community of conservationists, indigenous groups, researchers and non-governmental organizations, have supported its management.

All Mexican biosphere reserves have mandatory management programmes, refined through thematic sub-programmes (e.g. for tourism, research, monitoring etc.) and annual operational plans. The present overall management programme dates from 1995 and is currently being updated through a participatory process. In line with the existing protected areas legislation the instrument established and used for this purpose is a participatory Advisory Council.

Over the years, the management of the nominated property has vastly improved in terms of human and financial resources. Locally, there is a dedicated director and 17 staff, including 6 rangers. The formal management team is complemented by a dedicated group of researchers and non-governmental supporters who jointly have accumulated a wealth of knowledge about the area. The regular involvement of local stakeholders increases the chances of broadly accepted management and helps to address possible conflicts.

Facilities include a biological station, housing and office space. Several ranger stations along the three key roads are currently being built, supported by resources from the Federal Ministry for Communications and Transport (SCT). The 2011 budget totalled USD 1,857,000 from different federal and state sources, projects and to a lesser degree from tourist fees. Whilst the budget available for the management of the property is considered adequate there is a need to explore options to ensure the sustainable long-term financial management of the nominated property.

There is a visitor centre named Schuk Toak (the indigenous name of the Pinacate Range) within the property. The visitor centre is supported by federal and state resources and aims to promote tourism. Annual visitors in 2010 totalled 17,504, compared to 6,495 in 2003 and 3,177 in 1997. The centre is well appreciated by tourists and no doubt has further potential for revenue generation as a part of a diversified financing strategy. The tourism potential may explain part of the strong political support the nomination enjoys locally and at State level. Despite important educational and economic opportunities it should be remembered that the fragile and inhospitable desert environment sets tight limits to visitation.

Monitoring of a large number of indicators is carried out by staff in cooperation with several institutions of the Sonoran government and many academic partners. There is a long history of cooperation with governmental and academic partner institutions in the United States of America. The collaboration is not restricted to monitoring but extends across research, species recovery and management.

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

4.4 Community

The nominated property has a long history of human occupation, as evidenced for example by ancient trails, sleeping circles and numerous archaeological artefacts. The traditional native lands extend across both sides of the current Mexican-US border, which is the reason why the contemporary Tohono O'odham find themselves living in two countries. The Hia C'ed O'odham or "people of the sand", a subgroup within the larger O'odham culture, lived in the area that is today the national Biosphere Reserve. Members of the Tohono O'odham regard the nominated property as part of their native homeland and a spiritual place of origin, celebrated in sacred ceremonies.

Representatives of the Tohono O'odham expressed strong support for the conservation of the nominated property. At the same time, they understandably insist on the need to participate in decision-making. The Advisory Council is an adequate vehicle to do so. Practical concerns mentioned in the discussions with indigenous representatives related to ceremonies, such as the revival of salt pilgrimages to the Gulf of California through the nominated property. There are current efforts to better understand native place names, considering sensitive locations. Management protocols, including tourist and scientific access to archaeological sites, should be determined in consultation with the Tohono O'odham.

4.5 Threats

While most of the Mexican Northwest and the American Southwest along the border has experienced major population growth and economic development over the last decades, EPGDABR continues to be a remote area with comparatively little development and use pressure. Today, there are no permanent residents in the nominated property. A few landowners occasionally enter their "ejidos". Other than that human presence is restricted to protected areas staff and limited numbers of visitors and researchers. Access remains difficult as vast areas consist of rugged lava flows and inhospitable sand dunes, and there is practically no infrastructure. In this sense, the very character of EPGDABR serves as a natural protection.

The value of the nominated property is supported by the various large conservation units in the broader Sonoran Desert on both sides of the border. There are increasing concerns about the connectivity of the land both within Sonora and across the international border, including for flagship species like the Sonoran Pronghorn and the Desert Bighorn Sheep. Major roads are located on the margins (East, South) or within the boundaries of the nominated property. The fencing of roads, typically parallel on both sides of major roads, is common and apparently a legal requirement. Within Sonora, the relatively recent construction of the coastal route has opened a new access and increased the risk of disturbance from that side. Positively, the coastal road is defined as a scenic route which limits size, infrastructure and fencing. The current expansion of Mexican Route 2, parallel to the border near the northern edge of the nominated property, may represent the greatest current disturbance factor. The construction is accompanied by extraction of construction material and water, construction of temporary deviation and access tracks, noise, dust and pollution risks. Encouragingly, the responsible state institution dealing with this infrastructure development is fully involving CONANP in its design and location in order to minimize impacts.

The Sonoran Desert is bisected by the international border between Mexico and the United States of America. It was noted during the field evaluation mission that the border was no obstacle whatsoever until very recently. This changed over the last years, when physical barriers were erected and border control was tightened. In the Northwest of the nominated property, a high metal barrier prevents the migration from and to the Barry M. Goldwater Range. Elsewhere, the physical infrastructure is restricted to vehicle barriers which are in principle permeable for wildlife. At the same time, other border measures result in unprecedented disturbance. Effectively, what used to be a "soft" international border with a small road in the North of EPGDABR only a decade ago is about to turn into a "development corridor" soon to be comprised of a wide highway, electricity transmission and physical barriers. Whilst the State Party took the decision to not locate electricity transmission infrastructure along the coast, in order to conserve the visual integrity of the nominated property, there is a need to apply the highest environmental standards in the alternative power lines transmission corridor proposed for the northern part of the nominated property.

The environmental conditions of the Sonoran Desert are extreme; however there is an overarching concern that climate change may increase water scarcity, already under pressure from human use in the broader region. This in turn would have severe consequences for vegetation and wildlife. The relatively large size and contiguity with other large-scale conservation units appear to be the best possible mitigation measure to address this challenge. This implies that efforts to maintain or, where needed, enhance ecological connectivity and the prevention of new physical barriers are a good investment to enhance resilience in the face of climate change. This requires conservation and management actions across the international border. Realistic measures at the level of park management might well be restricted to monitoring in order to understand changes and inform adaptive management.

Both surface water and groundwater are scarce resources of utmost ecological importance and under increasing pressure in the Sonoran Desert. With the exception of a short stretch of the Sonoyta River there are no perennial surface water courses in EPGDABR. Agua Dulce, the only permanent stretch of about three kilometres of the river reminds an oasis. It supports important riparian and aquatic habitat for resident and migratory birds, endangered native fishes, rare Sonoyta Mud Turtles and many other species, all reasons for which it was recognized as a Wetland of International Importance under the Ramsar Convention. The Sonoyta River is thus a unique resource. It is also under pressure from pollution and overuse. Waste disposal in the border town of Sonoyta is a concern requiring adequate waste management and sewage treatment facilities. There is also groundwater withdrawal in the watershed on both sides of the border.

Other sources of surface water of major conservation importance are the rain-fed "tinajas" and some Artesian wells in the South of the nominated property. Domestic livestock is thought to compete for this resource and may also pose disease risks as wildlife aggregates near the waterholes. The situation and potential impacts from feral animals needs to be better understood and may require management responses.

Tourism is a major economic factor near the nominated property, most importantly in the nearby coastal resort and fishing town of Puerto Peñasco (Rocky Point). The resort attracts domestic and North American tourists, the latter mostly from nearby Arizona and Southern California. The bordering US side has experienced rapid population growth over the last decades leading to strongly increasing recreation demand on both sides of the border in the Sonoran Desert. At the same time, the economic situation and possibly the perception of the security situation in Northern Mexico have resulted in a noticeable decline of tourism over the last years even though there are ambitious and controversial plans to further promote tourism. The obvious focus is the coastal strip at the head of the Gulf of California. This pressure has been responsible for decades of coastal development.

Indirect impacts to the nominated property of nearby tourism development include increased traffic, which translates in a certain amount of disturbance, road kill of wildlife and littering. More importantly, it creates pressure to extend existing road infrastructure which could facilitate entry points for alien invasive species. Increasing off-road driving has been observed, requiring control and law enforcement in EPGDABR. However the most critical long term issue may be tourism-related water consumption.

On the other hand tourism development opens great opportunities for visitor education and awareness-raising, as well as for conservation financing. The visitor centre stands out as exemplar in this regard. Within the nominated property itself, the harsh environment imposes natural limits to tourism development.

There is a long history of uncontrolled extraction of natural resources facilitated by road construction in the 1940s and 1950s. Volcanic rock and pyroclastic material from the cinder cones, locally known as "morusa", for use in construction and adornment of gardens, has had localized impacts in the past. This practice was abandoned after the declaration of the national Biosphere Reserve.

Extraction of Ironwood and other woody species, such as Mesquite and Ocotillo, for fuelwood, charcoal production and carved handicrafts was an important subsistence and commercial activity. Ironwood is believed to be a keystone species in the desert ecosystem, as its seeds and leaves are important food sources for countless insects, rodents and birds, and acts as a substrate for cacti species. The extraction has come to an end due to the depletion of the resource, legal protection and control efforts. Regeneration is visible but probably occurring at a slow pace given the harsh environmental conditions.

Poaching of fauna for trophy, food and predator control was widespread prior to the establishment of the Biosphere Reserve, however, it seems mostly under control today. Clear regulations are in place and effectively enforced. Nevertheless some poaching is reported to occur which stress the need to maintain effective control and enforcement. In the case of the highly valued Bighorn Sheep, the strong financial incentive for poaching is difficult to counter. Many of the dirt roads have probably been created by poachers so there is also an indirect impact, including an ongoing visual impact.

Government backed petroleum prospecting reportedly took place some decades ago and the results of possible plans for follow-up appear to be unknown. There is no current exploration or active mining within EPGDABR or its immediate vicinity and there are no current concerns about changes in this regard.

Alien invasive species (AIS), both plants and animals, are of major concern in the wider Sonoran Desert, even in the rare aquatic habitats. A number of experts consulted during the evaluation mission rate IAS among the key conservation challenges. A specific study using the nominated property as a pilot area published in 2005 found 97 invasive plant species. The authors consider 18 of "particular" concern and three of "major" concern: Salt Cedar (*Tamarix ramosissima*), Buffelgrass (*Pennisetum ciliaris*), and Sahara Mustard (*Brassica tournefortii*). The spreading and establishment of AIS varies in relation to access, humidity and the prevalence of wildlife or domestic livestock. The central parts of the nominated property have been spared from major invasions due to their relative isolation and the exceptional aridity of the nominated property. Of major concern are the rare and valuable riparian habitats along the Sonoyta River where AIS compete with native species. Salt Cedar, a well-known invasive across the entire Colorado River Basin changes the ecology of rare and fragile riparian habitats. In water, non-native species compete with the struggling populations of two endemic fish species. In terms of animal species the key concerns appear to be feral pets and livestock, including cats, dogs, donkeys, goats and cows, competing with, preying on or spreading diseases to native species. Monitoring, eradication when possible, and prevention of further invasions will have to be a component of future management of EPGDABR.

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

5. ADDITIONAL COMMENTS

5.1 Transboundary natural resource management and conservation along the US-Mexican border

The international border between Mexico and the United States of America harbours many and very diverse areas of major conservation importance along its roughly 2000 miles, including well known protected areas in the Sonoran Desert. Transboundary conservation efforts in the Sonoran Desert date back as early as the 1930s and have continued since that time at very different levels. Concrete discussions about a formal transboundary protected area started in the 1960s. Building upon several earlier agreements, the U.S. Department of the Interior (DOI) and

SEMARNAT signed a Letter of Intent (LOI) on Adjacent Protected Areas in 1997. The LOI names the Western Sonoran Desert region as one of two pilot areas, explicitly including the nominated property. Within this encouraging framework, there has been a wealth of ongoing information exchange, staff exchange programs, joint environmental education, cooperation on AIS removal, and species conservation.

More recently, border security aspects have increasingly dominated government decision-making in the border region. Drug trafficking and illegal immigration have increased in remote areas along the border between Mexico and the USA. The new physical infrastructure, a high wall along the border, and augmented security activities on the US side, have generated negative impacts and have also introduced a new barrier for wildlife movements. It is hoped that the present governmental focus on security issues will not undermine the encouraging and functional working relationships across the border.

6. APPLICATION OF CRITERIA

The El Pinacate and Gran Desierto de Altar Biosphere Reserve has been nominated under criteria (vii), (viii) and (x).

Criterion (vii): Superlative natural phenomena or natural beauty and aesthetic importance
The property presents a dramatic combination of desert landforms, comprising both volcanic and dune systems as dominant features. The volcanic shield in the nominated property boasts a wide array of volcanic phenomena and geological formations, including a small shield-type volcano. The visually most striking feature is the concentration of a total of 10 enormous, deep and almost perfectly circular Maar (steam blast) craters, believed to originate from a combination of eruptions and collapses. The nominated property is visually outstanding through the stark contrast of a dark-coloured area comprised of a volcanic shield and spectacular craters and lava flows within an immense sea of dunes. The dunes can reach 200 meters in height and contain linear dunes, star dunes and dome dunes, displaying enormous and constantly changing contrasts in terms of form and color. In addition to these predominant features there are several arid granite massifs ranging between 300 and 650m high which emerge like islands from the sandy desert flats. The combination of all these features results in a highly diverse and visually stunning desert landscape.

IUCN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features
The property's desert and volcanic landforms provide an exceptional combination of features of great scientific interest. The vast sea of sand dunes that surrounds the volcanic shield is considered the largest and most active dune system in North America. It includes a diverse range of dunes that are nearly undisturbed, and include spectacular and very large star-shaped dunes that occur both singly and in long ridges up to 48km in length. The volcanic exposures provide important complementary geological values, and the desert environment assures a dramatic display of a series of impressive large craters and more than 400 cinder cones, lava flows, and lava tubes. Taken together the combination of earth science features is an impressive laboratory for geological and geomorphological studies.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species
The highly diverse mosaic of habitats is home to complex communities and surprisingly high species diversity across many taxonomic groups of flora and fauna. More than 540 species of vascular plants, 44 mammals, more than 200 birds and over 40 reptiles inhabit the seemingly inhospitable desert. Insect diversity is high and not fully understood. Several endemic species of plants and animals exist, including two freshwater fish species. One local endemic plant is restricted to a small part of the volcanic shield within the nominated area. Large maternity caves of the migratory Lesser Long-Nosed Bat, which is important for pollination and seed dispersal are found within the nominated property. Noteworthy species include the Sonoran Pronghorn, an endemic subspecies of the Pronghorn restricted to Southwestern Arizona and Northwestern Sonora and threatened by extinction.

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-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Inscribes the **El Pinacate and Gran Desierto de Altar Biosphere Reserve, Mexico,** on the World Heritage List under natural criteria (vii), (viii), and (x);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis
El Pinacate and Gran Desierto de Altar Biosphere Reserve (EPGDABR) is located in the Sonoran Desert. The Sonoran Desert is one of four great North American deserts along with the Chihuahuan Desert, the Great Basin Desert and the Mojave Desert. EPGDABR has a surface of 715,567 hectares with 354,871 hectares of buffer zone. It is a large and relatively undisturbed protected area which comprises two very distinct broad landscape types. To the East, there is a dormant volcanic area of around 200,000 ha, comprised of the Pinacate Shield with extensive black

and red lava flows and desert pavement. The volcanic shield boasts a wide array of volcanic phenomena and geological formations, including a small shield-type volcano. The most visually striking feature is the concentration of a total of 10 enormous, deep and almost perfectly circular Maar (steam blast) craters.

In the West towards the Colorado River Delta and South towards the Gulf of California, is the Gran Altar Desert, North America's largest field of active sand dunes and only active Erg dunes. The dunes can reach 200 meters in height and contain a variety of dunes types. The dunes originate from sediments from the nearby Colorado Delta and local sources. In addition, there are several arid granite massifs emerging like islands from the sandy desert flats, ranging between 300 and 650 m.a.s.l., which represent another remarkable landscape feature harbouring distinct plant and wildlife communities.

The variety of landscapes results in extraordinary habitat diversity. The diversity of life forms across many different taxa is notable with many species endemic to the Sonoran Desert or more locally restricted to parts of the property. All feature sophisticated physiological and behavioural adaptations to the extreme environmental conditions. The subtropical desert ecosystem reportedly hosts more than 540 species of vascular plants, 44 mammals, more than 200 birds, over 40 reptiles, as well as several amphibians and even two endemic species of freshwater fish.

Criteria

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

The property presents a dramatic combination of desert landforms, comprising both volcanic and dune systems as dominant features. The volcanic shield in the property boasts a wide array of volcanic phenomena and geological formations, including a small shield-type volcano. The most visually striking feature is the concentration of a total of 10 enormous, deep and almost perfectly circular Maar (steam blast) craters, believed to originate from a combination of eruptions and collapses. The property is visually outstanding through the stark contrast of a dark-coloured area comprised of a volcanic shield and spectacular craters and lava flows within an immense sea of dunes. The dunes can reach 200 meters in height and contain linear dunes, star dunes and dome dunes, displaying enormous and constantly changing contrasts in terms of form and color. In addition to these predominant features there are several arid granite massifs emerging like islands from the sandy desert flats, ranging between 300 and 650m high. The combination of all these features results in a highly diverse and visually stunning desert landscape.

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

The property's desert and volcanic landforms provide an exceptional combination of features of great scientific interest. The vast sea of sand dunes that surrounds the volcanic shield is considered the largest and most active dune system in North America. It includes a diverse range of dunes that are nearly undisturbed, and include spectacular and very large star-shaped dunes that occur both singly and in long ridges up to 48km in length. The volcanic exposures provide important complementary geological values, and the desert environment assures a dramatic display of a series of impressive large craters and more than 400 cinder cones, lava flows, and lava tubes. Taken together the combination of earth science features is an impressive laboratory for geological and geomorphological studies.

Criterion (x): Biodiversity and threatened species

The highly diverse mosaic of habitats is home to complex communities and surprisingly high species diversity across many taxonomic groups of flora and fauna. More than 540 species of vascular plants, 44 mammals, more than 200 birds and over 40 reptiles inhabit the seemingly inhospitable desert. Insect diversity is high despite not being fully documented. Several endemic species of plants and animals exist, including two freshwater fish species. One local endemic plant is restricted to a small part of the volcanic shield within the area. Large maternity caves of the migratory Lesser Long-Nosed Bat, which is an important pollinator and seed dispersal vector are found within the property. Noteworthy species include the Sonoran Pronghorn, an endemic subspecies restricted to the South-western Arizona and North-western Sonora and threatened by extinction.

Integrity

El Pinacate and Gran Desierto de Altar Biosphere Reserve is relatively undisturbed and has an outstandingly high level of physical integrity to a greater extent related to its harsh environment. Whilst there are a limited number of private land ownership (Ejidos) areas, the entire property is under the authority of the Federal Agency for Protected Areas (CONANP).

Protection and management requirements

The property counts on an effectively enforced adequate legal framework and its management is well supported in terms of human and financial resources. Management of the property is guided by a long-term management plan supported by annual operational plans and implementation is supported by local governments, NGOs and indigenous peoples. Future revisions of the existing management plan should consider ways and means to maintain and enhance the Outstanding Universal Values and conditions of integrity of the property. It should also propose new options and mechanism to ensure the financial sustainability required for the effective long term management of the property. In addition the management plan should establish enhanced mechanisms to effectively involve indigenous peoples in the planning and management of the property.

Special attention should be given to avoid the indirect impacts of nearby tourism development including from increased traffic, which creates ecological disturbance, littering and wildlife road kills. More importantly, tourism can create pressure to extend existing road infrastructure which could facilitate entry points for

alien invasive species. Increasing impact from off-road vehicles has been observed, requiring monitoring and effective law enforcement in EPGDABR. However the most critical long term management issue is to address potential problems derived from tourism-related water consumption.

Long term protection and management of the property also includes the need to minimize and/or mitigate impacts derived from existing or proposed roads; to ensure effective implementation of measures to avoid further depletion of scarce water resources; to maintain and enhance ecological connectivity so as to buffer against climate change impacts and to effectively control and eradicate alien invasive species. Transboundary cooperation to maintain and enhance the management of the property is essential and therefore the formal establishment of a Transboundary Protected Area with adjoining protected areas in the United States is highly recommended.

4. Commends the State Party on the decision to not locate electricity transmission infrastructure along the coast, in order to conserve the visual integrity of the area, and requests the State Party to apply the highest environmental standards to be applied in the alternative corridor in the northern part of the property;

5. Requests the State Party to ensure full compliance with Environmental Impact Assessment requirements as regards the ongoing expansion of the Route 2 road development;

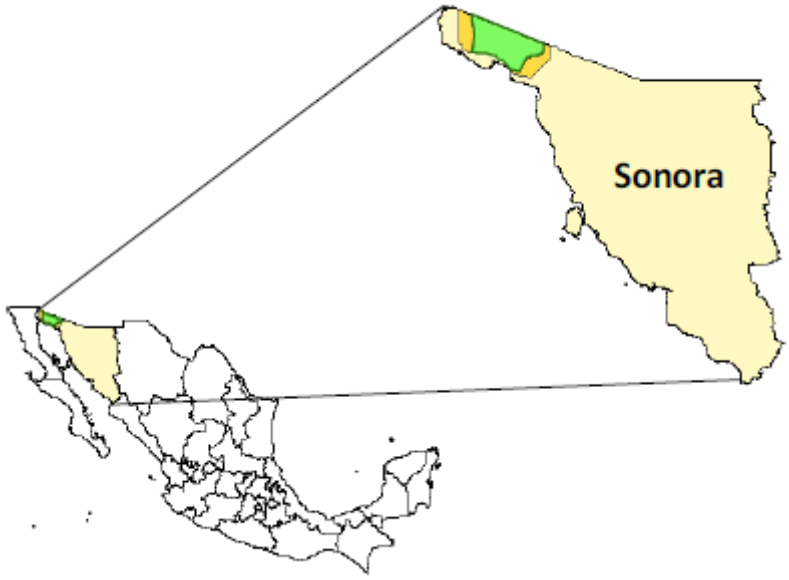
6. Encourages the State Party to consider the future expansion of the property to include the adjacent Ramsar site of Bahia de Adair;

7. Encourages the State Parties of Mexico and the United States of America to strengthen cooperation on the conservation and management of the shared Greater Sonoran Desert Ecosystem, building upon the existing agreements and working relationships at all levels, which may eventually lead to the formal establishment of a transboundary protected area;

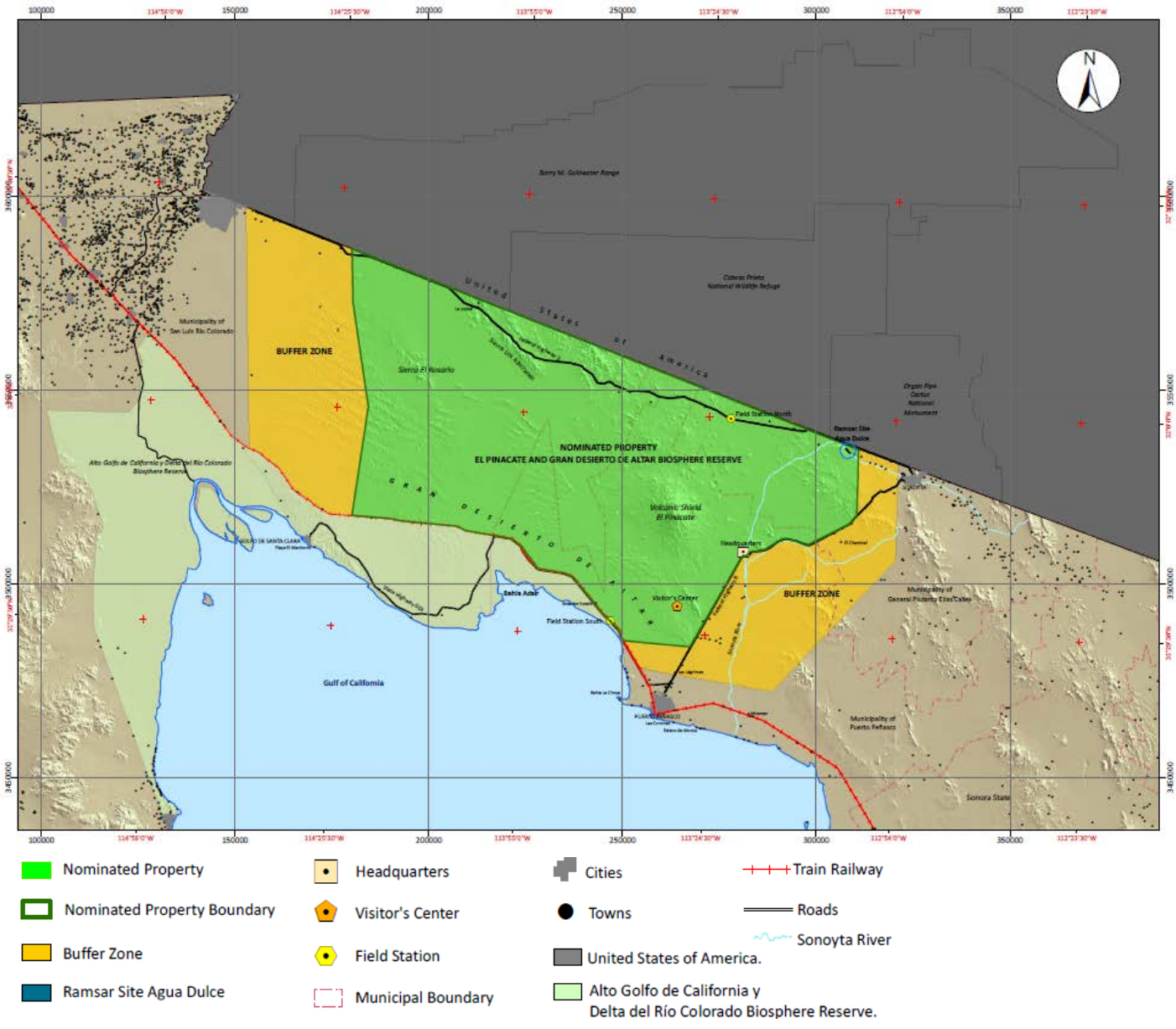
8. Encourages the State Parties of Mexico and the United States of America to further cooperate on the saving of the Sonoran Pronghorn from possible extinction;

9. Further encourages the State Party, and the neighbouring State Party of the United States of America, to fully consider environmental concerns in security efforts along the international border that forms the northern boundary of the property.

