



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



IUCN Report for the World Heritage Committee, 36th Session
Saint Petersburg, Russian Federation, 24 June – 6 July 2012

IUCN World Heritage Evaluations 2012

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

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OUTSTANDING UNIVERSAL VALUE																
State Party	Name of the property (ID number)	Note	Meets one or more natural criteria				Meets conditions of integrity				Meets protection and management requirements			Further mission required	IUCN Recommendation	
			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			
Chad	Lakes of Ounianga (1400)		yes	no	-	-	yes	yes	yes	-	yes	yes	yes	no	I	
China	Chengjiang Fossil Site (1388)		-	yes	-	-	yes	yes	yes	-	yes	yes	yes	no	I	
Russian Federation	Lena Pillars Nature Park (1299)		part	part	-	-	no	no	part	-	yes	part	no	yes	D	
Congo Cameroon CAR	Sangha Trinational (1380 Rev)	Referred nomination	-	-	yes	yes	yes	yes	yes	-	yes	yes	yes	no	I	
India	Western Ghats (1342 Rev)	Referred nomination	-	-	part	part	no	no	no	no	no	no	no	yes	D	
Palau	Rock Islands Southern Lagoon (1386)	Mixed site	yes	-	yes	yes	yes	yes	yes	-	yes	yes	yes	no	I	

OUTSTANDING UNIVERSAL VALUE																
State Party	Name of the property (ID number)	Note	Meets one or more natural criteria				Meets conditions of integrity				Meets protection and management requirements			Further mission required	IUCN Recommendation	
			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			
			77	77	77	77	78, 87-95	99-102	78, 98	137	78, 132, 4	78, 108-118, 132, 4, 135	103-107			
Paragraphs of the Operational Guidelines for the Implementation of the World Heritage Convention																
Israel	The Nahal Me'arot/Wadi el-Mughara Caves (1393)	Mixed site	-	no	-	-	-	-	-	-	-	yes	yes	yes	no	NI
Spain	Plasencia-Monfrague-Trujillo (1394)	Mixed site	-	-	-	no	no	no	yes	no	yes	part	part	no	NI	
Mexico	Banco Chinchorro Biosphere Reserve (1244 Rev)	Mixed site	no	-	-	no	yes	yes	yes	-	yes	yes	yes	no	NI	

KEYS

yes met
part partially met
no not met
- not applicable

I inscribe
NI non inscribe
R refer
D defer

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Tanzania	199 Bis	Selous Game Reserve	65

IUCN FIELD EVALUATORS

Site	Name
Lakes of Ounianga	Pierre Galland and Djafarou Tiomoko
Chengjiang Fossil Site	Patrick McKeever and Mohd Shafeea Leman
Lena Pillars Nature Park	Sarangoo Radnaa and Kyung Sik Woo
Rock Islands Southern Lagoon	Jerker Tamelander and Kohei Hibino
Sites of Human Evolution at Mount Carmel: The Nahal Me'arot/Wadi el-Mughara Caves	Friedemann Schrenk
Plasencia–Monfrague-Trujillo: Mediterranean Landscape	Wendy Strahm and Tilman Jaeger
Banco Chinchorro Biosphere Reserve	German Soler and Jorge Alberto Salas Avila

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

THE WORLD HERITAGE CONVENTION

IUCN TECHNICAL EVALUATION REPORT OF WORLD HERITAGE NOMINATIONS

MAY 2012

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 2005, IUCN commissioned an external review of its work on World Heritage evaluations, which was carried out by Professor Christina Cameron and resulted in a number of recommendations to improve IUCN's work. The review and the IUCN management response are available on IUCN's World Heritage website. IUCN will be undertaking a further review of its work on World Heritage during 2012. Amongst other matters this will also consider the results of current reflections by the World Heritage Committee regarding the scope to improve the support provided to nominations prior to their submission. IUCN welcomes this initiative and notes that many nominations encounter significant problems in meeting the requirements of the Conventions Operational Guidelines as a result of the lack of such processes. IUCN notes that in the last year it has further extended its work to provide such support to States Parties, through the agreed pilot projects on new "Upstream Processes", but also with its own resources by continued cooperation with the African World Heritage Fund on nomination training, and following up on specific requests from States Parties. IUCN is pleased to note that several nominations that have been submitted at the 37th Session of the Committee have benefitted from this support. IUCN also notes that successful implementation of such processes needs a full reflection by the World Heritage Committee, and will require additional resources to be achievable.

IUCN has continued to progress in the regional representation and gender balance of the selected evaluators and on the IUCN World Heritage Panel have been further enhanced during 2011-2012. IUCN has invested significantly since 2007 with its own resources in strengthening its work on World Heritage, with a strong financial contribution towards the position of head of the newly created World Heritage Programme. Further enhancements to IUCN work on World Heritage require significant additional funding, both from the World Heritage Fund and other partners and agencies.

2. EVALUATION PROCESS

In carrying out the technical evaluation of nominations IUCN is guided by the Operational Guidelines to the World Heritage Convention. The evaluation process is carried out over the period of one year, from the receipt of nominations at IUCN in March 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 70 external reviews in relation to the properties examined in 2011 / 2012.
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. **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 addition IUCN has begun to experiment with 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. This will be reported on at the 36th Session.

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. Early 2012 a resource manual on the preparation of World Heritage Nominations has been published, under joint lead authorship of IUCN and ICOMOS, which provides further details on best practices, including the key resources that are available to support nominations.

Finally, IUCN notes that it is undertaking a specific review of the recognition of rights within its evaluation process, in order to seek how to more systematically ensure that its advice is fully informed in relation to the rights of people, including communities and indigenous peoples that have a bearing on the decision of the World Heritage Committee. This work will be reported on at the 36th and 37th sessions of the World Heritage Committee, in IUCN's reports and forms part of a cooperative dialogue that is being undertaken by the Advisory Bodies and the World Heritage Centre.

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 Officer, who serves as the Executive Officer for the Panel.

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

4. EVALUATION REPORTS

Each technical evaluation report presents a concise summary of the nominated property, a comparison with other similar properties, a review of management and integrity issues and concludes with the assessment of the applicability of the criteria and a clear recommendation to the World Heritage Committee. IUCN also submits separately to the World Heritage Centre its recommendation in the form of a draft decision, and a draft Statement of Outstanding Universal Value for all properties it recommends for inscription. In

addition, IUCN carries out field missions and/or external reviews for cultural landscapes containing important natural values, and provides its comments to ICOMOS. This report contains a short summary of these comments on each cultural landscape nomination reviewed.

5. NOMINATIONS EXAMINED IN 2011 / 2012

9 nomination dossiers and 4 minor boundary modifications were examined by IUCN in the 2011 / 2012 cycle, involving 7 field missions. These comprised:

- 5 natural property nominations (including 3 new nominations, 2 referred nominations),
- 4 mixed property nominations (all new nominations), where joint missions were undertaken with ICOMOS,
- 7 cultural landscape nominations (all new nominations); 3 were commented on by IUCN based on internal and external desktop reviews and 4 were not commented on,
- 4 minor boundary modifications.

6. COLLABORATION WITH INTERNATIONAL EARTH SCIENCE UNIONS

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

It is also anticipated that the collaboration agreements will lead to increased support to States Parties more

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

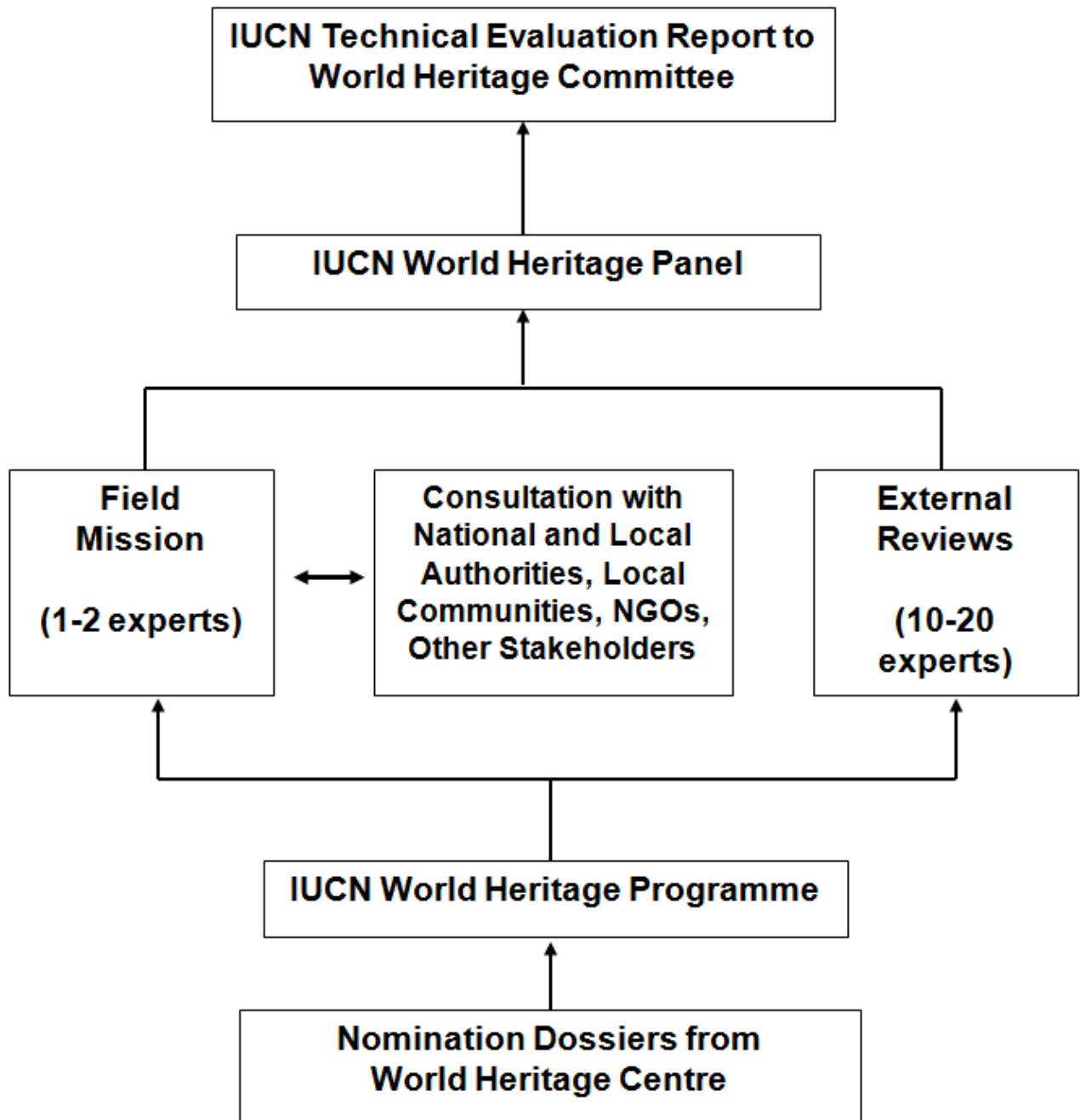
7. RECOMMENDATIONS TO THE WORLD HERITAGE COMMITTEE

In the 2011 / 2012 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 2012, 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

LAKES OF OUNIANGA

CHAD



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

LAKES OF OUNIANGA (CHAD) – ID No. 1400

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

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

b) Additional information officially requested from and provided by the State Party: The State Party provided supplementary information after the IUCN evaluation mission, including a revision to the boundaries of the property and its buffer zone. IUCN requested supplementary information from the State Party on 7 February 2012, including an enhanced comparative analysis for this serial property as well as information on new legal measures taken to enhance its integrity.

c) Additional Literature Consulted: Harris N. (2003) **Atlas of the World's Deserts**. The Brown Reference Group UK. pp 26-40 (available in IUCN Library); 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 pp 20-29. ProtectedPlanet <http://protectedplanet.net/>; Mexican protected area agency www.conanp.gob.mx. <http://environment.nationalgeographic.com/environment/habitats/desert-profile/> <http://www.linternaute.com/voyage/desert/trek/index.shtml>

d) Consultations: Fourteen external reviewers consulted. The mission also met with various partners, of which two from the German Cooperation; the technical services of the State party (CNAR, OTT); the focal point for World Heritage; the Ennedi Delegate for the Environnement; the German Ambassador in Chad; the director of the Development and Cooperation Agency (DDC) - cooperation between N'Djamena and Bern; and other various local authorities and local groups.

e) Field Visit: Pierre Galland and Djafarou Tiomoko, 9-19 October 2011.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The nominated property, the Lakes of Ounianga (LO), includes eighteen ecologically, geologically and hydrologically interconnected lakes within the Sahara Desert in the Ennedi region, West Ennedi department of Chad. It covers a total area of 62,808 ha. A buffer zone of 4'869 ha has been established in the south-western part of the nominated property to enhance its integrity but it is not proposed as part of the property.

LO is a natural site protected by the Decree N° 1077/PR/PM/MCJS/2010. The components of the nominated property, including both lakes groups, are:

Name	Number of lakes	Surface (ha)
Lakes of Ounianga Kebir	4	7,056
Lakes of Ounianga Serir	14	5,108
Land area around the lakes	-	50,644
Total surface		62,808

The Lakes of Ounianga are located in a basin located 50 to 80 m below a sandstone plateau. This basin extends from West-North-West to East-South-East. Water is supplied from fossil groundwater that flows from the foot of the sandstone cliff and feed the lakes, thus compensating extremely high evaporation losses.

The two groups of lakes are separated by a distance of c.40km between the two main lakes in each group, Lake Yoan and Lake Teli. The dominant geology of the region is sandstone and the lakes are located in a 50-80 mts depth depression.

The first group of lakes (Ounianga Kebir) comprises 4 lakes. The main lake at Ounianga Kebir, Lake Yoan, covers an area of 358 ha with a depth of c. 27 m. It is a hyper saline lake and the only life forms within it are algae and some microorganisms. However, some other lakes in the Ounianga Kebir group contain spirulina (*Spirulina platensis* or *Arthrospira platensis*).

The second group of lakes (Ounianga Serir) comprises 14 lakes separated by recently formed sand dunes. Almost half of the lakes' surface in the Ounianga Serir

group is covered by floating reeds (*Eragrostis bipennata*). This vegetation cover plays an important role in the lakes' function because it markedly reduces evaporation. Of all the lakes, Lake Teli is the most important: it covers a larger surface (436 ha) than Lake Yoan at Ounianga Kebir, but with less water volume, as its depth is less than 10 m. Lake Teli has a unique hydrological system, acting like a giant evaporation pump which creates an underground flow that feeds water to the other lakes of Ounianga Serir. The dunes separating the lakes are permeable structures through which groundwater can flow easily. The hydrological system of the lakes of Ounianga Serir, in conjunction with the reed cover, is responsible for the formation of the largest freshwater lake ecosystem in a hyper arid area. As a result of the good quality of their freshwater, some of these lakes are home to an aquatic fauna, particularly fish.

The Ennedi area in general, and the Northern part of Erdi of Ennedi in particular, has not had a recent inventory of natural resources. Only a few mammals and birds have been identified, amongst which fox, hyena, jackal, fennec fox, cape hare and gazelle have been noted. The Ounianga region is home to waterfowl, such as Marbled Teal, and Cape Teal, as well as to passerine species. At Ounianga Serir, the freshwater lakes shelter several fish species, amphibians and invertebrates.

Two villages are located on the outskirts of the two largest lakes (Yoan and Teli). They are Ounianga Kebir, in the buffer zone, and the smaller Ounianga Serir, inside the nominated property. Most inhabitants of the region live in these villages. The inhabitants have set up vegetable and fruit gardens (mostly date-palms) by the lakes, as well as other activities.

Located near Lake Yoan, Ounianga Kebir is the largest village, with three districts and c. 9,000 inhabitants, according to the 2009 census. Ounianga Kebir is equipped with a health centre, maternity, primary school, high school (total of 300 students) and customs office, together with shops, accommodation and traditional restaurants.

Located near the Lake Teli, Ounianga Serir is less developed than Ounianga Kebir. It houses a population of c.1,000 and has a primary school (total of 150 students), and a health centre is currently being built. There is little commercial traffic.

3. COMPARISONS WITH OTHER AREAS

The property has been nominated under natural criteria (vii) and (viii).

In the revised comparative analysis provided by the State Party the nominated property has been compared with 23 other sites in desert ecosystems of the Sahara, the Sahel, Peru and Chile. From this comparison the Lakes of Ounianga are the most important in terms of

the permanent volume of freshwater and are also the deepest (with a maximum of 27m depth in Lake Yoan) of all comparable sites in hyper-arid deserts. The fact that the lakes maintain permanent freshwater in an area where the highest potential evaporation has been recorded is outstanding and gives an indication of a complex underwater hydrological system which is still to be fully understood.

The lakes are fed by fossil groundwater, which compensates evaporation losses. The progression of the dunes (filling some lakes) is estimated at 2 m per year on average over the last 50 years. Given their size (the largest, Lake Teli, covering 346 ha.), the lakes are durable features, even in the current water deficit conditions. There are very few permanent lakes of significant size in the Sahara desert, and the lakes of Ounianga seem to be unique in its type of fossil groundwater circulation.

To summarize, the nominated property is the largest known lake complex in a hyper arid environment, with lakes of various water volumes, structure and composition (including saline, hyper saline and freshwater lakes). All these features support the recognition of the nominated property as a superlative natural phenomenon: one of the components of criterion (vii).

In relation to the second component of criterion (vii), regarding exceptional natural beauty and aesthetic importance, IUCN recognizes that can be subjective as it is dependent on how different cultures consider these values. In evaluating the nomination in this regard, IUCN notes that the opinion of all independent reviewers of this nomination is that aesthetic values are one of the key features of Ounianga, and the evidence of the field evaluation mission also strongly supports this view. IUCN has also made a systematic comparison of the nominated property with recorded images from the 23 sites included in the comparative analysis prepared by the State Party as well as with other desert sites worldwide. Images used for this assessment were obtained from a variety of journals, websites, Protected Planet (IUCN/UNEP-WCMC) and websites of national agencies for protected areas and tourism. From this assessment a number of features are found in the Lakes of Ounianga that can be regarded as making the nominated property exceptional:

- The shape and distribution of the lakes, combined with the effect of the wind moving the floating vegetation in the lakes, is an exceptional visual phenomenon, described by some observers as “waves of water flowing in the desert” offering a sense of dynamism close to that perceived in coastal areas.
- The beauty of the lakes, of various shapes, colours and chemical composition, offers spectacular scenery. A close comparator in terms of colours is associated to the Valley of Cuatro

- Ciénegas, in Central Coahuila, Mexico where a number of small lakes with pristine blue waters are present; however the Mexican site does not display the diversity of colours (green, pale blue, dark blue and reddish) of the Lakes of Ounianga.
- Unlike many other comparable sites the nominated property is located in a depression surrounded by sandstone cliffs which are natural outlook points allowing an overview of the dramatic landscape. Many comparable lakes are associated to mostly flat plains which don't allow this overview effect making difficult to distinguish the lakes from its surroundings.
- The shape and distribution of the lakes, which are aligned along parallel geological structures and separated by sand dunes, offer a very peculiar scenery with the form of large arrowheads shot into the desert.
- The overall setting of the nominated property is surrounded by some striking land forms that have been sculpted by the wind, resulting in a diversity of curious shapes and colours, and includes two villages with traditional buildings.

The key distinctive features noted above confer to the nominated property an exceptional natural beauty. In summary IUCN believes that through the combination of its superlative phenomena and aesthetic values the nominated property presents a strong case for inscription under criterion (vii).

In relation to the application of criterion (viii), the nomination argues that some of the lakes of Ounianga (in particular Lake Yoan - Ounianga Kebir) have a continuous and undisturbed sedimentation from the Holocene, providing a unique source of information on the recent paleoclimate of the Saharan region. However the arguments supporting this case appear based on a somewhat limited number of results. A number of independent reviewers noted that this justification for meeting criterion (viii) is not convincing, nor is yet fully supported by scientific research. In the view of IUCN the values outlined are both more of a regional significance, with potential to be strengthened through further research, than a representation of Outstanding Universal Value.

When assessing the Lakes of Ounianga against other World Heritage properties inscribed under criterion (viii), the property does not appear to demonstrate a compelling level of global geological importance for the application of this criterion. Other properties such as the Wadden Sea (Germany and The Netherlands) offer substantiated scientific records on the evolution of this vast area in the Holocene and it have been a source of scientific information that have influence geological concepts and theory on sedimentology. Arguably the geomorphological values of the property are also appropriately recognised under criterion (vii), also

embracing the diversity, and aesthetic aspects of the property. Therefore IUCN considers that at present the case for meeting criterion (viii) is not justified, and that the application of criterion (vii) could appropriately recognize the basis for recognition on the World Heritage List.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

The protected area system of Chad, as established in Law n°14/PR/2008, focuses on fauna and flora conservation. The classification contains the following categories: strict nature reserve; national parks; wildlife reserve; game reserve; wildlife ranches; faunal management zones; zoological garden, and forest.

None of these categories can be applied to the Lakes of Ounianga, which need protection rather for their hydrological operating system and aesthetic. The property is listed as a “natural site” according to the law 14-60 of 2 November 1960. This law covers the *“protection of monuments and natural sites, of sites and monuments of prehistoric archaeological, scientific, artistic or picturesque character, classification of historical or ethnographic objects and the regulation of excavations.”*

Decree n° 1077/PR/PM/MCJS/2010 of 15.12.2010 classified the Lakes of Ounianga as a “natural site and prohibits all activities that could threaten the integrity of the site, including mining. The national designation is similar to IUCN Category III for protected areas.

Wetlands such as the Lakes of Ounianga are also protected by Law 14/PR/98. The protection of the nominated property is adequate. However, IUCN notes that the legislation is very recent and, consequently, its application has not really been tested.

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

4.2 Boundaries

The nominated property was proposed in the original nomination document as a serial property as the land surface connecting the lakes was considered a buffer zone. This issue was promptly clarified during IUCN's technical evaluation mission and following the mission, the State Party submitted a revised proposal including the land surface connecting the lakes as part of the nominated property with boundaries following the 450 m contour line, corresponding to the limits of the natural depression where the lakes are located. The boundaries are also aligned with Decree No 1077 /PR/PM/MC/2010 which classifies the site as a Natural Protected Area.

The boundaries of the buffer zone were also revised following the field evaluation. The buffer zone established in the south-western part of the nominated property include the administrative facilities recently built in the village of Ounianga Kebir, the existing communication towers (all recently erected), the access road from Faya and the transit facilities for trucks going to and coming from Libya; all of which was originally considered within the nominated property. It was not possible to include the existing road to Libya in the buffer zone since it runs along Lake Yoan and then passes between the two main lakes of Ounianga Kebir; however a series of simple management measures should minimise impacts on the nominated property.

For the remainder of the property, a buffer zone is not necessary as external threats are essentially non-existent. The property is large enough to ensure visual integrity. The boundaries offer an appropriate degree of protection for the natural functions and specifically the underground hydrological system. However, it should be noted that current geological and hydrogeological data does not allow a scientific definition of the lake's watershed. Considering the amount of evaporated water which is compensated by an underground water supply, this watershed is likely to be much larger than the area of the natural depression where the lakes are located.

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

4.3 Management

IUCN notes the strong commitment at all management levels towards sustainable management of the property. IUCN's mission met with four ministers who expressed their willingness to contribute to the effective management of the site. Regional and local authorities, traditional or statutory, also showed clear support for the nomination and expressed their commitment to sustainable development in order to maintain the local population's traditional ways of life, whilst also giving access to modern benefits.

The management plan referred to in the nomination document is in fact more of an operational plan for the period 2010-2012, it offers a good starting point but will not be viable in the long term. In the additional information provided after IUCN's evaluation mission, the State Party confirmed that the management plan provided in January 2011 will be revised. International standards for management plans will be included in the new management plan that will be operational in May 2013. In the meantime, an action plan for the protection and conservation of the nominated property will be adopted and implemented. Moreover, a Local Management Committee (Comité Local d'Organisation et d'Exécution) was created by Ministerial Order (Minister of Culture N°064/PR/PM/MC/SG/CSNIP/2011 dated 12 September 2011). The authorities have discussed the lines of operation and mandate of the

Committee with the local populations. It was planned that the members of the committee would be designated at the latest by March 2012 so that the Committee could become operational as soon as possible. In agreement with the Local Committee and the National Scientific Interministerial and Multidisciplinary Committee (Comité Scientifique National Interministériel et Pluridisciplinaire--CSNIP), a site manager will be appointed.