Map 1: Nominated property location



Map 2: Nominated property and buffer zone



A. NATURAL PROPERTIES

A2. DEFERRED NOMINATIONS OF NATURAL PROPERTIES

ASIA / PACIFIC

TAJIK NATIONAL PARK (MOUNTAINS OF THE PAMIRS)

TAJIKISTAN

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

TAJIK NATIONAL PARK (MOUNTAINS OF THE PAMIRS) (TAJIKISTAN) ID No. 1252 rev

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meet natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

Background note: In 2009/2010 a smaller percentage of the Tajik National Park (TNP) was nominated as Tajik National Park (Mountains of the Pamirs). The nominated property was 1,266,500 ha with a buffer zone of 1,385,174 ha, both areas within the boundaries of the TNP. The IUCN evaluation and Committee decision noted that the property met criteria (vii) and (viii) and that these values could be strengthened by adding additional areas in the TNP. The IUCN evaluation concluded that the property did not meet criteria (ix) and (x). The Committee deferred the nomination to allow the State Party to refocus a nomination on criteria (vii) and (viii) with redefined boundaries; improve the comparative analysis to justify Outstanding Universal Value; provide a clear commitment and plan to improve resourcing; and to prepare and implement an effective management plan. The Committee requested the State Party to keep open the possibility of a future transnational nomination for the Pamir Mountains with neighbouring countries (Decision 34COM 8B.3).

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

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 20 December 2012. The information was received on 12 February 2013. IUCN requested the State Party to confirm its commitment and provide details on proposals to increase staff numbers to more adequate levels as foreseen in the next 5-year management plan for the property.

c) Additional literature consulted: Appleton, M.R. et al. (2012) **Biodiversity: Delivering results in Europe and the CIS.** UNDP, Bratislava, Slovakia. BirdLife International (2012a) **Important Bird Areas factsheet: Bulunkul and Yashilkul lakes and mountains.** Downloaded from http://www.birdlife.org on 19/11/2012. BirdLife International (2012b) **Important Bird Areas factsheet: Karakul lake and mountains.** Downloaded from http://www.birdlife.org on 19/11/2012. Breu, T. and H. Hurni (2003) **The Tajik Pamirs: Challenges and Sustainable Development in an Isolated Mountain Region.** Centre for Development and Environment (CDE), University of Berne, Switzerland. Conservation International (2012) **Mountains of Central Asia.** Hotspot description. Online: http://www.conservation.org/where/priority_areas/hotspots/europe_central_asia/Mountains-of-Central-Asia/Pages/default.aspx. Fisher R.D. 1995. **Earth's Mystical Canyons.** Sunracer Publications Tucson. 152 p. IUCN, 2009 **IUCN Technical Evaluation: Tajik National Park (Mountains of the Pamirs) (Tajikistan)** ID No. 1252; Magin, C. (2005) **World Heritage Thematic Study for Central Asia – A Regional Overview**. IUCN, Gland.; Middleton, R. & Thomas, H. (2008) **Tajikistan and the High Pamirs**. Odyssey Books & Guides.; Republic of Tajikistan (2012) **Tajik National Park (Mountains of the Pamirs)**, Nomination document, 190pp + maps; Thorsell, J. & Hamilton, L. (2002) **A Global Overview of Mountain Protected Areas on the World Heritage List**. IUCN, Gland. UNEP-WCMC (2009) **Tajik National Park (Mountains of the Pamirs) Comparative Analysis** (revised 1st draft). WWF (2012) Ecoregion descriptions. Online: http://worldwildlife.org/biomes

d) Consultations: 15 external reviews. The mission met with representatives of the Committee on Environmental Protection, Tajik National Commission for UNESCO, regional authorities in Murgab and local communities in Poi Mazar and Karakul, as well as national park staff and key private stakeholders.

e) Field visit: Les Molloy and Sarangoo Radnaaragchaa, 16-26 August 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The property is nominated under the name Tajik National Park (Mountains of the Pamirs), and is located in the eastern part of Tajikistan, mostly in the province of Gorno-Badakhshan (districts of Vanch, Rushan, Shugnan and Murgab) and, in the north-western sector, parts of Tavildara and Jirgatal Districts. The nominated property comprises the entire Tajik

National Park (TNP), an area of 2,611,674 hectares. There is no formal buffer zone as the remoteness and rugged character of the sparsely-inhabited surrounding mountains are considered to constitute an adequate physical buffer. The northern boundary of the park is the Alai Range which forms the border with Kyrgyzstan and contains the park's second highest peak, the 7134m Istiqlol Peak. In the east, the Sarykol Range and Kunlun Shan of Xinjiang (China), with peaks like Kongur Tagh (7719m) and Muztag Ata (7546m), form a natural and political boundary. To the south lie the Hindu Kush of Afghanistan and, at its western extremity, the park boundary almost reaches down to the canyon of the Panj River at 2000m altitude.

The Pamir Mountains are part of the Central Asian highlands. In the Eastern Pamir the mountain relief is superimposed on a high plateau. While the heights of the peaks above sea level average over 6,000m, their relative heights above the gently-undulating plateau in most cases do not exceed 1,500-1,800m. The massifs have mainly rounded contours, and the wide flat-bottomed valleys between them are generally occupied by clear meandering rivers. In contrast, the relief of the Western Pamir is high-mountains capped by extensive snowfields and glaciers, with deep, narrow ravines flanked with huge talus slopes and containing large turbulent rivers laden with glacial silt and prone to flooding during the summer thaw. The highest peak in the nominated property is 7,495m Ismoil Somoni.

The Pamir Mountains lie at the centre of the 'Pamir Knot', the term used by geographers to describe the tangle of the highest mountain ranges on the Eurasian continent. Huge tectonic forces stemming from the collision of the Indian-Australian plate with the Eurasian Plate have progressively thrown up the Himalaya, Karakoram, Hindu Kush, Kunlun and Tien Shan mountain ranges – all radiating out from the Pamir Mountains. Along with the Karakoram Mountains, the Pamir region is one of the most tectonically-active locations in the world. The Pamir highlands include some of the most active faults in Central Asia, making them subject to frequent strong earthquakes.

The climate of the Pamirs is sharply continental with high variations in seasonal temperatures from extremes of -63°C to +31°C. The high mountain ranges surrounding the park shield it from the humid air masses coming in from the west and south making the Pamir Mountains particularly arid compared with most of the Tibetan Plateau and the other high ranges of Central and South Asia. In the eastern Pamir the low mean annual precipitation varies from 63mm to 117mm. In the western Pamir total precipitation is considerably higher – 300 to 500mm on leeward slopes and increasing to 1,200 to 1,800mm on windward slopes. Due to the intense solar radiation, arid climate, low temperatures and limited precipitation, the eastern part of the park is considered to be a cold high-mountain desert. Here, the average annual temperature is below zero, diurnal temperature amplitude is as large as 30°C, and the frost-free period is only 40-80 days.

A wide range of glacial landforms and processes occur within the park. There are 1,085 recorded glaciers, with more than 1000 exceeding 1.5 km in length and a dozen exceeding 20 km. The majority are found in the western mountains of the core zone, including the longest valley glacier outside of the Polar Regions, the Fedchenko Glacier which is 77 km in length.

TNP contains 170 named rivers and more than 400 lakes. Virtually all of these rivers flow into the major Panj and Vakhsh Rivers, which combine to form the Amu Darya River which flows ultimately to the Aral Sea. The largest lakes within TNP are Karakul, Sarez and Yashikul. Sarez Lake is not only the largest freshwater lake in the Pamir Mountains in terms of water volume (17 km^3) but also in all of Central Asia. However, Karakul Lake is the largest of the Pamir's lakes in terms of surface area; located at almost 4,000m altitude, it is considered one of the highest salt lakes in the world. It lies within a circular basin with a rim diameter of 52 km, which is interpreted as the crater formed as a result of the impact around 25 million years ago of a large meteorite.

Two floral regions of Asia meet in the nominated property; the western Pamir belongs to the Southwestern Asia floristic region while the flora of the eastern Pamir is typical of the Central Asian floristic region. A total of 639 higher plants (belonging to 57 families) have been documented in the core of the park but this increases to reportedly 2,100 species when the lower non-core (22% by area) zones are included. The main families of plants are Poaceae (32 genera, 92 species), Asteraceae (118 species) and Brassicaceae (34 genera, 64 species). There are three altitudinal vegetation zones within the nominated property: the *subalpine* zone below 4,200m, dominated by teresken and feather-grass steppes; the *alpine* zone between 4,200 and 4,800m, dominated by semi-shrub tanacetium; and the *nival* belt above 4,800m with virtually no vegetation cover. Six different types of vegetation occur in the property, including teresken and wormwood deserts, talus and rock outcrop plants, and localized areas of steppe and riverine meadows. TNP is also considered an important centre for wild forms of cultivated plants and belongs to the 'Vavilov Centre of Central Asia', one of 11 global 'Vavilov Centres'. The plant varieties of particular agricultural importance in TNP are wheat in the Bartang Valley and the 'walnut-apple-cherry' woodlands of the Tavildara section of the park.

The harsh environmental conditions of the park support only a relatively poor fauna with a moderately high degree of endemism, all typical of Central Asia's fauna. The fish fauna of the Pamir belong to an ancient group characterised by low diversity, resistance to low temperatures, high endemism and a lack of predatory species. A total of 162 bird species have been observed in TNP, with 25 residents all year round. Nationally rare and threatened birds include mountain goose, Himalayan griffon, bearded vulture, golden eagle, Central Asian saker falcon, and Tibetan snow cock. The park is also the habitat of 33 mammal species, the most noteworthy being the Marco Polo subspecies of Argali, with a population of 5400

estimated from the 2010 wild animal survey. There are also an estimated 120 Snow Leopards, 4200 Siberian Ibex, and smaller numbers of Tibetan Wolf, Turkestan Lynx, Tian Shan brown bear, and otter.

3. COMPARISONS WITH OTHER AREAS

The property has been nominated under criteria (vii), (viii) and (x). With an area of 2,611,674 ha and covering some 18% of Tajikistan's land area, TNP is the largest high mountain protected area of the Eurasian continent and among the largest protected areas in Central Asia. The park has been identified in a number of previous gap analyses as having potential for inclusion on the World Heritage List. In particular, the IUCN thematic study for Central Asia noted it had been considered by three out of five gap analyses as a possible priority.

In landscape terms, the outstanding feature of TNP is the juxtaposition within one protected area of extensive high plateaux in the east and rugged glaciated mountains with deep gorges in the west. The Pamir Plateau between 3500m and 4500m covers 1,150,000ha (or 44% of the area of TNP) and most of it accords with Udvardy's 'cold winter desert' biome which is currently poorly-represented on the World Heritage list. The High Plateau of Tibet is the largest alpine plateau of the world but its vast Chang Tang Nature Reserve is not presently on China's tentative list. The high plateaux of TNP are not comparable to this Tibetan protected area in terms of size, but they are of comparable height and much drier than most of the Chang Tang. Furthermore, unlike the Tibetan Plateau, TNP boasts a remarkable combination of deep canyons, braided rivers, glaciated peaks and high plateaux within the one protected area. Within the property, the Kokuibel gorge near Ghudara has an altitudinal difference of more than 2600m between its valley bottom and highest point. The canyon of the Bartang River is more than 3300m in depth placing it within the top five deepest canyons on earth. This diversity of landscape differs from the other temperate zone mountainous World Heritage sites. The mountains of the nominated property are much more extensive than the Himalayan sites although the Pamir range is much smaller than the Tibetan Plateau. The nominated property concentrates and protects the full range of Central Asian landscapes, from the highest altitude plains and peaks to the deciduous forests of the deep river valleys.

TNP includes the highest peaks of the Central Asian region: three mountains exceed 7000m asl in height and over 40 exceed 6,000m. The only comparable Central Asian peaks and glaciers lie 800km to the north-east in the western Tian Shan on the border of China (Xinjiang) and Kyrgyzstan. Here the Tomur area includes the peaks of Tomur Feng (7439m) and Khan Tengri (6995m) along with 670 recorded glaciers, with the two largest exceeding 300km^2 (compared with 700km^2 for Fedchenko). Only two existing World Heritage properties include higher peaks than TNP: Sagarmatha (Mount Everest: 8848m) in Nepal and Nanda Devi (Nanda Devi: 7817m) in India. There are no existing natural World Heritage properties in close proximity to TNP; Nanda Devi is over 1,000 km away and The Golden Mountains of Altai (Russian Federation) over 1,500 km distant. However, outside listed World Heritage sites, there are other comparable peaks to those in TNP in the much closer 'Pamir Knot' ranges dividing Central Asia from South Asia. The closest are Kongur Tagh and Mustagh Ata at the western end of the Kunlun Shan 300 km to the east, and Tirich Mir (7690m) in the Hindu Kush 300 km to the south. The Karakoram Mountains 500 km to the SE in northern Pakistan have 17 peaks higher than Ismoil Somoni (with four above 8000m) and are considered the most heavily glaciated mountains outside the Polar Regions. The Karakoram Mountains are also the location of the three longest temperate zone glaciers after Fedchenko: Siachen (70 km), Biafo (63 km) and Baltoro (62 km). The Fedchenko Glacier is recognized as the longest glacier in the world outside of the Polar Regions. For comparison: the length of the Aletsch Glacier in Switzerland, the largest glacier in western Eurasia, is much less (23 km).

Two other comparable Inner Asia high mountain sites occur on tentative lists: a trans-national 'Mountains of Western Tien-Shan' straddling the western portions of the Tian Shan in Uzbekistan, Kyrgyzstan and Kazakhstan; and the 'Karakorum-Pamir' in Xinjiang, China. The former lacks the extent of high mountains and glaciers in TNP but the Chinese site bears serious comparison because it is an equally-active tectonic zone, has an alpine desert character, belongs to the same Udvardy biogeographical province of 'Pamir-Tianshan Highlands', and includes the outstanding peaks of Kongur Tagh and Mustagh Ata discussed above. Reviewers have also noted the importance of the TNP to the study of tectonic subduction. Specifically the nominated property offers a rare opportunity to test longstanding hypotheses about mountain building including the phenomenon of subduction initiated and sustained in continental lithosphere. This is of the utmost importance, because our current understanding of global plate tectonics is based on the sinking of oceanic lithosphere (the rocks of the sea floor) as the primary source of forces to move plates. It has long been assumed that continental rocks do not behave in the same way, so incontrovertible proof of subduction in the Pamir would require rethinking the most fundamental theory of the solid earth.

Karakul Lake, at 3923m altitude in the core zone of TNP, is the largest high endorheic (closed) lake in Central Asia. There are larger saline closed lakes on the Tibetan Plateau but the only currently World Heritage listed large closed lakes in Central Asia occur at much lower altitudes distant from the mountains – 'Uvs Nuur' (759m) in Mongolia/Russian Federation and Lake Tengiz (c.120m) in 'Saryarka – Steppe and Lakes of Northern Kazakhstan'. The largest mountain lake (by area) in Central Asia, Issyk Kul in Kyrgyzstan, is also lower in altitude (1606m) and freshwater in character. Lake Sarez, in the core of the park is a natural landscape phenomenon, the product of a magnitude 9 earthquake in 1911, which generated a six billion tonne landslide forming the highest natural

dam in the world, the 567m Uzoi dam, across the Murgab River. Because of the highly dynamic tectonic environment of TNP, Lake Sarez (3239m) is considered potentially very unstable and a potentially serious threat to the safety of populations in the Amu Darya River environs downstream.

Only 10% of TNP is covered by biogenic landscapes (i.e. landscapes formed under the influence of living organisms), the rest is largely barren rock or ice. The nominated area is part of the large terrestrial biodiversity hotspot "Mountains of Central Asia", which covers over 860,000 km^2 and includes two of Asia's major mountain ranges, the Pamirs and the Tian Shan. The flora of this hotspot is a mix of Boreal, Siberian, Mongolian, Indo-Himalayan and Iranian elements. There are more than 5,500 known species of vascular plants in the hotspot, about 1,500 of which are endemic. However, TNP only covers 3% of the hotspot with 639 plant species (12%), in 57 families and 248 genera, occurring in the nominated property. TNP is also part of a WWF priority ecoregion "Middle Asian Montane Woodlands and Steppe" however, many other sites on other Tentative Lists also exist within this ecoregion and have arguably higher levels of species richness. The nomination quotes 2,100 plant species as occurring within TNP, however, this figure may be inflated and has been challenged by a number of reviewers noting it may be for the Gorno Badakhshan Autonomous Oblast as a whole. Only 2,200 plant species are noted for this area as a whole.

It is also difficult to assess the global significance of TNP's wild varieties of crop plants in the Central Asian 'Vavilov Centre of Diversity'. Similar claims of outstanding universal value are made for "wild fruit forests" in the mountains of Xinjiang Tianshan, and there are similar centres of diversity elsewhere in the mountains of Central Asia (Afghanistan, Uzbekistan, and extending into north-west India and northern Pakistan).

Endemism is high in the hotspot's amphibians and freshwater fishes but the alpine cold desert environment of TNP is understandably poor in numbers of these vertebrate groups. Of the 143 mammal species recorded in the hotspot, only 33 (23%) occur in the nominated property; of the 489 bird species, 162 (33%) occur in the park but only 25 are considered resident all year round.

Although the nominated property is of international importance in relation to threatened mammal and bird species, it is not outstanding or at the highest global level of value. The nomination states that TNP has a population of 120 Snow Leopard but many existing (and proposed) World Heritage properties in Inner Asia, such as The Golden Mountains of the Altai, Nanda Devi and Valley of Flowers National Parks, Sagarmatha National Park, Uvs Nuur Basin, and Xinjiang Tianshan are habitats for this iconic mammal. At the subspecies level, TNP is home to a significant population of Marco Polo Argali, a subspecies of the globally threatened Argali Sheep. Recent surveys report 5400 individuals in the park, with their preferred territory the high plateaux in the east.

In summary, Tajik National Park stands out as a very large protected area encompassing almost all of one of the world's highest mountain ranges, with an outstanding landform juxtaposition of heavily-glaciated high peaks and high plateaux with alpine desert character. Some of this physical/climatic character is shared with two other properties (China's 'Xinjiang Tianshan' and 'Karakorum-Pamir') but they also differ significantly by lacking some of the landform diversity of TNP, or they are much less arid. In terms of criterion (x), TNP does not compare favourably with the region's other tentative-listed sites in relation to biodiversity richness, despite its large size. The biodiversity richness of other comparable properties is higher, for example: Three Parallel Rivers (China); Golden Mountains of the Altai (Russia); Altyn-Emel State National Natural Park (Kazakhstan); the Mountains of the Western Tien Shan (Transboundary nomination of Uzbekistan, Kyrgyzstan, Kazakhstan); and Chatkal State Biosphere Reserve (Uzbekistan). Xinjiang Tianshan (China) contains a more diverse range of ecosystems, bioclimatic contexts and altitudinal variation than TNP.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

The entire area of the TNP is nominated for the inscription. TNP was established under the Natural Protected Areas Law of the Republic of Tajikistan, No. 329, 1996 and the Order of State Directorate of Natural Protected Areas, No. 147, 2005. The status of TNP is 'state republican natural park (national park)'. The Law on Natural Protected Areas prohibits any mining and construction activities, cutting of woody plants, ecologically harmful activities, changes of the hydrological regime, construction of roads, pipelines, transmission and other communication lines that are not related to park management and the introduction of living organisms.

The category of national parks has the highest protection status in Tajikistan. As such, the main purpose of the TNP is: to preserve outstanding natural landscapes and biodiversity with particular attention to rare and endangered species; to protect cultural and historical monuments; conduct education and research activities and promote sustainable use of natural resources.

TNP is owned by the State but there are land parcels traditionally used by Kyrgyz communities near Karakul Lake. The boundaries of the park are well known to them and the importance of maintaining ecologically-sustainable levels of grazing by Kyrgyz herders is respected by the park administration. Kyrgyz communities have retained many of their traditional grazing rights and unlike other communities outside the park area they do not pay any land use taxes. Most of this traditional grazing occurs in the 'traditional use' and 'limited economic use' zones in the eastern part of the park. However, some seasonal grazing occurs within the core zone but is likely to be phased out or further restricted.

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

4.2 Boundaries

The 2010 deferment by the WHC of TNP's nomination recommended that the State Party "re-consider the design of the boundaries of the nominated property and its buffer zone….." IUCN's 2010 evaluation report was critical of only part of TNP being nominated, with large areas of high plateau and lake landscape being excluded as buffer (particularly in the east around Karakul Lake, and the south-east around Yashikul Lake).

This situation has been rectified in the current nomination by the inclusion of the entire TNP, with no need for a formal buffer zone because of the excellent level of physical integrity of the property. However, there is still no adequate demarcation or signalling of the boundaries of the national park on the ground. As a minimum, it is appropriate to at least clearly mark the boundaries at the most frequented entry points.

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

4.3 Management

The State Agency of Natural Protected Areas carries out the management and coordination of all activities in the park. Three regional offices operate within the TNP, namely: the regional office for Gorno-Badakhshan Autonomous Region (that covers four districts), and the Tavildara and Djirgatal regional offices. Management capacity has been supported by an UNDP/GEF project and by Flora and Fauna International. Funded training has focused on capacity-building of staff for protected area management, biodiversity conservation and development of a management plan. Furthermore, training has been organized on wildlife monitoring through support from the secretariat of the Bonn Convention on Migratory Species.

The total budget of the park for 2012 is only USD 183,200. This financing mainly comes from the state budget, and includes revenue from tourist activities within the park and a special fund administered by the Committee for Environmental Protection. Despite an increased budget linked to approval of the management plan and donor funding of several small-scale projects there is a danger that the management plan will not be fully implemented as only half of the necessary budget is available. However, Government officials confirmed that each year the budget has been increased. Furthermore, a recent initiative from the Committee for Environmental Protection revised the Law on Natural Protected Areas to legally provide for financial sustainability for the national park.

There are 54 staff in the TNP management team: including 3 directors, 3 chiefs of regional offices, 12 specialists, 19 rangers and 17 administration and support people. The majority of staff, especially rangers, are selected from local people. Fifteen of the staff have tertiary qualifications, and a fairly good level of technical capacity has been achieved in other staff through various on-the-job training. The park authority acknowledges that due to its vast territory the current number of staff is insufficient. Supplementary information provided by the State Party provides assurances that an additional 5 staff positions will be recruited annually over the life of the 2012-2016 management plan. Furthermore, the State Party also assures that an additional 10 ranger positions have been approved within the 2013 budget.

The current management plan, which covers the period 2012-2016, has been approved by the Chairman of the Committee for Environmental Protection under the Government of Tajikistan. The plan identifies the primary goals of park management and proposes activities on law enforcement, wildlife management, recreation, scientific research and monitoring, environmental education and the participation of local communities. This document is adequately guiding the management of the nominated property. The national park has been divided into four zones that vary according to the grade of protection and allowed permitted activities within it. These include: a core zone (77.7% of the TNP), traditional use zone (10.3%), limited economic use zone (9.8%) and a recreation zone (2.2%). It should be noted that the figures in the nomination document for the first three zones had been incorrectly calculated from the zoning map. They have been recalculated, meaning that the tabulated figures for the core zone have increased from 64.6% to 77.7%; traditional use increased from 4.9% to 10.3%; and limited economic use decreased from the previously stated 28.3% to 9.8%.

Law enforcement is considered effective and is carried out by a team of 19 park rangers, all recruited from local communities. There are also local community members who are working as volunteer rangers. In addition, the park cooperates with the guards/inspectors from the district and regional offices of the Department of Environmental Protection in Gorno-Badakhshan Autonomous Oblast in carrying out law enforcement measures. Because most of the park is a remote wilderness area, which is highly inaccessible and for much of the year under snow, the small local populations are considered to have negligible impact on the core area. Five years ago the government conducted a campaign to confiscate firearms and combat poaching. Since then illegal hunting has decreased but there are anecdotal reports that it is still carried out periodically by military personnel.

IUCN considers the management of the nominated property would benefit from being strengthened but appears to be adequate to meet the requirements set out in the Operational Guidelines.