To implement the action plan, an annual budget has been prepared and its funding has been guaranteed by Order of the Prime Minister, Head of Government (Order N°2893/PR/PM/MC/2011 dated 6 September 2011). A budget of 120 Million CFA francs (about 183'000 €) has been allocated for 2012 and 2013 by the Ministry of Culture to the management committees of the Lakes of Ounianga. The State Party has also confirmed that a 10 year budget would be allocated as part of the new management plan that is being prepared.

IUCN considers that these significant new commitments of the State Party achieve the minimum levels of commitment required by the Operational Guidelines, although it should be noted that best practice would always require that such measures have been prepared and are already in place prior to a nomination being submitted.

IUCN and the State Party have identified the following key aspects for the management plan:

- The Plan should be prepared in the shortest possible time using a local participative process; it should take advantage of the strong commitment of all the stakeholders to preserve the site;
- There is a need to establish a management structure with a transparent mandate and clearly defined terms of reference;
- The business plan should include a financing package that balances revenue and expenditure;
- Site surveillance: meeting at least minimum needs using local human resources;
- Monitoring: scientific research needs to be increased (i.e. no data is available on fauna and flora); simple monitoring actions established (regular photo-surveys, monitoring of the lakes level and of silting up, water quality, visitor counts and traffic monitoring coming from Libya, etc.); establish a data base with all existing datas on the site;
- Environmental education and awareness: continue work done in schools and awareness activities for visitors (including the importance of protecting the lake waters);
- Other field activities in cooperation with local communities: i.e. agronomic support, wise use planning of water resources and health.

To enable the implementation of the management plan, the site manager will be supported by the local authorities and associations, two organizations that are working in the Department of Ennedi, and Swiss

Development Cooperation which has been present in the area for many years.

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

4.4 Threats

Urban development and agriculture

To date the site is in a well conserved state apart from impacts of a few public buildings in Ounianga Kébir and the transit roadway between Faya and Libya. It is proposed to include in the buffer zone the area of Ounianga Kébir where there are public buildings and a part of the transit roadway. The *sous-préfet* supports the location of new infrastructure in the part of the village excluded from the nominated property, and in the buffer zone.

Because there has been limited infrastructure development the overall integrity of the nominated property is in good condition. However, some new buildings are not well integrated from an architectural point of view with the traditional houses, which underlines the necessity of implementing an effective management plan for the nominated property, considering the future development of the village as an integral part of management.

Although the populations of Ounianga Kebir (about 9,000) and Ounianga Serir (about 1,000) are small, human impacts on the site are visible: lack of waste management, wastewater discharge is affecting the water quality of Lakes Yoan and Teli, which are close to the two villages. Environmental impact is limited but needs to be integrated into short and long term management plans.

The villages' economy focuses mainly on date palms. Each producer owns between a hundred and a few thousands palm trees and, in 2000, the number of date palms in the area was estimated to more than 500,000 trees including about fifty different varieties. Animal husbandry is also one of the main economic activities of the region including camel herds or mixed herds (camels, goats, sheep, cattle, etc.). Other important income generating activities for local populations are the local collection of salt and native soda using traditional methods that have low environmental impact. In Ounianga Serir, people practice subsistence fishing. From September to December, villagers harvest « *kreep* » (a wild grass that is highly appreciated for human consumption). Under their present form, fishing, as an occasional activity, therapeutic baths and salt extraction do not seem to threaten the site. However, these activities should not be increased from their present levels, without first evaluating their potential impact.

Resource extraction

To date, no mining, oil or gas resources have been discovered in the area and there are no mining or oil

exploitation projects. The only threat could be an overuse of water resources.

As most lakes in the Sahara region, the Lakes of Ounianga will eventually disappear naturally but the survival of the nominated property is assured in the medium term. In relation to the potential over exploitation of water resources, the main threat, as noted by all independent reviewers, is linked to potential development of intensive agriculture in this area. The additional information provided by the State Party has addressed this potential threat by the recently adopted Decree No. 095 which aims to maintain traditional agricultural practices in the nominated property instead of intensive agriculture as this could lead to impacts on the values of the nominated property.

Water extraction from the lakes for use by local communities is very limited and does not seem to result in a lowering of the groundwater level but this needs to be carefully monitored. Any development project that requires a significant use of water resources will require a detailed environmental impact evaluation.

The movement of dunes into the lakes due to strong winds does not impact on the site's integrity as it is limited (about 2 meters a year), and is also a natural process that is an integral part of the landscape values and geomorphological interest of the nominated property.

Road Traffic

Although relatively far from the border, Ounianga Kebir is a customs post where trucks must be unloaded for inspection and then reloaded. These operations take several days and the drivers and their passengers used to stay close to the lake. Nowadays, they are provided with bungalows further from the lake. Truck traffic to and from Libya is growing slowly in Ounianga Kebir, but it is likely that the environmental impact of this traffic has greatly diminished since 2006 when bungalows equipped with toilets were built in the town. Truck passengers arriving in Ounianga Kebir must stay in these bungalows. This strategy also seems to have reduced considerably the impact of tourists and passengers on Lake Yoan and its surroundings.

The future development of traffic to Libya is difficult to predict. In the case of a significant increase, it would be preferable to move the current roadway that leaves Ounianga Kebir towards Libya. This does not seem feasible at the moment and there has been no study on the matter. However the recently adopted Decree No. 630 which establishes the need to develop Environmental Impact Assessments for any new project, including the development of roads and other infrastructure, will be a valuable tool to limit any environmental and social impacts associated with new proposed developments.

Tourism

Development of tourism in the region is moderate. Two tour operators based in N'Djaména, organize tours of the Ounianga site. Data provided by the tour operators and local authorities indicate an annual number of 200 to 600 tourists visiting the site in small groups. Tourists stay in mobile camps organized by tour operators. They leave all their waste at specially designated points within the site or take them back to N'Djaména.

To maintain the site's integrity, in agreement with administrative and traditional authorities, it has been decided that any future touristic facility or hotel must blend in with the local architectural features such as height, color, materials, shape of buildings, etc. Moreover, these facilities must meet eco-touristic and environmental principles and uses. Again the implementation of Decree No. 630 will be needed to consider and regulate these impacts.

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

5. ADDITIONAL COMMENTS

5.1 International cooperation

IUCN notes the nominated property is benefitting from support via international cooperation between Chad and a number of States Parties. The IUCN evaluation mission noted that Swiss development cooperation is currently in the course of planning its next phase of engagement with this area, and this could provide additional support for the creation and implementation of the new management plan for the property. The international cooperation being demonstrated in support of the conservation of this site, and associated sustainable development should be noted and welcomed.

6. APPLICATION OF CRITERIA

The **Lakes of Ounianga** has been nominated under criteria (vii) and (viii).

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

The nominated property represents an exceptional example of permanent lakes in a desert setting, a remarkable natural phenomenon which results from an aquifer and associated complex hydrological system which is still to be fully understood. The nominated property also displays a range of striking aesthetic features, with varied coloration associated with the different lakes and their vegetation, and the presence of dramatic natural desert landforms that all contribute to the exceptional natural beauty of the landscape of the property. The shape and distribution of the lakes, combined with the effect of the wind moving the floating

vegetation in the lakes, gives the impression of “waves of water flowing in the desert”.

IUCN considers that the nominated property meets this criterion.

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

Some of the lakes in Ounianga (in particular Lake Yoan - Ounianga Kebir) have a continuous and undisturbed sedimentation from the Holocene, providing a unique source of information on the recent paleoclimate of the Saharan region. However, these features are both of specialized interest and of regional significance rather than a basis for defining Outstanding Universal Value. The geomorphological values of the property are able to be recognised via inscription under criterion (vii).

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-12/36.COM/8B and WHC-12/36.COM/INF.8B2,
2. Inscribes the **Lakes of Ounianga (Chad)** on the World Heritage List on the basis of criterion (vii)
3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

Located in Northeastern Chad, in a hot and hyperarid desert setting with less than 2mm rainfall per year, the Lakes of Ounianga comprises a total of 18 lakes, in two groups, displaying a variety of sizes, depths, colorations and chemical compositions. The property covers 62,808 ha and has a 4,869 ha buffer zone. The Lakes of Ounianga property is located in a basin which, less than 10,000 years ago, was occupied by a much larger lake and has a globally unique hydrological system, sustaining the largest permanent freshwater lakes system in the heart of a hyperarid environment.

The property also displays a range of striking aesthetic features, with varied coloration associated with the different lakes and their vegetation, and the presence of dramatic natural desert landforms that all contribute to the exceptional natural beauty of the landscape of the property. The shape and distribution of the lakes, combined with the effect of the wind moving the floating vegetation in the lakes, gives the impression of “waves of water flowing in the desert”.

Criteria

Criterion (vii)

The property represents an exceptional example of permanent lakes in a desert setting, a remarkable natural phenomenon which results from an aquifer and associated complex hydrological system which is still to be fully understood. The aesthetic beauty of the site results from a landscape mosaic which includes the varied coloured lakes with their blue, green and /or reddish waters, in reflection of their chemical composition, surrounded by palms, dunes and spectacular sandstone landforms, all of it in the heart of a desert that stretches over thousands of kilometers. In addition, about one third of the surface of the Ounianga Serir Lakes is covered with floating reed carpets whose intense green color contrasts with the blue open waters. Rock exposures which dominate the site offer a breathtaking view on all the lakes, of which the colours contrast with the brown sand dunes separated by bare rock structures. The shape and distribution of the lakes, combined with the effect of the wind moving the floating vegetation in the lakes, gives the impression of “waves of water flowing in the desert”.

Integrity

The boundaries of the 62,808 ha property have been designed to ensure its integrity. The property includes the area situated below the 450m contour line within the immediate lake watershed. The 4,869 ha buffer zone includes the village of Ounianga Kebir beside Lake Yoan. Zoning for management of the site takes into account pressures which are now mainly concentrated on Lake Yoan. Ounianga Serir, the smallest village (population of c. 1,000 in 2012) is next to the Lake Teli, inside the property.

The hydrological system of the Lakes of Ounianga is functioning and the water level is stable apart from a slight seasonal variation, thanks to a groundwater supply which compensates evaporation losses.

The beauty and aesthetic values of the property have been well conserved. Although a good number of people live around lakes Yoan and Teli, local initiatives are assuring the compatibility between human activities and conservation of the site's values. Activities planned in the management plan strengthen and complement these initiatives. In addition the recently adopted Decree No. 095 which aims to maintain traditional agricultural practices in the property instead of intensive agriculture will enhance the conservation of the property.

Protection and management requirements

Decree n° 1077/PR/PM/MCJS/2010 of 15.12.2010 designated the Lakes of Ounianga as a « Natural site »; the protected area system of Chad, as established in Law n°14/PR/2008, focuses on fauna and flora conservation and, alone, is not fully suited to Ounianga; thus, responsibility for the property is vested in the Ministry of Culture. There is high level political support for the protection and management of the property at national and local levels.

Under the decree, all activities that could threaten the integrity of the property, including mining, are forbidden. The national designation is similar to IUCN Category III for protected areas. This decree is complemented by the Decree No. 630 which regulates the need to prepare Environmental Impact Assessments for development projects.

The property has an effective management plan in place for the short and long term, and there are adequate resources and staffing provided its implementation and monitoring.

Wetlands such as the Lakes of Ounianga are also protected by Law 14/PR/98. An action plan is implemented through local associations to avoid negative impacts on the site. Conservation efforts focus on factors that could impact the site's integrity, which include effective measures to regulate urban development, address litter and waste management, support sustainable agriculture and ensure that traffic, tourism and other uses is maintained at levels that do not impact the Outstanding Universal Value of the property. Several local associations created at the initiative of the local governmental authorities and the local communities are also responsible for the conservation of the property. These activities are implemented with the support of a Local Management Committee, which provides input for improving the existing management plan.

4. Commends the State Party, and the local communities associated with the property, for their efforts to conserve this property and to maintain the sustainable traditional use of resources in the region;

5. Requests the State Party to implement in full the commitments to both short-term and long term requirements to substantially revise and enhance the management plan for the property, and to provide adequate staffing and resources for its implementation, as noted during the evaluation of the nomination;

6. Requests the State Party to:

a) increase further the involvement and representation of local and indigenous communities in the future conservation and management of the Lakes of Ounianga in recognition of their rich cultural heritage, the legitimacy of their rights to maintain sustainable traditional resource use and their rich local knowledge, including through providing effective and enhanced mechanisms for consultation and collaboration;

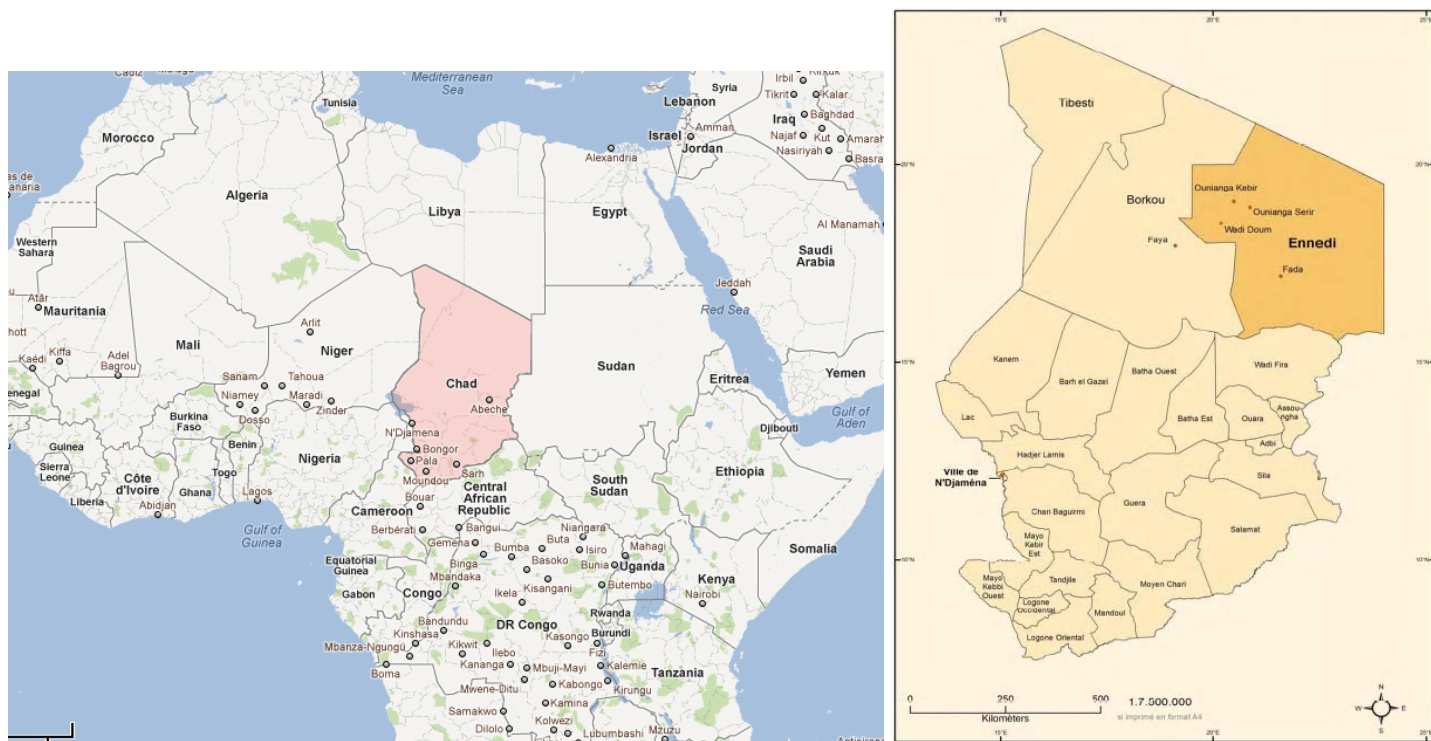
b) enhance the authority and effective work of the Local Management Committee and use it as platform by which the government, agencies and indigenous peoples will discuss, analyze and resolve land use and/or management actions that could represent threats to the property whilst sharing and making the best use of local and traditional

knowledge to improve the existing management plan for the property;

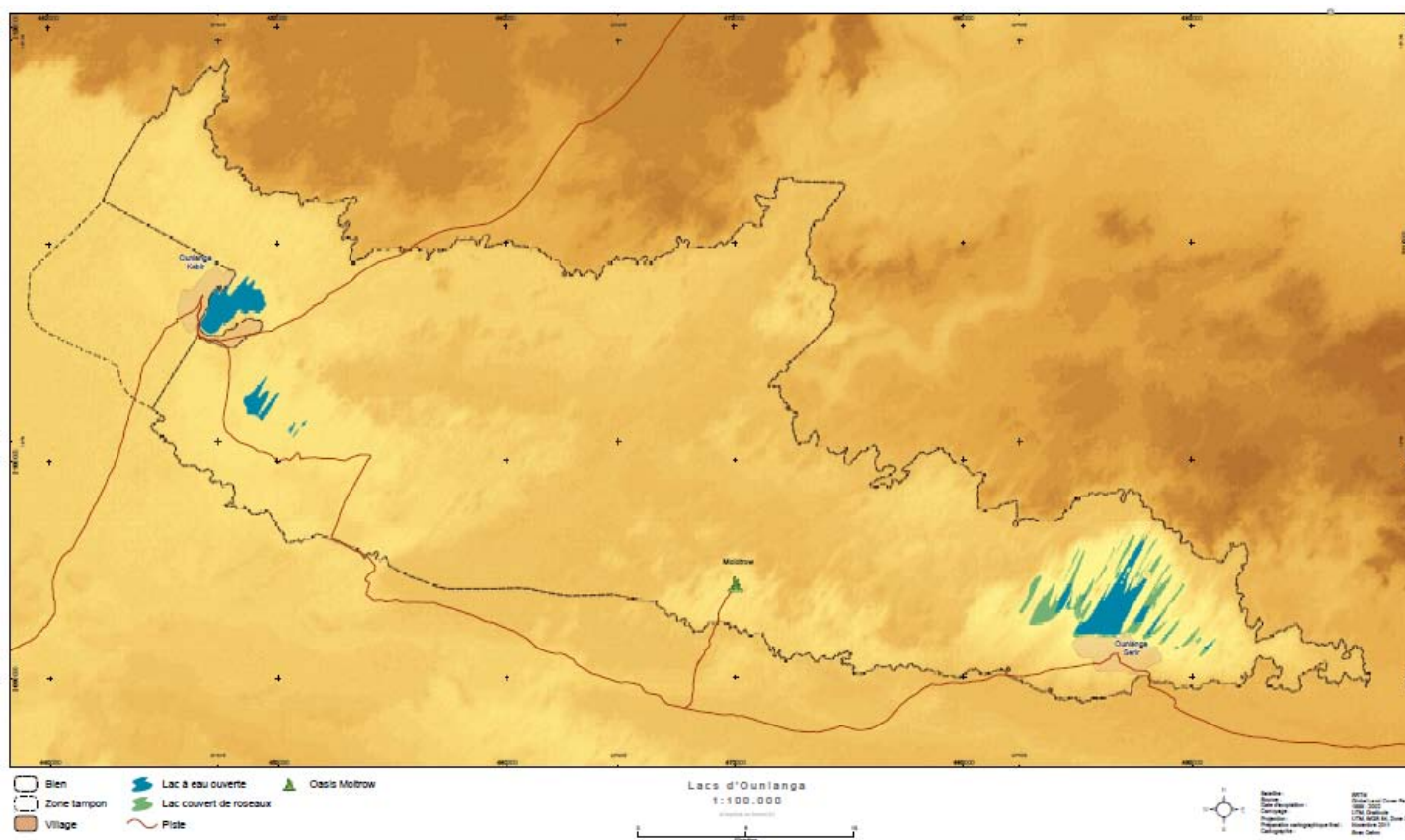
c) provide the necessary human and financial resources to ensure the effective enforcement of the recently approved Decrees No. 095 and 630 for ensuring the conservation and sustainable traditional use of the property.

7. Provide a report to the World Heritage Centre by **1st February 2014** on the establishment and resourcing of the management plan and the progress in implementing the above recommendations, for possible consideration by the World Heritage Committee at its 38th Session in 2014.

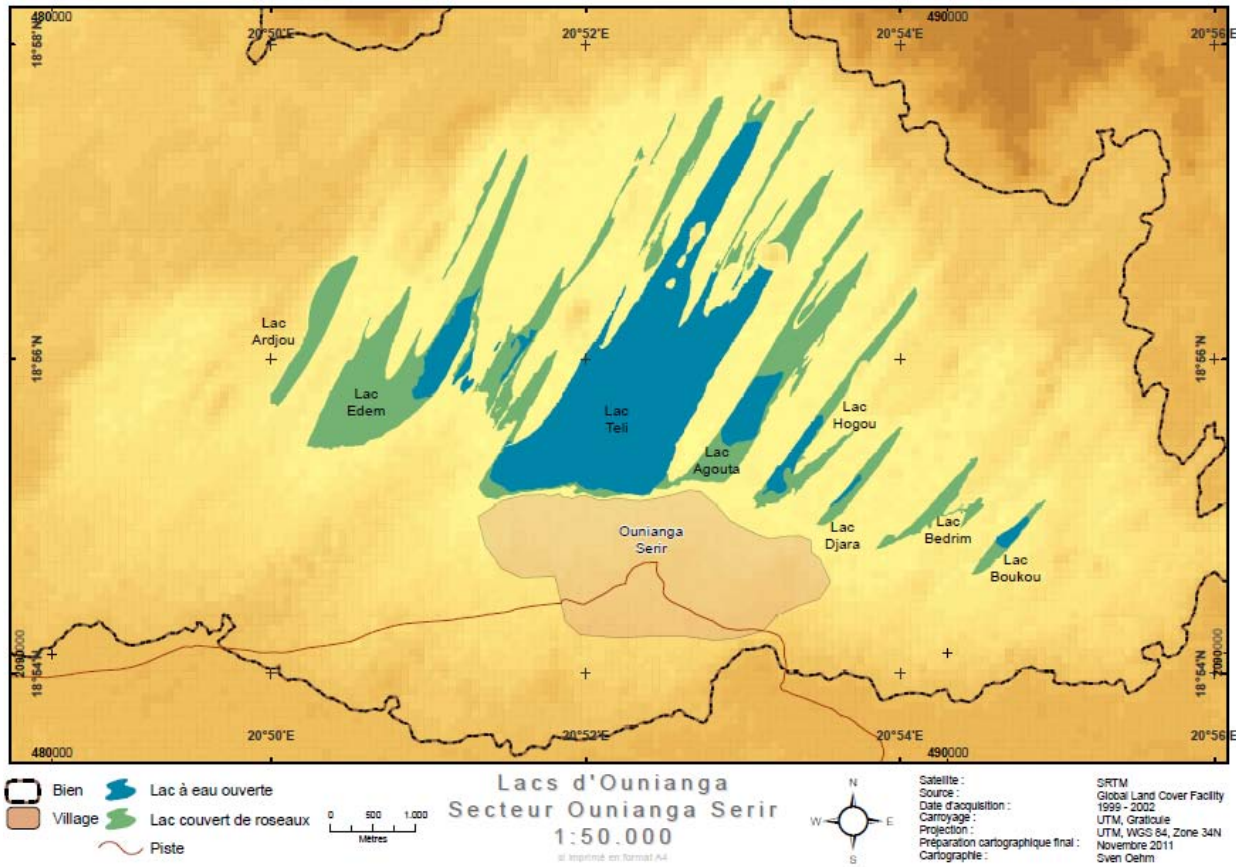
Map 1: Location of Chad in Africa and Ennedi region in Chad



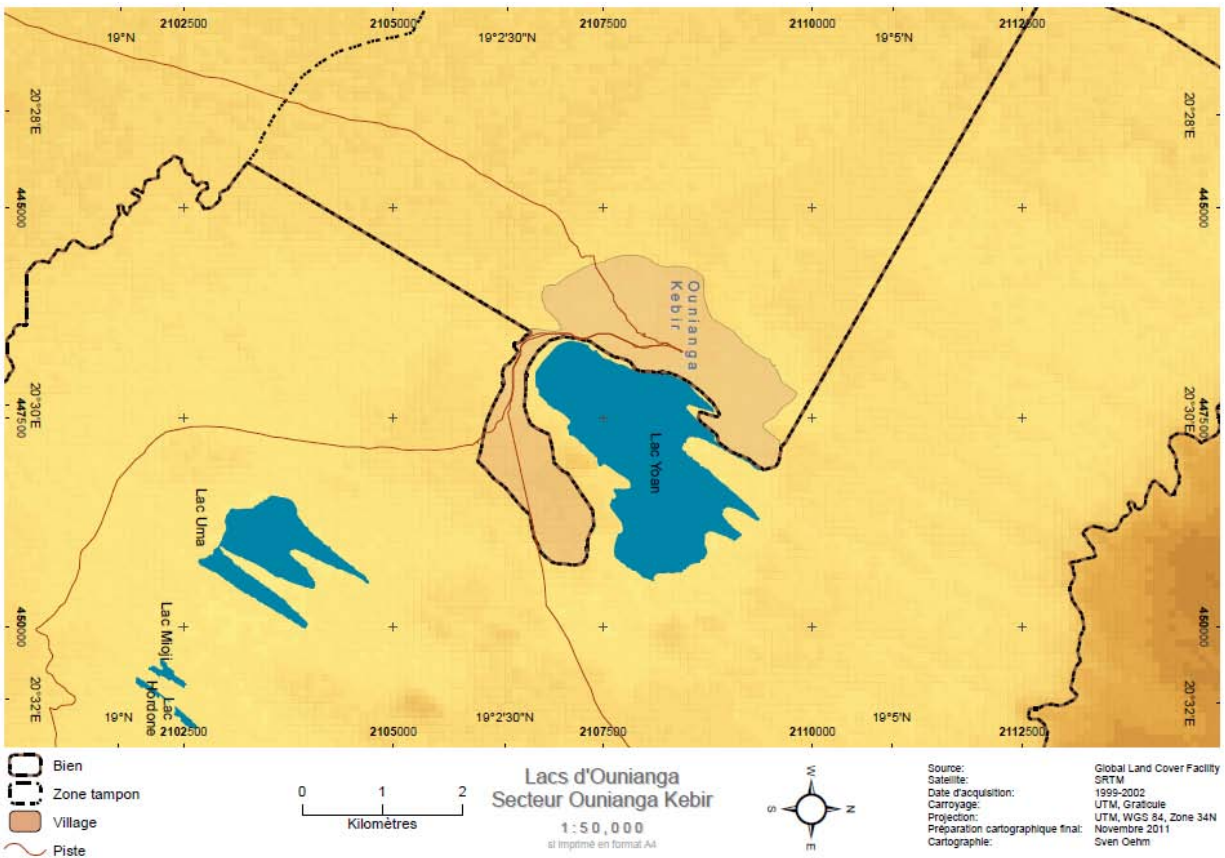
Map 2: Nominated property and buffer zone



Map 3: Ounianga Serir



Map 4: Ounianga Kebir



ASIA / PACIFIC

CHENGJIANG FOSSIL SITE

CHINA



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

CHENGJIANG FOSSIL SITE (People’s Republic of China) – ID No. 1388

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

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

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 12 October 2011. The information was received in November 2011. Subsequent to the IUCN World Heritage Panel meeting, further supplementary information was requested on 5 December 2011 and the information was received in January 2012.

c) Additional Literature Consulted: Dingwall, P., Weighell T. & Badman, T. (2005) **Geological World Heritage: A Global Framework**. IUCN / WCPA; Fortey, R. (2001) **Science's Compass - Perspectives - Evolution: The Cambrian Explosion Exploded?** Science. 293 (5529): 438; Hou, X. (2004). **The Cambrian fossils of Chengjiang, China: The flowering of early animal life**; Malden, MA: Blackwell. Levinton, Jeffrey S. (2008). **The Cambrian Explosion: How Do We Use the Evidence?** BioScience. 58 (9): 855; Lin, Jih-Pai. (2007) **From a fossil assemblage to a paleoecological community time, organisms and environment based on the Kaili Lagerstätte (Cambrian), South China and coeval deposits of exceptional preservation**. Ohio State University, 2007; Monge-Nájera J , and X Hou. (2000) **Disparity, decimation and the Cambrian "explosion": comparison of early Cambrian and present faunal communities with emphasis on velvet worms (Onychophora)**. Revista De Biología Tropical . 48 (2-3); Wells, R.T. (1996) **Earth's Geological History: A Contextual Framework for Assessment of World Heritage Fossil Site Nominations**. IUCN Report; Zhang, Xi-guang, Jan Bergstrom, Richard G. Bromley, and Xian-guang Hou (2007) **Diminutive trace fossils in the Chengjiang Lagerstätte**. Terra Nova. 19 (6): 407-412

d) Consultations: Fourteen external reviewers consulted. The mission also met with national and local officials, representatives of site managers and Yunnan University, local communities and scientists associated with the property.

e) Field Visit: Professor Patrick J. Mc Keever and Professor Mohd Shafeea Leman, 23-25 September 2011

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

Chengjiang Fossil Site (referred to as CFS hereafter) is a relatively small hilly area located in the eastern part of Chengjiang County of Yuxi City in south China's Yunnan Province. It is roughly oblong in shape with its western boundary about 5 km east of Chengjiang Town, while its southern boundary is only about 4 km northeast of Fuxian Lake shoreline. CFS is bordered by Luxishao Village in the west, Xiaolantian Village in the north, Ganhaizi, Longtang and Dongxishao Villages in the east, and Xincun Village in the south. Loulishan Village is the only village included in the CFS buffer zone and is located in the southeast. CFS comprises a total area of c.512 ha, and is surrounded by a buffer zone of c.220 ha that does not form part of the nominated property.

CFS is mostly newly reforested land with some native and introduced tree species. The buffer zone area is mostly agricultural land, including, to the southeast of CFS, the traditional Loulishan Village, situated in gently rolling agricultural land.

Tectonically, the CFS falls into the eastern part of Kunming Platform fold belt and has undergone several tectonic episodes including Caledonian and Hercynian (543 Ma to 250 Ma) movements; the Mesozoic (250 Ma to 65 Ma) uplift; the Himalayan (about 50 Ma) mountain building; and the Xiaojiang (3 Ma to 4 Ma) faulting. The nominated site as a whole is underlain by an asymmetric syncline which has an axial trend of 30° E and the eastern limb of which is the steeper.

The western limb of the syncline exposes a continuous succession representing the lower part of Lower Cambrian as well as part of the underlying Pre-Cambrian strata. The stratigraphy (from oldest to youngest) of the nominated site can be summarized as follows:

i) Yuhucun Formation [age: Late Sinian]

This is the oldest sequence within the CFS nominated site that consists of four members (from top to bottom):

the Dahai Member with dark grey and bluish-grey phosphorite and phosphoric dolomite; the Xiaowaitou Member with greyish-yellow microbedded dolomite and brown silicolite, plus grey dolomite with black silicolitic fragments and black silicolite; the Baiyanshao Member with grey, brownish-grey and muddy dolomites; and the Jiucheng Member consisting of grey-green medium to thick bedded dolomite.

ii) Heilinpu Formation [age: Early Cambrian]
Disconformably overlying the Yuhucun Formation; consists of two members (from top to bottom) the Yu'anshan Member and the Shiyantou Member. The Yu'anshan Member with a thickness of 200m is mainly made up of yellowish- and greenish-grey shale and thin mudstone interbedded with thin to medium beds of silty dolomite and calcareous siltstone. Repeated beds of fine quartz sandstone occur at 2-4m intervals in the upper parts. The base is made up of thinly bedded yellowish grey silty mudstone containing spherical calcite-dolomite nodules and phosphatic silty dolomite. The Shiyantou Member is approximately 80m thick and is mainly made up of dark grey, thin to medium bedded argillaceous siltstone with light grey, banded, micaceous dolomitic siltstone, grey-black thin to very thin bedded silty mudstone.

iii) Canglangpu Formation [age: Early Cambrian]
This member conformably overlies the Heilinpu Formation and has a thickness of approximately 150m with the upper part being eroded. It is mainly made up of thin to medium bedded purple-red, grey micaceous fine quartz sandstone and grey-green thinly bedded silty mudstone.

CFS provides direct evidence for the roots of animal biodiversity, it presents the most complete record of an early Cambrian marine community, it contains a prolific and exceptionally preserved biota, displaying the anatomy of hard and soft tissues in a very wide variety of organisms, invertebrate and vertebrate, in exquisite detail; its fossils bear upon fundamental questions regarding the design of animal body parts and the genetic generation of evolutionary novelty, it records the early establishment of a complex marine ecosystem, with food webs called by sophisticated predators.

The fossils of the Chengjiang fauna occur in the yellowish-weathering grey mudstone and shale from the upper part of the Yu'anshan Member of Heilinpu (Qiongzhusi) Formation. Radiometric dating from the lowest beds containing the Chengjiang Fauna gives a date of 530 Ma, and the fauna is estimated to be from a geological interval of 2-3 Ma duration.

The upper part of the Yu'anshan Member can be divided into four parts, as follows (from top to bottom):

i) Yellow silty sandstone (113 m) with reduced fauna. Only some trilobites such as *Eoredlichia* and *Yunnanocephalus*, some bradoriid such as

Kuanyangia and *Kunmingella*, and brachiopods *Lingulella* and *Lingulepis* remain.

ii) Yellowish green shale interbedded with thin to medium (10-20 cm) siltstones and sandstones (40-50 m) represent the main beds yielding soft-bodied fossils, especially in its lower and middle parts. This interval has extremely diverse arthropods such as *Naraoia*, *Leancoilia*, *Isoxys*, *Kunmingella*, *Eoredlichia* and *Yunnanocephalus*, lobopodians, eldoniids, worms and sponges.

iii) Black siltstone and shale. This interval yields mainly trilobites such as *Tsunyidiscus* and *Wutingaspis* and bradoriids *Hanchungella* and *Emeillopsis* belonging to the *Parabadiella* Biozone, and lacks key soft-bodied Chengjiang Fauna. The fauna lies between the Meishucun fauna and Chengjiang fauna.

iv) Black siltstone. This horizon contains the oldest trilobites in China such as *Parabadiella*, together with the bradoriids *Hanchiangella*, *Liangshanella*, *Nanchengella*, amongst others.

IUCN requested clarification from the State Party regarding the fossil fauna within the area that is nominated, rather than the wider region. Supplementary information supplied by the State Party indicates that the nominated property has a total of 152 documented species, or 44 less than documented in the original nomination file. These species are found in the region but outside the property, and are not at present proposed for inscription; however they do provide important context for the property. It is also noted that the strata which has produced those species (lower part of the Yu'anshan Member) is present within the nominated property boundaries; however collecting has not been undertaken in this part of the site.

3. COMPARISONS WITH OTHER AREAS

It is very rare to find fossils of soft-bodied organisms in the fossil record let alone find them in such abundance at such a key point in the evolutionary development of life on Earth. Among non-hominid palaeontological sites on the World Heritage List, several sites such as the Messel Pit in Germany and the Monte San Girogio transnational site between Italy and Switzerland also include soft-bodied preservation from different parts of the geological record. The Burgess Shale locality in Canada, part of the Canadian Rocky Mountain Parks World Heritage Site (and initially inscribed on the World Heritage List as a fossil site in 1980), is strongly comparable to the CFS and a specific comparison is provided in the nomination document.

The nomination notes that CFS represents a time period that is more than 10 million years older than the period represented by the Burgess Shale (Middle Cambrian: 510-505). Both provide relatively short but highly diverse snapshots of Cambrian life. CFS and Burgess Shale

represent different marine palaeogeographical locations, CFS representing a lower shoreface to proximal offshore environment and the Burgess Shale representing the seaward part of a submarine escarpment. The CFS fauna is obtained from fine grey mudstones and that from the Burgess Shale is from fine, dark grey to black shales. Both faunas represent muddy, bottom level communities where the fossils are flattened with some relief, and with exceptional soft-bodied preservation.

The Burgess Shale and CFS have produced similarly rich numbers of phyla, genera and species however, the species represented in the fossil record at CFS are virtually mutually exclusive of the Burgess Shale as only six species coincide with those at the Burgess Shale. The fauna at the two sites show similarities at the phyla level however the CFS records an earlier stage of development of these groups.

Both sites represent high diversity for a range of groups; however the CFS fossil record pushes the appearance of proto-vertebrates back in time to the Early Cambrian. Two species found within the site *Yunnanozoon lividum* and *magnificissimi* may be the oldest known hemichordates (a phylum closely related to chordates).

There are other Lower Cambrian sites that yield soft-bodied fossils that are not on the World Heritage List, including the Sirius Passet in northern Greenland, the Orsten Fossil Site in Sweden, or the Emu Bay Shale in Australia. However the latter two sites are more limited in their diversity and therefore in what they can really tell us about the record and evolution of life at this critical time in Earth history. The Greenlandic site also contains exceptionally well preserved Lower Cambrian fossils, including soft-bodied fossils, but to date the diversity of forms recovered from this remote site remains low. Although not noted in the comparative analysis, IUCN also notes that Cambrian fossil values are also part of the nomination of the Lena Pillars Nature Park, which is internationally noted as a fossil reef ecosystem. However as an emblematic site for the record of life in the Cambrian period, it does not provide the breadth and diversity of CFS.

IUCN set out carefully in its contextual study (Wells, 1996) recommendations for the selection of fossil World Heritage properties, and this has provided the framework for a longstanding and consistent approach for the recognition of fossil sites on the World Heritage List. The nomination provides a clear and specific response to the questions that are applied to evaluation of fossil sites, and these are summarised and added to in Annex 1. Whilst the Burgess Shale is already recognised as part of a listed World Heritage Site, the nominated property makes a convincing case for equivalent and complementary value and with a record that is geologically older. Whilst the early discovery of the Burgess Shale and its long-standing acknowledgement as the iconic site for the Cambrian Explosion of life on Earth is without doubt, this does not exclude the

possibility of considering that CFS, of equal significance, is of Outstanding Universal Value.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The Chengjiang Fossil Site is state-owned and protected under the Article 9 of the constitution of the PR of China and by various laws including the Environmental Protection Law of the PR of China (2002), the Law of the PR of China on Cultural Relic Protection (2002), the regulations on the management of palaeontological specimens (Ministry of Land and Resources, 2002), regulations on the protection and management of geological relics (1995) and the regulation on the protection of Yunnan Chengjiang Fauna Fossil (1997).

Today the area is largely covered with secondary forest and shrub and there is no industrial activity or permanent human habitation within the boundary. The property is protected under a zoning scheme that is applied to Chinese Geoparks, and this provides strong protection to its values. Supplementary information included a map displaying in Chengjiang Fossil Site Management Institute clearly showing the zonation of the National Geopark and also clearly showed that key fossil sites of the nominated property enjoy the maximum level (“Special Protection”) of protection and Maotianshan, the heart of the nominated property, lies in the Zone of highest protection. The boundary of the Class I protection zone corresponds to the remainder of the nominated property. The buffer zone is entirely within the Class II protection zone where limited development is permitted.

National oversight is provided by the Ministry of Land and Resources, the Ministry of Urban-Rural Development and the Chinese National Commission for UNESCO. At the Provincial level, management is overseen by the Yunnan Provincial Departments of Land and Resources and Construction as well as the Yunnan World Heritage Management Committee. Locally, management is coordinated between the Yuxi Municipal Government and the Chengjiang County Government with various municipal departmental offices (e.g. Land & Resources, Forestry, Tourism etc). They in turn work with the academic teams from Yunnan University, Kunming University of Science and technology, Nanjing Institute of Geology and Palaeontology. On the ground, day-to-day management is provided by the Chengjiang Fossil National Geopark Management Committee. The roles of each organisation are clear and this system of management appears to function very well.

The IUCN considers that the protection status of the nominate property and buffer meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The boundaries of the nominated property and its buffer zone are very well delineated. The boundary has been selected taking into consideration stratigraphical and structural factors to ensure that the CFS has geological consistency and coherence with regard to the fossiliferous horizons. The boundary has also been influenced by topographic considerations and with regard to the zones of least disturbance within the Chengjiang National Geopark.

The boundaries of both the nominated property and the buffer zone are very well signed on the ground and the boundary is both appropriate and does not need to be adjusted.

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

4.3 Management

Day-to-day management is provided by the Chengjiang Fossil National Geopark Management Committee. A management station undertakes the daily monitoring of the nominated property. The management committee employs 13 staff with range of qualifications, and including staff specialised in palaeontology, geology, management and museum studies. A further 16 local personnel are employed as part-time rangers. Supplemented by geological expertise from provincial and national universities, the staff quota appears to be adequate for a property of this size.

Three management plans are relevant to the nominated property. In 2001 the “Master Plan for the Yunnan Chengjiang Fossil National Geopark” was drafted and was updated in 2008 following a revision of management requirements by the Ministry of Land and Resources. In 2005 the “Plan for the Ecological and Geological Control and Management for the Protection of the Chengjiang Fauna Fossils in Surrounding Areas of Maotianshan” was prepared by provincial authorities. Finally, in 2010 the “Chengjiang Fossil Site Management Plan” was adopted for the particular management of the nominated property. Details of these plans are highlighted in the nomination dossier and together they appear to be more than adequate for the CFS.

Local involvement in the CFS appears to be somewhat limited to the provision of information seminars where local villagers have been made aware of the significance of the site. IUCN notes this as an area that could be significantly strengthened, not only in relation to the property, but also to the regulation and management of fossil sites in the wider landscape surrounding CFS.

Curation arrangements are in place for the property. Chengjiang fossils are widely displayed and available for study in China, including a public-access onsite field station with museum at Maotianshan and a purpose-built

new museum in Chengjiang town. There are also museum displays in Yunnan University and at the Nanjing Institute of Palaeontology and Stratigraphy (NIGPAS, Academia Sinica). Curated collections are held at several Chinese institutions, including the Key Laboratory for Palaeobiology, Yunnan University, and NIGPAS. Provision is made for domestic and international scientists to study material from the property within its overall management system.

Visitor statistics provided show that only a few thousand (4-5,000) individuals visit the property annually, most of whom are locals or individuals from neighbouring areas. Foreign visitors appear to largely fall into the category of visiting scientists. Supplementary information notes forecast increased visitation to 30-40,000 within five years, pending inscription on the World Heritage List. Strategies for managing tourism visitation include provision of guides, designation of restricted areas, and strict restrictions on fossil collecting.

The nomination dossier highlights monitoring activities at the property and further clarification regarding monitoring programs with indicators of the protection, presentation and promotion of the paleontological values was provided within the supplementary Information. The proposed monitoring program adequately documents processes for assessing indicators for the conservation of this property. However, some of the indicators proposed need to be fully integrated with enhanced land-use planning in areas surrounding the property.

The finances of the CFS come largely from national sources and are supplemented by smaller contributions at the city and county level. Figures show a significant increase in funding from 4.9 million RMB in 2008 to 28 million RMB in 2009. Supplementary information includes details regarding stable and special funding for the ongoing management of the property.

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

4.4 Threats

Mining

Prior to 2004, 14 phosphate mining operations occurred in the buffer zone of the nominated property; however, all have been closed down since 2008. The process of rehabilitating these former mining sites is ongoing and will take some considerable time. However, it is clear that no mining activities have actually impacted on the nominated property itself and the county and provincial governments have repeated their re-assurances that no new mines will be opened within the nominated property or its buffer zone.

Visitor management and infrastructure

Regulation and management of visitor use will be an essential and ongoing requirement on the site, including assuring no damage, illegal collection or removal of

geological materials takes place. The management plan for the property outlines measures to be taken in this regard appears adequate.

The mission noted with concern that some constructions had occurred within the nominated property in relation to the two key fossil localities. At the key stratigraphic section of Xiaolantian, a deep excavation has been made into the rock, including the fossiliferous layers hosting the Chengjiang Fauna, to create a walkway. The construction of this path had impacted on the integrity of the site through widening what had been done before the evaluation mission to the site. Additionally, a museum has been built at Miaotanshan, over the site of the first Chengjiang Fauna fossil discovery. Here, the construction of the museum building has also undoubtedly impacted negatively on the integrity of this key site during the building process (constructing foundations, access roads and landscaping).

Further supplementary information was requested to provide for a clear inventory of the impacts of human development and to provide information on plans for remediation to damaged areas. In addition, requests for outlines of policies and procedures for further infrastructure development to avoid further impacts on the integrity of the property was made. Supplementary information outlined the process for systematic review and approval for development. Moreover, the management authority has completely restricted future infrastructure development in the nominated property. IUCN notes that the operation of these new procedures is essential, and in the event of the inscription of the property on the World Heritage List, the process of notifying possible alterations of the property, and their assessment in line with paragraph 172 of the Operational Guidelines will need to be followed.

Site restoration

Considerable effort has taken place to restore those parts of the nominated property affected by human industrial and agricultural activity prior to 1997. While initial efforts resulted in the planting of non-native species of vegetation, recent efforts have ensured that only native species are being planted.

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

5. ADDITIONAL COMMENTS

Fossils of scientific importance have been excavated and collected outside the proposed boundaries (in Dapotou, Hongjiachong, and Fengkoushao villages) of the nominated property. Consideration for management and protection of important fossil sites bearing Chengjiang biota (especially the Haikou region) in the wider region is required, to complement research and furthering the understanding of this significant stage of Earth's history. As noted above this wider landscape

level protection is also required in view of the fact that some finds of significant fossils have been made outside the boundaries of the nominated property, even if the strata from which they have been found are also found inside the boundaries of CFS. Enhanced land-use planning as well as management and protection through national and provincial laws is imperative to ensure that the fossil record complements the story at the proposed property. There may be the case, in future, to consider modifications of the boundaries of the property to include additional sites, although this requires considerable further study.

6. APPLICATION OF CRITERIA

The property has been nominated under criterion (viii).

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

The Chengjiang Fossil Site presents an exceptional record of the rapid diversification of life on Earth during the early Cambrian period, 530 million years before present. In this geologically short interval almost all major groups of animals had their origins. The property is a globally outstanding example of a major stage in the history of life, representing a palaeobiological window of great significance.

The exceptional palaeontological evidence of the Chengjiang Fossil Site is unrivalled for its rich species diversity. To date at least 16 phyla, plus a variety of enigmatic groups, and about 196 species have been documented. Taxa recovered range from algae, through sponges and cnidarians to numerous bilaterian phyla, including the earliest known chordates. The earliest known specimens of several phyla such as cnidarians, ctenophores, priapulids, and vertebrates occur here. Many of the taxa represent the stem groups to extant phyla and throw light on characteristics that distinguish major taxonomic groups.

The property displays excellent quality of fossil preservation including the soft and hard tissues of animals with hard skeletons, along with a wide array of organisms that were entirely soft-bodied, and therefore relatively unrepresented in the fossil record. Almost all of the soft-bodied species are unknown elsewhere. Fine-scale detailed preservation includes features as the alimentary systems of animals, for example of the arthropod *Naraoia*, and the delicate gills of the enigmatic *Yunnanozoon*. The sediments of Chengjiang provide what are currently the oldest known fossil chordates, the phylum to which all vertebrates belong.

The fossils and rocks of the Chengjiang Fossil Site, together, present a complete record of an early Cambrian marine community. It is one of the earliest records of a complex marine ecosystem, with food webs capped by sophisticated predators. Moreover, it demonstrates that complex community structures had developed very early in the Cambrian diversification of animal life, and provides evidence of a wide range of

ecological niches. The property thus provides a unique window of understanding into the structure of early Cambrian communities.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

2. Inscribes the **Chengjiang Fossil Site, People's Republic of China**, on the World Heritage List on the basis of criterion (viii);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

The Chengjiang Fossil Site, located in the Province of Yunnan, China, conserves fossil remains which are of exceptional significance. The rocks and fossils of the Chengjiang Fossil Site present an outstanding and extraordinarily preserved record that testifies to the rapid diversification of life on Earth during the early Cambrian period, 530 million years before present. In this geologically short interval, almost all major groups of animals had their origins. The diverse geological evidence from the Chengjiang Fossil Site presents fossil remains of the highest quality of preservation and conveys a complete record of an early Cambrian marine community. It is one of the earliest records of a complex marine ecosystem and a unique window of understanding into the structure of early Cambrian communities.

Criterion

Criterion (viii)

The Chengjiang Fossil Site presents an exceptional record of the rapid diversification of life on Earth during the early Cambrian period, 530 million years before present. In this geologically short interval almost all major groups of animals had their origins. The property is a globally outstanding example of a major stage in the history of life, representing a palaeobiological window of great significance.