4.4 Community

Communities living within and adjacent to the TNP seem well informed about the World Heritage nomination and believe that the inscription will positively influence their lives, especially through increased tourism opportunities. However, during the meetings they stated their belief that poor roads and other infrastructure, and severe weather conditions, are the main impediments to tourism development. In addition, some considered that poor and unreliable information for tourists, inadequate advocacy and communication, competition between guesthouses, and poor service in general all inhibited tourism development. Communities seemed satisfied that they were consulted during the preparation of both the nomination document and management plan.

An agreement has been signed between the administration of TNP and the Heads of three *Jamoats* of the Vanj and Murghab Districts to receive support from the local communities on the protection of rare and endangered species within the park and to allow communities to use natural resources according to the different zoning. Trophy hunting could be an effective conservation management tool and provide a significant source of revenue for both national park management and local communities. However, there is no business plan developed for the national park and the concept needs to be developed further, leading to hunting management that encompasses all necessary elements of a science-based approach to game and habitat management and a tight regulatory framework. IUCN is pleased to have been made aware of plans to conduct a feasibility study into community-based trophy hunting. This study will be conducted in 2013 within framework of the German international aid (GIZ) Regional Programme "Sustainable Use of Natural Resources in Central Asia".

4.5 Threats

Traditional activities on the Pamir Plateau of haymaking and the collection of the slow-growing teresken plants for household fuel, are claimed to have an insignificant negative impact on the core area of the park. However, around the town of Murghab, which is home to half of the treeless plateau's human population, a fuel crisis has steadily developed since the withdrawal of coal supplies after the collapse of the Soviet Union in 1990. An area of 70-80 km in circumference has been almost completely cleared of combustible vegetation and it is of critical importance that the park authorities work with the local authorities to stop trucks penetrating into the core zone and undertaking this unsustainable harvest of teresken. To address this issue the Government is taking some measures, such as providing subsidies to local people to purchase coal and building small to medium scale hydro power plants in the Murghab region. Despite these measures the exploitation of teresken remains the main threat to the fragile high plateau environment. Therefore, a long-term strategy needs to be elaborated to provide alternative fuel resources to the local population and control the teresken cutting.

The management of the unique hazard posed by any catastrophic release of the waters of Lake Sarez is the responsibility of an Emergency Department, rather than the park administration. A complex network of sensors is in place and electronic signals indicating failure of the Uzoi Dam would be relayed by satellite to a co-ordination centre tasked with broadcasting warnings to downstream populations.

In summary, IUCN considers the nominated property meets the overall conditions of integrity and protection and management requirements as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

IUCN notes the previous deferral of this property has led to a positive response to achieve the work necessary for the property to meet the requirements for inscription on the World Heritage List, and to benefit from advice from IUCN and other partners. This is a model example of the importance and constructive nature of the deferral mechanism for nominations with potential, but which require further work prior to inscription, and should be noted, and the response of the State Party commended.

6. APPLICATION OF CRITERIA

The Tajik National Park (Mountains of the Pamirs), Tajikistan, has been nominated under natural criteria (vii), (viii) and (x):

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

The Pamir Mountains are the third highest mountain ecosystem in the world after the Himalaya and Karakorum Ranges and include the world's longest valley glacier outside of the Polar Regions. Among existing World Heritage properties, TNP offers an unspoiled glaciated mountain wilderness at a scale partly matched by Los Glaciares in the Neotropical realm and Te Wahipounamu (SW New Zealand) in the Antarctic realm, and surpassed only by Kluane/Wrangel-St.Elias/Glacier Bay/Tatshenshini Alsek in the Nearctic. The nominated property represents one of the largest high mountain protected areas in the Palearctic Realm. Among the many, often large, glaciers of Inner Asia, the Fedchenko Glacier is a spectacular example at the global level. The visual combination of some of the deepest gorges in the world, surrounded by rugged glaciated peaks, as well as the alpine desert and lakes of the Pamir high plateaux adds up to an alpine wilderness of exceptional natural beauty and the extreme aridity of the climate has kept the area virtually free of impacts from agriculture and permanent human settlement.

In addition two natural features: Lake Sarez and Karakul Lake are superlative natural phenomena. Lake Sarez, impounded behind the highest natural dam in the world, is one of the youngest large high altitude lakes in the world. It is of exceptional geomorphic

interest and a potential major hazard to millions of people downstream. Lake Karakul is likely to be the highest large lake of meteoric origin.

IUCN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features
Tajik National Park boasts high plateaux in the east and rugged high peaks with deep gorges in the west. The Pamir Mountains are a major centre of glaciation on the Eurasian continent and TNP hosts the longest valley glacier of the temperate latitudes. The juxtaposition in one protected area of so many high mountains, valley glaciers, and deep river gorges alongside the cold continental desert environment of the high plateau landforms provides for a unique geomorphic environment. A wide range of glacial and periglacial landforms and processes are apparent including rock glaciers of different kinds, areas of extensive permafrost and patterned ground.

Like the Karakoram and Hindu Kush mountains, the Pamir highlands are subject to frequent and strong earthquakes and the highly active tectonics have produced a geologically dynamic terrain. The most impressive result of this tectonic activity is Lake Sarez, near the centre of the nominated property. It was created by an earthquake-generated landslide of an estimated six billion tonnes of material and is possibly the youngest deep water alpine lake in the world. It is of considerable scientific significance because of the on-going geological processes which influence how it stabilizes, and what sort of lacustrine ecosystem develops over time. Furthermore the TNP offers a unique opportunity for the study of plate tectonics and continental subduction phenomena.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species
While the biodiversity of the Central Asian mountains is recognized as of global significance, Tajik National Park alone does not appear to be the most biologically diverse and/or representative site of the region. Due to its high elevation and aridity, the property has relatively low species diversity for both flora and fauna. While there may well be important information gaps for many species groups due to the remoteness and inaccessibility of the mountains, it seems unlikely that TNP's diversity can match or exceed that of existing (or proposed) high mountain World Heritage properties in Inner Asia. The same holds true with regard to endemism. Despite its large size, the nominated property does not compare favourably with some other Tentative List sites in the region in relation to biodiversity values. TNP is home to only a small number of globally threatened species.

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

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Inscribes the **Tajik National Park (Mountains of the Pamirs), Tajikistan,** to the World Heritage List under natural criteria (vii) and (viii);

3. Adopts the following Statements of Outstanding Universal Value:

Brief synthesis
Tajik National Park (2,611,674 ha in area) encompasses almost the entire Pamir Mountains, the third highest mountain ecosystem in the world after the Himalaya and Karakorum Mountains. The Pamir Mountains lie at the centre of the 'Pamir Knot', the term used by geographers to describe the tangle of the highest mountain ranges on the Eurasian continent. Huge tectonic forces stemming from the collision of the Indian-Australian plate with the Eurasian Plate have progressively thrown up the Himalaya, Karakoram, Hindu Kush, Kunlun and Tien Shan – all radiating out from the Pamir Mountains. Along with the Karakoram Mountains, the Pamir region is one of the most tectonically-active locations in the world.

Tajik National Park stands out as a very large protected area, with a stark treeless landscape of exceptional natural beauty. The outstanding scenic values are enhanced by the landform juxtaposition of heavily-glaciated high peaks and high plateaux with an alpine desert character. The property contains a number of superlative natural phenomena, including: Fedchenko Glacier (the longest glacier in the world outside of the Polar Regions); Lake Sarez (a very high, deep lake impounded just over a century ago by a severe earthquake which generated a huge landslide forming the Uzoi Dam, the highest natural dam in the world); and Karakul Lake, likely to be the world's highest large lake of meteoric origin.

Criteria
Criterion (vii)
Tajik National Park is one of the largest high mountain protected areas in the Palearctic Realm. The Fedchenko Glacier, the largest valley glacier of the Eurasian Continent and the world's longest outside of the Polar Regions, is unique and a spectacular example at the global level. The visual combination of some of the deepest gorges in the world, surrounded by rugged glaciated peaks, as well as the alpine desert and lakes of the Pamir high plateaux adds up to an alpine wilderness of exceptional natural beauty. Lake Sarez and Lake Karakul are superlative natural phenomena. Lake Sarez, impounded behind the highest natural dam in the world, is of great geomorphic interest. Lake Karakul is likely to be the highest large lake of meteoric origin.

Criterion (viii)
The Pamir Mountains are a major centre of glaciation on the Eurasian continent and Tajik National Park illustrates within one protected area an outstanding juxtaposition of many high mountains, valley glaciers, and deep river gorges alongside the cold continental desert environment of the high Pamir Plateau landforms. An outstanding landform feature of the property's geologically dynamic terrain is Lake Sarez. It was created by an earthquake-generated landslide of an estimated six billion tonnes of material and is possibly the youngest deep water alpine lake in the world. It is of international scientific and geomorphological hazard significance because of the on-going geological processes influencing its stability, and the sort of lacustrine ecosystem which will develop over time. Tajik National Park furthermore offers a unique opportunity for the study of plate tectonics and continental subduction phenomena thereby contributing to our fundamental understanding of earth building processes.

Integrity
The property comprises the entire area of the Tajik National Park and, because of its large size, mountainous and alpine desert character, and remoteness from human settlements, the property is considered to have an outstandingly high level of physical integrity. Consequently there is no need for a formal buffer zone. The defined core zone of TNP makes up nearly 78% of the property, with the other three sustainable 'limited use' zones ranged around the periphery of the park. Tajik National Park is owned by the State and, as a national park, it has the highest legal protection status in Tajikistan.

Protection and management requirements
The legislative framework and management arrangements for the property are comprehensive and clear and all activities that could threaten the integrity of the property, including mining, are legally prohibited.

There is a medium-term management plan approved by the Government and the State Agency of Natural Protected Areas is responsible for coordination of all activities in the park. The implementation of the management plan involves the participation of local communities and their traditional rights over the use of natural resources are respected. The zoning of the property accommodates both traditional and biodiversity conservation needs. The financing for the park comes largely from national sources with a minor contribution from donor funded projects.

Inscription on the World Heritage list presents an increased opportunity to the State Party to develop ecotourism. Therefore, long-term protection and management requirements for the property include the need to prevent negative impacts from tourism whilst accommodating any increased visitation to the property through the provision of quality visitor services.

There is a need for secured and adequate financing for the park to fully implement the management plan and carry out law enforcement measures. Since Government sources are limited, alternative sources of funding need to be investigated. In this respect, the concept of trophy hunting management needs to be developed, as trophy hunting could be an important supplementary income source for the management of the park. However, it should encompass all necessary elements of a science-based approach to game and habitat management, involve independent and external experts, and have a tight regulatory framework.

The property requires an effective long-term monitoring programme, including defined key indicators of the conservation and habitat health of the property.

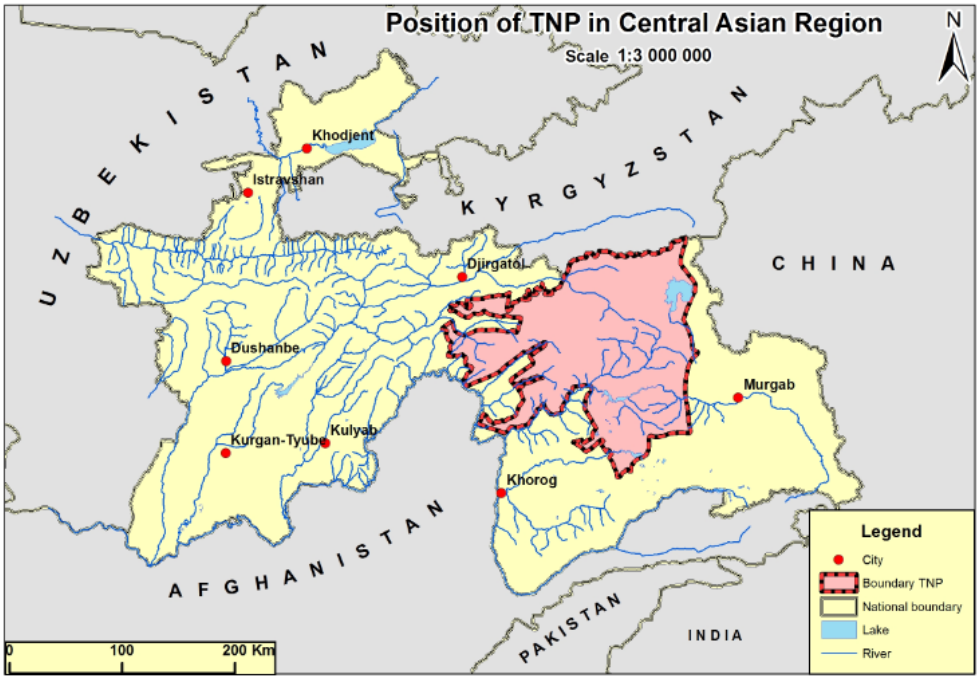
4. Commends the State Party on its continued and responsive efforts to improve protection and management of the property, in particular for the development and future implementation of the management plan;

5. Recommends the State Party to marshal the necessary human and financial resources to ensure effective long term protection and management in accordance with the property's management plan and to explore options to secure additional international financial assistance for capacity building;

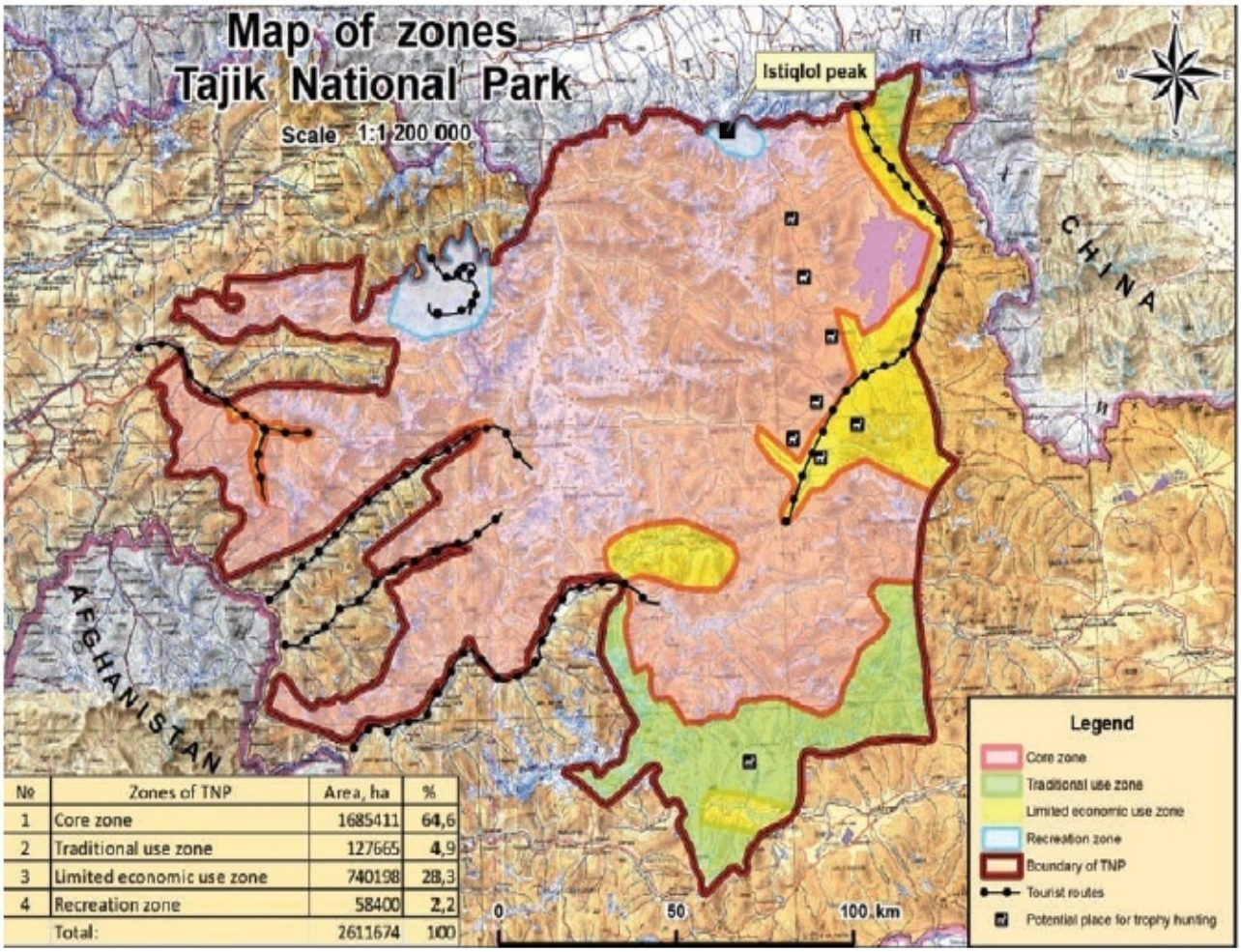
6. Encourages the State Party to cooperate with the neighbouring State Party of Kyrgyzstan to develop improved and sustainable tourism programmes which enhance visitor services, income and which foster community-based tourism development;

7. Encourages the State Party to cooperate with neighbouring State Parties, the World Heritage Centre and the Advisory Bodies to undertake a regional comparative biodiversity and geodiversity study of Inner Asian high mountains and deserts and to conduct a regional expert workshop with a view to developing opportunities for future transnational potentially serial nominations.

Map 1: Nominated property location



Map 2: Nominated property and buffer zone



B. MIXED PROPERTIES

B1. NEW NOMINATIONS OF MIXED PROPERTIES

AFRICA

BIJAGOS ARCHIPELAGO – MOTOM MORANGHAJOGO

GUINEA BISSAU

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

BIJAGOS ARCHIPELAGO–MOTOM MORANGHAJOGO (GUINEA-BISSAU) ID No. 1431

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination under natural criteria.

Key paragraphs of Operational Guidelines:
Paragraph 77: Nominated property meets World Heritage criteria.
Paragraph 78: Nominated property does not meet integrity or protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: None requested, written information exchanged following the first meeting of the IUCN World Heritage Panel.

c) Additional literature consulted: Various sources, including Birdlife (2012). **East Atlantic Flyway Factsheet.** http://www.birdlife.org/datazone/userfiles/file/sowb/flyways/4_East_Atlantic_Factsheet.pdf Camhi, M.D., Valenti, S.V., Fordham, S.V., Fowler, S.L. and Gibson, C. (2009). **The Conservation Status of Pelagic Sharks and Rays: Report of the IUCN Shark Specialist Group Pelagic Shark Red List Workshop**. IUCN Species Survival Commission Shark Specialist Group. Newbury, UK. x + 78p. Cuq, F. (ed.) (2001). **Un Système d'Information Géographique pour l'aide à la gestion intégrée de l'archipel des Bijagós (Guinée-Bissau).** Notice de la carte, constitution et exploitation du SIG. Géosystèmes, Brest. Dodman, T. , Barlow, C., Sá, J.& Robertson, P., 2004. **Zonas Importantes para as Aves na Guiné-Bissau. Important Bird Areas in Guinea-Bissau.** Wetlands International, Dakar / Gabinete de Planificacao Costeira / ODZH, Bissau, 130 pp. Krueger, S. (1998). **Rapid Assessment of the Bonny Island Marine Hippopotamus and Habitat**. http://finimanaturepark.org/wp/wp-content/uploads/2010/05/Survey-Rapid-Assessment-of-the-Bonny-Island-Marine-Hippopotamus-and-Habitat.pdf National Geographic (2004). http://ngm.nationalgeographic.com/ngm/0408/feature6/ Rebelo, R. & Catry, P. (2011). O arquipélago dos Bijagós (Guiné-Bissau). **Plano Nacional de Conservação do Manatim Africano (Trichechus senegalensis) na Guiné-Bissau. I - Resultado do Inquérito Nacional e II - Recomendações para a Conservação da População**. IUCN & ICN. (English section: National Conservation Plan for the African Manatee (*Trichechus senegalensis)* in Guinée-Bissau, results and recommendations). Pennober, G. (1999). **Analyse spatiale de l'environnement côtier de l'archipel des Bijagós (Guinée Bissau**). PhD Thesis, l'Université de Bretagne Occidentale. Robertson, P. (2001). Guinea-Bissau. In: Fishpool, L.D.C. & Evans, M.I. (eds.) **Important Bird Areas in Africa and associated islands: Priority sites for conservation**. Birdlife Conservation Series 11. BirdLife International. Silva, M.A., Araújo, A., Djedjó, F., Gomes, L. & Monteiro, H. (1999). Plano Nacional de Conservação do Manatim Africano (*Trichechus senegalensis*) na Guiné-Bissau. SWOT (2011). **State of the World's Marine turtles.** ***The Green Turtle.*** Report VI. http://seaturtlestatus.org. For Green Turtle nesting map for 2011 see http://seaturtlestatus.org/sites/swot/files/report/033111_SWOT6_Map_Green%20Nesting.pdf

d) Consultations: 6 desk reviews received. The mission also met with the Secretary of State of Environment and Tourism; the Governor of the Region of Bolama-Bijagos; the Director-General of the Institute of Biodiversity and Protected Areas (IBAP, the State Party submitting the nomination) and his staff; Government departments including tourism, cadastre, fisheries protection and monitoring agencies; NGO's including IUCN-Guinée-Bissau, Tiniguena, Noé-Conservation, CBD-Habitat (a Spanish NGO), the association of artisanal fishers; 8 tourist operators managing hotels within the nominated property; the second secretary EU Delegation to Guinée-Bissau; and representatives of a number of local communities.

e) Field Visit: Wendy Strahm and Djafarou Tiomoko, with Bakonirina Rakotomamonjy (ICOMOS), 15-26 October 2012.

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The Bijagós Archipelago is situated just off the coast of Guinea-Bissau in the delta of the Geba River and is nominated as a mixed property; this IUCN evaluation considers the natural values of the property, whilst the cultural values will be considered by ICOMOS. It is composed of 88 islands and islets and a large intertidal area of mudflats and mangroves separated by a network of channels of different widths and depths. The nominated property covers 1,046,950 ha, with land area covering about 90,000 ha. The nomination cites a further 120,000 ha of exposed mudflats and sandbanks at low tide and 42,480 ha of area under mangroves. The property is situated on a shallow continental shelf which means that there is a large area of land exposed at low tide which makes it an

especially rich feeding area for a number of species of waterfowl, in particular waders and terns.

Of the 88 islands and islets, more than 40 are of significant size, and of these 21 are permanently inhabited; the other large islands are seasonally inhabited for agriculture. A population of some 32,500 people live in 177 villages within the property, although about two-thirds of the people live in the two towns of Bolama (c. 10,000 inhabitants), and Bubaque (9,200 inhabitants), which is the economic and tourist centre for the archipelago. The nomination suggests that the use of these islands has a very reduced ecological footprint, although it is noted that the interior of all these islands has been heavily modified by human activity, with the main vegetation type consisting of palm-dominated forest in which either agroforestry, palm grove exploitation and slash and burn agriculture are undertaken. There are also some areas of savannah (including secondary grasslands), temporary wetlands and mangroves. In general, most of the interior of the islands seem to have been cultivated at some time; furthermore, the nomination notes that "fallow" periods between cultivation were getting shorter. The IUCN field mission observed as well cashew plantations on Formosa, and the nomination notes cashew plantations on Bolama and Soga.

While the property has almost pristine belts of sandy beaches, mangroves and palms surrounding the islands, the most significant natural values are marine, including a large range of species listed as endangered in the IUCN Red List. The marine and coastal fauna includes 155 species of fish including 40 species of sharks and rays (including the Critically Endangered (CR) Hammerhead Shark, 5 species listed as Endangered (EN), and 10 Vulnerable (VU)). There are two species of crocodiles, an important population of West African Manatee (VU), which also occurs in mangrove forests outside of the property, and a small population of "marine" Hippopotamus (VU). The tidal flats host a rich invertebrate fauna. Two species of dolphin including the Atlantic Humpbacked Dolphin (VU) inhabit the shallow waters. The most southerly islet of Poilão hosts the largest Green Turtle (EN) nesting colony in West Africa, with between 7,000 and 37,500 nests recorded depending on the year. Four other turtle species (Leatherback CR; Hawksbill CR, Loggerhead EN and Olive Ridley VU) have also been recorded nesting on this and some of the other islands, although in small numbers. The archipelago is the second most important wintering ground for Palaearctic migratory waders after the Banc d'Arguin in Mauritania with an estimated 700,000-875,000 birds wintering within the nominated site. Sawfish have been cited as emblematic species for the reserve, although like elsewhere along the West African coast, they may now be extinct in the property. The reserve is popular with foreign sport fishermen.

Some of the islets host a number of heronries, as well as breeding colonies of ibises, gulls and terns. A list of terrestrial biodiversity is provided in the nomination with the flagship species being a small population of Timneh Grey Parrot (VU) occurring in the João Vieira National Park. The population cited in the nomination from the Orango National Park has now disappeared, and the mission was told that 10 pairs survive on João Vieira and Meio islands. The nomination cites a list of 471 species of vascular plants recorded on the islands; however, a number of these species are non-native and include some introduced plant species such as cashew and mango and potential invasives such as *Mimosa pigra, Ricinis communis* and *Argemone mexicana*. Given that people live either part- or full-time on all the large islands, livestock including cows, goats and pigs range freely; feral pigs are also recorded on João Vieira and Caravela and introduced Black Rats occur in the property although it was not indicated on which islands.