The exceptional palaeontological evidence of the Chengjiang Fossil Site is unrivalled for its rich species diversity. To date at least 16 phyla, plus a variety of enigmatic groups, and about 196 species have been documented. Taxa recovered range from algae, through sponges and cnidarians to numerous bilaterian phyla, including the earliest known chordates. The earliest known specimens of several phyla such as cnidarians,

ctenophores, priapulids, and vertebrates occur here. Many of the taxa represent the stem groups to extant phyla and throw light on characteristics that distinguish major taxonomic groups.

*The property displays excellent quality of fossil preservation including the soft and hard tissues of animals with hard skeletons, along with a wide array of organisms that were entirely soft-bodied, and therefore relatively unrepresented in the fossil record. Almost all of the soft-bodied species are unknown elsewhere. Fine-scale detailed preservation includes features as the alimentary systems of animals, for example of the arthropod *Naraoia*, and the delicate gills of the enigmatic Yunnanzoon. The sediments of Chengjiang provide what are currently the oldest known fossil chordates, the phylum to which all vertebrates belong.*

The fossils and rocks of the Chengjiang Fossil Site, together, present a complete record of an early Cambrian marine community. It is one of the earliest records of a complex marine ecosystem, with food webs capped by sophisticated predators. Moreover, it demonstrates that complex community structures had developed very early in the Cambrian diversification of animal life, and provides evidence of a wide range of ecological niches. The property thus provides a unique window of understanding into the structure of early Cambrian communities.

Integrity

The property has clear boundaries including the most significant rock exposures of the region, and has a buffer zone that provides wider protection to the property. It is noted that fossil evidence is provided in some sites that lie outside the property boundaries and its buffer zone, and these areas need to receive appropriate wider protection and are important to provide context for the property.

Prior to 2004, 14 phosphate mining operations occurred in the buffer zone of the property. Since 2008 they have all been closed down. The process of rehabilitating these former mining sites is ongoing and will take some considerable time. No mining activities have actually impacted on the property itself and the ongoing commitment of County and Provincial governments to not open or re-open mines within the property or its buffer zone are critical to protect the values of the property.

Various excavations have occurred within the property in relation to the two key fossil sites. At the key stratigraphic section of Xiaolantian, a deep excavation has been made to create a walkway. Additionally, a museum has been built at Miaotanshan, over the site of the first Chengjiang Fauna fossil discovery. Both the path and museum construction have had impacts on the integrity of the site. The State Party has introduced a process for systematic review and approval for any development which may impact on the site. Moreover,

the management authority has completely restricted future infrastructure development in the property.

Protection and management requirements

The Chengjiang Fossil Site is state-owned and protected under the Article 9 of the constitution of the People's Republic of China and by various laws including the Environmental Protection Law of the People's Republic of China (2002), the Law of the People's Republic of China on Cultural Relic Protection (2002), the regulations on the management of paleontological specimens (Ministry of Land and Resources, 2002), regulations on the protection and management of geological relics (1995) and the regulation on the protection of Yunnan Chengjiang Fauna Fossil (1997).

The property is designated as a protected area ensuring that potentially damaging human activities within the site can be prevented. The area is largely covered with secondary forest and shrub and there is no industrial activity or permanent human habitation within the boundary. The property lies entirely within a Chinese National Geopark.

There is an effective management plan, supported by a dedicated and adequately staffed and resourced management body. The Chengjiang Fossil Site Management Institute is responsible for coordinating on-site management of the protected area. The property protection strategy includes a National Geopark zoning plan which affords adequate protection to key fossil sites, supported by staffing for implementation. The finances of the Chengjiang Fossil Site come largely from national sources and are supplemented by smaller contributions at the City and County levels. Stable and special funding for the ongoing management of the property is adequate to address ongoing protection, promotion and presentation of the property. The property has an established monitoring programme including defined indicators for the conservation of this property, and which needs to be integrated with monitoring of the protection of the wider surroundings of the property. The need for ongoing and effective curation of fossil specimens collected from the property, to the highest international standards, is fully recognised and provided for by the State Party.

Visitor numbers are anticipated to increase from a few thousand (4-5,000) individuals in 2012, most of whom

are locals or individuals from neighbouring areas and visiting scientists. Increased visitation to the property requires effective management strategies and the provision of guides, designation of restricted areas, and strict restrictions on fossil collecting. It will be essential to carefully regulate visitor numbers within the capacity of the property. The anticipated maximum numbers at the time of inscription were estimated at c.30-40,000 people. There is a need to assure effective land-use planning in areas surrounding the property in order to secure its long-term conservation, including the conservation of fossil sites in the surrounding area that provide context for understanding the value of the property.

4. Commends the State Party on its continued and responsive efforts to improve protection and management of the property and on increasing conservation investments;

5. Requests the State Party to:

- a) Continue to strengthen and enhance land-use planning to avoid further impacts to the values and integrity of the property and its buffer zones;
- b) Ensure proactive tourism management in anticipation of increased future visitation, and to ensure that visitation remains within the capacity of the property;
- c) Ensure any proposed infrastructure development and excavations are sympathetic to the site's values and are subject to rigorous prior impact assessments, to determine if they are appropriate, including via reporting to the World Heritage Committee in line with paragraph 172 of the Operational Guidelines to the World Heritage Convention.

6. Strongly encourages strengthened management and protection of important fossil sites and strata bearing Chengjiang biota in the wider region to complement research and further the understanding of this significant stage of Earth's history. Enhanced land-use planning as well as management and protection through national and provincial laws is imperative to ensure that the fossil record in the wider landscape is protected, as it provides important context for the comprehension of the property.

ANNEX 1: Fossil Checklist**Chengjiang Fossil Site*****(1) Does the site provide fossils which cover an extended period of geological time? i.e. how wide is the geological window.***

The Chengjiang Fossil Site presents a snapshot of biodiversity at a critical time in the early evolution of animal life. It represents a limited period of geological time but is a palaeobiological window of exceptional significance.

(2) Does the site provide specimens of a limited number of species or whole biotic assemblages? i.e. how rich is the species diversity?

The biota is extremely rich and diverse. Taxa recovered range from algae, through sponges and cnidarians to numerous bilaterian phyla, including the earliest known vertebrates. It is the most completely preserved early Cambrian community known.

(3) How unique is the site in yielding fossil specimens for that particular period of geological time? i.e. would this be the 'type locality' for study or are there similar areas that are alternatives?

The Chengjiang fossil Lagerstätte contains the most diverse and disparate fauna known from the lower Cambrian, most of the diversity of which is represented in the nominated property. As well as representatives of skeletonized groups (e.g. brachiopods, hyoliths, bradorids, trilobites, echinoderms), it contains a wide variety of soft-bodied taxa, including many vermiform animals. Almost all of these soft-bodied species are unknown elsewhere, although a few genera are also found in other lower Cambrian sites around the world. It can be regarded as the 'type locality' for early Cambrian life.

(4) Are there comparable sites elsewhere that contribute to the understanding of the total 'story' of that point in time/space? i.e. is a single site nomination sufficient or should a serial nomination be considered?

The Burgess Shale is the most closely comparable site on the current World Heritage list to the Chengjiang, and is a much earlier and better known discovery, but is younger in age and with a mostly different fossil fauna represented. There are a small number of other lower Cambrian sites that display soft-tissue preservation, contain some additional taxa and, therefore, contribute to the total story of global early Cambrian biodiversity such as Sirius Passet, North Greenland and the Emu Bay Shale, Australia). There are also numerous lower Cambrian sites worldwide that preserve skeletal remains only, but include taxa that are not present in the Chengjiang biota.

(5) Is the site the only or main location where major scientific advances were (or are being) made that have made a substantial contribution to the understanding of life on earth?

The Chengjiang fossil Lagerstätte is one of the most important palaeontological sites in the world. With the possible exception of the younger Burgess Shale, no other locality has yielded as much information on the nature of early Cambrian representatives of extant phyla and on the

structure of the earliest animal communities. The very fine scale anatomical detail preserved in the specimens renders them highly informative for the interpretation of early body plans, and numerous key fossils have been described that shed light on the early evolution of many major animal groups. The Chengjiang biota continues to make a highly significant contribution to developing fields of evolutionary biology.

(6) What are the prospects for ongoing discoveries at the site?

There is considerable potential for ongoing discoveries. Although many thousands of specimens have been collected, new major discoveries continue to be made every year. This is demonstrated by the continuing publication of papers in high-profile journals. Existing collections contain numerous enigmatic specimens, some in very small numbers, whose true nature will only be determined when additional specimens are recovered.

(7) How international is the level of interest in the site?

The site is of the highest international interest. The fossils have been studied by many international teams, resulting in numerous publications. For instance an iconic temporary exhibition of Chengjiang fossils was held in the University of Oxford Museum in 2010, as part of the museum's 150th anniversary celebrations. At the International Palaeontological Congress 3 in 2010 nine papers were presented specifically on fossils from the Chengjiang fossil Lagerstätte. The biota has attracted continual extensive coverage in global newspapers, radio and television.

(8) Are there other features of natural value (e.g. scenery, landform, vegetation) associated with the site? i.e. does there exist within the adjacent area modern geological or biological processes that relate to the fossil resource?

The prime importance of the site lies in its exceptional scientific value, but it is situated within a scenically attractive and unspoilt area of rural China, enhancing its appeal.

(9) What is the state of preservation of specimens yielded from the site?

The state of preservation of the fossils is truly exceptional, not just for the lower Cambrian, but for the entire fossil record. At Chengjiang, soft tissues such as gills, eyes and guts are commonly preserved, and there are numerous fossils of animals that were entirely soft-bodied.

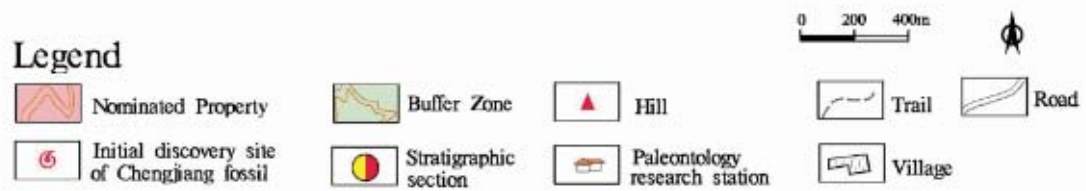
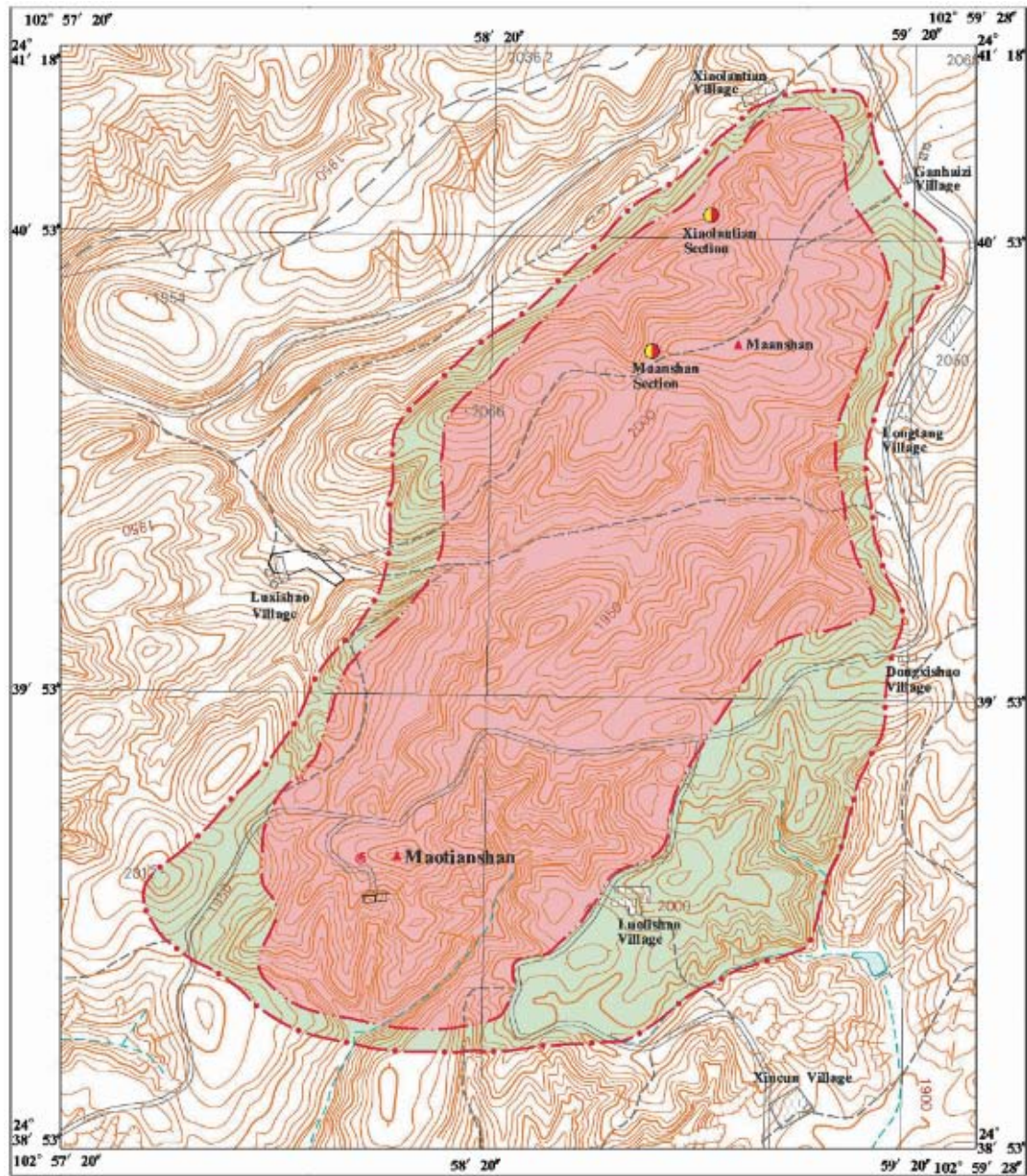
(10) Do the fossils yielded provide an understanding of the conservation status of contemporary taxa and/or communities? i.e. how relevant is the site in documenting the consequences to modern biota of gradual change through time?

The Chengjiang fossil Lagerstätte records the original establishment of a marine ecosystem structure, with complex food chains. The maintenance of this basic structure through geological history provides a context within which to understand modern marine ecosystems.

Map 1: Location of the Chengjiang Fossil Site in China



Map 2: Detailed map of the Chengjiang Fossil Site



EUROPE / NORTH AMERICA

LENA PILLARS NATURE PARK

RUSSIAN FEDERATION



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

LENA PILLARS NATURE PARK (Russian Federation) – ID No. 1299

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination of the property

Key paragraphs of Operational Guidelines:

Paragraph 77: A revised nomination has potential to meet one or more natural World Heritage criteria

Paragraph 78: Property as nominated does not meet integrity or protection and management requirements

Background note: Lena Pillars Nature Park was previously nominated for consideration at the 32nd Session of the World Heritage Committee, based on a differently configured nomination including two serial components, one of which had a designated buffer zone. IUCN evaluated the nomination and recommended to not inscribe the property on the World Heritage List. The State Party withdrew the nomination prior to discussion by the 32nd Session of the Committee, and thus it has not previously been considered by the Committee.

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

b) Additional information officially requested from and provided by the State Party: IUCN sent a letter to the State Party on 3 February 2012, which did not request supplementary information, but provided a statement on the evaluation process. The State Party subsequently provided a range of additional information on 28 February 2012.

c) Additional literature consulted (selected list): Amthor, J. E. et al., (2003) **Geology**. 31, 431–434; Brasier, M.D. et al., (1994) **Multiple $\delta^{13}\text{C}$ excursions spanning Cambrian Explosion to Botomian Crisis in Siberia**. *Geology* 22, 455-458; Ford, D. and Williams, P., (2007) **Karst Hydrogeology and Geomorphology**. Wiley, 562p.; Gunn, J., Ed., **Encyclopedea of Caves and Karst Science**. Fetzyroy Dearborn NY 537-538; **World Heritage Caves and Karsts – A Thematic Study** (by P. Williams). IUCN 2008 34p.; Kouchinstky, A. et al., (2001) **Geological Magazine**. 138, 387-396; Russian Federation, Republic of Sakha, **Mid-term Management plan of the Lena Pillars Nature Park 2008-2012** (in Russian); Russian Federation, Republic of Sakha, **Concept on the Development of Protected Area System in the Republic of Sakha**, Resolution of Government. 16 February 2011 (in Russian); Russian Federation, Republic of Sakha, **Law on Protected Areas of Republic of Sakha**. 1 March 2011 (in Russian); Russian Federation, Republic of Sakha, **Strategy for tourism development and Concept on the establishment of tourism and recreational zones in the Reoublic of Sakha**, Resolution of Government. 27 May 2009, (in Russian); Sandberg, P.A., (1983) **Nature**. 305, 19-22; Spector V.B. and Spector V.V., (2009) **Karst processes and Phenomena in the Perennially Frozen Carbonate Rocks of the Middle Lena River Basin, Permafrost and periglacial**

processes. 20, 71-78; Trofimova, E.V., (2007) **Particularites du developpement recent du karst calcaire de Siberie et d'Extreme-Orient (Russie)**. Karst and Cryokarst Sosnowiec-Wroclaw 203-209; Wells, R (1996) **Earth's geological history: a contextual framework for assessment of World Heritage fossil site nominations**. IUCN Gland Switzerland; Zhuravlev, A. and Wood, R.A., (2008) **Geology**. 36, 923-926; Zhuravlev, A. and Wood, R.A., (2009) **Geology**. 37, 1123-1126

d) Consultations: 14 external reviewers consulted. Extensive consultations were conducted during the IUCN field visit with a large number of key stakeholders including national and state legislative bodies and government institutions, site management authorities, scientists and researchers, as well as site based staff, community representatives and tourist guides.

e) Field Visit: Kyung Sik Woo and Sarangoo Radnaaragchaa, 22-31 August 2011.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The nominated property, the Lena Pillars Nature Park (LPNP) is located in the central part of the Sakha Republic (Yakutia) in the Russian Federation, around 200 km southwest from the provincial capital Yakutsk which is the capital city. The total area of the property is 1,272,150 ha.

LPNP extends along part of the Lena River and its Buotama tributary. It is located in an area with an extreme continental climate with an annual temperature range of almost 100° C, ranging from c.-60° C in winter to c.+40° C in summer.

The property is nominated in relation to criteria (vii) and (viii), and its key natural values relate to its geomorphology and geology.

The geomorphic environment of LPNP is dominated by cryogenic (ice-related) processes, and the ground is frozen to a depth of several hundred metres. Summer thawing only penetrates a few metres. Consequently, even though the area is underlain by hundreds of metres of carbonate rocks, karst development is embryonic. The nomination notes karst features such as dolines (caves, vadose vertical solution pipes, karren surfaces, karst lakes, dry valleys), and thermokarst features are abundant. The incision of the Lena and its tributaries has induced a hydraulic gradient that has enabled groundwater to flow from the upland surface towards neighbouring valleys.

The celebrated pillars (up to c.100m in height) that line the banks of the Lena River are rocky buttresses isolated from each other by deep and steep gullies developed by frost shattering directed along intervening joints. The pillars form a discontinuous belt that extends back from the river's edge along the incised valley sides of some rivers in a zone about 150 m wide. The joints that isolate individual pillars may have sometimes been widened by dissolution of the carbonate rock. Penetration of water from the surface has facilitated cryogenic processes (freeze-thaw action), which have widened gullies between pillars leading to their isolation. Fluvial processes are also critical to the pillars. This is because cliff-foot ice-shattered debris (scree) slides downslope to the valley floor where it is transported away by the river. Pillars are only found along those stretches of valley sides where the river in flood can scour and undercut the banks. If it were not for this fluvial action the pillars would be buried in their own cryogenic debris. A series of evolutionary stages in pillar formation can be observed from massive cogged walls to separated individual pillars. Other complementary and dramatic pillar landforms are known in the immediate region at Sinyaya outside the nominated property's boundaries.

A further geomorphological feature emphasized in the nomination are the tukulans which are highly unusual high-latitude sand dune areas formed in reworked sandy terrace sediments on the top of Tertiary sediments along the Lena River and its tributary Vilyui River.

The nominated property and surrounding area also contains geological values that are internationally noted and which are described in detail in the nomination, and in supplementary information provided by the State Party. The Lena River and its tributaries provide within the property and adjoining areas natural sections of the uppermost Ediacaran (Precambrian) to middle Cambrian strata of a total thickness from 980-1370m in thickness. These strata were accumulated in platformal environments and were not subsequently subject to either strong tectonic or metamorphic alteration. As a result, sub-horizontal strata of a few centimetres

thickness are traceable for dozens of kilometres. The pillar relief itself provides excellent outcrops.

These strata cover the time interval which encompasses the “Cambrian Explosion”, one of the major diversification events on the Earth where all the main modern and fossil animal body plans appeared. The Lena Pillars sections allow study of the early stages of multicellular animal evolution and its diversity and dynamics. Among approximately 2,000 known early Cambrian genera, about 350 have been described from this region. These genera include the first archaeocyaths (rigid aspiculate calcified sponges), radiocyaths, coralomorphs (skeletal primitive cnidarians), brachiopods, and some other groups of animals with mineralized skeletons. Additionally, a number of complete and intact specimens with very high quality preservation make up the so-called Sinsk Biota, which is one element within the overall geological succession, and contains a number of unique records of fossil species including with phosphatised soft tissues and cells as well as their embryos.

The most important geological values in the nominated territory are fossil reefs. Good preservation, high diversity, and multiple localities of reef fauna in the Lena Pillars allow detailed palaeoecological and population dynamics' studies of the earliest metazoan reef biota. The geology of the areas has also enabled detailed stratigraphic analysis to be achieved, including high precision statistical analyses of the distribution of different skeletal groups. This has also enabled the distinction of the earliest currently recorded mass-extinction events in the Earth history which are known as the Sinsk and Toyonian extinction events, both named after the Lena Pillar's area.

In addition, whilst not the basis for the proposal for inscription on the World Heritage List, the Quaternary sediments in LPNP bear rich skeletal remains of the mammoth fauna including bones that are well-preserved for a DNA analysis. It also protects nationally important biodiversity values, including the presence of Siberian salamander and Siberian frog, 105 species of nesting birds, and 38 species of mammals. An introduction programme of Wood Bison is also noted.

3. COMPARISONS WITH OTHER AREAS

The consideration of the values of LPNP has been greatly facilitated through the new nomination, as well as the process of discussion and advisory activities that have taken place since the previous submission (see section 5).

The previous IUCN evaluation (2008) pointed out that impressive rock pillar landscapes are found in many other parts of the world, and a number of such landscapes are already recognised on the World Heritage List. These include Wulingyuan (China), Tsingy de Bemaraha (Madagascar), South China Karst (Shilin,

China), the subsequently inscribed China Danxia (China) and other spectacular areas that are not on the World Heritage List such as Arches National Park and Bryce Canyon National Park (both in USA) and Nambung (Australia).

Reviewers have noted that the phenomenon of the major pillars in LPNP should not be considered as primarily karstic, but rather being formed by the combination of cryogenic erosion and the fluvial removal of the resulting debris. Any mechanically competent bedded and jointed rock, such as hard sandstone or quartzite, would also form pillars in such an environment. The effectiveness of these combined processes is especially evident in the previously nominated Sinyaya area, where pillars are only developed on the outside bends of incised meanders where undercutting by the river is at its most intense. The combination of cryogenic and fluvial processes that has led to the formation of the Lena Pillars is unusual, as is the disposition of pillars for many kilometres in a narrow belt along the Lena and some tributaries.

Although there are many examples of pillar and tower landforms in the world, most are in the tropical or temperate realm, tend to be rounded or smoothly sculpted, and owe little or nothing to cryogenic processes. The circumstances in Yakutia are thus a special combination of lithology, fluvial incision and continental cold climate processes. These factors have acted in concert to produce a visually spectacular and geomorphologically very unusual landscape that the majority or reviewers consider would be worthy of recognition as being of Outstanding Universal Value. However some of the best examples of this phenomenon in the LPNP region, on the Sinyaya River, are not included in the nomination, although they were part of the previous proposal.

IUCN, in its 2008 evaluation, noted that there are significant gaps in the geographical distribution of karst World Heritage sites, representation being particularly poor in areas such as North Asia. It also noted that there are significant gaps in the natural environmental distribution of karst World Heritage sites, there being relatively poor representation in arid, semi-arid, and periglacial environments.

Extensive outcrops of carbonate rocks with karst features are found across permafrost areas of the Russian Federation and Canada. Some of these areas were glaciated in the Pleistocene and others were not because conditions were too dry, even though they were cold enough. The Lena Pillars region of Siberia and the Nahanni National Park World Heritage Property in Canada are examples of permafrost areas that were unglaciated in the last major glaciation. Due to the embryonic development of karst, no features in the nominated property come close to the geomorphic importance of the karst found in the Nahanni National Park of Canada. Thus although the karst landforms described and illustrated in the nomination document are

interesting, their expression is at a very small scale and by no means unusual, and is not a feature of Outstanding Universal Value.

In relation to Cambrian fossil values, the nomination notes a range of comparator sites, including S.E. Newfoundland (Canada), Morocco, China, South Australia and parts of Europe. There are prominent exposures of Cambrian rocks in other World Heritage properties such as the Grand Canyon (USA). More significantly, the World Heritage List already includes the Burgess Shale fossil site (part of the the Canadian Rocky Mountain Parks World Heritage Site, Canada, and originally inscribed as a single World Heritage Site), which is widely known as an iconic global reference for the Cambrian Explosion.

Significant Cambrian reefs are known from locations including in Morocco, South Australia, eastern Canada, western United States, some European countries (Spain, France, Sardinia), and elsewhere. However, in all the relevant areas, the earliest Cambrian strata do not contain reefs and mostly are barren. Some other areas of the Siberian Platform also provide a rich record of skeletal fossils across entire lower Cambrian interval; however, their fossil assemblages are poorer than those of the area in and around LPNP.

IUCN notes that the consideration of sites nominated to the World Heritage List in relation to fossil values has been based on a consistent set of principles outlined in the established thematic study on fossil sites prepared in 1996. In this regard, IUCN considers there is not a compelling basis to consider the application of criterion (viii) in relation to the fossil values of the area alone.

IUCN notes the phenomenon of the Cambrian Explosion is already represented by the Burgess Shale, which is one of the most significant fossil areas of the world and provides a wealth of data to aid in the classification of enigmatic fossils. The most significant fossil organisms there are soft bodied, hence largely absent from the rest of the fossil record. Whilst the fossils of the LPNP region are an internationally significant record, they include many species that are found in other sites, even if not in the same concentrations or associations. The nomination emphasizes that the fossil values of the Sinsk Biota are c.10 million years older than those of the Burgess Shale.

A further key comparison is with the Chengjiang Fossil Site (CFS) in Yunnan Province, China, which is also nominated for consideration by the 36th Session of the World Heritage Committee. Like the Burgess Shale, CFS is a site with exceptional soft body preservation, as well as preserving skeletal animals and is now considered to be at least as important as the Burgess Shale. In this case CFS is slightly older than the Sinsk biota of LPNP (though younger than the oldest Cambrian strata in the present nomination). CFS is recognized as one of the richest Cambrian sites known and appears to IUCN to provide a much stronger claim for Outstanding Universal

Value in relation to fossil values than LPNP, and also to much better accord with the long established principles for listing fossil sites as of Outstanding Universal Value adopted by the World Heritage Committee.

The present nomination and supplementary information emphasises that the Burgess Shale and CFS do not provide significant skeletal fossil remains, and also emphasises the special preservation of the Sinsk biota. It notes the long time recorded in the strata of the LPNP region, and the continuous and fossil-rich carbonate record of the uppermost Ediacaran (Precambrian) to middle Cambrian strata of ca. 35 my interval, whilst the Chengjiang site and the Burgess Shale provide a more limited Cambrian record in terms of the total number of taxa and ecosystems, and time interval. However IUCN notes that, if the values noted in the nomination are extended as a basis for comparison, sites such as the exceptional preservation of the early Ediacaran fauna in Australia (and elsewhere), and the very earliest marine ecosystem in the late Precambrian noted from Mistaken Point (on the tentative list of Canada) would also rate more highly than the LPNP area in terms of the representation of the earliest phase of the evolution of complex life in the fossil record.

IUCN notes that the World Heritage List is “not intended to ensure the protection of all properties of great interest, importance or value, but only for a select list of the most outstanding of these from an international viewpoint” (Operational Guidelines, paragraph 52). IUCN concludes that the fossil values of the LPNP area do not reach the threshold required to be regarded as being of Outstanding Universal Value. As noted below, not all of the key fossil sites in the immediate region are included in the property, and the boundaries of the property also do not respond to the sites that are of geological significance; thus superimposed on this judgement is a question regarding integrity.

To summarise, IUCN notes that the information available to assess the nomination has been significantly enhanced in the present nomination, in relation to the earlier proposal. Nevertheless the application of the natural criteria remains complex and finely balanced. IUCN has taken into account the Committee’s previous application of criteria (vii) and (viii), including in the most recent inscriptions. On balance it does appear that the combination of internationally significant values for geomorphology (the exceptional representation of cryogenically generated pillars), which are supported by the geological values (the important Cambrian record, significantly complementing the most exceptional sites from that period) in the LPNP region provides the potential for a revised nomination to be considered under criterion (viii) and possibly criterion (vii). However, as noted below, integrity considerations undermine the present basis to consider inscription under either criterion.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1 Protection

LPNP was established by the Resolution of the Government of the Republic of Sakha (Yakutia) in 1995. The nominated property has the status of a Nature Park of the Republic Sakha.

The highest level of protection for the property would correspond to a federally protected “zapovednik” or equivalent. The Lena Pillars property is not protected at this level currently. Nevertheless, the Ministry of the Natural Resources of the Russian Federation has already included LPNP in the list of the Special Protected Areas to be designated as State National Nature Park by 2015. Such designation will grant to LPNP the Federal level of protection. As this level of federal protection is not yet in place, there is a need to demonstrate that the State level of legal protection is sufficient to protect its values fully.

LPNP is owned by the Sakha Republic. There are some land parcels traditionally used by Evenki indigenous people. The boundaries of the land are well known and their validity is respected by the park administration. Limited traditional use of the land includes hay-making and hunting. Co-existence of traditional rights and use, and legal land ownership appears to be appropriately considered.

LPNP possesses the status of a non-profit legal entity and established in the form of state-operated nature conservation institution and financed by the state budgetary funds from the Sakha Republic. Legal instruments for the protection of the property are determined by the regulations of the Nature Park (referred as the “Statute of the State Enterprise Lena Pillars Nature Park” 2006 in the Annex B5 of the nomination document) confirmed by the Government of the Sakha Republic. The territory of the nature park is zoned and includes areas termed reserved zone, sacred places, restricted and active recreational zones, traditional nature management zone and zone of breeding for rare and extinct animals.

IUCN considers the protection status of the nominated property could be strengthened, but appears to meet the requirements set out in the Operational Guidelines.

4.2 Boundaries

The boundaries of the nominated property are clearly defined. The nominated property has been put forward without a formal buffer zone and aligns with the boundary of LPNP, but excluding a component of LPNP at Sinyaya, which was part of the previous nomination and which contains an important range of pillar landforms.

IUCN has a range of concerns regarding the adopted boundaries of the property. Firstly in relation to the pillars

on the Lena River, it is noted that the main values are located relatively close to the river and the majority of the nominated property does not include these features. Importantly the process that defines the pillars certainly includes the Lena River. The integrity of the pillars depends on maintaining active fluvial scour at their base, active scree-producing cryogenic processes on slopes, and availability of carbonate rock for incision on the plateau immediately behind the pillars. From the point of view of the protection of the pillars, the existing National Park boundaries include a great deal of land behind the pillars, inland of the river, which is more than enough to conserve that element of the pillar process. However, it appears necessary to either include the key sections of the Lena River in a buffer zone, or within the site itself, to ensure that the key values of the pillars would be protected and managed. More fundamentally IUCN recalls that from the first evaluation, and also in the view of reviewers, some of the best pillar landforms of the region are those of the Sinyaya area. Since these have been excluded in the revised nomination, a major loss in the values put forward has resulted. The IUCN World Heritage Panel noted that whilst the science underpinning the nomination has been both improved and much better presented since the previous nomination, the values of the revised nomination are significantly less than the original proposal, in terms of what is actually being nominated.

Similarly in relation to the fossil sites, IUCN notes that several of the key localities are on the left bank of the Lena River outside of the property, and do not appear to have specific legislative or management protection. IUCN considers that they should be considered for inclusion in the property.

In relation to aesthetic values and the overall comprehension of the property, it is also noted that the key features of the Lena Pillars would primarily be appreciated and comprehended from the river, and thus the river is an intrinsic part of these values of the property. This also argues strongly for the inclusion of the adjoining river to the property within its boundary, or the establishment of buffer arrangements.

Finally IUCN notes that the nominated property includes large areas that neither display pillar landforms, nor key geological exposures, and these would not therefore appear to be appropriate for inclusion in 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

There is a management plan for the nominated property covering the period of 2008-2012. This plan was developed in accordance with the Direction of the Ministry of Natural Resources of the Russian Federation. It identifies primary goals of the park and proposes activities on protection, scientific research,

environmental education and recreation. The document is adequately guiding the management of the nominated property.

The plan defines the sources of financing, which are mainly from the regional budget with a minor contribution from self-generated revenue. The total annual budget of the park (c. USD524,000) appears to be adequate to conduct nature conservation, patrolling and monitoring activities. However, it was noted during the IUCN evaluation that the budget needs to be increased to manage tourism use and to improve associated tourism infrastructure. As noted below the tourism management framework of the property also is not yet adequate.

LPNP has a personnel of c.40 including state environmental inspectors, education and tourism specialists, and a range of administration and support staff. Detailed information on staffing was provided in supplementary information provided to IUCN. There is a specific need to provide suitably qualified and experienced staff to manage the earth science values that are the basis for the nomination, and it is recommended a geomorphologist and geological specialist be appointed.

Local schools are actively involved in environmental education programs. A modern visitor centre has been built in the territory of the park with financial assistance from the Regional Investment Fund.

Since LPNP has been nominated for its geological values it would be appropriate to develop geological monitoring indicators as currently all monitoring indicators as described in the management plan are focused on biodiversity.

IUCN considers the management of the nominated property does not fully meet the requirements set out in the Operational Guidelines, and requires strengthening in a number of areas.

4.4 Threats

Tourism

Tourism in LPNP has been gradually increasing over the past five years. LPNP is widely advertised as a tourism brand of the Sakha Republic and the Government is promoting tourism. At present an upper limit of 23,000 person visits per year has been established for the nominated property based on its carrying capacity. LPNP is collaborating with local traditional communities in the organization of tourism activities. Local people are working as tour guides and offering their service in providing transportation for tourists, selling traditional handicrafts and regional food products.

However, a long-term strategy needs to be developed that would balance the increasing trend in tourism in one hand whilst respecting the capacity of the area, and realizing benefits to local communities.

The previous IUCN technical evaluation had recommended that an ecotourism master plan be developed which “maintains low-key tourist operations”; provides direct and adequate financial contributions from tourism to the conservation activities; and involves relevant local authorities and other major stakeholders. Furthermore, it is essential to develop tourism concepts with participation of major stakeholders that include the LPNP administration, tour operators, local communities and others.

The State Party provided in its supplementary information “The Program of Environmental Tourism Development in the Lena Pillars NP for the period 2012 – 2016. Whilst outlining some useful principles, the document is extremely brief and contains no operational details including programme, staff or resources. Thus at the present time this aspect of the management framework does not appear to be adequate.

Agriculture and hunting

Traditional use activities are carried out within the area of the Park and include licensed sable hunting, horse breeding in the Buotama River mouth, deer farming and haymaking. 884,000 ha of land or about 60% of area of the Park are assigned to six Evenki ancestral farms that raise deers and horses and use the area for fishing and hunting. Such activities are carefully managed, and do not appear to create major environmental impacts.

Fire management

LPNP cooperates with the Yakut Territorial Committee for Environmental Protection and Special Poaching Inspection Unit in carrying out law enforcement measures. During the summer time the Yakutia Aircraft Fire Extinguishing Brigade executes fire management activities according to the agreement between the two organizations. In addition, LPNP is working with the Khangalassky Forestry Unit on forest fire prevention. The capacity of the park on fire control and suppression needs to be further strengthened.

Pollution threats

There is a major oil pipeline that crosses the Lena River 800 km upstream of the property. There are some risks of oil spillage and cracking of pipes in the winter. There is a need for the LPNP administration to regularly monitor the impact that might be caused by the pipeline operations.

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

5. ADDITIONAL COMMENTS

5.1 Associated cultural values

IUCN notes the long standing associated cultural values and human use of the property as significant, and the ongoing commitment to conservation from the traditional

peoples of the area. The property preserves archaeological remains, and displays petroglyphs that testify to the long standing human association with the property.

5.2 “Upstream process” regarding early advice on potential nominations

IUCN engaged in providing advice and support to the State Party, at its request since the original nomination. An expert advisory mission was undertaken by a member of IUCN’s World Commission on Protected Areas to the site, and a visit by elected officials and staff of the Sakha Republic was hosted at IUCN Headquarters. IUCN considers that this process has enabled both a range of points to be addressed to strengthen the nomination, and a much better appreciation of the values of the nominated area to be obtained by IUCN leading to the recognition of potential in this area to demonstrate Outstanding Universal Value following consideration by the IUCN World Heritage Panel. Nevertheless there appear to have been a number of key requirements that have not yet been addressed, and thus the process undertaken has not yet achieved the desired result of a nomination that can be recommended for inscription. IUCN is keen to both reflect with the State Party on lessons learned, and is also willing, on the basis of the present revised evaluation to work closely with the State Party to seek to redefine a nomination that would meet the Operational Guidelines.

IUCN also notes that it took the step with the present nomination, on an experimental basis, to communicate its concerns on the viability of the nomination during the evaluation process, and to invite the State Party to engage in early dialogue regarding the nomination before the Committee takes place. This follows the specific requests of the 35th Session of the World Heritage Committee to strengthen communication in the evaluation process. The results of that process will be reported at the 36th Session Committee, for discussion.

6. APPLICATION OF CRITERIA

Lena Pillars Nature Park has been nominated under natural criteria (vii) and (viii).

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

The pillar landforms along the Lena River within the nominated property are spectacular natural phenomena, but there are equally spectacular pillar areas elsewhere in the region of the property, notably at Sinyaya, and also elsewhere in the world. Comparative analysis does not yet provide a compelling argument for the application of this criterion to the features of the LPNP areas. The property’s boundaries also do not encompass the areas that allow the appreciation of the main pillar areas on the Lena River. Large areas of the nominated property do not include attributes relevant to the application of this

criterion. There may be potential for a revised nomination in the region to make this criterion, but this requires further evaluation.

IUCN considers that the nominated property does not meet this criterion, but a revised nomination in the region, that also met integrity requirements, might have potential to do so.

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

The region around LPNP displays two features of significant international interest in relation to the earth sciences. The large cryogenically formed pillars in the region are the most notable pillar landscape of their kind known, whilst the internationally renowned and important exposures of Cambrian rocks provide a second and important supporting set of value, although alone they are not of Outstanding Universal Value. However the site that has been nominated does not include all of the most important attributes in the region in relation to either of these values, since it excludes the significant pillar landscapes at Sinyaya, the river which is a key element of the pillar forming process, and a number of the associated key fossil localities. Nor does the nominated property have adequate buffer zone arrangements. Conversely, large parts of the nominated property do not contain attributes that are strongly relevant to these internationally significant values.

IUCN considers that the nominated property does not meet this criterion, but a revised nomination in the region, that would meet integrity requirements, has potential to do so.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

2. Defers the nomination of the **Lena Pillars National Park (Russian Federation)**, taking note of the potential for a substantially revised nomination to meet criteria (vii) and (viii), in order to allow the State Party to:

a) revise the boundaries of the area to conform to the key attributes that relate to the pillar landforms and key geological features and exposures within

the region, including any key areas not within the Lena Pillars National Park (LPNP), and to also consider including the Sinyaya component of LPNP, and relevant areas of the Lena River that are necessary to assure integrity within the revised nomination, and also to exclude from the nomination areas of LPNP that do not contain attributes relevant to criteria (vii) and (viii);

b) establish appropriate buffer zones to the revised nominated property and wider protection measures that will ensure the protection of the river catchments, and the appropriate management of activities on the Lena River;

c) provide a clear demonstration that the legal regime supporting a revised property and buffer zones is effective;

d) specify a full and revised strategy, and an operational action plan, for the management of sustainable tourism within the capacity of the property, and to secure appropriate benefits to local people;

e) provide a revised long-term management plan for the revised nominated property which includes a strong programme of awareness devoted to the aesthetics, geomorphological and geological features, and ensures the necessary scientific skills required to protect and manage these values are in place.

3. Takes note of the willingness of IUCN to provide direct advice to the State Party regarding the preparation of a revised nomination, to meet the identified potential for a substantially revised proposal in this region to meet the requirements for inscription on the World Heritage List;

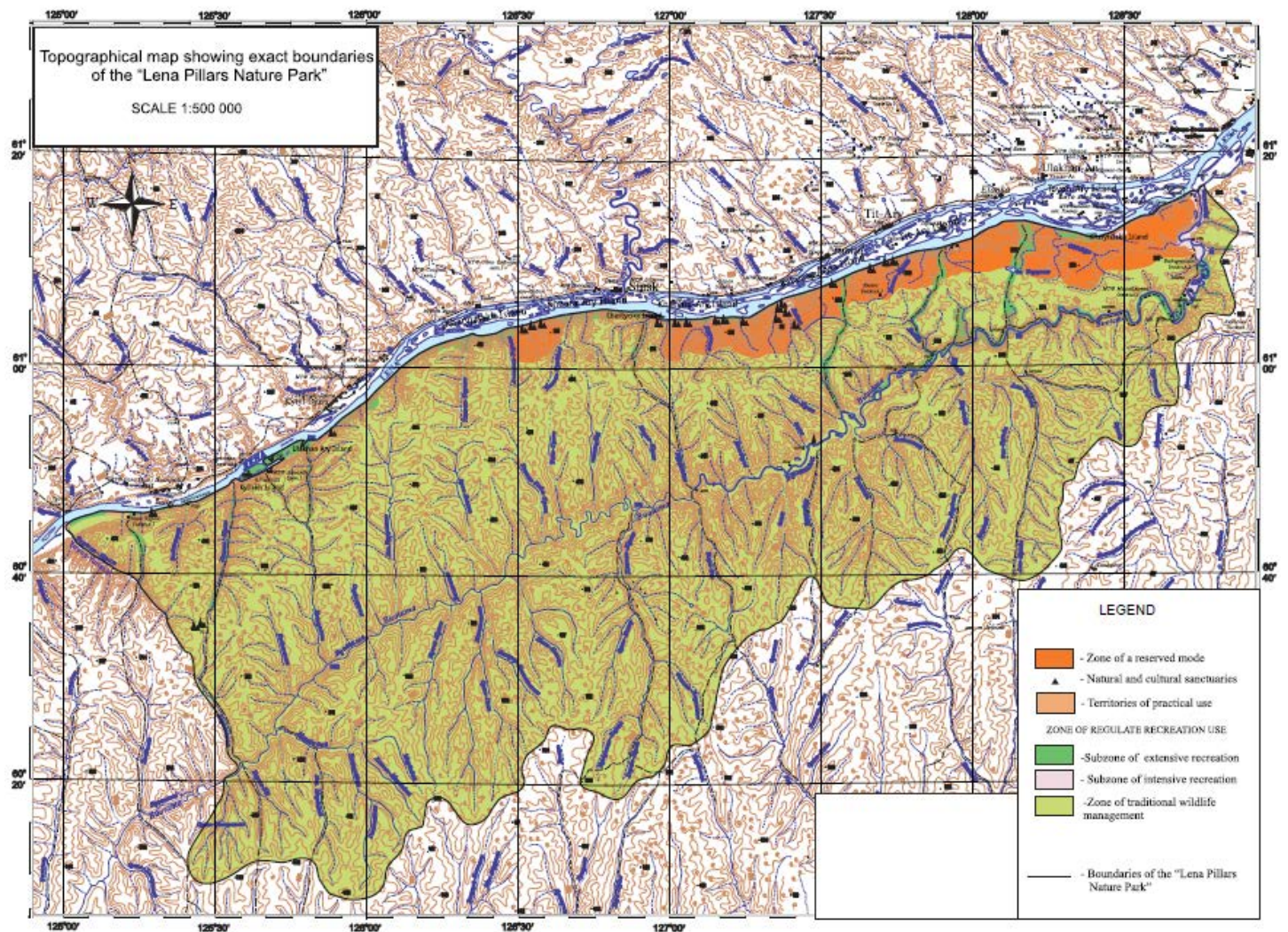
4. Expresses its appreciation to the State Party, and the State Government of the Sakha Republic, and stakeholders, regarding the work that has been done to research, present and protect the values within the Lena Pillars region;

5. Further welcomes the collaborative efforts of the State Party, stakeholders and IUCN during the evaluation of this nomination to increase dialogue and assess practical options toward an improved nomination, and requests that lessons learned are appropriately considered in the reflection on the Future of the Convention.

Map 1: Location in the Russian Federation



Map 2: Nominated property and buffer zone



A. NATURAL PROPERTIES

A2. REFERRED NOMINATIONS OF NATURAL PROPERTIES

AFRICA

SANGHA TRINATIONAL

CONGO, CAMEROON, CENTRAL AFRICAN REPUBLIC



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

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

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

Background note: As detailed in the IUCN evaluation report for 35COM, IUCN recommended a deferral of the original nomination. While maintaining the full set of technical IUCN recommendations, the Committee decided to refer the nomination (35COM 8B.4). As a follow-up and as requested in Decision 35COM 8B.4, and upon the request of the States Parties, IUCN provided advice to the States Parties on the interpretation of the IUCN recommendations. This advice was provided by different means including through several workshops in Central Africa. A meeting in Paris brought together representatives of IUCN (both field evaluators and a representative of the IUCN World Heritage Programme), the World Heritage Centre and an international consultant hired to contribute to the revision of the nomination dossier. Two participants of the meeting in Paris personally conveyed the conclusions of the group to the participants of a subsequent workshop in Cameroon. A member of IUCN regional staff, based in Yaoundé, contributed to further convey IUCN's advice as considered by the Committee, in particular by representing IUCN at two workshops in the region.

1. DOCUMENTATION

a) Date nomination received by IUCN: Original nomination received on 15 March 2010. Revised version after 35COM referral decision received on 28 February 2012.

b) Additional information officially requested from and provided by the State Party: Supplementary information on the original nomination was requested from the State Party on 04 January 2011. The Republic of Congo submitted the requested information on 24 February 2011 on behalf of the three States Parties. The submitted information was considered in IUCN's 2011 evaluation report and this 2012 Evaluation Report.

c) Additional Literature Consulted: Cassidy R., Watkins B., Cassidy T. (2010) **First record of Red-necked Picathartes oreas for Central African Republic**. Bull ABC 17 (2) : 216-217; Endamana D., Klintuni Boedihartono A., Bokoto B., Defo L., Eyebe A., Ndikumagenge C., Nzoo Z., Ruiz-Perez M., Sayer J.A. (2010) **A framework for assessing conservation and development in a Congo Basin forest landscape**. Trop. Conserv. Sci. 3 (3): 262-281; Kirtley, A., Gontero, D. (2011). **Forests, Development, and Dignity for the BaAka A Needs Assessment of the BaAka Pygmy Population living in the Dzanga Sangha Complex of the Central African Republic**. Submitted to Sacharuna Foundation; Sandker M., Campbell B.M., Nzoo Z., Sunderland T., Amougou V., Defo L., Sayer J.A. (2009). **Exploring the effectiveness of integrated conservation and development interventions in a Central African forest landscape**. Biodivers. Conserv.;

UNESCO (2010) **Le patrimoine mondial dans le bassin du Congo**. Unesco Paris : 63 p.; White, L., J.P. Vande weghe (2009). **Patrimoine mondial naturel d'Afrique centrale: Bien existants – Bien potentiels**. Rapport de l'atelier de Brazzaville du 12-14 mars 2008 UNESCO Centre du Patrimoine Mondial Paris France; Yanggen, D., Angu, K., Tchamou, N. (2010) **Conservation à l'échelle du Paysage dans le Bassin du Congo : Leçons tirées du Programme régional pour l'environnement en Afrique centrale (CARPE)**. IUCN / USAID

d) Consultations: Five external reviewers were consulted, together with both IUCN representatives from the 2010 field visit.

e) Field Visit: Gérard Collin and Charles Doumenge evaluated the original nomination in November 2010.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

Tri-national de la Sangha (Sangha Trinational), or TNS is a transboundary conservation complex in the North-western Congo Basin where Cameroon, the Republic of Congo and the Central African Republic meet. TNS encompasses three contiguous national parks totalling 754,286 hectares. These are Lobéké National Park in Cameroon, Nouabalé-Ndoki National Park in Congo and Dzanga-Ndoki National Park in the Central African Republic. The latter is comprised of two distinct units. The parks are embedded in a much larger forest

landscape, sometimes referred to as the TNS Landscape. Compared to the original nomination referred at 35COM the buffer zone has been significantly enlarged to 1,787,950 ha compared to less than 400,000 ha before.