The marine and coastal landscape value of the islands has been preserved since the indigenous Bijagos community built their villages in the interior of the islands and not along the coastline. This means that the belts of mangroves and palm-lined beaches surrounding each island are largely unbroken, apart from the towns of Bolama and Bubaque, a few small hotels, some seasonal villages along the coast, and some fishing villages.

The entire nominated area, delimited by a bathymetric level of 10 m, was inscribed as a Biosphere Reserve in 1996. No buffer zone has been designated as the property is mostly surrounded by reefs, sandbanks and shoals on the marine side, and a belt of mangroves grows along the continental coast. Within the Biosphere Reserve lie three formal protected areas. The Orango National Park includes the most southerly group of inhabited islands (Orango, Canogo, Imbone, Meneque and Orangozinho) covering a land area of 27,000 ha (158,235 ha total). The João Vieira / Poilão Marine National Park includes four small, only seasonally inhabited islands in the south-east of the archipelago as well as the islet of Poilão and a large area of ocean covering 49,500 ha. The third protected area of Urok (54,500 ha) includes three large, inhabited islands (Formosa, Chedia and Nago) and was inscribed as a community-managed marine protected area in 2005. A number of small islets, while not all in the National Parks, are said to be protected by customary laws of the Bijagos indigenous population. The National Parks are said to meet the criteria for Ramsar sites but have not been officially designated as wetlands of international importance, although there is an active discussion to do so.

3. COMPARISONS WITH OTHER AREAS

The property is located within a region that has previously been identified as being of high potential to demonstrate Outstanding Universal Value in relation to natural criteria, including IUCN analysis of potential World Heritage Sites in Africa. No other area with exactly the same suite of characteristics as the Bijagos has been identified either at a regional or international level. Comparisons need to be made with areas with mangroves, large tidal flats, island archipelagos, and with areas that are particularly important for biodiversity, including marine turtles and mammals, cartilaginous fish and waterfowl. At a bioregional level,

the terrestrial part of the property falls within the Afrotropical Realm/West African Woodland/Savanna (Udvardy, 1975) and the marine part within the Tropical Atlantic Realm, West African Transition Province.

For mangroves, the nomination notes that there are areas with much larger areas of mangroves such as the Niger Delta (Nigeria), the Sundarbans (Bangladesh and India), the Irrawaddy Delta (Burma) or the Everglades (USA). However it states that these areas are composed of low alluvial islands which are not a true archipelago of islands and also do not have vast tidal flats. If only mangroves are considered, then the Bijagos with its six mangrove species covering some 42,480 ha is not exceptional. Despite its well-preserved mangrove forests there are larger mangrove forests outside of the property (note that the entire country of Guinea-Bissau has 338,652 ha of mangroves, ranking it as 12th in the world for this habitat). The site cannot compare to the Sundarbans which has 27 species of mangrove over a much larger area. Note that the Sundarbans also have mudflats and a much richer terrestrial and marine biodiversity, including sawfish which appear to still exist there.

A comparison of areas of large tidal flats has shown that areas with tidal flats covering more than 100,000 ha are mostly situated in the tropics and associated with rivers, including the Red River and Mekong River Deltas (Vietnam), Yellow River and Yangtze River Deltas (China), Chao Phraya Delta (Thailand), Nile River Delta (Egypt), Frobisher Bay (Canada) and to a lesser extent, the mangrove systems of Western Africa, Indochina, Myanmar coast, East Africa and New Guinea (Wadden Sea evaluation, 2009). The intertidal system of the Bijagos is reportedly the largest for Africa and is in many cases far more intact and less polluted than elsewhere, providing habitat for nearly a million waterfowl during the winter period (see discussion on biodiversity below). The area is very rich in molluscs which are an important food source for the local human population, as well as for the birds.

More importantly, there are no other coastal deltaic island archipelagos occurring on the continental shelf of the African continent. The nomination cites other island archipelagos which may have similar characteristics of colonial marine bird colonies, nesting marine turtles and various cetaceans in the surrounding waters, but notes that these are rocky islands surrounded by coral reefs and not by large and shallow intertidal zones, therefore having few waders and mangroves. Examples include the archipelagos of Socotra (Yemen) and Papahanaumokuakea (USA), World Heritage sites, and a number of properties on tentative lists including Hawar (Bahrain), Cat Ba (Vietnam), or Quirimbas (Mozambique) and the Khuran Straits (Iran). For the most part, these sites harbour a richer biodiversity than the Bijagos.

Terrestrial biodiversity appears to be relatively low and with no endemics: 15 terrestrial mammal species are listed for the property, however this includes a number of introduced species. There are also 10 bat species and 4 marine mammals. The flagship mammal species is the “marine” Hippopotamus (VU), of which a small population survives in the Orango National Park and possibly on some of the other islands, although the last hippo in the Formosa group has recently disappeared. This hippo spends much of the day in marine waters, before coming on land in the evening to feed in the savannah and rice paddies. The nomination says that “marine” Hippos are unique to the Bijagos, but there are some reports of them also occurring in Nigeria and Gabon.

The mammals of greatest conservation interest are marine and include the West African Manatee and Atlantic Humpback Dolphin (both globally VU). There is little data for both species but the IUCN mission was told that there are relatively good populations of these species within the property and that the Bijagos could be the stronghold along the West African coast.

283 bird species have been recorded from the islands, which is high but not exceptional for the region. One of the flagship species is the Timneh Grey Parrot (VU) with a small population occurring on 2 islands in the João Vieira National Park. On mainland Africa, the Timneh Grey Parrot’s distribution stretches from Guinea-Bissau east through Guinea, Sierra Leone, Liberia, southern Mali and Côte d'Ivoire; however it does not currently occur in mainland Guinea-Bissau, thus the small population on the Bijagos is disjunct. This species nests in large trees and given the loss of forest on the islands and possible continued collecting pressure, it remains threatened on the Bijagos.

The Bijagos have been identified as a critical site for migratory birds along the Eastern Atlantic Flyway. The nomination notes that the property is home to an estimated 700,000-875,000 wintering waders and about 10,000 Little Terns (about 25% of the European population), 10 to 15,000 Gull-billed Terns, 7,600 Sandwich Terns (5% of the European population) and 7,500 Royal Terns (10% of the West African population), making it is the second most important wintering ground for waders and an important wintering area for terns. This is in comparison with the Banc d’Arguin which houses 2,250,000 waders (over 30% of all using the flyway) during the winter.

Thirty-one species of reptiles and 14 species of amphibians have been recorded from the property; this is not exceptional considering the close proximity to the mainland.

The property seems to have more marine than estuarine fish species. Diversity at a West African scale is high, the only other equivalent being in the Ebrié Lagoon in Côte d'Ivoire. However, fish diversity in other marine regions is higher. Comparison of the 40 species of sharks and rays recorded in the property deserves further research to determine in what quantities these species occur within the property, although having 40 out of the 64 species of sharks and rays recorded worldwide appears to be significant. Finally, the main flagship species is the colony of Green Turtles which breed in large numbers on the small islet of Poilão (see above). A

number of areas (e.g. Raine Island, Australia; Tortuguero, Costa Rica; French Frigate Shoal, Hawaii USA; Ascension Island, UK; Aves I, Venezuela; Heron I, Australia, Ogasawara, Japan) are all significant Green Turtle nesting areas, but the most recent Green Turtle map does indicate that the island of Poilão is a small but extremely important Green Turtle nesting site.

The scenic value of the property is hard to compare with other areas. The islands coastlines are mostly unbroken, as the Bijagos build their villages inside the islands. The island edges therefore have some very fine intact sandy beaches and mangrove/palm vegetation. There is very little sign of pollution or litter in the sea or on the islands apart from and in the two towns of Bolama and Bubaque. The nomination notes the exceptional natural beauty of the changing landscape with the change of the tide, and also the important human dimension of the landscape with the traditional uses of shell collection, rice paddies and villages. While these human elements are indeed harmonious, they are not the basis to justify criterion vii "*areas of exceptional natural beauty and aesthetic importance*"; only some of the small uninhabited islets, in particular Poilão, appear to fulfil this criterion.

In conclusion, the Bijagos demonstrates significant interest due to its geomorphology as an exceptional example of a deltaic island archipelago surrounded by large tidal flats. The undeveloped nature of the Corubel River which provides sediment to the delta combined with the oceanic upwellings appears to be intact. Its long unbroken stretches of beaches and palm and mangrove habitat and clean seas, are complemented by some flagship species such as one of the rare populations of "marine" hippo, the second most important wader wintering site along the west Atlantic flyway, and for containing one of the most important nesting colonies of Green Turtle in the world.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The "Biosphere Reserve" that is the subject of the nomination is currently not legally protected. Although there are proposals to legally protect the area, this requires a committed and consistent level of national attention. Three legally protected areas do exist within this Biosphere Reserve and include the Orango and João Vieira-Poilão National Parks created in 2000, and the Community-managed Urok Marine Protected Area created in 2005.

Fishing activities are also governed by specific laws (protected species, net size, etc). All of the protected areas have a legally inscribed zoning system, which includes a core zone where subsistence fishing (with restrictions) and mollusc gathering by the resident community is permitted; a buffer zone where any activities that may be detrimental to the core zone requires permission from the Park Director; and a sustainable development zone where activities, including commercial fishing (by resident and non-residents) that may benefit the local community, can be undertaken. There are few restrictions on what the local community can do in the terrestrial part of the property, although hunting in the national parks is not allowed. Sport fishing is permitted even in the core zone of the property, although certain species like sharks are strictly protected. Parts of the Biosphere Reserve which are not covered by the three protected areas also have a zoning system of core, buffer and transition zones. Finally, the property contains sacred islets and initiation sites for which protection is assured through traditional mechanisms and customary laws.

The marine area is large and remote; there are very few resources available for surveillance, meaning that illegal uses fishing including shark finning and reported drug trafficking occur within the property. It was noted that sport fishermen collaborate with the authorities on protection, and NGOs have supported law enforcement through the provision of boats.

All land is owned by the State which grants "concessions" of 99 years to private landowners, after agreement with traditional owners and a number of government departments including IBAP and the Cadastre. There are only small areas of the property outside the towns of Bolama and Bubaque which are under this type of ownership, including a few small hotels on some of the islands. However, the land is traditionally owned by different Bijagos communities and no development on their land can take place without their consent. It should be noted though that if a local community decides to undertake a project, even if it is within the National Park, it can do so.

While important efforts are being undertaken to protect the property under very difficult circumstances and much progress has been made over the last decade, given the need for strengthened regulations concerning development on the islands and an overall level of protection for the property, 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 the nominated property are the same as for the Biosphere Reserve, which includes all 88 islands and islets with all the larger islands inhabited either all or part of the year. There is no buffer zone. Deeper canals that can be used by ships cut through the property. The nomination noted that there is a project to build a port along the Rio Grande de Buba to transport bauxite from a mine located in the east of the country, meaning that if this project takes place, it appears that large ships will need to use the Orango and Canhabaque canals situated within the reserve and cross the nominated site.

The property seems to illustrate many commendable aspects of how a Biosphere Reserve should be managed. However this Biosphere Reserve also contains large areas which do not contain attributes relevant to the natural criteria. With respect to natural values, it appears inappropriate to include the towns of

Bolama and Bubaque within the property, and from the GIS maps provided in the nomination, the island of Bolama and the mainland portion appears to be mostly covered with cashew plantations. It also seems questionable to include rice paddies and areas under slash and burn agriculture within the property. Thus the boundaries for the property need to be reconsidered in relation to natural criteria whilst recognising that this will need to also consider the potential cultural values of the property.

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

4.3 Management

The Institute for Biodiversity and Protected Areas (IBAP) is an autonomous governmental body created in 2007 and the management authority for the nominated property, and has a competent and dedicated staff. A coordinator of the Biosphere Reserve is based at the Bijagos Environment and Cultural Centre in Bubaque, who coordinates the participatory management of the reserve with responsibility for a range of general management activities. IBAP and the Biosphere Reserve are supported by partnerships with a number of national institutions, international NGO's including IUCN, the national NGO Tiniguena and a range of donors.

A Management Plan was prepared for the Biosphere Reserve in 1996. This Plan is more an operational plan than a management plan and requires updating. It is not appropriate to the management needs of the property and the expectations for effective management. An "Action Plan" for the Biosphere Reserve for the 2012-2016 period was produced in 2011 as well as 3 separate Management Plans for the Protected Areas (Orango and João Vieira and Poilão/2008-2018, Urok/ 2004-2008). National Action Plans for the conservation of sharks, manatees and marine turtles have also been produced, as well as a national plan for forest and mangrove monitoring, and a masterplan for research in the Biosphere Reserve.

Conservation measures being undertaken, include maritime surveillance by IBAP with other governmental institutions (FISCAP, the fisheries authority and maritime police), and a strategy of marine surveillance has been elaborated, made possible through an international project.

A community radio station created within the framework of the Biosphere Reserve plays a crucial role in promoting conservation and development activities in this region. The Reserve also has partners for environmental education, notably the Palmeririnha NGO which works directly with IBAP.

Each of the three Protected Areas has an office, staff and logistic means, including a Park Director, guards, boats for marine surveillance, radio communication, and scientific documentation needed for monitoring, as well as a small visitor centre. The Community-managed Urok Marine Protected Area has also a centre on the main island of Formosa. Each protected area involves the local stakeholders in the definition and field enforcement of the regulations.

Scientific partnerships, notably with Portuguese universities, are undertaking regular research and monitoring of the marine turtles and the Timneh Grey Parrot with Park staff and members of the local communities. The Reserve benefits from active political support, and many people and institutions are active in supporting conservation of the nominated property.

Financial resources mainly come via the Government of Guinea-Bissau, depending on a range of international donors. The annual budget for projects funded directly by IBAP for the Bijagos is around 355,000 €. Partner NGOs engaged in conservation and some local associated development projects in partnership with IBAP make an annual contribution estimated at €450,000. A fee system for hunting/fishing and wildlife observation provides additional minor revenues to the Parks.

IBAP and its partners have created an endowment fund called the "Fondation Bioguiné" and are currently seeking funds to populate it. Interest from the capital will ensure sustainable financing for protected areas and biodiversity conservation.

According to an assessment of management effectiveness undertaken by IUCN in 2007, the "*the parks(of Guinea Bissau) ... show a good quality of management and achieve results. This is in part due to the configuration of the parks, including their isolation, but also due to efforts made by IBAP to maintain the highest level of management in relation to its resources*".

There is a clear need to complete work on updating the management plan; IUCN considers the management of the nominated property does not meet the requirements set out in the Operational Guidelines.

4.4 Community

The nomination identifies and describes the population groups and rights holders in the "management plan" of the Biosphere Reserve (1996); it documents consultation and consent processes with local authorities and representative organizations. Evidence from the evaluation mission, which met many local representatives, suggests that an effective ongoing consultation process is in place with strong local support for the nomination. The archipelago is almost entirely inhabited by the Bijagos people, who, through their culture including the establishment of sacred islets and initiation areas, have contributed to the conditions which have conserved the natural values of the property. Local people clearly wish to modernise and improve their standard of living, but, at the same time, are very attached to their traditions. However, they also complained about restrictions that protected area status placed on them, for example the fact that they are no longer allowed to kill crocodiles which eat livestock. The need to consider the local population

living in the Biosphere Reserve in terms of a plan for sustainable development, whilst assuring that changes in patterns of use do not adversely impact natural values, is a further reason to reflect further on the most appropriate configuration for a revised nominated property.

The entire area is managed on sustainable use principles and participative management which is to be highly commended. However, what constitutes an appropriate level of sustainable use remains a question that will require continuous reflection as the property evolves based on the central relationship between local people and nature.

4.5 Threats

The activity of migrant fishermen is the major threat recognised in the nomination, i.e. people coming especially from Senegal and Guinea (Guinea-Conakry) who practice fishing in large motorized canoes, install major temporary or permanent villages and cut the mangroves for smoking of fish. There are also commercial fishing companies off the continental shelf that send smaller boats to fish within the property. Given the economic interest of these species, there is also illegal fishing of sharks and rays. Off-shore trawling also affects the fish populations within the reserve. Given the low level of resources in the country, the control of illegal fishing in the property is a huge task. IBAP (with other agencies) is supported in this task by bilateral cooperation; a trust fund to deal with this threat is in the process of being established.

While the population inhabiting the property remains relatively low but is growing, the exploitation of the forest including cultivation continues to have a considerable negative impact on the integrity of the property. Hunting and collecting, while controlled, are also potential threats to the natural values of the property.

The number of visitors is estimated as in the order of 1,000 foreign tourists/year and tourism is said not to be a significant threat. A government department (CAIA) is responsible for undertaking environmental impact assessment on any development projects on the islands. There are about 15 small hotels, called “camps” as they are mostly modest thatched roof bungalows, including 10 hotels on Bubaque; there is also “weekend tourism” from Bissau, mainly limited to Bubaque. 3 small hotels on Ancurai, Kéré and Galo have been built on uninhabited islets; the nomination recommends that this not be allowed in the future.

In conclusion, tourism facilities for such a large site seem minimal; the foreign tourism is mainly devoted to sport fishing and to some wildlife related “eco-tourism”. There are tourism guidelines for visiting the turtles and the hippos and a tourism charter is planned to be developed that will seek to provide for equitable benefit-sharing with the local population. The mission was informed as well of a proposal to build a major new style hotel on the island of Uno, although it was stated these projects are common and do not get approved. However, a concession of 70 ha was granted to a French entrepreneur to build a hotel on the sacred island of Rubane in 2007, with the agreement from the local people. Although it is stated in the management plan that no new hotels are permitted in the National Parks, the mission saw one concrete structure built by local stakeholders, currently incomplete due to lack of finance, that had received approval. There is no assurance that this might not occur elsewhere in the National Parks, not to mention the Biosphere Reserve. Some efforts to establish ecotourism through some ventures in the property have been made, but clear and sustained capacity are still lacking, as well as an overall strategy and plans to develop an appropriate tourism in the property compatible with the maintenance of the integrity of the nominated site and the long term preservation of its natural values. Given the potential impact of World Heritage status on tourism demand, including sport fishing, it appears essential that this aspect is considered prior to inscription on the World Heritage List.

Although the nomination states that there are no invasive species on the property, invasive species appear to be a clear and significant threat to its values. The interior of the islands were mostly secondary vegetation including rice and cashew plantations which while not invasive, at the same time take the place of native vegetation. The list of plant species occurring on the islands includes non native and potentially invasive species (see above). The mammal list included as well introduced Black Rats, and free-ranging livestock including cows, goats and pigs were observed. Pigs have been recorded as being feral on João Vieira and Caravela and there appear to be no quarantining procedures for the islands.

Mining threats exist from development planned outside of the nominated property. A bauxite mine project located in the east of the country includes the construction of a port in the Rio Grande de Buba. This means that large mineral ore ships will need to use the channels within the Biosphere Reserve, and so the nominated area. Offshore petroleum exploration is also occurring about 100 km to the northwest of the property. The Corubal River which provides sedimentary input to the delta is little affected by development, infrastructure or pollution at present; however the growth of activities within the wider watershed is a concern.

Sea level rise associated with changes in temperature, rainfall and storms, could impact severely on the property, but it is difficult to predict and evaluate this impact. However, coastal erosion is already a phenomenon important in some areas of the archipelago. In particular, coastal erosion could affect the turtle nesting beaches, and temperature increase is feared to affect the sex ratio in hatching turtles. More importantly, climate change could also impact the sedimentary input and the overall ecological functioning and processes of the delta.

The nomination as proposed includes many features of international conservation importance but also significant areas, notably terrestrial areas, which do not correspond to the integrity requirements of World Heritage site status. Whilst many aspects of the management are commendable, the property does not have a fully functional system of legal protection. Finally, significant issues such as defining the appropriate level of tourism development and assuring capacity to manage its impacts need to be considered prior to inscription on the World Heritage List. IUCN considers that these aspects are capable of being addressed on a timescale of 2-3 years and would be willing to provide support and advice to the State Party in order to address these issues.

IUCN considers the nominated property does not meet the conditions of integrity, nor the protection and management requirements as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Transnational aspects of nomination

Three other important African sites along the West Atlantic Flyway have already been inscribed on the World Heritage list (the Banc d'Arguin, Mauritania, Djoudj National Bird Sanctuary, Senegal and the Saloum Delta, Senegal, as a cultural landscape), and the Wadden Sea World Heritage Site (Germany and Netherlands) is a further important linked site.

The Bijagós Archipelago is another key area for wintering Palearctic birds, and thus it would be beneficial to encourage cooperation between all relevant States Parties, not only in Africa but also in Western Europe, with regard to the preservation of the natural values of these properties in relation to migratory species.

5.2 Upstream Support

IUCN notes the high potential for a successful nomination to be made in the Bijagos Archipelago considering the region's recognised natural values, confirmed by this evaluation and noted in previous studies. IUCN considers that this property should be a high priority for further upstream support from IUCN (and ICOMOS as relevant) considering that clear assistance to the State Party is required to address fundamental issues of integrity, protection and management that, at present, do not meet the requirements of the Convention's Operational Guidelines. IUCN would be willing to assist the State Party to address these issues.

6. APPLICATION OF CRITERIA

The Bijagós Archipelago – Motom Moranghajogo has been nominated under natural criteria (vii), (ix) and (x).

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

Along the West African coast this property is one of great regional significance for both its natural beauty (88 islands and islets almost entirely surrounded by unbroken belts of mangroves and palms, sandy beaches and marine habitats) and natural phenomena (unique active deltaic landscape in Western Africa, the second largest wintering area for Palearctic waders and one of the most important Green Turtle nesting site in the world). While these values are not the largest, they are still outstanding at the global level and although the interior of all the larger islands have suffered from development through cultivation and human habitation, some of the smaller islets as well as marine areas remain in pristine condition.

IUCN considers that the nominated property has the potential to meet this criterion, but does not currently meet the relevant integrity, protection and management requirements.

Criterion (ix): Ecological processes

The Bijagós Archipelago is the only active deltaic island archipelago along the Atlantic coast of Africa. It has the greatest tidal range in the region as it is situated on a large and shallow continental shelf. The delta is formed by the combination of three processes: the tide, sediments being transported by the Corubal River and the convergence of ocean currents from North and South. In addition, input from rivers south of the property combined with oceanic upwellings make these tidal flats extremely rich in nutrients, thereby maintaining an important flora and marine fauna. The flora and rich invertebrate fauna sustain trophic levels within the food chain including an important variety of fish (including sharks and rays), marine turtles, dolphins, manatees, migratory waders and other seabirds. The presence of a large diversity of high orderpredators such as sharks and two species of dolphins, testifies to the good health of the ecosystem. While ecological processes in the terrestrial part of the property do not fulfil this criterion, in terms of marine processes, IUCN considers that the nominated property has the potential to meet this criterion, but does not currently meet the relevant integrity, protection and management requirements.

Criterion (x): Biodiversity and threatened species

The nominated property is of great regional significance as the second most important wintering site for Palaearctic migratory waders, after the Banc d'Arguin in Mauritania, and one of the most important nesting areas for Green Turtle globally. The property also provides protection for an exceptional range of threatened species, including five species of marine turtles, at least ten sharks, six rays, possibly two species of sawfish, West African Manatee, Atlantic Hump-backed Dolphin, and an unusual population of "marine" hippopotamus. While IUCN considers that the property cannot be inscribed for its terrestrial values on biodiversity criteria, if just marine and some coastal values are taken into account, then IUCN considers that the nominated property has the potential to meet this criterion, but does not currently meet the relevant integrity, protection and management requirements.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Defers the examination of the nomination of the **Bijagós Archipelago – Motom Moranghajogo**, **Guinea Bissau**, to the World Heritage List under natural criteria (vii), (ix) and (x) to allow the State Party to:

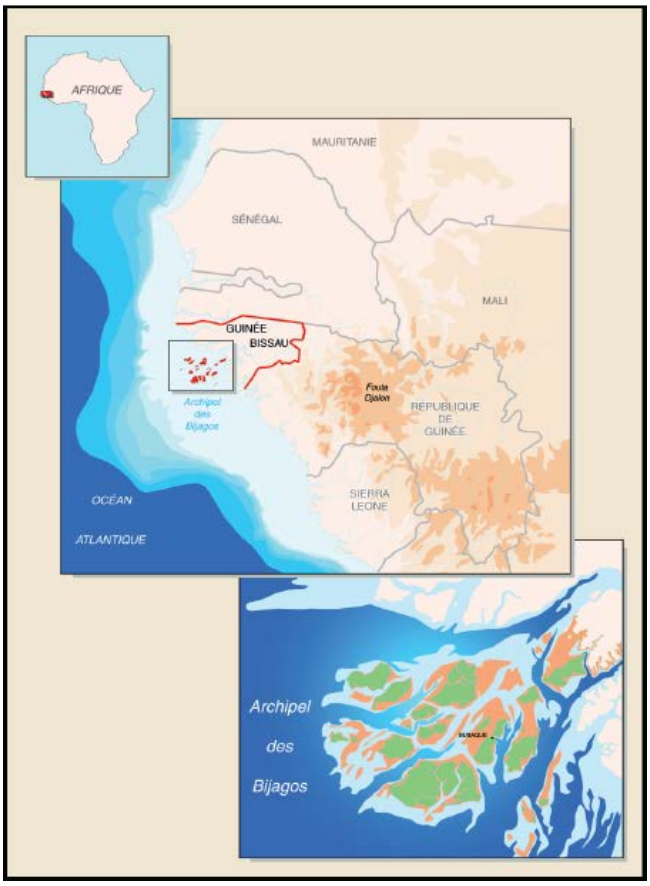
a) strengthen the legal protection status of the property, to ensure that all areas nominated have adequate legal and/or customary protection;
b) consider modification of the boundaries of areas to be nominated within the overall biosphere reserve to conform to integrity requirements and exclude heavily modified areas that do not contain attributes that contribute to the Outstanding Universal Value of the property. These areas, including the towns of Bolama and Bubaque, could be included in a buffer zone for the property as defined in paragraph 103 of the Operational Guidelines;
c) ensure that an overall management plan/system is established for the nominated site with appropriate institutional and financial means and measures in place, including an overall coordination body for the whole property;
d) ensure that this management plan/system includes a clear and agreed strategy for sustainable tourism, including appropriate policies, programmes and tourism infrastructure that does not degrade the integrity of the property and its Outstanding Universal Value;
e) update, detail and strengthen management plans for the existing legally protected areas included within the property in a way that is compatible with the overall management plan/system of the property;
f) establish effective protection and management measures and activities that minimize the effects of the non-native species, including those considered as invasive, and restore degraded areas where appropriate;
g) ensure that new shipping routes are not be established through the nominated site;
h) ensure that oil exploration and exploitation operations do not take place within the nominated property and that operations outside of the site do not have any significant impact on the nominated site; and
i) ensure that human and financial resources are sufficient to maintain the integrity of the property and the long-term preservation of its Outstanding Universal Value; in particular raise sufficient financial resources for the trust fund project (the “Fondation Bioguinée”), and take all measures to ensure that an adequate proportion of this fund is earmarked for the nominated property.