Natural values and features include the ongoing ecological and evolutionary processes in a mostly intact forest landscape at a very large scale. Numerous and diverse habitats such as tropical forests comprised of deciduous and evergreen species, a great diversity of wetland types, including swamp forests and periodically flooded forests and many types of forest clearings of major conservation importance continue to be connected at a landscape level and harbor viable populations of complete faunal and floral assemblages, including top predators and rare and endangered species. The size, biogeographic location at the junction between the Congo Basin and the Lower Guinea floristic domains and very limited man-made disturbance are factors that have contributed to the development and maintenance of the remarkable diversity of life. Unlike many other parts of the Congo Basin, TNS comprises large tracts of ecologically and functionally intact tropical lowland forests which have never been commercially exploited or deprived of ecologically important mammals and birds by excessive hunting and poaching. An estimated 30% of TNS has been selectively logged for commercial purposes and near settlements during the second half of the 20th century but has since mostly been left to naturally regenerate into ecologically valuable secondary forests. Historic human use goes back a long time with the impacts of the traditional semi-nomadic inhabitants living from hunting, gathering and fishing having remained very limited. The human population density remains extremely low.

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

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

Species regularly visiting the forest clearings include Forest Elephants, Gorillas, Chimpanzees, several antelope species such as the Sitatunga and the emblematic Bongo, as well as different species of wild pig.

Beyond their ecological importance, the clearings facilitate unusual opportunities for scientific and touristic observations otherwise unavailable in most tropical lowland rainforests. In addition to the clearings there are numerous lakes, likewise of high wildlife importance. It is important to note that there are large numbers of forest clearings and lakes located outside of the nominated area, in particular in Congolese forest concessions, south of the nominated property. Their inclusion in the buffer zone and consideration for their protection in the logging concessions are positive from a conservation perspective.

The biodiversity of TNS represents the full spectrum of humid tropical forest ecosystems in Africa but the flora is enriched by additional herbaceous species occurring exclusively in the forest clearings. Endemic species and subspecies have been identified in the Sangha River corridor and in particular in the nominated property, such as the Sangha Forest Robin (*Stiphornis sanghensis*). Future research is likely to discover new species, in particular arthropods. TNS protects a large number of heavily exploited tree species including vulnerable species such as numerous Meliaceae, and Critically Endangered species such as *Austranella congolensis*.

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

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

3. COMPARISONS WITH OTHER AREAS

The property has been nominated under natural criteria (ix) and (x). The nomination includes a comprehensive analysis putting TNS in perspective within the Guinean-Congolese forests and the Central African forest region but also major tropical forests worldwide in terms of size, number and density of selected species, species diversity (plants, mammals and birds), habitat diversity, and wildlife aggregations. The comparative analysis

uses a wide range of data from UNESCO, UNEP-WCMC and IUCN.

Results from the comparative analysis show that TNS does have major importance for great ape conservation in Western Equatorial Africa for its scale, remoteness and for so far being free of the devastating Ebola virus. TNS supports over 4,000, maybe over 8,000 Western Lowland Gorilla and Chimpanzee, plus at least 4,000 forest elephants. TNS is also among the few remaining large-scale priority areas for other taxa, including forest elephants, even though two other priority areas in the region are already on the World Heritage List, the Dja Conservation Complex and the Lopé National Park (LNP). However, TNS is larger than the LNP and has by far greater ape populations, and TNS is larger and more important for other taxa than the Dja Conservation Complex.

In terms of size, TNS is not as large as Salonga National Park or Okapi Wildlife Reserve in the Democratic Republic of Congo; it is as large as Virunga National Park; and exceeds Kahuzi-Biega National Park (Democratic Republic of Congo), the Ecosystem and Relict Cultural Landscape of Lopé-Okanda (Gabon) and Dja Faunal Reserve (Cameroon). At the same time the new addition of major buffer zones surrounding the three national parks comprising the nominated property and ongoing efforts to improve logging practices in concessions will substantially contribute to improved conservation and management at a large scale well beyond the nominated property which is a unique feature of TNS when compared to other World Heritage properties.

While it could be argued that other existing World Heritage properties support a higher diversity, the size, existence of large pristine areas, relative remoteness and intactness of the property, the high diversity of habitats including the various types of forest clearings, as well as the still mostly forested surrounding landscape support the case for Outstanding Universal Value of TNS as the combination and scale of these numerous values and phenomena is exceptional.

Clearly, some of the values and intactness of TNS are a function of the much larger forest landscape. Therefore, the future of TNS will also depend on the fate of the surroundings. More concretely, it will depend on the balance between conservation and resource use, including addressing local livelihood needs and effectively controlling commercial logging.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is comprised of three state-owned national parks: Lobéké National Park in Cameroon, Nouabalé-Ndoki National Park in Congo and Dzanga-Ndoki National Park in the Central African Republic. With the exception of a small fishing

community there appear to be no permanent inhabitants within the nominated property.

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

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

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

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

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

The establishment of the transboundary complex and of the TNS Foundation provides a strong framework and is showing positive results. More recently and in response to the Committee decision 35COM 8B.4 the three State Parties involved in this nomination declared more than

1.7 million ha of adjacent land as a formal buffer zone. The land is mostly under timber concessions most of which address or are starting to address key social and environmental issues under certification schemes.

Overall and despite many challenges, TNS is a highly encouraging example of transboundary cooperation and conservation in the region. The protection status of the nominated property is appropriate. Formally, the concerns about the broader landscape and its relationships with the nominated property expressed in the previous IUCN evaluation have been dealt with through the declaration of a large buffer zone.

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 are defined by the legal extent of the three existing national parks: Lobéké National Park in Cameroon, Nouabalé-Ndoki National Park in Congo and Dzanga-Ndoki National Park in the Central African Republic. In the case of Lobéké National Park they follow water courses or dirt roads. As for Nouabalé-Ndoki and Dzanga-Ndoki National Parks, in some case administrative or geographical limits are used.

In the original nomination a formal buffer zone for the nominated property had only been designated in the Central African Republic in the form of the Dzanga-Sangha Special Forest Reserve. In the other two countries, the nominated property is adjacent to concessions which are committed to regulated logging, and many adhere to the standards established by Forest Stewardship Council (FSC), which includes social standards. While these concessions are of vital importance for the long term integrity and conservation value of the nominated property, they were not formally proposed as buffer zones to the property. This has since been revised and the entire nominated property is now surrounded by a large buffer zone in all three countries. In IUCN's view this is a most welcome acknowledgement of the intricate linkages between the nominated property and its surroundings. It is hoped that these changes in the approach will provide an umbrella for land use planning and for addressing the livelihood needs of local and indigenous communities in the broader TNS landscape. IUCN also notes that important values that are noted in the nomination, such as the rich natural forest clearings and associated wetlands, are partially located in these adjoining concessions and contribute to the overall conservation value of the landscape.

Consistent with earlier conclusions IUCN considers the integration of concessions bordering the various national parks as formal buffer zones a considerable conceptual improvement. It is likely to increase the integrity of a

possible future World Heritage property provided that timber extraction in the forest concessions do not compromise the natural and cultural values of the nominated property nor the livelihoods of local communities and indigenous peoples.

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

4.3 Management

The three national parks all have management and administrative staff provided or supported by both governments and international cooperation agencies. Lobéké National has a permanent staff of roughly forty, including several technical and scientific staff provided through an agreement with the Djengi project (WWF and the German development agency, GIZ). Dzanga-Ndoki National Park has 148 staff of which only ten are government funded, another ten are funded from tourism revenues with the rest supported by WWF. In Nouabalé-Ndoki National Park there are 18 staff, including 12 "ecoguards". The Wildlife Conservation Society Congo Program (WCS) supports around 50 permanent technical and scientific staff. Consequently, around 300 are involved in the management of TNS at various levels.

The national level support budgets for the parks are modest, contributing only a small percentage to the overall budget, leaving the bulk of funding to international cooperation and concessionaries near TNS. The latter finance the salaries of the "ecoguards" whose tasks include anti-poaching activities. It is hoped that this significant dependence on external support will eventually be reduced through increasing capacities, higher governmental budget allocations and new forms of conservation financing.

TNS Foundation, established in 2007, is a private entity, established under British law with its executive headquarters in Central Africa. It is managed by a Board of Directors, consisting of 11 members who are representatives of the governments of Cameroon, Republic of Congo, Central Africa Republic, as well as WWF, the Wildlife Conservation Society, Rainforest Foundation, KfW banking group, l'Agence Française de développement (AFD) (observer), the park managers and civil society. Set up as a conservation trust, it has the objective to secure long term funding through contributions from various donors. Currently, there is a capital of about €20M mostly from KfW, AFD and German foundation "Regenwald Stiftung" founded by a private brewery. The stated objective is €35M. On the basis of an estimated 4% of annual returns, the fund is reported to cover the identified funding needs. There are four areas representing the three countries involved and a fourth dedicated specifically to transboundary efforts. The Fund is the most important source of funding for the property besides revenues from tourism.

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

Regular trilateral meetings take place at the management and implementation level (Comité Tri-national de Planification et d'Exécution) and between park managers. A scientific Committee (CST) has been declared but it is still to be fully operational.

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

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

The traditional livelihoods of the indigenous peoples, such as the BaAkas, are to an extent considered in park's management but it is clear that the establishment of the parks has excluded local communities from previously used land and resources. There are policies for local resource users in the protected areas. In Lobéké National Park (Cameroon) there are use zones within the park. In the Central African Republic, the buffer zone permits local resource use, including indigenous hunting and gathering. In the case of Congo, community hunting zones have been designated within logging concessions. The significantly enlarged buffer zone presents an opportunity to consider the livelihood needs of local and indigenous communities under the World Heritage umbrella more thoroughly. In particular the World Heritage momentum associated to this nomination should be used to follow up on a range of different commitments of the States Parties regarding the recognition of the rights of local and indigenous peoples. IUCN considers this matter should be noted as an explicit and important expectation for the protection and management of the area if inscribed on the World Heritage List, and as a matter that should be considered further by the World Heritage Committee.

Park management would need to have a stronger mandate to become more actively involved in guiding actions in the buffer zones. These areas are doubtlessly decisive for maintaining and enhancing the integrity of the nominated property. There is also a need to harmonize legal approaches and regulations across all the State Parties involved in this nomination as to allow the traditional use of resources by indigenous peoples.

The need for using local knowledge in wildlife management and resource use should be also considered in the zonation and management planning of the buffer zone.

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

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

Overall, the approach to natural resource management appears to be progressing in a positive direction. Through the declaration of a major buffer zone there is now a clear recognition in the nomination that park management must also address issues on local communities and indigenous people's livelihoods in an integrated manner.

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

4.4 Threats

Logging and secondary effects of logging

Illegal logging does not appear to constitute a major concern within the nominated property and the prospects for the parks in this regard appear positive. Given the local practices, remoteness, transport costs and rareness of commercially viable species resulting in highly selective extraction, logging as such is not expected to lead to deforestation or major forest degradation. In terms of the broader landscape, logging does play a major role though as the nominated property is surrounded by concessions almost in its entirety on the basis of long-term contracts. Only the concessions within the Dzanga-Sangha Special Forest Reserve have not been allocated so far. The type of highly selective logging and increasingly high forest management standards in line with or based on FSC are a positive development. Having considerable parts of the concession formally nominated as buffer zones it is expected that there will a close coordination between logging concessions and park management.

The concern, however, are secondary effects of logging through the establishment of roads in otherwise inaccessible areas. The effects of this "door opener" are well documented and in Central Africa are often related to informal settlements, small-scale mining and poaching for bush meat and ivory. Countering these effects

requires political willingness and full cooperation on the part of concessionaires. A stronger commitment to control of poaching should be encouraged. The declaration of the buffer zone surrounding the nominated property should be used by conservationists to have a stronger involvement in the future of the forest concessions.

Hunting, poaching and fishing

Hunting by local people is a traditional and legitimate resource use in the TNS landscape. Community hunting reserves have been established outside of the nominated property. Feedback from independent reviewers suggests room for improvement in terms of designing and managing community hunting reserves.

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

Commercial “safari” hunting is legally possible in many parts of the proposed buffer zone and is already taking place in some areas. It is important that this activity benefit local communities through generation of revenues and employment. There may be opportunities to further tap into the potential of sports hunting as a conservation financing instrument. Hunting must be accompanied by monitoring to prevent impacts on ecologically important species, such as predators or large mammals.

Fishing is occurring at a subsistence level and does not appear to constitute a major conservation concern for the time being.

Agriculture

Small-scale agriculture, including livestock keeping, is widespread around the villages in the area but practically non-existent within the nominated property. Wildlife damage to crops, such as from elephants and gorillas, are a sensitive human-wildlife conflict which will continue to impact on the relationship between park staff and local communities and indeed the very perception of conservation. Mitigation and compensation measures should be put in place as a management response to address this issue.

Mining

No major mining is known to occur within the nominated property. Small scale diamond exploitation is illegally developing in the Northern part Dzanga-Sangha Special Forest Reserve proposed as a buffer zone and may occasionally occur in the parks. The closest mining is only around five kilometres away from the Northern part

of Dzanga-Ndoki National Park. Monitoring and, if needed, decisive action is needed in order to phase out the illegal mining in Dzanga-Sangha Special Forest Reserve and to prevent its expansion into Dzanga-Ndoki National Park. In the much larger buffer zone proposed in the revised nomination there are a number of areas where mining is reported. Future management should address these questions in coordination with other sectors.

Epidemics

The Ebola virus has not been documented in the nominated area but poses a potential threat, particularly for the populations of Western Lowland Gorilla. Biosecurity considerations and safety precautions in tourism management are therefore of the utmost importance in the management of 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 Consideration of local people, including local cultural values

IUCN had noted in its earlier evaluation that there is a rich cultural heritage associated with the nominated property. As pointed out before this has not been strongly considered within the nomination even though the revised nomination considers local and indigenous communities in more detail than the previous documentation. IUCN has also followed, but without the possibility of an on-site mission, the further consultation arrangements regarding the nomination, and also received representations from an observer of the consultation in one of the nominating States that these were not adequate and took place very late and only at the moment of submission of the referral information. IUCN considers that the World Heritage Committee may wish to consider this matter further with the nominating States Parties in considering the potential inscription of the property on the World Heritage List. Consistent with the view that inscription on the World Heritage List would provide momentum to further and better consider these issues, and support the rights of the traditional communities within the existing protected areas that make up the nomination, IUCN recommends that they are commented on specifically in the Committee decision. In IUCN’s view, the inclusion of a large buffer zone in the revised nomination provides a good basis for natural resource management of the broader landscape considering ways and means to address the livelihoods of local communities and indigenous peoples as well as to enhance their involvement in planning and decision-making.

6. APPLICATION OF CRITERIA

Sangha Trinational has been nominated under criteria (ix), and (x). The States Parties have decided to not make a case for criterion (vii) which was considered in the first nomination.

Criterion (ix): Ecological processes

The property is characterised by its large size, further supported by the massive buffer zone, minimal disturbance over long periods and intactness thereby enabling the continuation of ecological and evolutionary processes at a huge scale. This includes the continuous presence of healthy natural populations of wildlife, including top predators and large mammals which are often affected by hunting and poaching elsewhere. There is a fully connected mosaic of very diverse habitats, including numerous types of ecologically remarkable forest clearings attracting major wildlife aggregations and countless plant species otherwise not found in the forest landscape. Unlike many other forest protected areas, the nominated property is not a remaining fragment but continues to be part of a much larger intact and ecologically functional landscape. This is increasingly rare and significant at a global scale.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species

The nominated property represents a wide spectrum of the species-rich humid tropical forest ecosystems in Central Africa's Congo Basin. The flora is enriched by additional herbaceous species occurring exclusively in the many types of forest clearings. TNS protects a large number of tree species which are heavily commercially exploited elsewhere, such as the critically endangered Mukulungu (and various species commercially traded as "ebony", and so at risk of extinction. The property provides protection for a range of endangered species. In addition to viable populations of forest elephants, significant populations of the critically endangered Western Lowland Gorilla and the endangered Chimpanzee occur both in and around the property, together with several antelope species, such as the Sitatunga and the emblematic Bongo.

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-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

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

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

Trinational de la Sangha (TNS - Sangha Trinational) is a transboundary conservation complex in the North-western Congo Basin where Cameroon, the Central African Republic and the Republic of Congo meet. TNS encompasses three contiguous national parks totalling a legally defined area of 746,309 hectares. These are Lobéké National Park in Cameroon, Dzanga-Ndoki National Park in the Central African Republic and Nouabalé-Ndoki National Park in the Republic of Congo. Dzanga-Ndoki National Park is comprised of two distinct units. The parks are embedded in a much larger forest landscape, sometimes referred to as the TNS Landscape. A buffer zone of 1,787,950 hectares has been established in recognition of the importance of the broader landscape and its inhabitants for the future of the property. The buffer zone includes Dzanga-Sanga Forest Reserve in the Central African Republic, which connects the two units of Dzanga-Ndoki National Park.

Natural values and features include the ongoing ecological and evolutionary processes in a mostly intact forest landscape at a very large scale. Numerous and diverse habitats such as tropical forests comprised of deciduous and evergreen species, a great diversity of wetland types, including swamp forests and periodically flooded forests and many types of forest clearings of major conservation importance continue to be connected at a landscape level. This mosaic of ecosystems harbours viable populations of complete faunal and floral assemblages, including top predators and rare and endangered species, such as Forest Elephants, Gorillas, Chimpanzees, and several antelope species, such as the Sitatunga and the emblematic Bongo.

Criteria

Criterion (ix)

The property is characterised by its large size, further supported by the very large buffer zone, minimal disturbance over long periods and intactness thereby enabling the continuation of ecological and evolutionary processes at a huge scale. This includes the continuous presence of viable populations and natural densities of wildlife, including top predators and large mammals which are often affected by hunting and poaching elsewhere. There is a fully connected mosaic of very diverse habitats, including numerous types of ecologically remarkable forest clearings attracting major wildlife aggregations and countless plant species otherwise not found in the forest landscape. Unlike many other forest protected areas, the property is not a remaining fragment but continues to be part of a much larger intact and landscape with good conservation prospects. This is increasingly rare and significant at a global scale.

Criterion (x)

The property represents a wide spectrum of the species-rich humid tropical forests in Central Africa's Congo Basin, and provides protection for a range of endangered species. The flora is enriched by species occurring exclusively in the many types of forest clearings. TNS protects a large number of tree species which are heavily commercially exploited elsewhere, such as the critically endangered Mukulungu. In addition to viable populations of forest elephants, significant populations of the critically endangered Western Lowland Gorilla and the endangered Chimpanzee occur both in and around the property, together with several endangered antelope species, such as the Sitatunga and the emblematic Bongo.

Integrity

The boundaries of the property coincide with the boundaries of three existing national parks thereby forming a large and contiguous protected area in the heart of the broader TNS Landscape. The entire property is surrounded by a large buffer zone in all three countries which responds to the intricate ecological linkages between the property and its surroundings. This approach provides an umbrella for land-use planning and for integrating the legitimate livelihood needs of local and indigenous communities with nature conservation within the broader TNS landscape. Logging and hunting is banned in the national parks. In addition, the remoteness of TNS adds a natural layer of protection from resource exploitation. It will be essential to ensure that the future activities in the buffer zones, including forest and wildlife management, tourism, agriculture and infrastructure are fully compatible with the conservation objectives for TNS so the surrounding landscape will satisfy the needs of local and indigenous communities while indeed serving as a "buffer" for the property.

Protection and management requirements

There is strong and committed joint management of the property bringing together all three States Parties, an indispensable permanent requirement. The three national parks that make up the property all have management and administrative staff provided by governments and if needed complemented through international support from non-governmental organizations, as well as multi-lateral and bi-lateral agencies. Management, law enforcement, research, monitoring and tourism all require coordination across the national boundaries. There is a Trinational Monitoring and Action Committee (Comité Trinational de Suivi et d'Action), bringing together the three countries at the ministerial level. A Trinational Monitoring Committee unites the three countries at the level of regional administrations. These mechanisms are effective in providing a joint protection and management approach to the property, and will need to be maintained and built upon.

The rights and traditional livelihoods of local and indigenous peoples, such as the BaAkas, are a

fundamental and increasingly recognised element in the management of the property. Whereas in Lobéké National Park (Cameroon) there are use zones within the park, in the Central African Republic and the Republic of Congo, local resource use, including indigenous hunting and gathering, is not permitted in the protected areas thereby affecting local livelihoods and creating the potential for conflict. This illustrates the crucial importance of finding an overall balance between nature conservation and local resource use in the broader landscape. The significantly enlarged buffer zone presents an opportunity to better understand and integrate the livelihood needs but also the knowledge of local and indigenous communities under the umbrella of a living TNS landscape. The inscription on the World Heritage List presents a concrete opportunity for the States Parties to translate a range of different commitments of the States Parties regarding the rights of local and indigenous people into action on the ground.

Maintaining the ecological values of the property will not only depend on law enforcement but eventually both on the standards of commercial resource extraction in the buffer zone and the acceptance and support of parks by the local and indigenous communities in the surrounding landscape.

4. Strongly commends the three State Parties for their constructive joint response to decision 35COM 8B.4 of the World Heritage Committee, in particular as regards the consideration of a much larger landscape as a formal buffer zone for the property and the stronger acknowledgment of and reference to the need to effectively engage local and indigenous communities, in the management of the property;

5. Requests the State Parties to provide an enhanced map of the defined boundaries of the buffer zones, at an appropriate large scale, to the World Heritage Centre before 31st December 2012;

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 its buffer zone, and therefore requests the State Parties to:

a) use the declaration of a large buffer zone surrounding the entire property as an opportunity to further develop an integrated landscape approach in line with commitments stated in the nomination;

b) increase further the involvement and representation of local and indigenous communities in the future conservation and management of the TNS landscape in recognition of the rich cultural heritage of the region, the legitimacy of their rights to maintain traditional resource use and their rich local knowledge, including through providing effective and enhanced mechanisms for consultation and collaboration;

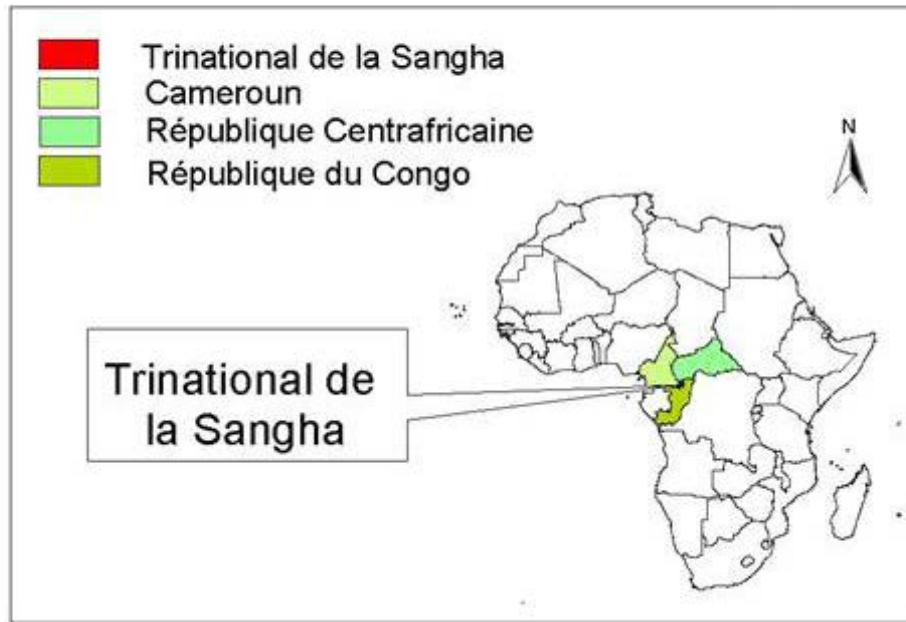
- c) further ensure and monitor socially and environmentally high performance standards of the logging and hunting concessions;
- d) further harmonize objectives and guidelines for the various conservation initiatives and management planning, including tourism planning among the three State Parties;
- e) further improve coordination between ministries and sectors to ensure adequate and consistent planning of land and resource use, and law enforcement in the buffer zone;
- f) ensure adequate long-term funding support for the property, including through full support to the

Trust Fund and to the retention of tourism revenues for conservation and community development purposes.