3. Further recommends that the State Party move forward plans to designate either the National Parks, or possibly the entire Biosphere Reserve, as a Ramsar site, to strengthen national and local protection and management and international recognition;

4. Commends the State Party and its partner organisations for its committed and innovative work in participatory community management in this important protected area;

5. Encourages the State Party, with the assistance of the World Heritage Centre and the Advisory Bodies, to reframe the nomination to address the concerns above.

Map 1: Nominated property location in Africa



Map 2: Nominated property

AFRICA

SEHLABATHEBE NATIONAL PARK
(Extension of uKhahlamba / Drakensberg Park)

LESOTHO

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SELABATHEBE NATIONAL PARK (LESOTHO), PROPOSED EXTENSION OF UKHAHLAMBA DRAKENSBERG PARK (SOUTH AFRICA) – ID No. 985 bis

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To approve the extension under natural criteria.

Key paragraphs of Operational Guidelines:
77 Property meet natural criteria.
78 Property meets conditions of integrity and protection and management requirements.

Background note: Sehlabathebe National Park (SNP) has been nominated by the Kingdom of Lesotho as an extension to the existing uKhahlamba Drakensberg Park (UDP) World Heritage site in South Africa. The nomination is the result of collaboration between the Kingdom of Lesotho and the Republic of South Africa dating from 1997 and in the context of the transnational conservation initiative known as the "Maloti Drakensberg Transfrontier Conservation Area" that includes the Maloti highlands in Lesotho and the KwaZulu Natal Drakensberg Mountains in South Africa. A bilateral Memorandum of Understanding signed by Lesotho and South Africa is in place. In the event that SNP is approved as an extension to the UDP World Heritage site both Governments have proposed a name change of the property to "Maloti Drakensberg Transboundary World Heritage Site".

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: None requested

c) Additional literature consulted: Government of the Kingdom of Lesotho and the Government of the Republic of South Africa (2008) **Memorandum of Understanding between the Government of the Kingdom of Lesotho and the Government of the Republic of South Africa in respect to the Maloti-Drakensberg Transfrontier Conservation and Development Area** (signed 1st December 2008). Government of the Kingdom of Lesotho (2005) **Draft Nature Conservation Bill.** Government of the Republic of South Africa (2012) **UDP World Heritage Site Funding Proposal for Buffer Zone**. Government of the Republic of South Africa (2012) **UDP Buffer Zone Technical Committee minutes for 2012** (5 meetings held). Government of the Republic of South Africa **UDP Fire Management Report.** IUCN (1999) **Technical Evaluation: uKhahlamba Drakensberg Park (Republic of South Africa)** ID No. 985. Online: http://whc.unesco.org/archive/advisory_body_evaluation/985.pdf. IUCN (2012). **IUCN Red List of Threatened Species** Online: http://www.iucnredlist.org/search accessed 18/01/2013. Kopij, G. (2002) **The birds of Sehlabathebe National Park, Lesotho.** Koedoe - African Protected Area Conservation and Science; Vol 45, No 1 (2002), 65-78. doi: 10.4102/koedoe.v45i1.15. **Maloti Drakensberg Transfrontier Park (uKhahlamba Drakensberg Park World Heritage Site/Sehlabathebe National Park) Joint Management Plan 2008-2012.** Maloti Drakensberg Transfrontier Project (2007) **Spatial Assessment of the Biodiversity Priorities in the Lesotho Highlands.** Ministry of Tourism, Environment and Culture, Kingdom of Lesotho (2012). **Nomination of Sehlabathebe National Park - SNP (as an extension to the uKhahlamba Drakensberg World Heritage Site - South Africa).** 51pp + maps. **Sehlabathebe National Park Management Plan 2008 – 2013. Sehlabathebe Tourism Business Plan 2008.**

d) Consultations: 10 external reviewers. The mission met with high level representatives of Lesotho's Ministry of Environment Culture and Tourism in addition to local staff with responsibility for the management of SNP. Meetings were also held with local stakeholders, businesses and local community representatives from the Local Government Community Council made up of representatives from the different villages neighbouring the park and the village chief and the Community Conservation Forum covering others.

The mission also met with Senior Officers from South Africa's Department of Environment Affairs and Tourism as well as staff from the UDP World Heritage Site and personnel responsible for transfrontier conservation activities.

e) Field Visit: Moses Wafula Mapesa and John Kinahan (ICOMOS), 6-13 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

Sehlabathebe National Park (SNP) has been nominated as an extension of the uKhahlamba Drakensberg Park (UDP) World Heritage site, South Africa which was inscribed in 2000 as a mixed site [(i), (iii), (vii), (x)]. SNP is nominated under the same mixed criteria as UDP. The evaluation of the nomination in relation to cultural criteria is undertaken by ICOMOS.

The SNP is situated on the eastern Maloti Drakensberg escarpment and is contiguous with the UDP at its southernmost tip sharing an international border between Lesotho and South Africa running approximately 12 kilometers in a west-easterly direction. Qacha's Nek, the closest regional center is about 100 kms south west of the park. The Sehlabathebe village cluster sits on the western boundary of the park. The park can be accessed by road from Maseru, an 8 hour drive, or from South Africa near Qacha's Nek through a border crossing.

The property is gazetted and managed as an IUCN Category II national park within Lesotho's national legislative framework. The nominated extension is 6,500 ha which if added to the existing UDP World Heritage site of 242,813 ha would total 249,313 ha as a transnational World Heritage site. The buffer zone of the property on the Lesotho side is 46,630 ha which comprises the Sehlabathebe Range Management Area, a sparsely populated area with some crop cultivation but predominantly livestock rearing. The buffer zones in Lesotho and South Africa have not yet been gazetted although on the South African side a process of formal gazettal has been advanced. SNP receives approximately 800mm p.a. of precipitation which falls mainly in summer. Mist is a common phenomenon during summer. In the winter months, it is cold and dry with temperatures below zero and frost and snow are a common occurrence. The mean annual temperature is 16°C but there are high daily and seasonal variations. SNP is situated on the topographically rugged eastern escarpment of the Drakensberg where very deep river valleys cut into the relatively young African surface of the Lesotho Plateau at an average of 2,450m above sea level. The topography of the park is undulating and most of the ridges in the park were formed due to the existence of several dolerite dykes that are resistant to weathering. An important factor in the landscape of SNP is its location at the interface of the lower lying sedimentary and overlying igneous sequences and due to prominent tectonic block faulting, the SNP area was uplifted relative to the rest of the Drakensberg escarpment resulting into unique outcrops of Clarens Sandstone formation. It is believed that the periglacial weathering during the last ice age resulted in the formation of the distinctive caves, rock pools, tarns, pillars, cliffs and arches of the Clarens sandstone. This landscape assemblage is not found within the UDP World Heritage site.

The two areas of UDP and SNP form the most important water catchment area for Lesotho and South Africa. The SNP is situated on the edge of the watershed that divides the Senqu-Orange River draining into the Atlantic and the Thukela River flowing into the Indian Ocean. As opposed to UDPs eastward flowing drainage, the SNP drainage flows west. The SNP boasts extensive, near-pristine wetlands in 3 categories: tarns, which are lakes or pools with no outlet; riparian marshes found along rivers like ox bow lakes and freshwater drainage marshes as rivers.
A comprehensive spatial assessment of Biodiversity priorities in the Lesotho highlands was conducted by the Transfrontier Project in 2007**.** SNP shares a significant number of species in common with UDP. The park's vegetation consists of Themeda-Festuca Alpine veld, a high altitude grassland type consisting of a mixture of sub-tropical temperate grass species with a wide variety of monocotyledons and dicotyledons. The high altitude of the area makes it an important center of plant endemism. SNP has a reported 515 plant species, 59 of which are endemic to the park. The tarns of SNP provide the only known protection for the globally endangered endemic plant *Aponogeton ranunculiflorus.* A mammal survey conducted in 1988 recorded 32 species including Grey Rhebok *(Pelea capreolus),* eland, oribi, ice rat, golden mole, common mole, black backed jackal, mountain reedbuck, spotted neck otter and clawless otter.

Referenced records in the SNP and the UDP/SNP management plans indicate that a total of 106 bird species have been found in SNP. Another record attributed to Kopij (2002) lists 117 bird species. SNP provides nesting habitat for the globally endangered Bearded Vulture and is foraging sites for the Cape Vulture. No specific SNP reptile and amphibian surveys have been carried out, however, anecdotal reports indicate 31 reptile species and a number of amphibian species which are adapted to mountain aquatic.

Six species of fish, 4 naturally occurring and 2 introduced species of trout have been recorded in UDP/SNP. The critically endangered Maloti Minnow (*Pseudobarbus quathlambae*) only exists in SNP with the Minnow only known from one old record in UDP. Several recent searches in UDP have failed to find any record of the fish in UDP. The only viable population of Maloti Minnow is found upstream of the Tsoelikane Waterfall in SNP. Although the Maloti Minnow was abundant below the waterfall and in other rivers in the park, it is no longer the case due to predation by introduced trout. The habitat of the Maloti Minnow has therefore shrunk by over 95% in the last 100 years. Trout were introduced for purposes of tourism, however, should they ever be introduced above the waterfall it is likely to lead to the extinction of the Maloti Minnow.

The invertebrate fauna of SNP and UDP is poorly known. SNP has never been formally surveyed for invertebrates, however records show 44 species of South African dragonflies and 74 species of butterflies have been recorded in UDP/SNP. 24 species of millipedes and 4 species of molluscs are endemic to UDP/SNP. Endemic genera and species of ostracod (mussel shrimp), copepod and anostracan (4 species of fairy shrimp) and crustaceans are believed to occur in rock pools, tarns and rivers and streams.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier includes a limited comparison on natural values. In making comparisons with other areas it is important to note that the nomination is a relatively small extension of the UDP World Heritage site.

SNP's values are presented as complementary to those of UDP and therefore need to be considered in that context. In addition to the commonalities, there are distinct phenomena unique to the SNP which do not exist in UDP. For example while the physical beauty of UDP lies with basaltic buttresses, incisive cutbacks, golden sandstones, steep sided river valleys, caves and rock shelters; SNP's superlative natural beauty, a result of uplifting of part of the Maloti Drakensberg due to tectonic block faulting, is a unique outcrop of the Clarens Sandstone lifted higher than the rest of the Drakensberg escarpment and where subsequent periglacial weathering of the sandstone has led to the natural sculpturing of the rocks in amazing forms and shapes including arches, cliffs, pillars, tarns and rock pools. These are within a relatively expansive grassland area with wetlands and a spectacular meandering river with ox bow lakes flowing through a rocky gorge to a picturesque waterfall. In addition to the physical beauty is the diversity of plants with a mosaic of colorful flowers in spring and summer. As noted in the description above, there are also biodiversity values represented in SNP that are not present in UDP. These features ensure that SNP adds significantly to the superlative qualities of the existing UDP World Heritage Site.

In summary SNP's natural values are notable despite its relative small size of 6,500 ha and make a valuable addition to the much larger UDP World Heritage site. Whilst SNP does not, on its own, meet the relevant WH criteria it adds significantly to the integrity of the existing property through the addition of important natural attributes and features that are complementary to UDP. This provides a clear basis to support the extension as proposed.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

SNP was established as a Wildlife Sanctuary and National Park in 1970 and legally established as a National Park in 2001. There is a sound national legal framework aimed at guaranteeing long term protection, namely: National Parks Act, 1975, Environment Act 2008, Local Government Act, 1997, Historical Monuments, Relics, Fauna and Flora Act 1967. In addition a draft Nature Conservation Act is designed to provide overall guidance for nature conservation. The area is administered by the Ministry of Tourism, Environment and Culture with delegated management authority to the Director of Parks under the Department of Environment.

At International level is the bilateral Memorandum of Understanding between Lesotho and South Africa which provides a clear commitment for the joint management of SNP and UDP and the adjoining buffer zones.

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

4.2 Boundaries

The SNP boundaries are the same as the boundaries for the nominated extension. The boundaries are clearly defined, marked on the ground and well known by all neighboring communities. Although there is evidence of previous access and use of resources in the park including grazing, harvesting of grass and medicinal plants and even poaching; there has been tremendous ecological recovery of the grassland and wetland ecosystems and the park's vegetation can on the whole be described to be in good condition.

The buffer zone is appropriate as all areas of Outstanding Universal Value are located within SNP. The buffer zone is subject to community based cultivation and grazing. The existing buffer zones in Lesotho and also South Africa have not yet been formally gazetted despite good progress to this end in South Africa.

IUCN considers that despite the delay in formally gazetting the buffer zones, the boundaries of the nominated extension meest the requirements set out in the Operational Guidelines.

4.3 Management

The management capacity of SNP is very limited, including in relation to the management of tourism. Whilst there is a Park Manager, there are hardly any technical and support staff on site. Although joint management and business plans (2008-2012) are in place for SNP and UDP, their implementation has been affected due to inadequate staffing and financial resources. However, local involvement is strong due to a supportive local leadership and reinforced by the creation of the Community Conservation Forum. A new law, the Nature Conservation Act, 2005, is pending approval and is expected to provide guidance on staffing and resource allocation for SNP.

Technical support is needed to build capacity and on issues of planning (including legal and policy review) and community awareness. SNP is being managed as part of an internationally renowned transfrontier conservation initiative. More advantage needs to be taken of this and the ability of the Joint Management Committee to share and build enhanced capacity in Lesotho.

IUCN considers the management of the nominated extension in relation to natural values is barely sufficient to meet the requirements set out in the Operational Guidelines, and requires significant strengthening, in the context of achieving strong overall management of the extended property.

4.4 Community

In addition to the support evident at the national level, local field officers and stakeholders met by the mission expressed strong and consistent support for the nomination. IUCN has not received any objections to the listing of the property.

Records indicate that agricultural communities moved into the SNP area between 600 and 400 years ago bringing with them livestock that were grazed high up in the mountains in the park as recently as 50 years ago. In 1970 when the Wildlife Sanctuary and National Park were declared, people and livestock were moved from the area. Eviction of people and livestock from SNP created a tense relationship between the community and the park authorities. It is only in the last 5 years that community relations have been restored through the formation of the Community Conservation Forum – a mechanism that allows for community input in decision – making on SNP park management. It is essential that this input is retained and supported.

The National Environment Policy, 1996; the National Livestock and Range Management Policy, 1996 and the Community-based Policy reinforce the critical partnership required with the community for the long-term protection of the park.

4.5 Threats

Threats to the natural values in the form of poaching, grazing, plant resource utilization and encroachment have largely been contained. The management of these threats seems however, to be linked to the promise of new tourism developments in the park and surrounding areas and the expectation that this will bring employment opportunities and increased income. The implementation of the tourism business plan alongside the SNP and UDP/SNP management plans, together with sustained management effort would considerably reduce the risks associated with tourism development.

The only potential threat to the endangered Maloti Minnow is the possibility of introducing trout above the falls which would likely lead to the extinction of the population. The likelihood of this occurring is considered to be low, but requires constant surveillance.

In summary, IUCN considers the nominated property meets the overall conditions of integrity and protection and management requirements as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Upstream support

IUCN notes the nominated extension has benefitted from upstream support via the programme of courses to support nominations delivered by the African World Heritage Fund (AWHF) in partnership with the World Heritage Centre, IUCN, ICOMOS, ICCROM and others. The nomination demonstrates the positive results from these courses organised by AWHF.

6. APPLICATION OF CRITERIA

The Sehlabathebe National Park (Lesotho) has been nominated as an extension of the uKhahlamba Drakensberg Park World Heritage Site (South Africa) under natural criteria (vii) and (ix), and under cultural criteria.

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

The natural beauty of Sehlabathebe National Park results from uplifting of part of the Maloti Drakensberg due to tectonic block faulting to create a unique outcrop of the Clarens Sandstone lifted higher than the rest of the Drakensberg escarpment. Here subsequent periglacial weathering of the sandstone led to the natural sculpturing of the rocks in dramatic forms and shapes including arches, cliffs, pillars, tarns and rock pools, within an extensive grassland area with wetlands and a meandering river with ox bow lakes flowing through a rocky gorge to a picturesque waterfall. Adding to this physical landscape beauty is the diversity of plants with a mosaic of colorful flowers in spring and summer. The distinctive yet fragile mountain grasslands of SNP scenically complement those of uKhahlamba Drakensberg Park World Heritage site.

IUCN considers that SNP, as a nominated extension to the existing uKhahlamba Drakensberg Park World Heritage site, enhances the integrity of the existing property in relation to this criterion.

Criterion (x): Biodiversity and threatened species

The nominated extension will add to uKhahlamba Drakensberg Park World Heritage site an elevated, western flowing watershed which is host to flora and fauna of global scientific importance, classified as rare and endemic to Sehlabathebe National Park. The park's wetlands are currently the only officially protected area in the country where the endangered and endemic Maloti Minnow (*Pseudobarbus quathlambae*) occurs. The site provides critical nesting habitat for the globally endangered Cape Vulture (*Gyps coprotheres*) and the Bearded Vulture (*Gypaetus barbatus*). The proposed extension of uKhahlamba Drakensberg Park World Heritage site to include Sehlabathebe National Park will add value to the conservation of these species, particularly to the diversity of fish species as the Maloti Minnow is considered extinct in the uKhahlamba Drakensberg Park World Heritage site.

The Maloti Drakensberg has been identified as an important centre of plant diversity in Southern Africa protecting high levels of endemism and globally threatened plant species. Sehlabathebe National Park hosts more than 20% of the plant species in the whole Maloti Drakensberg area and more than 10% of the park's plant species are endemic to the park. Sehlabathebe National Park contains wetland and African alpine tundra ecosystems that significantly add to the value of uKhahlamba Drakensberg Park World Heritage site.

IUCN considers that SNP, as a nominated extension to the existing uKhahlamba Drakensberg Park World Heritage site, enhances the integrity of the existing property in relation to this criterion.

7. RECOMMENDATIONS

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

IUCN notes that its recommendation will need to be harmonized with that of ICOMOS in the eventual consolidated draft decision to the World Heritage Committee, considering the property is a mixed site, and therefore notes elements of the decision in square brackets pending consideration of the cultural criteria:

[The World Heritage Committee,]

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;]

2. [Approves as an extension of uKhahlamba Drakensberg Park World Heritage site under natural criteria (vii), and (x), to include the **Sehlabathebe National Park, Lesotho,** and also approves the new name for the extended property the Maloti Drakensberg Transboundary World Heritage Site;]

3. [Adopts the following Statement of Outstanding Universal Value for the transnational property] [IUCN's below draft is adapted from the existing and approved SoOUV for the uKhahlamba Drakensberg Park WHS; it does not consider the editing necessary in relation to cultural criteria, authenticity, and cultural aspects of integrity, protection and management]:

[Brief synthesis

The Maloti Drakensberg Transboundary World Heritage Site is a transnational property spanning the border between the Kingdom of Lesotho and the Republic of South Africa. The property comprises Sehlabathebe National Park (6,500ha) in Lesotho and uKhahlamba Drakensberg Park (242,813 ha) in South Africa. Maloti Drakensberg Transboundary World Heritage Site is renowned for its spectacular natural landscape, importance as a haven for many threatened and endemic species, and for its wealth of rock paintings made by the San people over a period of 4000 years. The property covers an area of 249,313 ha making it the largest protected area complex along the Great Escarpment of southern Africa.

The Maloti Drakensberg range of mountains constitutes the principal water production area in Southern Africa. The areas along the international border between the two countries create a drainage divide on the escarpment that forms the watershed for two of southern Africa's largest drainage basins. The Thukela River from uKhahlamba Drakensberg Park flows eastwards into the Indian Ocean. The Senqu/Orange River from Sehlabathebe National Park flows westwards into the Atlantic Ocean.

Along with its pristine steep-sided river valleys rocky gorges, high altitude grasslands, wetlands and meandering streams, the property has numerous caves and rock shelters containing an estimated 665 rock art sites, and the number of individual images in those sites probably exceeds 35,000. The images depict animals and human beings, and represent the spiritual life of this people, now no longer living in their original homeland. This art represents an exceptionally coherent tradition that embodies the beliefs and cosmology of the San people over several millennia. There are also paintings done during the nineteenth and twentieth centuries, attributable to Bantu speaking people.

Extending along most of KwaZulu-Natal's south-western border with Lesotho, the property provides a vital refuge for more than 250 endemic plant species and their associated fauna. It also holds almost all of the remaining subalpine and alpine vegetation in KwaZulu-Natal, including extensive high altitude wetlands above 2,750m and is a RAMSAR site. The Park has been identified as an Important Bird Area, and forms a critical part of the Lesotho Highlands Endemic Bird Area.

Criteria

Criterion (i)

To be considered by ICOMOS – current statement: The rock art of the Drakensberg is the largest and most concentrated group of rock paintings in Africa south of the Sahara and is outstanding both in quality and diversity of subject.

Criterion (iii)

To be considered by ICOMOS – current statement: The San people lived in the mountainous Drakensberg area for more than four millennia, leaving behind them a corpus of outstanding rock art which throws much light on their way of life and their beliefs.

Criterion (vii)

The property has exceptional natural beauty with soaring basaltic buttresses, incisive dramatic cutbacks and golden sandstone ramparts. Rolling high altitude grasslands, wetlands, alpine tarns, the pristine steep-sided river valleys and rocky gorges also contribute to the beauty of the site. Sehlabathebe National Park in Lesotho contributes an unusual uplifted area with a visually spectacular series of sculptured arches, caves, cliffs, pillars and rock pools.

Criterion (x)

The property contains significant natural habitats for in situ conservation of biological diversity. It has outstanding species richness, particularly of plants. It is recognised as a Global Centre of Plant Diversity and endemism, and occurs within its own floristic region – the Drakensberg Alpine Region of South Africa. It is also within a globally important endemic bird area and is notable for the occurrence of a number of globally threatened species, such as the Cape Vulture, Yellow-breasted Pipit, Bearded Vulture and the Maloti Minnow, an endangered endemic fish found only within Sehlabathebe National Park. The diversity of habitats is outstanding, ranging across alpine plateaux, steep rocky slopes and river valleys. These habitats protect a high level of endemic and threatened species.

Integrity

To also be considered by ICOMOS – The Maloti Drakensberg Transboundary World Heritage Site, composed of 12 protected areas in

South Africa established between 1903 and 1973 and in 1970 has a long history of effective conservation management. Covering 249,313 ha in area, it is large enough to survive as a natural area and to maintain natural values. It includes 4 proclaimed Wilderness areas that cover almost 50% of the site. While largely unaffected by human development, the property remains vulnerable to external land uses including agriculture, plantation forestry, encroachment, wind farm and ecotourism, although agreements between Ezemvelo KZN Wildlife and local stakeholders have been implemented to manage these threats.

Invasive species and fire also threaten the integrity of the site, along with land claims in certain areas, infrastructural developments, soil erosion caused by fire and tourist impacts on vulnerable alpine trails, grazing and poaching.

Boundary issues highlighted at time of inscription included the gap belonging to the amaNgwane and amaZizi Traditional Council between the northern and much larger southern section of the South African section of the site. While planning mechanisms restrict development above the 1,650m contour to maintain ecological integrity, it was recommended that a cooperative agreement between the amaNgwane and amaZizi Traditional Council and Ezemvelo KZN Wildlife be envisaged. Extending conservation areas by agreements with privately-owned land along the escarpment to the south of the property was also recommended. Finally an important step to strengthening integrity has been the development of the Drakensberg Maloti Transfrontier Conservation and Development Area, which has recognised the importance of a Transboundary Peace Park linking the Sehlabathebe National Park (and eventually the contiguous Sehlabathebe and Mohotlong Range Management Areas) in Lesotho with uKhahlamba Drakensberg Park. Project Coordinating Committees in both KwaZulu-Natal and Lesotho are cooperating in a planning process.

The property contains the main corpus of rock art related to the San in this area. Although the area has changed relatively little since the caves were inhabited, management practices, the removal of trees (which formerly sheltered the paintings) and the smoke from burning grass both have the capacity to impact adversely on the fragile images of the rock shelters, as does unregulated public access.

Authenticity

To be considered by ICOMOS – The authenticity of the paintings, and their shelter and cave settings, as a reflection of the beliefs of the San peoples, are without question. The images are however vulnerable to fading that could lessen their ability to display their meaning.

Protection and management requirements

To also be considered by ICOMOS – In uKhahlamba Drakensberg Park management of the Park is guided by an Integrated Management Plan with subsidiary plans, and is undertaken in accordance with the World Heritage Convention Act, 1999 (Act No. 49 of 1999); National Environmental Management: Protected Areas the Sehlabathebe National Park in Lesotho established Act, 2003 (Act 57 of 2003); National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004); KwaZulu-Natal Nature Conservation Management Amendment Act (No 5 of 1999); World Heritage Convention Operational Guidelines; and Ezemvelo KZN Wildlife policies. In terms of this legislation, all development within or outside the property is subjected to an environmental impact assessment, which considers the Outstanding Universal Value of the property. In addition all World Heritage Sites are recognized as protected areas, meaning that mining or prospecting will be completely prohibited from taking place within the property or the proclaimed buffer zone. Furthermore, any unsuitable development with a potential impact on the property will not be permitted by the Minister of Water and Environmental Affairs who is responsible for the implementation of the World Heritage Convention.

In Sehlabathebe National Park Lesotho's National Parks Act, 1975, Environment Act 2008, Local Government Act, 1997, Historical Monuments, Relics, Fauna and Flora Act 1967 provide for protection. In addition a draft Nature Conservation Act is designed to provide overall guidance for nature conservation. The Park is administered by the Ministry of Tourism, Environment and Culture. A Park Management Plan and Business Plan are in place to guide the future of the Park, however, capacity to implement the plans is inadequate. It is important to accelerate the approval and enactment of the draft Nature Conservation Act, 2005 to provide guidance on staffing and resource allocation for Sehlabathebe National Park. A Community Conservation Forum supports community engagement in the management of the park.

The transfrontier collaboration between the Kingdom of Lesotho and the Republic of South Africa dates from 1997 and provides the framework for joint planning, management and technical cooperation. A bilateral Memorandum of Understanding signed by Lesotho and South Africa is in place with respect to the Maloti Drakensberg Transboundary World Heritage Site and a Joint Management Committee has been established to support cooperation.

Invasive species and fire are major management challenges. In uKhahlamba Drakensberg Park, at the time of inscription 1% of the Park was covered with alien vegetation, including existing plantations and wattle infestations. This poses a threat to the ecological integrity of the Park as well as to the yield of water from its wetlands and river systems. Park management is actively addressing the removal of alien species. The interaction between the management of invasive species and the management of fire should also be carefully considered, taking into account the effects of fire on fire-sensitive fauna such as endemic frogs. Management of fire and invasive species needs to be addressed jointly by Lesotho and KwaZulu-Natal, ideally within the framework established for transboundary protected area cooperation. Alien invasive trout present a potential threat to the critically endangered Maloti Minnow (Pseudobarbus quathlambae) which is endemic to

Sehlabathebe National Park. The only viable population of Maloti Minnow is found upstream of the avoid the introduction of trout above the waterfall to prevent the risk of extinction.

Advantage needs to be taken of the transfrontier context to ensure the transfer of skills and knowledge to build enhanced capacity in Sehlabathebe National Park, and achieve and maintain consistent and effective management across the whole property. There is also a need to ensure an equitable balance between the management of nature and culture through incorporating adequate cultural heritage expertise into the management of the property, in order to ensure that land management processes respect the paintings, that satisfactory natural shelter is provided to the rock art sites, that monitoring of the rock art images is conducted on a regular basis by appropriately qualified conservators, and that access to the paintings is adequately regulated. Furthermore, there is a need to ensure that Cultural Heritage Impact Assessments are undertaken in conjunction with Environmental Impact Assessments for any proposed development affecting the setting within the property.]

4. [Requests the State Party of the Kingdom of Lesotho to carefully consider any proposed development of a wind farms in areas neighbouring the Sehlabathebe National Park and to ensure that such developments do not adversely impact on the outstanding universal value of the Maloti Drakensberg Transboundary World Heritage Site in particular on populations of Bearded Vultures and Cape Vultures in the Lesotho Highlands and the surrounding escarpment of South Africa;]

5. [Considers that approval of Sehlabathebe National Park as an extension to uKhahlamba Drakensberg Park World Heritage site presents an opportunity to further enhance a number of protection and management issues and therefore requests the State Parties to:

Tsoelikane Waterfall and ongoing efforts are need to

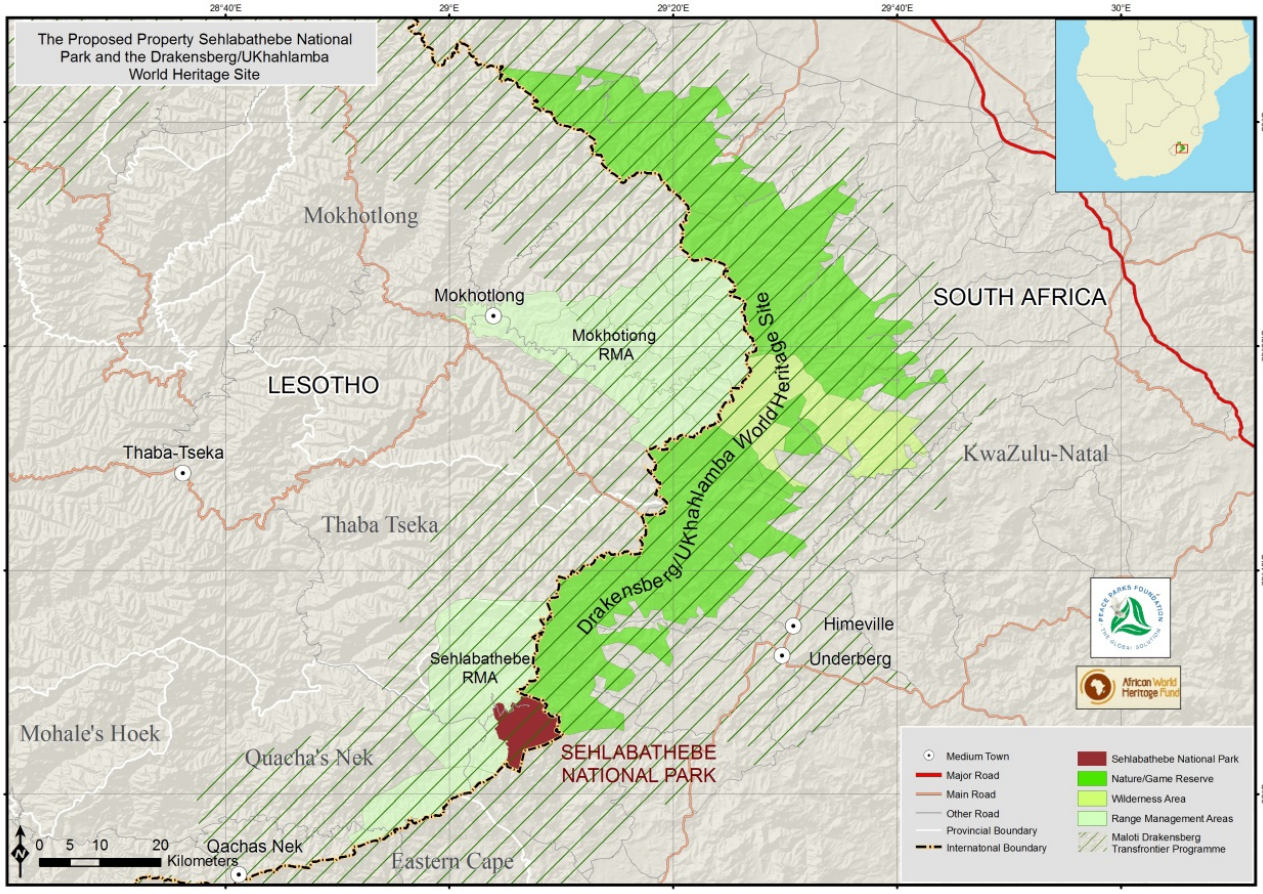
a) Finalize revisions, amendments and enactment of relevant laws pertinent to the property, in particular to approve and enact the draft Nature Conservation Act 2005 in Lesotho;
b) Update the current Sehlabathebe National Park and joint Sehlabathebe National Park/ uKhahlamba Drakensberg Park management and business plans which expire by 2013 and to ensure they provide for enhanced cooperation and joint management of both natural and cultural World Heritage values;
c) Provide significantly enhanced qualified staff within the property, and especially within Sehlabathebe National Park and increased finances to improve the protection of Outstanding Universal Value and to implement planned management interventions;]

6. [Also requests the States Parties to:

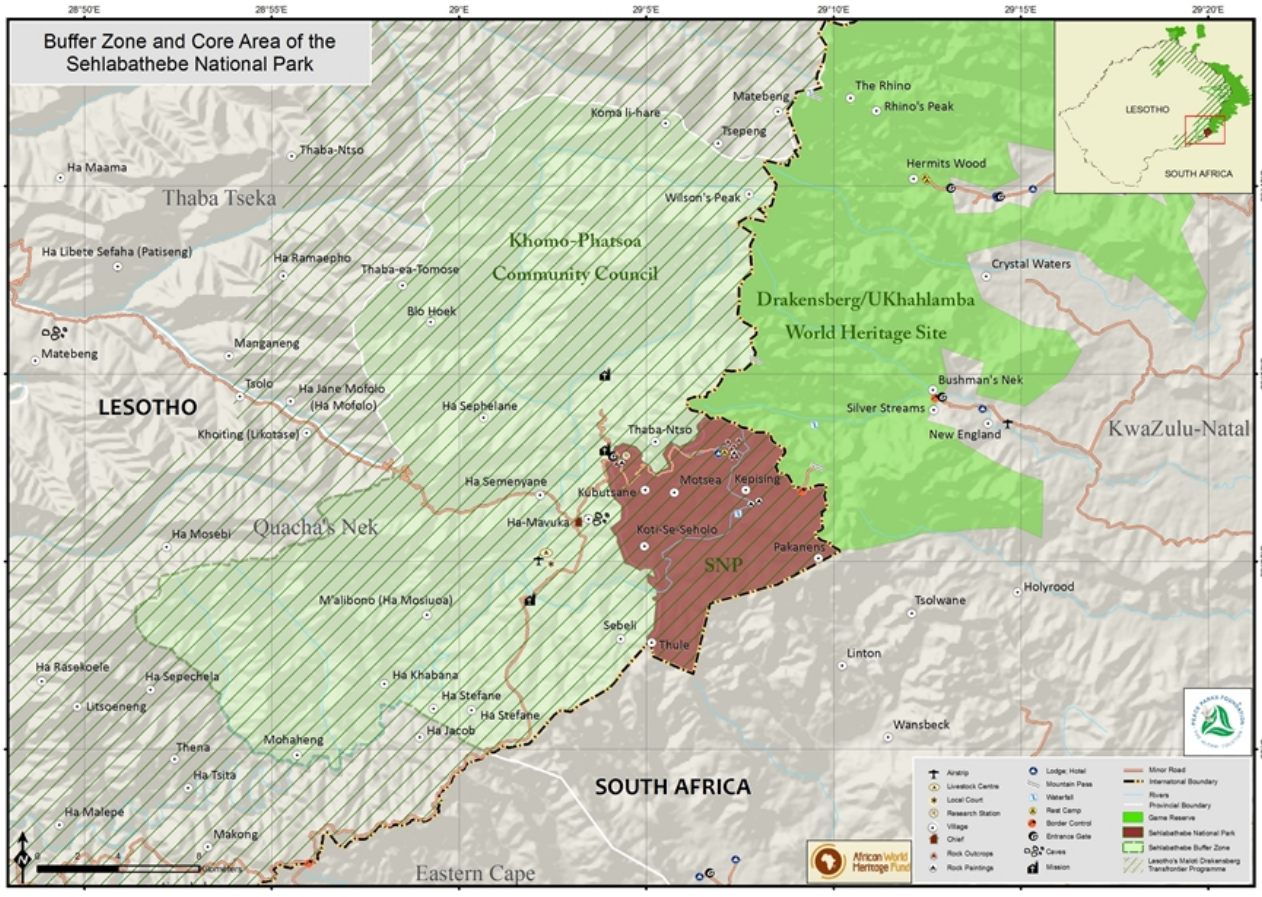
a) Finalize without delay the formal gazettal of the buffer zones surrounding the property;
b) Enhance transnational collaboration to share technical capacity and ensure improved management capacity within Sehlabathebe National Park:
c) Formalize the proposed new name of the transnational World Heritage property “Maloti Drakensberg Transboundary World Heritage Site” consistent with the paragraph 167 of the Operational Guidelines;]

7. [Congratulates both States Parties on their cooperation in the nomination of the extension to create a new transboundary World Heritage property, and their collaborative approach to protect and manage the property to the highest international standards.]

Map 1: Proposed extension location



Map 2: Proposed extension and buffer zone



EUROPE / NORTH AMERICA

PIMACHIOWIN AKI

CANADA

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

PIMACHIOWIN AKI (CANADA) – ID No. 1415

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination under natural criteria.

Key paragraphs of Operational Guidelines:
78 Property does not meet conditions of integrity related to natural criteria.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information: Additional information was requested by ICOMOS following prior discussion with IUCN, and a reply from the State Party was received and reviewed by IUCN.

c) Additional Literature Consulted: A large range of references included in nomination, and additional literature reviewed included **A Global Overview of Forest Protected Areas on the World Heritage List**, J. Thorsell and T. Sigaty, IUCN, Gland, Switzerland (September 1997). **Human Use of World Heritage Natural Sites; A Global Overview (Working Paper 4)**, J. Thorsell and T. Sigaty, IUCN, Gland, Switzerland (September 1998). **World Heritage Forests: Leveraging Conservation at the Landscape Level;** Proceedings, 2nd World Heritage Forests Meeting, March 2005 (Published April, 2007 by UNESCO WHC, Paris). **Proceedings of the World Heritage Boreal Zone Workshop,** St. Petersburg, Russia, IUCN, Gland, Switzerland (June, 2004). **A Forest of Blue: Canada's Boreal**, Pew Environment Group, Seattle, Washington (March, 2011). **Guidelines for Applying Protected Area Management Categories,** N. Dudley (ed.), IUCN, Gland, Switzerland (2008).

d) Consultations: 4 external reviews. The mission met briefly with Manitoba Provincial Premier and Deputy Premier for Aboriginal and Northern Affairs. It made extensive visits within the nominated property and was accompanied throughout by the Pimachiowin Aki Corporation and Parks Canada. The mission also met with or was accompanied by members of the five First Nations as well as their elected tribal officials, officials from the provinces of Manitoba and Ontario, provincial park (Atikiki, Manitoba; Woodland Caribou, Ontario) resource specialists, and lodge owners and operators.

e) Field Visit: David Mihalic, 25 August – 1 September 2012, with Maunu Häyrynen (ICOMOS)

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The nomination encompasses 33,400 square kilometers in the boreal biome and Canadian taiga biogeographical province. It is centered in the North American boreal shield, east of Lake Winnipeg and along the provincial border of Manitoba and Ontario, Canada. It includes the Atikiki Provincial Park in Manitoba, Woodland Caribou Provincial Park, and the Eagle-Snowshoe Conservation Reserve, which form the southern quarter of the nominated area. The remainder of the area is "crown" or provincial land that comprises the ancestral lands of five Anishinaabeg First Nations communities (Pikangikum, Poplar River, Little Grand Rapids, Bloodvein River and Pauingassi). The nomination is submitted as a mixed property, and the evaluation of values in relation to cultural criteria will be undertaken by ICOMOS.

Pimachiowin Aki is in the centre of the North American boreal biome and the boreal shield ecological region, and is characterized by boreal forests with relatively small trees, granite bedrock exposures, long free-flowing rivers and numerous lakes and wetlands. The Precambrian bedrock dates back 2 to 3 billion years. Erosion, volcanism, and continental glaciation shape what appears today. The most recent ice age produced the Laurentide Ice Sheet, the weight of which depressed the earth's crust. About 11,000 years ago, the nominated area was free of retreating ice but glacial melt formed Glacial Lake Agassiz in this depression, the largest post-glacial lake in the world, which lasted 4,000 years. Three of the four common boreal shield surficial types are fully represented within the nominated property and the fifth most common type is partially represented. Water plays a dominant ecological and structural role with a highly complex, seemingly random and unpredictable drainage pattern – a result of continental glaciation and variable surficial deposits. Underlying landforms can result in water flowing in more than one direction. The topography and poor soil drainage near-surficial bedrock create high water tables characterized by diverse wetland ecosystems, communities and complexes. The rivers flowing across the nominated area provide ecological connectivity, nutrient transfer and, along with the numerous lakes, both dominate the landscape and are critical to the way in which this ecosystem functions and so underpins indigenous people's cultural use of the landscape.

There are over 8,000 permanent freshwater marshes and pools of less than 8 ha in size and nearly 41,000 kilometers of shoreline wetlands that provide important habitat for waterfowl, birds, amphibians, mammals and insects. Fire is a key ecological force and major natural agent of change, including at the landscape level. Different fire regimes in the nominated property result from the presence of bogs, fens, marshes (many in the western parts) that limit size and duration from that of drier sites in the eastern areas. Fire's frequency and pattern shapes the landscape in vegetation type, forest age class, and play a major role in ecosystem processes (nutrient cycling, energy flow, soil fertility). Fire regimes in the landscape are also important to the way the landscape has been and is used.

Plant communities and species diversity are typical for boreal forests, with black spruce, jack pine and tamarack prevalent with birch and other hardwoods scattered where conditions warrant. The nominated property includes both fens and bogs with plant communities dependent on depth-to-water. Extensive and diverse peat lands and tamarack fens dominate in the western portion of the nominated property where lacustrine and organic surficial materials prevail. Northern wild rice is widespread, naturally and a result of indigenous aquaculture. While an important traditional Native food source, it is no longer commercially cultivated, but remains a food source for waterfowl and other birds and animals.

The nominated property contains most of the mammal, bird and amphibian species representative of the North American boreal shield. Moose are widespread (along with their primary predator, the wolf) and culturally significant. Woodland caribou, an umbrella indicator species with high sensitivity to human encroachment, have had the most study in Ontario, including migration data, but less so in Manitoba. The southern range is shrinking due to human encroachment but the nominated area provides extensive areas of summer and winter range, along with critical calving "island" (upland areas in marshes/bogs that inhibit predation) habitat. Wolves, fox, pine marten, fisher, weasel, snowshoe hare, lynx, river otter, beaver, muskrat and wolverine are all present and healthy enough to be harvested, but population data are unavailable for the nominated area. The nomination similarly lists 216 bird species, 8 of which are species at risk, including breeding Trumpeter Swans, thought to have been extirpated in Manitoba. Fish populations are stated to be "representative" for the boreal shield, with lake sturgeon endangered. Amphibians and reptiles are present in typical abundance and distribution for the Canadian boreal shield.

3. COMPARISONS WITH OTHER AREAS

The nomination includes an extensive appendix of comparisons with other areas both at a global and regional scale, in relation to criterion (ix). It examines some 132 sites worldwide of which 23 were in the North American boreal shield. The nomination developed a scoring system for "typical conditions" to arrive at a short list of 12 global sites which were further examined. The nomination's suggested comparison determined only two other examples of a site with strongly similar values (Wood Buffalo National Park and nearby Wabakimi Provincial Park). The nomination notes that Wood Buffalo is a "boreal plains" region while Pimachiowin Aki is a "boreal shield" site, with the distinction explained in the nomination document. The nomination suggests that Pimachiowin Aki is of Outstanding Universal Value because it is "representative" of a different eco-region. Nearby, the Wabakimi Provincial Park in Ontario, is very similar in most ways, the main differences being size and lack of First Nations input in planning or management.

The World Heritage listed Virgin Komi Forests (Russian Federation) cover 32,800 km^2 of tundra and mountain tundra in the Urals, as well as one of the most extensive areas of virgin boreal forest remaining in Europe. Kluane / Wrangell-St. Elias / Glacier Bay / Tatshenshini-Alsek (Canada/USA) National Parks and protected areas comprise an impressive complex of glaciers and high peaks on both sides of the border between Canada (Yukon Territory and British Columbia) and the United States (Alaska) and are home to many grizzly bears, caribou and Dall's sheep. The parks demonstrate some of the best examples of glaciation and modification of landscape by glacial action, but their Outstanding Universal Value is not substantially related to boreal shield values.

Other World Heritage properties located in the boreal realm include the Russian Federation's Lake Baikal World Heritage property at 31,500 km^2 which is of similar size to the nominated property and centered on the deepest lake in the world. The Central Sikhote-Alin World Heritage site is a coastal protected area with a diverse mix of temperate, taiga and subtropic, maritime and boreal species, resulting in an unusual assemblage of plants and animals. Its diversity and breadth of species is not a direct comparison to the nominated property. The Putorana Plateau is a mountainous area above the Arctic Circle that is large, isolated and intact, with many floral and faunal species and subspecies typical of the boreal, but also a complete set of subarctic and arctic ecosystems in an isolated mountain range. The Pimachiowin Aki nomination has more defined and narrower values for boreal shield systems. The Gros Morne World Heritage (Canada) site has a coastal environment that provides habitat for many salt-tolerant and maritime flora and fauna. The geologic values of exposed crust and mantle relate to tectonic activity and while there are similar forest species (spruce, balsam fir, larch (tamarack) scrub, etc.) the values are not comparable to the nominated property.

Areas not included on the World Heritage List that are comparable to the nominated property include Yukon Flats National Wildlife Refuge (USA) in the interior of Alaska and covers 30,294 km^2 along the Yukon River. The refuge is similar to the nominated area in relief, with similar boreal flora and fauna but has more bog, discontinuous permafrost (and resultant wetlands) and shrub land and, where forested, is more coniferous and less deciduous than the nomination. Koyukuk

National Wildlife Refuge (USA) is a federally managed protected area of 25,436 km^2 in western Alaska in the Nearctic realm. Bisected by the Koyukuk River the site has abundant flatlands, wetlands, bogs and seasonally flooded lakes ("grass lakes"). There is subsistence use by local Alaskans from nearby villages regulated by subsistence use commissions that, by law, are part of maintaining natural and healthy populations. The Green Belt of Fennoscandia (Norway, Finland, Russian Federation) is a trans-boundary area that includes a number of protected areas situated along national boundaries of the three countries and represents old growth forest and the full north-south gradient of the global boreal realm, totaling 11,144 km^2. Sibirskie Uvaly Nature Park (Russian Federation) is an area of 2,996 km^2 of western Siberian taiga, about two-thirds the size of the nominated property. There is high integrity, no commercial development and isolated from transportation corridors and population centers but the management regime allows for various uses depending on location. The park has cultural sites within it from former settlements and ancestral lands of indigenous peoples but none living within the park. In addition there are several known proposals to create large protected areas in the boreal zone within a number of countries.

The nomination dossier makes it difficult to directly compare numbers of species between the nominated components noting that some estimates are based on extrapolation. The property is clearly a very large boreal protected area, comparable in size with the largest protected areas in the boreal realm. It is however not clear that the nominated property has a comparable degree of ecosystem diversity when measured against boreal sites that are already included on the World Heritage List. Additionally there are evidently a range of other areas that are large and could make similar claims for their extensive boreal ecosystem values. The case for the application for criterion (ix) on its own is not compelling; however there is an important aspect of the application of this criterion in relation to the overall values conveyed by the nomination, as a mixed property. This is discussed further below.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated area is mainly government-owned, or Crown land, with some small First Nations owned components near communities, and subject to the jurisdiction of the provincial government, as are the three protected units (Atikiki Provincial Park, Manitoba; Woodland Caribou Provincial Park, and Eagle Snowshoe Conservation Reserve, Ontario) included. In Canada, by its constitution and particularly the *Natural Resources Transfer Act (1930)*, Provinces have primary jurisdiction over Crown land.

There are two recent pieces of legislation which facilitate the nomination. Manitoba's *East Side Traditional Lands Planning and Special Protected Areas Act* (2009) enables First Nations on the "east side" of Lake Winnipeg to participate in land-use and resource management planning *for areas of Crown land that they have traditionally used and to provide such areas with special protection from development*. By means of this *Act*, bilateral arrangements to facilitate planning have been created between Manitoba and Bloodvein River, Little Grand Rapids, Pauingassi and Poplar River First Nations. In Ontario, the *Far North Act* (2010) enables similar bilateral partnerships between Ontario and Little Grand Rapids First Nation and Pauingassi First Nation. This act supports a significant role for First Nations in land-use planning for the Far North region of Ontario which includes the Pimachiowin Aki nominated area.