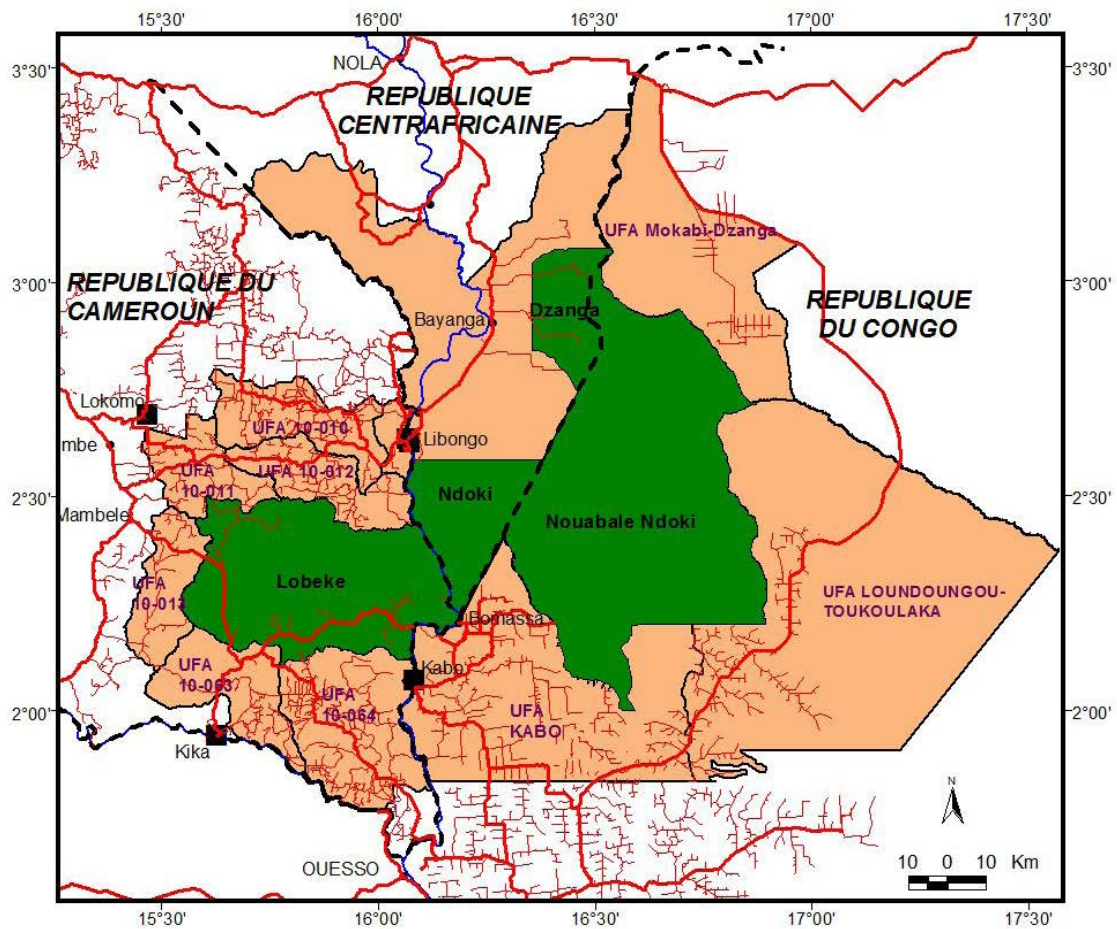
7. Expresses its strong appreciation to the States Parties for their longstanding transboundary approach to conservation and management efforts of a shared landscape and the major and ongoing international support that has been provided to support this work;

8. Provide a report to the World Heritage Centre by **1st February 2014** on the progress in implementing the above recommendations, for possible consideration by the World Heritage Committee at its 38th Session in 2014.

Map 1: Nominated property location in Africa



Map 2: Nominated property and buffer zone



Légende

- Parc National
- Zone tampon
- Ville forestière (Site de transformation du bois)
- Principale ville/village
- Rivière navigable
- Frontière nationale
- Route principale
- Route forestière secondaire

ASIA / PACIFIC

WESTERN GHATS

INDIA



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

WESTERN GHATS (INDIA) – ID No. 1342 Rev

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To defer the nomination of the property

Key paragraphs of Operational Guidelines:

78 Property does not meet conditions of integrity or protection and management requirements

114 Property does not meet management requirements for serial properties

Background note: As detailed in the IUCN evaluation report for 35COM, IUCN recommended a deferral of the original nomination. While maintaining the full set of technical IUCN recommendations, the Committee decided to refer the nomination. The Committee requested the State Party to address a range of issues concerning the scope and composition of the serial property; boundaries of the property's core area and its buffer zone; enhanced stakeholder consultation and engagement; and a range of protection, management and coordination measures. The State Party of India submitted a response to Decision 35COM 8B.9 in February 2012 which provides information in relation to each of the issues raised and providing revised maps of the nominated property. The evaluation below draws upon the previous assessment taking into account re-submitted material.

1. DOCUMENTATION

a) Date nomination received by IUCN: Original nomination received on 15 March 2010. Revised version after 35COM referral decision received on 28 February 2012.

b) Additional information officially requested from and provided by the State Party: Supplementary information on the original nomination was requested from the State Party on 06 January 2011. India submitted the requested information on 24 February 2011. The submitted information was considered in IUCN's 2011 evaluation report and this 2012 Evaluation Report.

c) Additional literature consulted: Anand, M.O., J. Krishnaswamy, A. Kumar and A. Bali (2010). **Sustaining biodiversity conservation in human-modified landscapes in the Western Ghats: Remnant forests matter.** *Biological Conservation* 143: 2363-2374; S.D. Biju and F. Bossuyt (2003) **New frog family from India reveals an ancient biogeographical link with the Seychelles.** *Nature London* 425: 711-714; BirdLife International (2010) **Endemic Bird Area factsheet: Western Ghats.** <http://www.birdlife.org>; T.M. Brooks, R.A. Mittermeier, C.G. Mittermeier et al. (2002) **Habitat loss and extinction in the hotspots of biodiversity.** *Conservation Biology* 16: 909-923; CEPF (Critical Ecosystem Partnership Fund) (2007) **Ecosystem Profile: Western Ghats and Sri Lanka Biodiversity hotspot, Western Ghats Region.** Ashoka Trust for Research in Ecology and Environment, Bangalore; A. Das et al. (2006) **Prioritisation of conservation areas in the Western Ghats, India.** *Biological Conservation* 133: 16-31; A.N. Henry and R. Goplan (1995). **Agasthyamalai Hills, India.** In: *Centres of Plant*

Diversity. A Guide and Strategy for their Conservation Vol 2; IUCN Publications Unit, Cambridge, UK. IUCN (2004) **The World Heritage List: Future priorities for a credible and complete list of natural and mixed sites.** Submitted to the World Heritage Committee WHC-04/28.COM/INF.13B; C. Magin and S. Chape (2004) **Review of the World Heritage Network: Biogeography, Habitats and Biodiversity. A Contribution to the Global Strategy for World Heritage Natural Sites.** WCMC / IUCN; R.A. Mittermeier, J. Ratsimbazafy, A.B. Rylands et al. (2007) **Hotspots Revisited.** CEMEX Mexico City Mexico; N. Myers, R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca and J. Kent (2000) **Biodiversity hotspots for conservation priorities.** *Nature* 403: 853-857; N.C. Nair and P. Daniel (1986) **The floristic diversity of the Western Ghats and its conservation: a review.** *Proc. Indian Acad. Sci. (Animal Sci./Plant Sci.) Suppl.* 127-163; P.O. Nameer, S. Molur, and S. Walker (2001) **Mammals of Western Ghats: A Simplistic Overview.** *Zoos' Print Journal* 16(11): 629-639; E. Vajravelu (1995) **Nilgiri Hills, India.** In: *Centres of Plant Diversity A Guide and Strategy for their Conservation* Volume 2; Bossuyt, F., M. Meegaskumbura, N. Beenaerts et al. (2004) **Local endemism within the Western Ghats – Sri Lanka biodiversity hotspot.** *Science* 306: 479-481; Dahanukar, N, Raut, R. and Bhat, A. (2004) **Distribution, endemism and threat status of freshwater fishes in the Western Ghats of India.** *Journal of Biogeography* 31(1): 123-126; Gunawardene, N.R., A.E. Dulip Daniels, I.A.U.N. Gunatilleke et al. (2007) **A brief overview of the Western Ghats – Sri Lanka biodiversity hotspot.** *Current Science* 93: 1567-1572. 669-670; Helgen, K.M. and C.P. Groves (2005). **Biodiversity in Sri Lanka and the Western Ghats.** *Science* 308: 199

d) Consultations: three external reviewers together with both IUCN representatives from the 2010 field visit.

e) Field visit: Wendy Strahm and Brian Furze evaluated the original nomination in October 2010.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

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

The Western Ghats covers an area of about 160,000 km² (CEPF, 2007) composed of mountains, large tracts of rainforest, rivers and waterfalls, seasonal mass-flowering wildflower meadows, and what is called the "shola-grassland ecosystem" which are patches of forests in valleys surrounded by grasslands. The overall composition of the resubmitted serial nomination has not changed from the nomination of 2010. The re-submitted nomination consists of seven different areas (the "sub-clusters") covering a total of 795,300 ha. 39 different component parts comprise these sub-clusters. Three sub-clusters are comprised of 5-6 contiguous components, and four sub-clusters are comprised of 4-7 at times contiguous components. The different components range in size from a minimum of 377 ha to a maximum of 89,500 ha. A list of the seven sub-clusters with their 39 components and their size is provided in Annex 1.

The components refer for the most part to administrative boundaries, which include Tiger Reserves, National Parks, Wildlife Sanctuaries, or Reserved Forest (in decreasing order of strict protection). Revised maps for each of the 39 components have been submitted by the State Party. A detailed GIS analysis of the revised maps undertaken by IUCN with the support of UNEP World Conservation Monitoring Centre (UNEP-WCMC) noted that a number of the 39 components now have different areas to that initially nominated. The GIS analysis shows the total area of the nominated property is now 816,538 ha, a net increase in area of 2.67% over the 2010 nomination. A number of Reserved Forests have been identified in revised maps as buffer zones and connectivity mechanisms for the property.

The property has been re-nominated under criteria (ix) and (x). The Western Ghats display high natural biodiversity values despite the high human population densities and development needs of this region. The 2010 nomination dossier noted that some "23% of the original extent of forest remains as natural habitat". However, many of the natural areas have been disturbed. Patches of native forest are interspersed with different types of cultivation, timber plantations, as well as human habitation. GIS analysis of six broad landuse classes (estates, forests, forest plantations, reservoirs, scrub and settlements) based on the re-submitted maps suggest that more than 93% of the re-nomination is forest, however, there are areas of non-conservation landuses still within the nomination (settlements; agricultural areas; artificial reservoirs; and plantations – potentially of coconut, rubber, teak, eucalypt, cardamom, tea, and/or coffee).

The 2010 nomination states that "the Western Ghats have the highest protected area coverage on the Indian mainland (15%), in the form of 20 national parks and 68 sanctuaries" and it is clear that this region enjoys a high level of formal protection. The State Party has given lengthy consideration to which components of areas already under protection ought to be included within the serial nomination. Hence the components include 21 protected areas. 40% of the nominated area is classed as Reserved Forest and so lies outside of formal protected areas. As a result, in total 5% of the area of the Western Ghats has been included in the nomination. The Western Ghats also include two Biosphere Reserves, the Nilgiris Biosphere Reserve (covering 11,040 km²) and the Agasthyamalai Biosphere Reserve (covering 3,500 km²).

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

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

case could be made for including these National Parks in the serial site based on the value of some flagship species.

The 2010 nomination notes 139 mammal species with 17 endemic species. Nameer et al. (2001) note 135 species and 16 endemic species, with all but 2 species threatened and one data deficient. The Western Ghats is also known for a high diversity of bat species, with nearly 50 species and one endemic genus, represented by the Critically Endangered (CR) bat *Latidens salimalii*, which is endemic to the High Wavy Mountains in the Western Ghats (not included in the nomination). A number of flagship mammals have been repeatedly identified throughout the nomination including the Endangered (EN) endemic lion-tailed Macaque, Nilgiri Tahr (EN) and Nilgiri Langur (VU). These have been identified as key indicator species for monitoring purposes. The nomination also includes areas that protect the Malabar civet (CR and one of the most threatened Indian mammals) occurring in Talacauvery Wildlife Sanctuary, Kudremukh National Park and as “possibly extinct” in the Sahyadri sub-cluster.

In addition, Asian Elephant (EN) and Tiger (EN) are highlighted throughout the 2010 nomination with claims that “The Western Ghats are also home to the world’s largest population of the endangered Asian Elephant, with about 11,000 animals.” The 2010 mission, however, noted that very few animals actually occur inside the proposed property, cause for some concern given that both Asian Elephant and Tiger have been chosen as indicator species to monitor the state of conservation of the proposed property and are highlighted as central to its outstanding universal value. Elsewhere the 2010 nomination notes “The Nilgiri Sub-cluster is recognized as one of the most significant landscapes for conservation of a whole range of plant and animal taxa, as well as vegetation and ecosystem types. Together with the adjoining protected areas in the States of Karnataka (Bandipur and Nagarahole), Kerala (Wayanad) and Tamil Nadu (Mudumalai), this landscape has vast expanses of grasslands, scrub, deciduous and evergreen forests that possibly contain the single largest population of globally endangered ‘landscape’ species such as the Asian Elephant, Gaur and Tiger.”

In terms of species richness, the 2010 nomination also provided figures for amphibians (179 species, of which 65% are endemic, not referenced). CEPF (2007) noted that amphibians had the greatest degree of endemism, with 126 species of which 78% are endemic. Whatever the correct figures are, amphibian diversity and endemism is extremely high. The 2010 nomination mentioned a newly described species of purple frog belonging to an endemic family (Biju et al. 2003) that has been classified as EN (Biju 2004), just one example of the importance of amphibians in the Western Ghats. The 2010 nomination also highlights high species richness in reptiles (157 species, 62% endemic) and fish (219 species, 53% endemic) as well as noting that invertebrate biodiversity, once better known, is likely also

to be very high (with some 80% of tiger beetles endemic).

Human impacts are still evident across this landscape notwithstanding careful delineation of boundaries to exclude these wherever possible from the nominated property itself. Revised maps show that 11 of the 39 (28.2%) components have had adjustments made to their boundaries to excise a number of disturbed areas principally human settlements and parts of reservoirs. However, as the GIS analysis suggests many disturbed areas remain within the re-nominated property. In addition component parts of the re-nomination continue to have villages and other developments in close proximity with the inevitable issues such as encroachment, livestock grazing, fodder and fuel wood collection, illegal hunting and increasing interest in tourism-related activity among others.

3. COMPARISONS WITH OTHER AREAS

The Western Ghats have been repeatedly identified, including based on their species and habitat values, as an important gap on the World Heritage List. They have been identified as a potential forest World Heritage site (Thorsell et al. 1997), a potential mountain World Heritage site (Thorsell et al. 2002), a high priority Endemic Bird Area not yet on the World Heritage List (Smith et al. 2000), and an IUCN/SSC global habitat type in Asia that could be considered for inscription to the World Heritage List (Magin et al. 2004).

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

The nominated areas include parts of the Agasthyamalai Hills and Nilgiri Hills Centres of Plant Diversity and the Western Ghats Endemic Bird Area, all not yet covered on the World Heritage List. The nominated areas fully or

partly include up to 14 Important Bird Areas and 3 Alliance for Zero Extinction sites. The nominated areas also include a number – but not all – of the forest reserve areas of high conservation value that were identified by Das et al. (2006) using a systematic conservation planning approach.

In terms of species diversity the 2010 Western Ghats nomination provided somewhat inconsistent information on the exact number of species and endemic species. Based on the information available it is however clear that the species richness and endemism of the Western Ghats is exceptional: the whole region includes some 5,000 vascular plant species (1,700 endemics), 288 freshwater fish species (118), 179 amphibian species (117) and 157 reptile species (97), 508 bird species (17) and 139 mammal species (17). Even if the nominated areas were to include only half of these species, their species richness and endemism would exceed that of most existing natural World Heritage properties in the region. Only the Central Highlands of Sri Lanka – less than a tenth the size of the nominated area – achieve similarly exceptional levels of endemism in freshwater fish, amphibians and reptiles, but there are far fewer species present overall. However, the faunas of Sri Lanka and the Western Ghats are quite distinct, with large numbers of endemic species including mammals, birds, reptiles, amphibians and freshwater fish not occurring in both areas (Bossuyt et al. 2004, Gunawardene et al. 2007, Helgen et al. 2005).

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

The comparison demonstrates that for just about all groups of taxa, the Western Ghats comes out as being outstandingly rich with among the highest levels of endemism for any continental tropical area.

Criterion (ix) was not included in the original 2010 nomination from the State Party; however the re-submitted nomination provides additional analysis of the values of the nominated property in accordance with criterion (ix). Notwithstanding the evidence provided the re-submitted material provides no global comparative analysis nor is it clear if the originally nominated component parts are the most suitable for conserving the ecosystem function values of the Western Ghats.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

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

The State Party has reaffirmed in re-submitted material that 40% of the nominated property lies outside of the formal protected area system, mostly in Reserved Forests. The addition of these areas to the nominated property was undertaken as a way of increasing the opportunities to conserve a larger area of the Western Ghats within a World Heritage property and it is argued that they are legally protected and effectively managed. However, IUCN recalls earlier State Party advice that these Reserved Forests ‘do not provide strict conservation and management of wild faunal species’ and remains unconvinced that this level of protection will successfully protect the values of such a large proportion of the property from various pressures including access and infrastructure development.

Despite the re-submitted maps showing a number of disturbed lands have been excised from the nomination there remain areas within the nominated property which are inappropriate for the core area of a natural World Heritage area. The revised maps indicate a number of settlements, artificial reservoirs, plantations and agricultural areas within the nominated property which has been confirmed by the GIS analysis.

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

4.2 Boundaries

This re-submitted nomination continues to propose 39 mapped components and stresses the importance of the “contiguous site elements” or components in all 7 sub-clusters. Whilst some component parts have adjoining boundaries, there remain concerns as to how ecological processes and conservation connectivity across the nominated property as a whole will function.

The re-submitted maps indicate boundary adjustments to 11 of the 39 component parts. Some human settlements have been excluded from the re-nominated property; however, it appears settlements remain in the

nominated property along with a number of dams, plantations and agricultural areas.

The State Party in its re-submitted material state that 'the matter of determining the inclusion/ exclusion of sites in the serial nomination has not been dealt by the Western Ghats Ecology Expert Panel (WGEEP) and accordingly there are no recommendations on this.' IUCN notes, however, that WGEEP report which was tabled in August 2011 and after submission of the original nomination, makes a number of recommendations on Ecologically Sensitive Zones as areas of high conservation value within the Western Ghats system. IUCN believes it is appropriate to consider the findings of the WGEEP report noting it was specifically commissioned by the Government of India and tasked with comprehensive data compilation and identifying ecologically sensitive areas through GIS and an extensive consultation processes. IUCN is also concerned that the re-submission of essentially the same site composition may not cover those components needed to comprehensively encompass the ecological processes that could be considered under criterion (ix). Furthermore concerns persist that the proposed boundaries may not correspond with those areas essential for the conservation of the key species noted in the nomination.

IUCN remains concerned that the use of Reserved Forests as buffer zones may not offer adequate protection. It is recalled that Reserved Forests are not in place around all components and hence do not provide for a comprehensive buffer zone in all instances.

IUCN considers that the boundaries of the renominated property do not meet the requirements set out in the Operational Guidelines primarily due to ongoing concerns regarding site selection, inclusion of inappropriate land uses and buffer zone effectiveness.

4.3 Management

Integrating the management of 39 sites across 4 States will be a challenge. It is noted that the Western Ghats Natural Heritage Management Committee has been formed under the auspices of the MoEF to deal with coordination and integration issues. This Committee will be chaired by the Director-General of Forests and includes appropriate representation from national level; State level through the Chief Wildlife Wardens of Kerala, TN, Maharashtra, Karnataka, Gujarat and Goa; as well as representatives from Wildlife Institute of India (WII), ATREE, Nature Conservation Foundation (NCF), and the Western Ghats Ecology Expert Panel. The State Party, in re-submitted material, has re-stressed the existing measures for coordination of management, noting that inscription onto the World Heritage List will strengthen a common identify for the 39 component parts. The State Party argues that inscription will result in enhanced coordination and catalyse increased benefits to local livelihoods, tourism development and research and monitoring activities.

Furthermore the re-submitted information notes a three level management structure is being established at national, state and site levels.

The State Party has previously confirmed that "all 39 site elements (components) in the 7 sub-clusters are managed under specific management / working plans." Whilst the three tier management structure is welcomed, IUCN remains concerned that individual management plans are complex and not set within the context of an overarching management plan which clearly articulates how the management of the 39 component parts is to be consistent and harmonized. This is highly desirable to bring a degree of cohesion to such a large serial site with differing types of protected areas. It is also important to spell out overall management goals and a common set of principles which will maintain and enhance the values of the Western Ghats.

The 2010 mission noted support for the World Heritage nomination was evident from many quarters including Government agencies, local populations, academics and committed conservationists including a variety of NGOs and individuals. However, the mission also witnessed strident opposition to NGOs, Government and the nomination in some places such as Kodagu and Karnataka. The State Party in its resubmitted material re-emphasized that all 39 components have participatory mechanisms in place through Village Ecodevelopment Committees (VEDCs). It further restated its commitment to support participatory governance schemes. IUCN notes that there are some 40 different Adivasi/indigenous peoples in several states of the Western Ghats region. IUCN have also been made aware of continued significant concerns about the nomination and rights issues from sections of the indigenous local community. Whilst the VEDCs offer a mechanism for consultation it is important that governance mechanisms not be externally imposed but respect existing indigenous institutions for decision-making consistent with the UN Declaration on the Rights of Indigenous Peoples.

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

4.4 Threats

Mining

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

Hydroelectricity, irrigation and wind farms

As previously noted, many of the components still contain sizable reservoirs within them with the potential for expansion in response to increased irrigation and hydro-electric demand. Similar pressures may arise for wind power generation, noting a number of new windmills within the mountains. The State Party has restated that any infrastructure development is subject to environmental impact assessment. Further that dams do not affect outstanding universal value; however, the evidential basis of this conclusion has not been made clear.

Population pressure, grazing, unsustainable non timber forest products (NTPF) and fuel wood extraction

The re-submitted maps exclude a number of human settlement areas, however, it is recognised that high population pressures and encroachment, grazing and unsustainable NTFP and fuel wood extraction will always remain a threat. Measures are in place to control this and some protected areas have been declared “grazing free” thanks to ecodevelopment projects, largely financed by the Government. However, in other areas grazing remains a visible impact. Human-wildlife conflict is also a major issue in a number of components.

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

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

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

a) What is the justification for the serial approach?

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

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

The formulation of this complex serial nomination has evolved through a consultative process drawing on scientific analysis from various sources. However, IUCN considers that although the component parts have been chosen on a scientific basis in order to conserve the

most irreplaceable species and habitats of the Western Ghats, the nomination still does not adequately encompass the full values of the Western Ghats. In addition, given that each State focuses on its own biodiversity and conservation activities, this means that the overall continuity in interpreting the full values of the Western Ghats as a whole remains very weak.