The lands noted as protected in the nomination are the three existing provincial parks/reserves and the 20,110 km^2 designated as *protected* by the community land use plans. The nomination states these are protected to the same level as if they were legislated provincial parks and equivalent to IUCN Category II ("National Park") protection. However this level of legal protection is only equivalent if the designations in land use plan are not changed by future land use plans. IUCN therefore considers that it appears the nomination has several governance types.

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

4.2 Boundaries

The nomination notes that the boundaries are an outcome of *community-led land use planning* under legislation in both Provinces that strives to respect values in the boreal region while allowing environmentally sustainable economic development for the needs of local communities. In many areas they follow the boundaries of the community-based planning areas for the First Nations, which, in turn, were developed on the basis of trap line boundaries recognized legally in the 20th century by traditional family and customary stewardship institutions in these indigenous communities. The legislated boundaries of the three protected areas on the south are also the southern boundaries of the nominated area. On the east, the nomination boundaries follow First Nations planning areas (based on areas of traditional use), protected cultural waterways, both within the nominated property and also in the "enhanced management" buffer areas, and traditional travel routes between these areas.

The resulting boundaries of the property are quite varied in character. Some areas are not included in the nominated property where First Nations have to date not participated in the nomination process, including lands running to the shores of Lake Winnipeg. This results in the nomination having a gap in forest coverage: a type of "hourglass" configuration. To the east the boundaries are linear following a thin lattice of rivers and streams. IUCN concludes that the boundaries of the nominated property are not primarily related to the ecosystem functions in the area, being determined by cultural factors and choices of the

participating First Nations. Such an approach, whilst validly recognizing the traditional interaction between indigenous peoples and the landscape, does not provide an optimal configuration that supports ecological processes.

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

4.3 Management

The two provinces and the five First Nations communities have joined together as the *"Pimachiowin Aki Corporation."* It is this *corporation* that has both prepared the nomination and is proposed to be the management entity. The nomination notes that the 7 parties are equal partners and that management actions are shared and will not be undertaken without consensus. The objectives of land-use planning in the Far North are protection of cultural values and ecological systems and sustainable economic development that benefits First Nations.

The resource agencies of the Provinces of Manitoba and Ontario presently manage the nominated area. These agency resource staff are located in nearby communities (Red Lake, Ontario; Lac du Bonnet, Manitoba) and supported by central offices in Winnipeg and Toronto. Both regional directors are part of the board of directors of the Pimachiowin Aki Corporation. Except for the provincial parks (Atikiki, Woodland Caribou) resource staff are part of broader regional services.

A process of community-based land use planning has been completed, approved and in effect. At this time, the area is in transition between the existing overall management by the provincial ministries of natural resources (as part of the provincial crown lands) to that which is proposed by the nomination, which includes World Heritage *inscription.* Management actions are either that which has historically taken place (such as fire management) or that authorized by the "plans" under the two relevant acts from each province (that authorize community-based land use planning).

The proposed "Management Plan" is, in reality, a statement of principles or a framework. It clearly states it will only be placed into effect should Pimachiowin Aki be inscribed upon the World Heritage List. The proposed framework outlines a governance structure based on shared power among the five First Nations communities and the two provinces, with the Pimachiowin Aki Board approving all actions through consensus where all parties are equal. Dispute resolution focuses on shared responsibility for protecting Outstanding Universal Values and "reflects both the distinctive First Nation approach to leadership and the pluralism of the partnership."

The nomination notes that funding will be both from government and private sources (since the Corporation is a non-profit it can accept donations) but does not propose operating budgets. Manitoba (but not Ontario) has already made CAN$10 million available for a management endowment. Initiation of protective measures will be through traditional stewardship (relying on the day-to-day conduct of individuals as they travel, harvest and interact with other beings); land use planning and collaboration (where local communities are key to decisions and zoning of land and land voluntarily conserved by local people); and activities of the Pimachiowin Aki Corporation (including agreements and collaboration and communication among and between partners). If inscribed, the initial focus will be to make the transition from the present state of management by the two provinces to one in which the governance and management structure *as proposed* is implemented.

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

4.4 Community

There are five small, isolated settlements with a total population of 6,200 within the property. Some small resource based industry exists but there is no large, natural resource exploitation with most monies derived from social services with some tourism. Traditional use of the nominated area is mainly trapping for fur-bearers, fishing, and gathering including traditional medicines.

The nomination is remarkable in the degree to which it is community-led, with the central engagement of the five First Nations whose traditional lands are included in the nomination. This isolated region was late to come into direct contact with the trade companies and other Western institutions, which helps to explain why traditions have persisted. Little outside economic attention was paid to significant natural resources. To date, only the five First Nations occupy the area throughout the year, along with social services and other government presence in the band communities. Access is by air or "winter roads" to some communities, but that may change. The traditional Anishinaabeg way of life and the associated belief system are strongly present in the nominated property, while there are modern pressures, particularly on younger community members. From the discussions with the First Nations during the evaluation mission it became evident that they consider the nominated property to be among the last remaining areas that may still support their traditional way of life.

The First Nations propose to both manage the nominated area for its natural values as well as maintain their traditional life-ways and, where possible, use the land for sustainable development for future needs in a manner that does not conflict with Outstanding Universal Value. Attaining World Heritage inscription is seen as part of the strategy to encourage heritage conservation and eco-tourism as part of ongoing use. The First Nations communities have come to varied conclusions as to how best this might occur (as might be expected as an outcome of the community-based planning process). The nominated area also includes community use zones and

commercial development zones (depicted mostly to River and Pauingassi First Nations planning areas) that will have development and use accompanied by enhanced management to protect the Outstanding Universal Value.

4.5 Threats

Within the use and development zones are also "commercial development zones" (near Bloodvein) and both winter road (mostly existing) and newly constructed all season road access corridors for the communities of Bloodvein, Berens River and, eventually, Poplar River. Winter roads are proposed to continue to Little Grand Rapids and the "all-weather" road is presently under construction. These roads are supported by the native communities because they ease the lives of the people in these isolated communities, but IUCN notes such developments can also have negative environmental impacts. It is a controversial issue among other outside entities but is supported by the communities. While assurances were made during the mission that access would not lead to future problems, the ramifications of increased road building are of concern.

Some areas of commercial use are excluded from the nomination and included in buffer zones. In the Bloodvein area there is some proposed potential use for peat in the community use zones, with the knowledge that it would be managed to protect the Outstanding Universal Value (if inscribed). There is no proposed mining in or near buffer zones or within the property at present, but there are several areas with mineral "potential" that are excluded from the nomination. These are near the Manitoba-Ontario boundary on the north of the nomination near Pauingassi, as well as the west of the Pauingassi and Little Grand Rapids communities in Manitoba.

There is a long-standing high profile issue that pertains to transmission of power from hydroelectric dams far to the north of Lake Winnipeg. The evaluation mission was assured that the present government had made the decision to construct these power corridors to the west of Lake Winnipeg and that the issue was closed.

The size of the nominated area and especially the different ecozones related to differences in vegetation due to soils, the types of "shield" exposures and the two different fire regimes offer an opportunity to monitor and study the effects of climate change in the boreal realm. The different ecosystem types extend north and south across the nominated property, and thus offer monitoring opportunities as climate change occurs. The monitoring plan was developed with climate change in mind through studies contracted for the nomination.

The mission noted the presence of fire control facilities in several communities and it appears fire management is presently keyed to human values rather than natural. The mission clarified that fire management practices are not proposed to evolve toward a natural fire regime if inscription results.

the west near Bloodvein, Little Grand Rapids, Poplar In summary the property is large and is in a substantially natural condition. There is variety in species and in landforms that are emblematic of the boreal realm and the boreal shield. Rivers and streams are undammed. Waterways are natural and, except for some areas where the naturally occurring wild rice has been cultivated, the region is relatively unchanged through human occupancy and use. Outside threats, except for perhaps some road access, are not acute and areas within the community use zones and even outside the nomination but within the planning areas are proposed for enhanced management that takes into account proposed World Heritage values.

IUCN considers the nominated property meets the protection and management requirements of the Operational Guidelines, but there are questions regarding the selection of boundaries in relation to the application of criterion (ix).

5. ADDITIONAL COMMENTS

5.1 Mixed Site Nomination

An essential aspect of the nomination of Pimachiowin Aki is its proposal for recognition as a mixed site. The basis for the nomination's consideration of criterion (ix) is purely based on identification of ecosystem values, and IUCN's evaluation is therefore focused on that criterion. As currently worded this criterion does not expressly recognize values of people interacting with the ecosystem, although this is clearly central to the basis of the nomination. IUCN has sought to interact with ICOMOS to the largest extent possible during the evaluation process, however the two evaluation processes for cultural and natural values are currently configured to reach separate conclusions in relation to the cultural and natural values. IUCN also notes that the interaction between people and nature in the current version of the Operational Guidelines is recognized primarily through the inscription of properties as cultural landscapes.

Based on the above analysis IUCN considers that the case for the application of criterion (ix) is not compelling.

All elements of the IUCN evaluation process (panel, evaluators, reviewers) were highly impressed by the exceptional nature of this nomination in relation to the interaction of the First Nations with the area. This aspect is, in the view of IUCN, related to the application of the cultural criteria so its significance is most appropriately evaluated by ICOMOS. Nevertheless IUCN recognizes that there is an argument that could be made for criterion (ix) to be applied in combination with cultural criteria, considering the basis for the argument for Outstanding Universal Value that is made in this case.

Conversely, it is clear to IUCN that application of only natural criteria would be inappropriate given the community-led nature of this nomination, and the central premise that traditional use would be

recognized as intrinsic to the values of the property, if inscribed. On balance the view of IUCN is that it is more appropriate to defer consideration of criterion(ix), and to reconsider it at a point when the evaluation of the nomination under cultural criteria has been clarified through ICOMOS's evaluation.

IUCN also notes that it would be worth taking the present nomination as a case study to evaluate the need for a revision to the IUCN and ICOMOS evaluation processes in nominations where the interaction between people and nature is central to the nomination (i.e. in cultural landscapes and mixed sites). IUCN is of the view that maintaining entirely distinct evaluation processes does not allow for adequate opportunities for shared decision taking processes between the Advisory Bodies in such situations.

6. APPLICATION OF CRITERIA

Pimachiowin Aki has been nominated as a mixed property, and IUCN is asked to consider the application of criterion (ix).

Criterion (ix): Ecosystems / communities and ecological / biological processes
Pimachiowin Aki represents a typical large, natural and healthy boreal shield ecosystem on three of the four common boreal shield surficial types with the presence of a fifth surficial type. The property is intact with characteristic species and processes. There are similar areas nearby, but protected in smaller areas, and other more diverse boreal forest areas either already included on the World Heritage List, or in other protected areas within the boreal realm. The boundaries of the nominated property are not optimally defined in relation to ecosystem functions. The case for inscription only under criterion (ix) is not compelling, despite the scale and naturalness of the area.

IUCN considers that the nominated property does not appear to meet this criterion, but that further reflection is required following clarification of the possible basis for inscription under cultural criteria.

7. RECOMMENDATIONS

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

The World Heritage Committee,

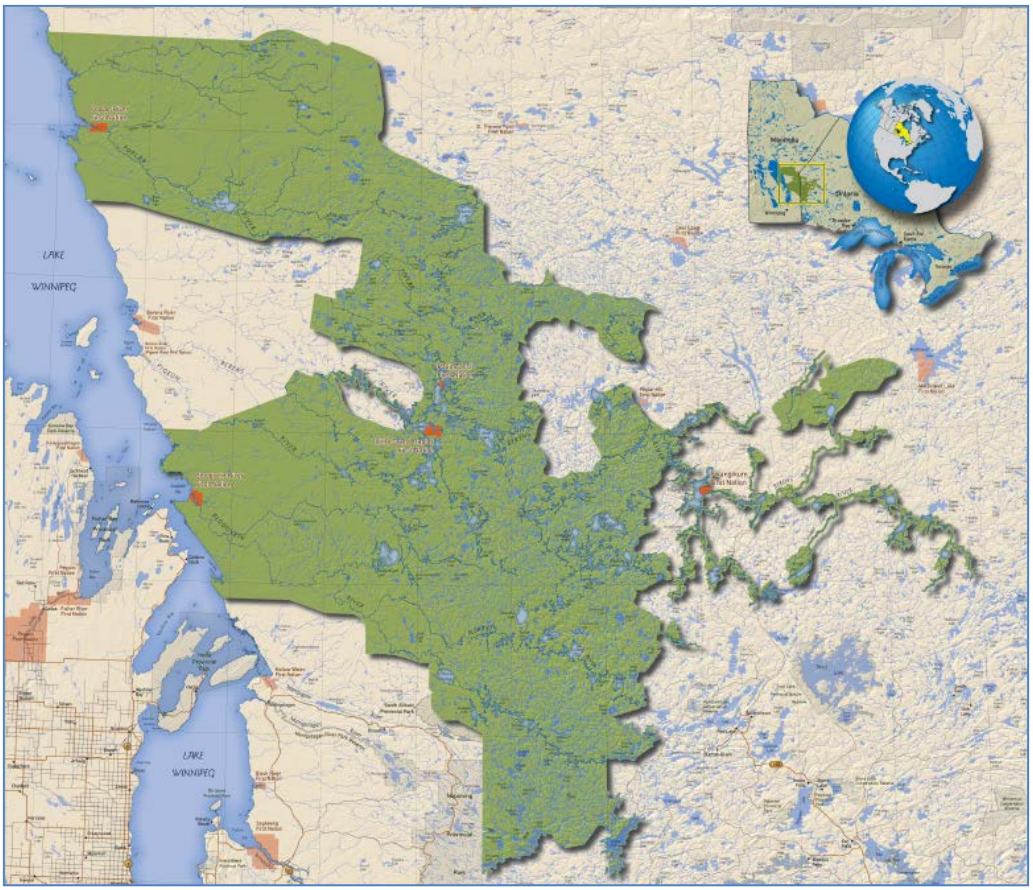
1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

2. Defers the nomination of the **Pimachiowin Aki, Canada,** in relation to natural criterion (ix), in order to allow the State Party, in collaboration with the First Nations and the partners in the nomination, to consider options to refine and strengthen the boundaries of the nominated property to meet integrity requirements in relation to the operation of ecological processes within the property and surrounding areas;

3. Commends the State Party, the First Nations and other stakeholders for their exemplary efforts to develop a nomination that will protect, maintain and restore the significant cultural and natural assets and values associated with Pimachiowin Aki.

Map 1: Nominated property location

Map 2: Nominated property and buffer zone



EUROPE / NORTH AMERICA

SVIYAZHSK HISTORICAL, ARCHITECTURAL, NATURAL AND LANDSCAPE COMPLEX

RUSSIAN FEDERATION

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SVIYAZHSK HISTORICAL, ARCHITECTURAL, NATURAL AND LANDSCAPE COMPLEX (RUSSIAN FEDERATION) – ID No. 1419

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: 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 integrity, protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 25 March 2012

b) Additional information officially requested from and provided by the State Party: None requested; information exchanged in a conference call following the first meeting of the IUCN World Heritage Panel.

c) Additional literature consulted: Aleksandrova, A.B. et al., (2012). **The Red book of soils of the Republic of Tatarstan.** Kazan: Foliant, 192 p. (in Russian); Bakin, O.V., Rogova, T.V., Sitnikov, A.P, (2000). **Higher plants of Tatarstan.** Kazan: Kazan University, 496 p. (in Russian); Baranov, V.I., (1915). **The lower stream of the Sviyaga river and Volga river near Sviyask town** // Materials on the research of grassland of Kazan guberniya (district). Issue IV. Kazan, 59 p. (in Russian); Bulgakova, E.I., (1963). **The distribution of spawning grounds and young fish of different types in Sviyazhsk creek of Kuybishev reservoir** // the collection of postgraduate students' papers. Kazan: Kazan State University publications, 46-53. (in Russian); **Ecological systems of Kuybyshev reservoir**. Kazan: Fan, (in Russian); Ermolaev, O.P., et al., (2007). **Landscapes of Tatarstan Republic (Regional landscape-ecological analysis).** Kazan: Slovo, 410 p. (in Russian); **Frescoes and icons of Sviyagsk Assumption cathedral**, (2009). Saint-Petersburg, 239 p. (in Russian); Galanina, A.P., (2008). **Ecological and geographical characteristics of birds' population** (on an example of GPKZ "Sviyazhsk" district): Doctor of Biology thesis. Kazan, 179 p. (in Russian); Gorshkov, Y.A., (2009). **The ecological net of the region protected areas: development and management** // Environment and sustainable development of region: new methods and technologies of investigations. Transactions of All-Russian scientific conference. Vol. III. **Ecology and biodiversity protection**. Kazan, 110-114. (in Russian); Gorshkov, Y.A., (2006). **Waterfowls management in the conditions of plain reservoirs** // Bulletin of MSNE. Biology section, V, 111 (2), 3-9. (in Russian); Gorshkov, Y.A., (2006). **The Volzhsko-Kamsky Biosphere Reserve: brief characterization of and its major activities**. EUROMAB Austria, 2005. Meeting of the EUROMAB Biosphere Reserve coordinators and managers. Proceedings. Published by Austrian Commission for UNESCO. Vienna, 63-65.; Gorshkov, Y.A. & Gorshkov, D.Y., (2012).**The experience of biodiversity conservation in conditions of Great Volzhko-Kamsky Biosphere Reserve** // Proceedings of the Kazan State University. Nature sciences. Vol. 154 (2)2, 1-8. (in Russian); Boiko, V.A. (Ed.), (2002). **Islands Ecological systems of Kuybishev reservoir**. Kazan: Tatarstan Republic Academy of Science, 358 p. (in Russian); Komech, A. I., (2001). **Russian monasteries. History and culture of the Republic of Tatarstan. X-XVII centuries**. Moscow. (in Russian); Miracle island. **The legend of Sviyazhsk**, (2010). Moscow, 252 p. (in Russian); Petrov, B.G., (2004). Kuybyshev reservoir. **The geographic aspects of water protected management**. Moscow: Eco press, 320 p. (in Russian); **Red Book of Tatarstan Republic. Animals, plants, micromicetes** (2006). Kazan: Idel-press, 830 p. (in Russian); **Renaissance of Island-Town Sviyazhsk**, (1997). Kazan, 378 p. (in Russian); **State historical, architectural and art museum "Island-Town Sviyazhsk"**, (2011). Kazan. (in Russian); **State Registry of specifically protected territories**, (1998). Kazan. (in Russian); Sviyazhsk readings, (2010, 2011). Collection of reports of the conference. Issue 1-3. Sviyazhsk. (in Russian); **The Red Book of the Republic of Tatarstan**, (1995). Kazan. (in Russian); **The treasures of Tatarstan culture**, (2005). Moscow, 590 p. (in Russian); Zorin, A.N., (2001). **Towns and trading quarters of Pre-revolution Volga region**. Kazan. (in Russian).

d) Consultations: 2 external reviews. Discussions were held with several senior political figures including the President of the Republic of Tatarstan; the Prime Minister of the Republic of Tatarstan; the Tatarstan Minister of Ecology and Natural Resources; and the Tatarstan Minister of Culture. Also consulted were senior and site level staff from the Tatarstan Ministry of Culture; Ministry of Ecology and Natural Resources; Ministry of Forestry; Kazan State University of Culture and Art; Institutes of Academy of Science; the Sviyazhsk Museum and leaders from relevant municipalities. The mission also met with a range of academic specialists in different scientific fields relevant to Sviyazhsk in addition to a broad range of local stakeholders including landowners, community representatives and NGOs.

e) Field Visit: Kalev Sepp, 15-19 October 2012

f) Date of IUCN approval of this report: April 2013

2. SUMMARY OF NATURAL VALUES

The nominated property, the Sviyazhsk Historical, Architectural, Natural and Landscape Complex (Sviyazhsk HANLC) is located in the Tatarstan Republic of the Russian Federation, around 800 km east of Moscow**.** The Sviyazhsk HANLC is located within two of Tararstan's district administrations: Zelenodolsky and Verhne-Uslonsky Districts, approximately 30 kms from Kazan, the capital of Tatarstan Republic.

Geographically, the Sviyazhsk HANLC is located at the confluence of the Volga and Sviyaga Rivers in the Sviyazhsky Bay. It is a small elliptical shaped, steep sloped island covering an area of 64.37 ha. The island was formed in 1956 as a result of the creation of the Kuibyshev reservoir; before that time it was a peninsula which was seasonally flooded. Most of the island is covered by settlements due to the fact that Sviyazhsk was a fortress and a military base which subsequently developed into a town preserving the initial fortification layout and two monastery complexes.

The buffer zone of the nominated property has an area of 9,136.63 ha. The majority of the buffer zone of the nominated property is part of the Sviyazhsky Wetland Area, which is a management unit of the Great Volzhsko Kamsky UNESCO Biosphere Reserve. It comprises a variety of fresh-water ecosystems within the mouth of the Sviyaga River, a tributary of the Volga River, including typical river valley biotopes such as small leafed forests, willow forests, meadow steppes, herbaceous swamps, communities of wetland vegetation and beaches. The areas included in the buffer zone are considered important for the conservation of freshwater biodiversity, and especially fish resources.

The Great Volzhsko Kamsky Biosphere Reserve is recognised for its biodiversity. The diversity of various biotopes coupled with good feeding and protective conditions permit high productivity of plant and animal populations, especially freshwater species. More than 500 species of higher plants; 36 species of mammals; 70 species of nesting birds; 12 species of amphibian and reptiles; and 49 species of fish have been reported. Among them, 68 animal species, 27 plant species and 9 animal species are listed in the Red List of the Russian Federation. Shallow waters and islands provide habitat for waterfowl which reach densities of up to 350 individuals/sq. km. Some 120 species of birds have been recorded on the islands, shores and high waters of Sviyazhsky Bay.

3. COMPARISONS WITH OTHER AREAS

Sviyazhsk HANLC has been nominated as a mixed site under natural criterion (vii) and cultural criteria (iv) and (vi). The nomination document provides a comparative analysis that mostly emphasizes the historical significance of the buildings on the island in the context of cultural-historic criteria (iv) and (vi).

The nomination makes the case for natural criterion (vii) which, according to the World Heritage Operational Guidelines, requires that the nominated property *"contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance".* However the values of the nominated property do not support the application of this criterion for a number of reasons.

Firstly, and probably most importantly, the nominated property is not a natural area but is the result of the construction of the Kuibyshev Reservoir. In the past this area was a peninsula functioning as an island only on a seasonal basis. The State Party provided additional information, which whilst documenting the natural values of the wider wetland area, reconfirmed that the environment is the result of the reservoir constructed in 1956. Thus the property does not correspond to the type of heritage mentioned in criterion (vii), as it is not a natural feature but is the result of human intervention. In addition the nominated property is itself an urban area.

The values being argued under criterion (vii) relate to scenery and the wider aesthetic setting of its wetlands. The nominated property is considered to be too small (64 ha) to support such an argument. Other World Heritage properties inscribed under (vii) for their scenic and wetland values display a variety of land/water features and are of a much larger scale than the nominated property. A small nomination of this size may be appropriate if it were protecting a very restricted natural feature; however, this is not the case here. Furthermore the aesthetic values of the setting of the island are in fact outside of the nominated property in the buffer zone.

IUCN considers that the application of criterion (vii) is inappropriate in the case of this nomination as the types of values that are described relate to a cultural landscape nomination instead of a nomination of a mixed property. In this context it is also important to note that the natural values associated to the Great Volzhsko Kamsky UNESCO Biosphere Reserve, which constitutes the buffer zone of the nominated property, appear to be of regional and national significance, but are not considered to be of Outstanding Universal Value in relation to natural criteria.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

There is an effective management and ecological monitoring regime in place for the protection of the Great Volzhsko Kamsky UNESCO Biosphere Reserve which constitutes the buffer zone of the nominated property. In relation to the protection and management of the island there are a number of programmes under implementation to limit the impacts from erosion and seasonal flooding.

The management of cultural heritage objects in Sviyazhsk is carried out by the Republic of Tatarstan Ministry of Culture; tourist activities are regulated by the Ministry of Culture conjointly with the Ministry of Youth Affairs, Sports and Tourism; business activities in the sphere of tourism are implemented by the Museum of Sviyazhsk.

The land under monuments of federal significance is owned by the Russian Federation and land under the monuments of regional significance is owned by the Republic of Tatarstan. Land allotted for residential development along with roads and a number of vacant plots belong to municipal government. Parts of the historical monuments and a number of land plots linked to them have been transferred by the municipal government for use by the Museum of Sviyazhsk. The residential area of Sviyazhsk is privately owned.

4.2 Boundaries

The boundaries of the nominated property and its buffer zone are clearly defined in the nomination. The boundary of the nominated property is defined by the shoreline of Sviyazhsky Island. As noted above the boundaries do not correspond to attributes related to natural heritage.

4.3 Management

The management of the nominated property is guided by the "Development Concept of the State Historical, Architectural and Art Museum *Island-City Sviyazhsk*" that was approved in June 2012 by the Order No. 453 of the Minister of Culture of the Republic of Tatarstan. This document defines four strategic objectives: (a) to preserve and promote the spiritual, historical, cultural and natural heritage site "Island-city Sviyazhsk", (b) to promote access to its cultural values in the interests of the spiritual and cultural development of Russia, social and economic development of the local community; (c) to elaborate the strategy for the development of the Museum "Island-city Sviyazhsk"; and (d) to establish the Federal Museum-Reserve on the basis of the Museum "Island-city Sviyazhsk" for an optimal and efficient use of Sviyazhsk as a tourism destination. There is limited reference to the protection of the natural values and features of the island.

4.4 Community

The existing Management Plan for the nominated property is providing a tool to enable all concerned local parties and stakeholders to understand and share the management objectives defined for this site and to support their implementation. There is strong cooperation between governmental agencies at different levels, local communities, NGOs and the scientific community. Local communities are very supportive of the protection of the nominated property as they are benefiting from tourism and recreational activities taking place on the island.

4.5 Threats

The number of visitors to Sviyazhsk HANLC has been stable over the past decade, but is forecasted to gradually increase in coming years. Approximately 15,000- 20,000 people per annum visit the site for sightseeing and as pilgrims. In the first stage of development (up to 2014), the total number of visitors will approach 30,000 p.a. The estimated number of tourists visiting the nominated property in 2020 is forecast to reach 100,000 as Sviyazhsk HANLC is widely advertised as a tourism destination within the Tatarstan Republic. The Sviyazhsk Museum is collaborating with local inhabitants in the organization of tourism activities. Several local people are working at the Sviyazhsk Museum, others are involved in services. During the last few years several new items of tourism infrastructure have been built including a parking lot, new river harbour, several museums, and a tourist centre. The existing management plan prescribes a well-considered long term strategy for tourism development and possible mitigation measures.

The Complex territory of Sviyazhsk Island is affected by various development activities such construction linked to settlement's infrastructure and services, new housing and those linked to tourism and recreational activities.

The island is affected by seasonal flooding, and water/wind erosion. Rising levels of ground water resulting from the construction of the Kuybyshev Reservoir seem to be affecting the foundation of some monuments. Several engineering and technical solutions have been applied to mitigate these impacts.

In conclusion most of the arguments used in the nomination are directly linked to the conditions of integrity of the historical buildings and not those directly linked to the protection of the island's natural values. Accordingly IUCN considers that the integrity, protection and management of the nominated property do not meet the requirements set out in the Operational Guidelines for natural properties.

5. ADDITIONAL COMMENTS

None.

6. APPLICATION OF CRITERIA

The property has been nominated under natural criterion (vii). However it is not a natural area rather it is the result of the construction of the Kuibyshev Reservoir and the island itself is an urban area. The application of this criterion is substantiated by the scenic and landscape setting of the island and relates to buffer zone areas outside of the nominated area. A key feature of the aesthetics values described in the nomination is linked to the existing reservoir which is a man-made infrastructure. Other World Heritage properties inscribed under this natural criterion are

usually vast areas displaying a variety of land/water features and forms that result in intrinsic exceptional natural beauty. The nominated property clearly does not correspond to the application of natural World Heritage Criteria.

IUCN considers that the nominated property does not meet natural criterion (vii).

7. RECOMMENDATION

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

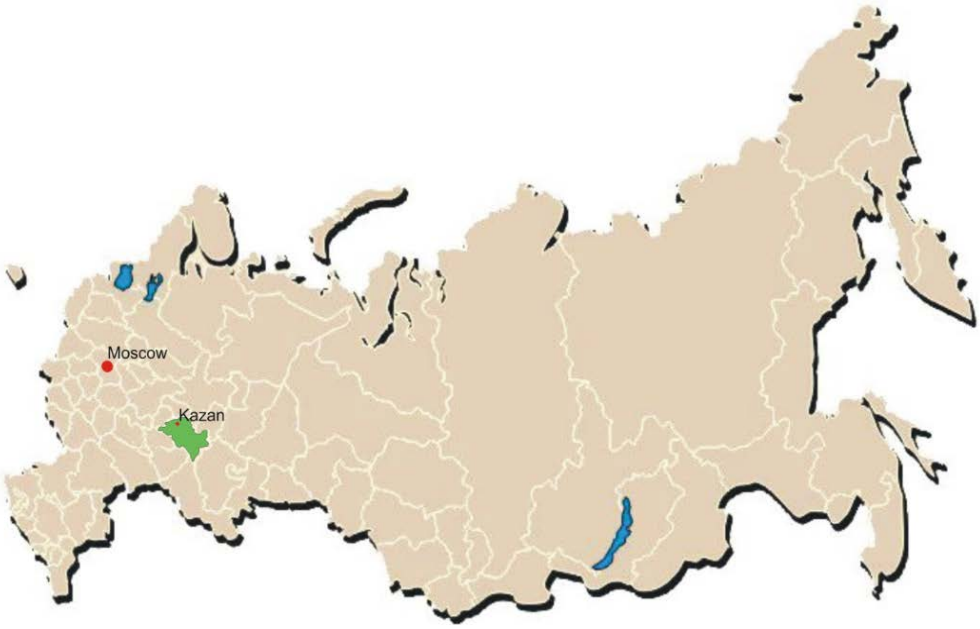
The World Heritage Committee,

1. Having examined Documents WHC-13/37.COM/8B and WHC-13/37.COM/INF.8B2;

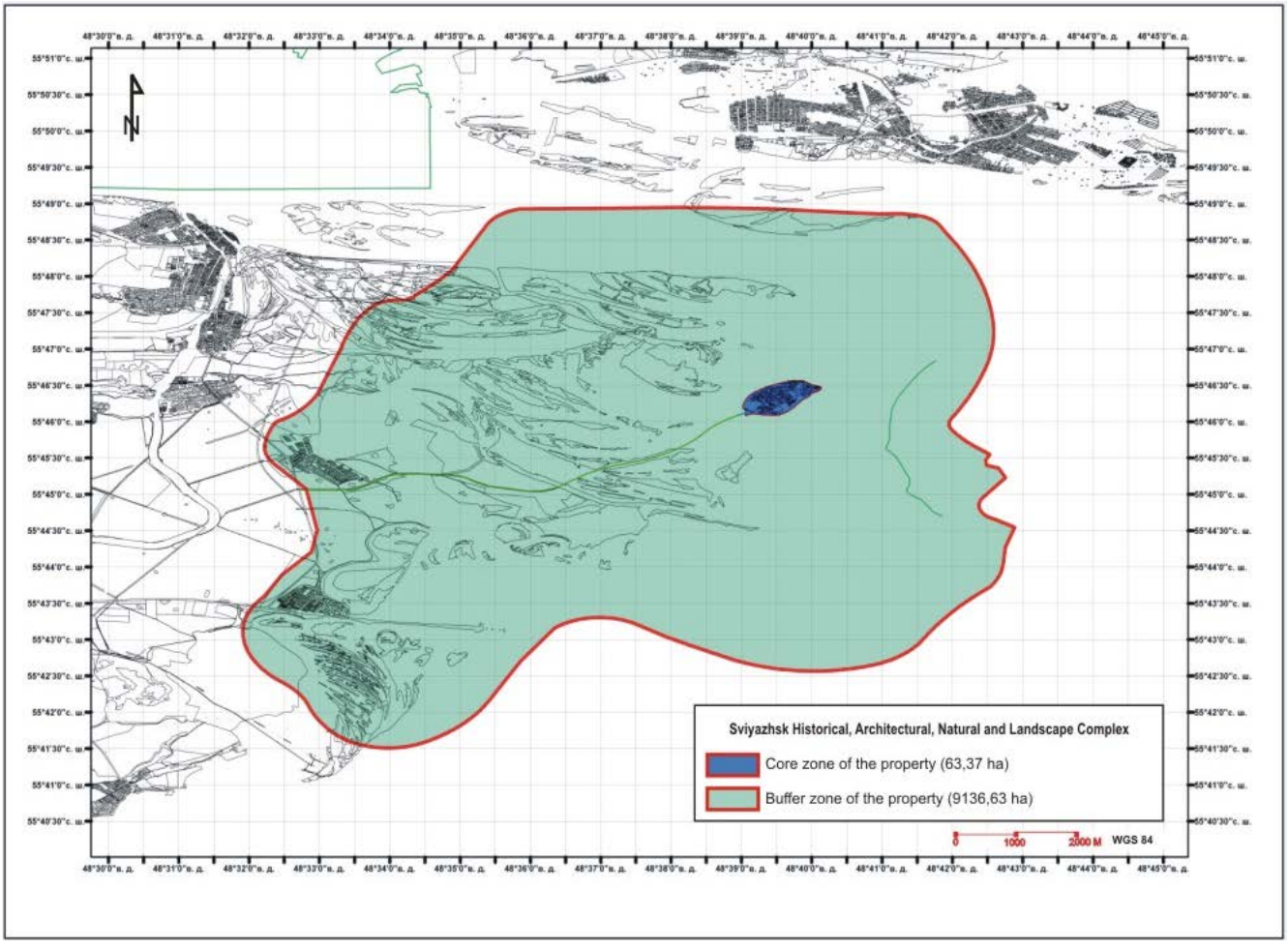
2. Decides not to inscribe the **Sviyazhsk Historical, Architectural, Natural and Landscape Complex, Russian Federation,** on the World Heritage List under natural criteria;

3. Commends the State Party for its efforts towards the effective protection and management of the Great Volzhsko Kamsky UNESCO Biosphere Reserve.

Map 1: Nominated property location in the Republic of Tatarstan, Russian Federation



Map 2: Nominated property and buffer zone



C. CULTURAL PROPERTIES

C1. NEW NOMINATIONS OF CULTURAL PROPERTIES

AFRICA

ZOMA DE L’ISANDRA

MADAGASCAR

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

ZOMA DE L'ISANDRA (MADAGASCAR) – ID No. 1428

IUCN considered this cultural landscape nomination based on a desk review of the nomination and considered the comments of two external reviewers. IUCN also communicated with ICOMOS regarding the content of its reviews.

IUCN's comments on this nomination are as follows, and transmitted some additional comments on cultural values received through its network to ICOMOS.

According to IUCN records the Zoma de l'Isandra is not currently designated as a protected area. The area is primarily a human inhabited mortuary landscape with geological features.

A critical question in Madagascar at present (September 2012) is the wider matter of the enabling, legal and policy environment, as well as concerns pertaining to national governance dating from the change in government/coup d'état which took place in January 2009.

Across the country, a significant amount of illegal logging and extraction of natural resources continues to take place. The national elections, planned for mid-2013, will be an important milestone for creating the conditions for long term governance of conservation. IUCN Guidelines on the good management and governance of sacred natural sites (SNS), as well as indigenous and community conserved areas (ICCAs) may be highly relevant in this case.

In the case of the Zoma de l'Isandra, given that the area is relatively small (26.72ha for the core zone + 36.42 for the buffer zone = total 63.14ha) and a landscape dominated by a stable and well established population (relatively far from the coastal areas subject to high resource extraction pressures) would suggest that the integrity of the site should be capable of protection. The traditional and customary protection system is highly developed and would in all likelihood serve as the most reliable guarantor (indeed inalienable element of the CL given that the *vatolahy* carved stones are markers of sovereignty/nobility, as well as territory) for the continuation and protection of the values of the nominated property

As outlined in the nomination, the cultural taboos regarding access to this sacred natural site (SNS) remain strong, and represent a good example of ongoing cultural tradition with a strong linkage to the landscape (see pages 26 and 66-67).

There is some reference to preliminary awareness workshops with local populations, as well as the creation in January 2012 of the "*cellule de gestion*" (management unit) to be responsible for the protection of the property (p.90), as well as linkages with the '*Plans Communaux de Développement'* (PCD) on p.96. The nomination dossier could however have included additional information on the consultation process with the local population in particular with regard to the nomination and boundary demarcation. The State Party may be encouraged to establish a *permanent consultative mechanism* or *local consultative body* (LCB) with the different stakeholders involved with the WHS governance as part of the action plan for 2012-2016 (i.e. section 5.e on p.96).

One national level example of the creation of an LCB can be found under the 'Community Management of Protected Areas Conservation (COMPACT) programme, implemented through the UNDP/GEF Small Grants Programme (SGP). Hosted in Toliara by the Fondation Tany Meva, COMPACT has created an LCB at the regional level (involving protected area managers, local populations, academics, and NGOs) to assist with the nomination of the "*forets seches*" WH tentative list cluster nomination of 5-7 protected areas and corridors for the South-West Madagascar (currently also under preparation by the state party).

As noted on p.84 of the nomination, there are considerable risks to exposing WH sites, such as the Bandiagara cliffs in Mali, to the intrusive effects of "mass tourism" (i.e. loss of authenticity values and cultural privacy). An additional element of this nomination may be for the state party to protect the authenticity and integrity of the area by restricting access to the SNS elements of this ICCA under customary governance arrangements – potentially by limiting the access of tourists as part of a biocultural protocol (BCP), as recognized by the Convention on Biological Diversity (CBD), to be developed with the local community.

It is also suggested to further develop research on the values of the property, including Push the research on intangible assets related to the site including oral traditions, myths and legends associated with the site, and the use of the many plant species and their therapeutic values.

IUCN also notes the potential of the nominated property to be recognised as an Indigenous and Community Conserved Area (ICCA), which can be registered under the UNEP-WCMC Global Registry of ICCAs (www.iccaregistry.org) under the CBD 2020 Aichi Targets.

References used:

Bloch, Maurice (1971). *Placing the dead: tombs, ancestral villages and kinship organization in Madagascar*. London: Berkeley Square House. ISBN 0-12-809150-9, 9780128091500.
Bloch, Maurice (1995). "The Resurrection of the House Amongst the Zafimaniry of Madagascar". In Carsten, Janet; Hugh-Jones, Stephen. *About the House: Lévi-Strauss and Beyond*. Cambridge University Press. pp. 69–83. ISBN 0-521-47953-3, 9780521479530.

IUCN also noted input from the UNDP/GEF Small Grants Programme (SGP) which may be in a position to support/fund a potential project with the local Community-Based Organisation (CBO) to increase the capacity of the local population to protect and monitor the natural and cultural values of the WH cultural landscape. For more information, the state party can contact the SGP National Coordinator: Ms. Vololoniaina Rasoarimanana, National Coordinator, GEF SGP Madagascar

ASIA / PACIFIC

CULTURAL LANDSCAPE OF HONGHE HANI RICE TERRACES

CHINA

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

CULTURAL LANDSCAPE OF HONGHE HANI RICE TERRACES (CHINA) ID No. 1111

The area of nominated property is 16,603.22 ha, with a proposed buffer zone of 29,501.01 ha.

IUCN considered this cultural landscape nomination based on a desk review of the nomination and considered the comments of three external reviewers. IUCN also communicated with ICOMOS regarding the content of its reviews.

IUCN makes the following brief observations:

Reviewers note the important natural values in this area. The Ailao mountains stretch along the Red River (Honghe) valley, and are home to the large virgin subtropical mountane evergreen broadleaf forest in China, with a highly significant population of the Endangered Black Gibbon (*Nomascus concolor*), whose population is assessed in the IUCN Red List as decreasing. Population estimates for the Chinese portion of this species range from about 200 to 260 groups (Jiang *et al*. 2006). Using an average group size of 5.0 individuals, this would translate into 1,000 to 1,300 individuals. Perhaps the most important subpopulation in China resides in the Wuliang Mountains and numbers about 100 groups (Jiang *et al*. 2006). There are 98 groups of *N. c. jingdongensis* (Jiang *et al*. 2006), with a total of about 490 individuals, if an average groups size of 5 individuals is used. For *N. c. furvogaster* there are about 26-42 groups remaining (Jiang *et al*. 2006), which would represent about 130-210 individuals, if an average groups size of 5 individuals is used. A survey in the northern part of Ailao Mountain National Nature Reserve found approximately 45 groups of *N. c. concolor*, with around 200-250 individuals.

According to a recent survey, the majority of the region's gibbon population occurs in the areas north of the nominated property while there are several isolated small populations surviving in the areas south of the nominated site. Reviewers suggest endangered plant species in the forest in or near the site, *e.g.* include *Manglietiastrum sinicum* (not assessed on the Red List at present, but suggested by reviewer as endangered) and up to 4 endangered endemic *Cycas* species. The Honghe valley is the dividing line for the geographical units, flora as well as fauna of the Southwest Mountains (Hengduan Mountains) and Yunnan-Guizhou Plateau. The river may also be important for the largest and most critically endangered freshwater turtle in the world, *Rafetus swinhoei*.

As mentioned in the nomination file (P50-100), the four landscape elements of the nominated property, forests- water systems- terraces- villages, are organically integrated. The water flows down from the headwater forest and runs into the terrace through a well managed water system. The flow of physical matters and energy from hilltop down to the valley is well described and interpreted in the file. However, the inverse flow of matter from the valley up to the hilltop is insufficiently elaborated. Reviewers noted the scenic beauty that occurs during the dry season, results from moisture coming from the valley which ascends along the mountain slope and finally forms dense fog at altitudes over 1,000m. From an ecological prospective, the water cycle between the Ailao Mountains and the Red River is noted by reviewers as significant in endowing the Hani Terrace outstanding scenic value and productivity in biodiversity and agricultural civilization. Awareness of this should be raised and should be emphasized in future landscape conservation and management.

The nomination document offers little information on the biodiversity of global importance in and around the nominated site, only a simple vegetation table and a few descriptive texts cited from the folk poem were presented (P65-66). There is also a gap in monitoring requirements related to biodiversity and ecosystem service, according to Table 6.1 of the nomination (P243-244).

The nomination makes clear there are a wide range of interactions between people, notably the Hani ethnic group, and the landscape including both tangible and intangible aspects of this relationship. IUCN notes that ICOMOS will assess the global significance of that interaction in relation to the cultural criteria under which the property is nominated. IUCN's World Heritage Panel considered that the nomination clearly outlines the types of long standing, traditional interactions between people and nature that characterise this type of landscape as a cultural landscape in the terms defined in the World Heritage Convention: "a combined work of man and nature". The magnitude of the continuity of balance between mosaic anthropogenic landscape and natural system is notable in both temporal and spatial scale. However, it is also a fact that the current landscape of the Hani Terrace is sustained at the expense of montane rain forest with the same extent. There are therefore intrinsic relationships between the property, as part of the human impacts on the landscape of this part of China, and the numbers of endangered species in and around the site. These natural values should therefore be considered both within the property, and in relation to the wider landscape in which it sits.

Boundaries

The boundary of the property includes four elements, forest-water system-village-terrace. However, from a natural perspective, the boundary does not account for the ecological processes which maintain the run of water system and productivity of forest and terrace.

IUCN notes that the nominated property is not currently recognised as a protected area although it may potentially qualify as an IUCN Category V or Category VI protected area. IUCN noted that the nomination indicates that a National Wetland Park has recently been declared, which comprises 5 components, including 3 in the nominated property, one in its buffer zone, and one elsewhere. The relationship of the National Wetland Park and the nominated property is discussed in the nomination, but the reasoning for the differences between these boundaries is not made clear and it might therefore be practical to consider greater harmonisation of boundaries.

Regarding forests, the paramount headwater forest in Yuanyang county comprises the virgin forest in the West Guanyin Mountain and the East Guanyin Mountain, which is under the protection of the provincial Guanyin Mountain Nature Reserve. The nominated property is located between the two and includes only small patches of virgin forest. (There is no map illustrating the relationship between the nominated site and the boundary of the Guanyin Mountain Nature Reserve). The diversity of vegetation zones is a prominent feature of the nominated site, but the boundary is biased to higher altitudes, and fewer lowland vegetations are included. In contrast the lowland habitat accommodates more species and is fragmented to a much larger extent.

The nominated property includes some land patches of the National Wetland Park of Hani Terrace and the Provincial Nature Reserve of Guanyinshan. A further integration of the national wetland park (which is discussed in the nomination), the provincial nature reserve (which is not discussed) and the nominated property should be considered to enhance the integrity of the nominated property.

References used

Shui, Yumin, Wenhong Chen. Seed Plants of Honghe Region in Southeast Yunnan. Yunnan Science and Technology Press. Kunming. 2004.

Sun, Guozheng, Yongqing Ni, Bei Huang et al., The numbers, distribution and status of the global populations of Black Gibbons (Nomascus concolor). Forestry Constructions. 2012(01).

Fang, Jie, Dayu Yang. Difference residential space form of one national: a comparison of the traditional Hani nationality residential space form. Huangzhong Architecture. 2012(06).

Huang, Shaowen, Aili Yuan. A survey of rice-fowl-fish symbiosis and biodiversity in the terraced fields of Yunnan Hani Community. Academic Exploration. 2012(2).

Wang, Jian, Haitao Shi, Cheng Wen, Lianxian Han. Search and conservation of *Rafetus swinhoei* in upper Red River. Technical report for Turtle Conservation Fund program. 2008. (Unpublished)

Wen, Cheng, Xi Liu, Huixin Zhang, Dajun Wang. The habitat loss trend of Sun Bear (Helarctos malayanus) in Southeast Yunnan, 1970s-2010. Technical report for International Bear Association program. 2012. (Unpublished)

ASIA / PACIFIC

CULTURAL LANDSCAPE OF MAYMAND

IRAN

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

CULTURAL LANDSCAPE OF MAYMAND (ISLAMIC REPUBLIC OF IRAN) ID No. 1423

The core zone of the cultural landscape of Maymand covers an area of 4985.85 hectares and the buffer zone of Maymand covers an area of 7024.65 hectares.

IUCN considered this cultural landscape nomination based on a desk review of the nomination and considered the comments of one external reviewer. IUCN also communicated with ICOMOS regarding the content of its reviews.

IUCN makes the following comments, and transmitted some additional comments on cultural values received through its network to ICOMOS.

According to IUCN's global database the nominated area is not designated as a protected area in relation to natural values, and the nomination does not suggest the area is so categorised.

The nomination notes a combination of three different types of seasonally utilised settlements associated with a form of transhumance (semi-nomadism). These three types of settlement are occupied at different times of the year with accompanying livestock. The main village settlement consists of houses and other functional architecture excavated into the natural geological formations.

The current population of the main village is around 130-150. The nomination document stresses the continuation of a "living tradition". The traditional land use practices (primarily nomadism and agriculture) continue to be practiced (although apparently on a reduced scale) and many of the cultural practices and handicrafts are currently maintained. The close links between the traditional lifestyle and its limited impacts on nature are sometimes presented in the document in rather romantic language which refers to "living in harmony over millennia" (eg p. 11). The decline of nomadism as a way of life in Iran generally no doubt contributes to this threat.

The nomination document is generally very thorough and documents the architecture, seasonal patterns, natural environment and land use thoroughly. One concern in this respect is that it does not include any detailed information showing how much residents actually depend on natural resource use (livestock, agriculture etc). It shows the way people use various resources, but not how dependent they are upon these resources. This is important in assessing the impacts of the proposed nomination on the population. Will people lose income or livelihood sources? As the site is already a heritage site under national legislation, some assessment of the impacts of heritage status should be possible.

The nomination provides details of the long-term legislative and regulatory protection in place. Potential concerns regarding management that should be assessed by ICOMOS in its detailed evaluation include:

- It is not clear if the management plan deals with issues related to land use. The main emphasis in the management plan seems to be on restoration, construction of tourist facilities, education and regulation of traditional styles. It is not clear how much intervention into and regulation of economic activities will occur and, therefore, how much impact regulation would have on the incomes of local people. The long-term plans include ' Economic development considering a home-oriented outlook" (p 520). It is not clear what this means, but it does sound as if objectives will be set by the MCHB (Maymand's Cultural Heritage Base).

- The potential increase in tourist numbers may well present problems. According to the table on p 386, numbers of tourists have been increasing annually, with 27,600 visiting in the March-April tourist high season in 2011. This represents an average of over 450 per day during that two month season. Over 130 per day visited from January to November that year. Quite apart from the sheer logistics involved in coping with such numbers and the need to minimise physical impacts on nature and the settlement, it seems inevitable that the tourist numbers may overwhelm the small local population. How can this be managed so that the people are able to maintain some privacy without tourism intruding on local life. The concentration of tourists within the relatively small core settlement makes the problem potentially acute.

- The extent of consultation with the population is barely mentioned in the nomination, except in the most general terms. Further, while there is some reference to committees etc, the extent of representation and influence on decision-making and objective setting is not at all clear. All this is potentially a matter of great concern as the impacts of regulations on dwellings, buildings and (especially) land use are likely to be very significant, as are the likely numbers of tourists.

References used

Emadi, M. (1995) Pastoralists, Participation and Policy: An Action Oriented, Systemic and Participatory Approach to Improve the Relationships Between Pastoralist Nomads, Government and Natural resources in Iran. PhD Thesis, University of Western Sydney, Hawkesbury.

Zoroastrian heritage website Maymand, Kerman Region. Troglodyte Village Photographic tour. http://www.heritageinstitute.com/zoroaslrianism/kerman/maymand.htm accessed on 16 September 2012