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

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

Despite the three tier coordination mechanisms proposed by the State Party there remains no overarching management plan for the nominated property. Individual site management plans are in place, however they are complex and it is not clear how they contribute to an overall management strategy for the proposed World Heritage Site as a whole.

5.2 Deferral, referral and the Upstream Process of support to nominations

IUCN considers that the present nomination has not been well served by the application of the referral mechanism, since this does not allow for the appropriate level of further dialogue and discussion regarding the levels of revision of the nomination that have been requested by the World Heritage Committee. It also does not enable any on-site interactions with the State Party to take place in support of consideration by the World Heritage Committee, and no advisory mission was requested to enable support to be provided. IUCN notes that whilst there is clear potential for a World Heritage Site to be successfully nominated in the Western Ghats Region, the present nomination does not conform to the requirements established in the Operational Guidelines. IUCN considers that this presents a clear opportunity to practically implement an “Upstream Process” to provide better support to States Parties in a collaborative and constructive manner. Specifically IUCN considers that the most appropriate way forward would be for the Committee to adopt a deferral mechanism as a positive measure to provide the necessary support and guidance to the State Party to reconsider the nomination and develop a revised proposal that would meet the Operational Guidelines. IUCN would be pleased to provide further support to the State Party, through an advisory mission or otherwise in support of the revision of the nomination prior to its resubmission. Conversely, IUCN considers perpetuating a referral in this case will be a barrier rather than facilitating a process leading to a successful inscription.

6. APPLICATION OF CRITERIA

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

Criterion (ix): Ecological processes

The re-submitted nomination provides additional analysis of the values of the nominated property in accordance with criterion (ix) in relation to three significant global speciation events. The Western Ghats region demonstrates speciation related to the breakup of the ancient landmass of Gondwanaland in the early Jurassic period; secondly to the formation of India into an isolated landmass and the thirdly to the Indian landmass being pushed together with Eurasia. Together with favourable weather patterns and a high gradient being present in the Ghats, high speciation has resulted. The Western Ghats is an “Evolutionary Ecotone” illustrating “Out of Africa” and “Out of Asia” hypotheses on species dispersal and vicariance. However additional global comparison is required to confirm the potential of a revised nominated property to meet criterion (ix), including the type of configuration of serial property required to respond to this criterion, and to articulate a proposed statement of outstanding universal value that would appropriately reflect these values.

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

Criterion (x): Biodiversity and threatened species

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

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

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

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

a) review and refine the scope and composition of the current serial nomination to take into account the recommendations of the “Western Ghats Ecology Expert Panel” noting the Panel was tasked to compile scientific data and define ecologically sensitive areas through consultation;

b) following the above revision, to further refine the boundaries of the components nominated to ensure the exclusion of disturbed areas such as artificial reservoirs, plantations, settlements, industry and agricultural lands; and to enhance the contiguity and buffer zones of the nomination taking into account the recommendations of the “Western Ghats Ecology Expert Panel” on landuse and controls on development;

c) establish improved coordination and integration between component sites, particularly through the preparation and implementation of an overarching management plan or framework for the serial property as a whole and through the establishment of the proposed “Western Ghats Natural Heritage Conservation Authority”;

d) undertake a further consultation to facilitate increased engagement to ensure the views of all stakeholders, including local indigenous groups are considered, in order to ensure and demonstrate broad-based support for the nomination; and

e) provide an improved revised global comparative analysis and succinct statement of outstanding universal value, to the standards established in the Operational Guidelines.

3. Recommends the State Party to invite an IUCN advisory mission, in the context of the “Upstream Process” to collaboratively review the issues outlined above, thereby ensuring a comprehensive approach to conserving the globally recognised high biodiversity values of the Western Ghats region.

Annex 1: Site Elements (Components) and Sub-clusters – 2010 Western Ghats Serial Nomination

Sub-cluster	No.	Component	Area (ha) (2010 data)	State
(1) Agasthyamalai (furthest south)	1	Kalakad-Mundanthurai Tiger Reserve	89,500	Tamil Nadu
	2	Shendurney Wildlife Sanctuary	17,100	Kerala
	3	Neyyar Wildlife Sanctuary	12,800	Kerala
	4	Peppara Wildlife Sanctuary	5,300	Kerala
	5	Kulathupuzha Range	20,000	Kerala
	6	Palode Range	16,500	Kerala
(2) Periyar	7	Periyar Tiger Reserve	77,700	Kerala
	8	Ranni Forest Division	82,853	Kerala
	9	Konni Forest Division	26,143	Kerala
	10	Achankovil Forest Division	21,990	Kerala
	11	Srivilliputtur Wildlife Sanctuary	48,500	Tamil Nadu
	12	Tirunelveli (North) Forest Division (part)	23,467	Tamil Nadu
(3) Anamalai	13	Eravikulam National Park (and proposed extension)	12,700	Kerala
	14	Grass Hills National Park	3,123	Tamil Nadu
	15	Karian Shola National Park	503	Tamil Nadu
	16	Karian Shola (part of Parambikulam Wildlife Sanctuary)	377	Kerala
	17	Mankulam Range	5,284	Kerala
	18	Chinnar Wildlife Sanctuary	9,044	Kerala
	19	Mannavan Shola	1,126	Kerala
(4) Nilgiri	20	Silent Valley National Park	8,952	Kerala
	21	New Amarambalam Reserved Forest	24,697	Kerala
	22	Mukurti National Park	7,850	Tamil Nadu
	23	Kalikavu Range	11,705	Kerala
	24	Attapadi Reserved Forest	6,575	Kerala
(5) Talacauvery	25	Pushpagiri Wildlife Sanctuary	10,259	Karnataka
	26	Brahmagiri Wildlife Sanctuary	18,129	Karnataka
	27	Talacauvery Wildlife Sanctuary	10,500	Karnataka
	28	Padinalknad Reserved Forest	18,476	Karnataka
	29	Kerti Reserved Forest	7,904	Karnataka
	30	Aralam Wildlife Sanctuary	5,500	Kerala
(6) Kudremukh	31	Kudremukh National Park	60,032	Karnataka
	32	Someshwara Wildlife Sanctuary	8,840	Karnataka
	33	Someshwara Reserved Forest	11,292	Karnataka
	34	Agumbe Reserved Forest	5,709	Karnataka
	35	Balahalli Reserved Forest	2,263	Karnataka
(7) Sahyadri	36	Kas Plateau	1,142	Maharashtra
	37	Koyna Wildlife Sanctuary	42,355	Maharashtra
	38	Chandoli National Park	30,890	Maharashtra
	39	Radhanagari Wildlife Sanctuary	28,235	Maharashtra
		TOTAL	795,315	

Map 1: Nominated property



A. NATURAL PROPERTIES

A3. MINOR BOUNDARY MODIFICATIONS OF NATURAL PROPERTIES

AFRICA

SELOUS GAME RESERVE

TANZANIA

WORLD HERITAGE MINOR BOUNDARY MODIFICATION PROPOSAL – IUCN TECHNICAL EVALUATION

SELOUS GAME RESERVE (TANZANIA) – ID No. 199

1. BACKGROUND INFORMATION

This report is on a resubmission of the proposed minor boundary modification of Selous Game Reserve (SGR) that was considered by the Committee at its 35th Session, and which was previously evaluated by IUCN. Covering over 5,000,000 ha, SGR is one of the largest remaining wilderness areas in Africa. The property, located in Southern Tanzania, harbours one of the most significant concentrations of Elephant, Black Rhinoceros, Cheetah, Giraffe, Hippopotamus and Crocodile, amongst many other species. The reserve contains a great diversity of habitats including Miombo woodlands, open grasslands, rivers and accompanying gallery forests and swamps, making it a valuable laboratory for on-going and relatively undisturbed ecological and biological processes at a very large scale. The property was inscribed in 1982 under natural criteria (ix) and (x).

Following the previous submission, the IUCN World Heritage Panel concluded that the requirements for approval as a minor boundary modification of the property were not met and thus recommended that the Committee not accept the proposal. The Committee adopted a revised decision that referred the minor boundary modification and requested a number of points to be addressed, as outlined in Decision 35COM 8B.46.

The decision also requested an advisory mission to the property, which was undertaken in September 2011 by two independent experts who were recommended and facilitated by IUCN, including specific expertise in assessment of the impacts of uranium mining, and with consideration of the Terms of Reference jointly with and approval by the State Party. The mission was undertaken on an independent basis and the findings represent the professional views of the experts contracted by the State Party. As noted in the agreed brief for the mission, and its final report, the views expressed did not constitute an IUCN statement on the proposal, as IUCN provides formal advice on matters requested by the World Heritage Committee only through its World Heritage Panel. The mission report was provided to both the State Party and the IUCN World Heritage Panel.

IUCN has maintained a constant dialogue with the State Party during the process, including via the preparation of the Advisory Mission, exchanges of letters and direct discussions. IUCN is grateful to the State Party for the interaction that has been possible since the 35th Session of the Committee.

2. BRIEF SUMMARY OF PROPOSAL

The revised proposal for minor boundary modification for SGR was submitted by the State Party to the World Heritage Centre on 31st January 2012 and transmitted to IUCN in early February 2012. The new proposal is differently configured, and is also in total for a larger area. It comprises what appears to be the same area referred to as SML PL4700-Nyota Prospect of 19,794 ha that was the principal subject of the previous proposal and is the area covered by a mining license for extraction of uranium, and an additional buffer zone of 21,492 ha to provide protection to the World Heritage property. Both the mining area and the buffer zone would be removed from the property, resulting in the excision of 41,286 ha of land, and a reduction in area of c.0.8% of the current area of the property, according to the information provided in the proposal. (The total area proposed for removal from the property in the earlier proposal, which also included a buffer zone, was 34,532ha).

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

In providing advice to the Committee, IUCN's World Heritage Panel has carefully considered the nature of the modification, recalling that the Operational Guidelines provide two options for a State Party to propose a modification to the boundaries of a property. These are firstly the minor boundary modification process (paragraphs 163, 164 and Annex 11 of the Operational Guidelines) and secondly the process for significant modification of boundaries, which requires a new nomination (paragraph 165). IUCN noted that there were different interpretations of the intent of decision 8B.46 regarding which process should be applied to the proposed boundary modification, and sought further advice on this point from the World Heritage Centre. Whilst acknowledging the different interpretations of Decision 8B.46, the IUCN World Heritage Panel considered that the appropriate procedure to be followed would be for the resubmission of the proposal as a significant modification of boundaries. IUCN wrote to the State Party immediately following the first meeting of the Panel in early December 2011 to advise that was the view of the World Heritage Panel.

The subsequent submission of the revised proposal by the State Party on 31st January 2012 clearly refers to the proposal being requested as a minor boundary modification by the State Party. As a minor boundary modification the language of the Operational Guidelines

regarding requirements is clear, as per paragraph 163 of the Operational Guidelines, viz:

163. A minor modification is one which has not a significant impact on the extent of the property nor affects its Outstanding Universal Value.

In relation to the impact on the extent of the property, as per the above figures, this represents a small percentage of the extremely large property. Nevertheless the area is a relatively large tract of land of over 40,000 ha: according to a preliminary analysis more than 50 of the 211 natural World Heritage properties currently included on the World Heritage List are smaller in area than the area proposed for excision from the property. As noted below the final version of the Environmental Impact Statement (EIS) submitted by the State Party in January 2012 also concludes that the reduction in size of the property is a significant impact.

In relation to the impact on Outstanding Universal Value, it would appear clear that an excision of a 40,000 ha area to create a uranium mine inside the current boundary of a World Heritage property could not be considered to “not affect” Outstanding Universal Value, since there inevitably would be some reduction in the values and the integrity of the property through direct, secondary and cumulative impacts. IUCN has noted that it considers that boundary modifications to World Heritage Sites, as defined in the *Operational Guidelines* to the Convention, should not be proposed for the purpose of facilitating mineral and oil/gas exploration and exploitation projects, and/or associated infrastructure, within or affecting a site. Any proposed changes to the boundaries of a World Heritage Site should be subject to procedures at least as rigorous as those involved in the nomination of the Site, as required under the *Operational Guidelines* to the Convention. IUCN also recalls the advice provided on this issue in the most recent World Heritage Centre / IUCN mission to the property in 2008, recommending that any amendment to the boundaries of the property be considered in the context of the Selous ecosystem, and in relation to Outstanding Universal Value. The IUCN Panel also noted that the Committee had explicitly indicated in decision 35COM 8B.46 that boundary modifications related to mining activities should be considered through the procedure for significant modifications of boundaries.

IUCN has taken note, within the available time for its evaluation, of a number of lines of information regarding the impacts of the proposal, including the final Environmental Impact Statement (EIS) related to the proposed mining activity, the mission report documenting the independent advisory mission (both of which are included in the State Party’s submission of the proposal of 31st January 2012) and voluntary reviews from IUCN’s professional networks.

The advisory mission to the property reached several key conclusions regarding the preparation of the

Environmental Impact Statement related to the proposal (to which reference was made in the Committee’s previous decision). The draft impact statement (version as of September 2011) was reviewed by the advisory mission, which, *inter alia*, concluded that that draft EIS at that time was an inadequate and insufficient basis for decision making, and that a revised EIS was needed, and which would require another review to ensure that the necessary revisions have been put in place.

In terms of OUV, the mission report considered that direct impacts of the proposed mine appeared likely to be minor, provided that appropriate mitigation and management measures were effectively implemented, with some potential benefits to SGR. IUCN concludes that this indicates that there would be an impact, and an assessment would need to be made of the eventual mitigation and management measures that would be applied to determine its extent. Such an evaluation can only be made by IUCN once the EIS has been completed and approved. IUCN notes that a minor negative impact would still not correspond to the requirements of paragraph 163 of the Operational Guidelines in relation to consideration of the proposal as a minor boundary modification.

A revised EIS was submitted to the World Heritage Centre on 31st January 2012 and transmitted to IUCN as part of the minor boundary modification request. IUCN sought information from the State Party regarding whether the newly submitted EIS had been subjected to a further independent review. The State Party confirmed that this had not been done, and subsequently commissioned a rapid independent review of the EIS which was transmitted to IUCN at the start of April 2012. This was therefore provided both after the required deadline for supplementary information that IUCN is required to observe (paragraph 148h of the Operational Guidelines), but also arrived after the final meeting of the IUCN World Heritage Panel, so there was no practical possibility to consider this in the provision of IUCN’s advice to the Committee. IUCN concludes that the EIS submission remains an incomplete process in relation to the provision of advice to the 36th Session of the Committee.

Thus, following the recommendations of the advisory mission, at the time of concluding the present report for the 36th Session, IUCN still awaits the conclusions of the further independent review which is needed before proceeding with substantive analysis of the EIS. As a substantial and detailed document, the evaluation of such a report would also require adequate time for consideration. However the unreviewed EIS does form part of the submission received in February 2012, and IUCN also notes that the submitted EIS contains a section explicitly related to Outstanding Universal Value. This enumerates a range of impacts on the Outstanding Universal Value of SGR, and proposes a range of measures that would seek to address them. IUCN notes that the EIS does comment upon the specific issue of size in its chapter on Outstanding Universal Value thus

“with regards to the potential size of the SGR WHS, the proposed boundary modification will reduce the size of the SGR in effect by 0.8%. This may seem an insignificant amount, however, when one of the main features of the OUV of the SGR is the size of SGR itself, it thus may be considered a significant impact.” As a *prima facie* statement this appears to provide support to a conclusion that the proposal does not correspond to the requirement for a minor boundary modification regarding size.

IUCN notes that the 35th Session of the Committee (Decision 35COM 8B.46) welcomed the commitment of the State Party to secure and enhance the continued effectiveness of the Selous-Niassa corridor as a key feature to maintaining the long-term integrity of the property and to make proposals for the inclusion into the property of additional land to the effect of further maintaining and enhancing the Outstanding Universal Value of the property. In the decision on the State of Conservation of the property at the 35th Session, the Committee also strongly encouraged the State Party to provide an appropriate protection status to the Selous-Niassa corridor as its inclusion within the property is vital to the long-term integrity of the property and the corridor is progressively fragmented. The proposal of the State Party indicates its support for the conservation of the Selous-Niassa Corridor. It also indicates that it has decided to add the Undendeule Forest to the property, but provides no specific details, and this addition is clearly not part of the proposal as it is currently presented for evaluation. The proposal does not therefore, at the present time, provide a clear position regarding the commitments made by the State Party that were noted by the 35th Session of the World Heritage Committee in Committee decision 35COM 8B.46.

IUCN has also sought input from its network on the proposal, and received several reviews of the revised proposal, although it should be noted there has not been adequate time since the submission of the proposal to complete an adequate review process. The reviews received to date broadly support the conclusion that a fully mitigated amendment to boundaries, including additional areas that provide more significant values than the excluded areas, might not eventually impact on Outstanding Universal Value, provided that all the necessary mitigation measures are defined and implemented. However, based on the reviews received to date it is also difficult to have complete confidence that all key impacts have been considered and some responses assert there has not been adequate consultation of all key stakeholders. For example IUCN has received reports from stakeholders in the Mbarang'andu Wildlife Management Area, who do not consider they have been consulted, and who might lose income as the project will impact on wildlife based revenue opportunities. Such matters would need to be considered as part of the further review of the completed and approved EIS.

The views of reviewers vary but the most positive also note that it would be necessary for the Undendeule area to be included in the property, and that greatly strengthened conservation measures in the Selous-Niassa corridor would be required if the proposal were to be acceptable. A range of concerns are noted that require more time for consultation. These include the adequacy of the consultation process, the setting of precedents within the Convention, and the potential supplementary impacts of the proposal in the wider region, including the Selous-Niassa corridor. Superimposed on these concerns are significant points regarding the impacts of mining on the local communities of the area.

In terms of the potential for a revised boundary to be resubmitted as a significant boundary modification, IUCN reiterates its concerns that this is a complex matter with potentially significant negative impacts if the proposal is not strictly planned, regulated and implemented. The proposal requires a full evaluation to consider the property as a whole, and the issues affecting its overall state of conservation. It would need to be demonstrated that a revised boundary, including any areas proposed for addition to the property, would benefit Outstanding Universal Value. A modification would also need to support the more effective protection and management of the property as a whole, and assure and enhance protection of critical adjoining areas, notably the Selous-Niassa Corridor, as well as protect the property from impacts from any proposed mining and other development and use outside its boundaries. These and other relevant matters such as monitoring and issues related to communities would need to be addressed through thorough review and consideration, which is the practical reason why the process for significant modification of boundaries is foreseen for such situations.

In conclusion, all the lines of evidence available to support the evaluation of the excision of over 40,000 ha of Selous Game Reserve to facilitate uranium mining, indicate clearly that it would have some impact on Outstanding Universal Value of the existing property. The views on the scale of that impact and the potential to mitigate it vary. Based on the conclusions of the most recent EIS the specific issue of the reduction of the size of the property may also be considered a “significant impact” given the size of Selous Game Reserve is an integral part of its Outstanding Universal Value. IUCN therefore concludes that neither of the requirements of paragraph 163 of the Operational Guidelines are met by the proposal, and thus the proposal may not be approved via the minor boundary modification process. IUCN concludes that, if it is to be considered further, the proposal should be dealt with through the procedure for significant boundary modifications, allowing the full and appropriate review process to be undertaken, and advice provided accordingly to the State Party and the World Heritage Committee.

IUCN considers that the proposal does not meet the requirements for approval as a minor boundary modification of the property.

4. OTHER COMMENTS

None.

5. RECOMMENDATION

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

2. Recalling decisions 33COM 7B.8, 34COM 7B.3, 35COM 7B.6 and 35COM 8B.46;

3. Takes note that a revised proposal for modification of the boundary of the property has been submitted by the State Party of Tanzania for consideration via the minor boundary modification procedures;

4. Considers that this proposal cannot be approved through the minor boundary modification procedure, as the excision of an area of c.40,000 ha to facilitate mining inside the present boundary of the property clearly has some impact on Outstanding Universal Value, and thus does not conform to the requirements set out in the Operational Guidelines for a minor modification;

5. Takes note of the progress in considering the potential environmental and social impacts of the proposed

modification, and also takes note that the actions requested in its 35COM decision have not yet been completed;

6. Requests the State Party to consider, at its own discretion, resubmitting any proposal to amend the boundaries of the property through the established process for consideration of significant modification of boundaries, taking account of the need to:

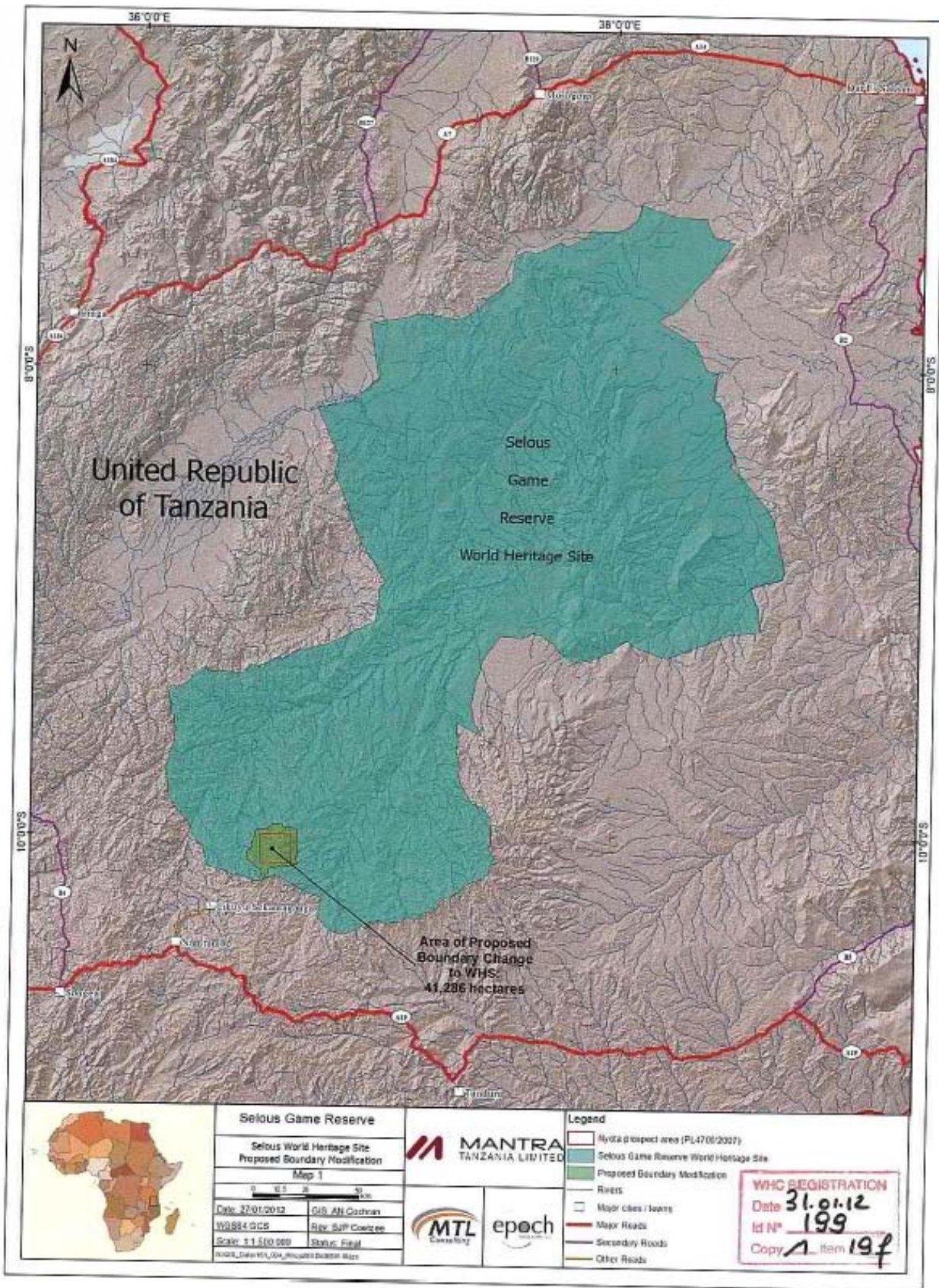
a) complete the independent review of the revised Environmental Impact Statement for the proposal, and the associated proposal for mining development, prior to further assessment by IUCN;

b) develop firm plans to address the impacts of any amendment to the boundaries of the property, to assure the Outstanding Universal Value of the property is maintained and effectively protected;

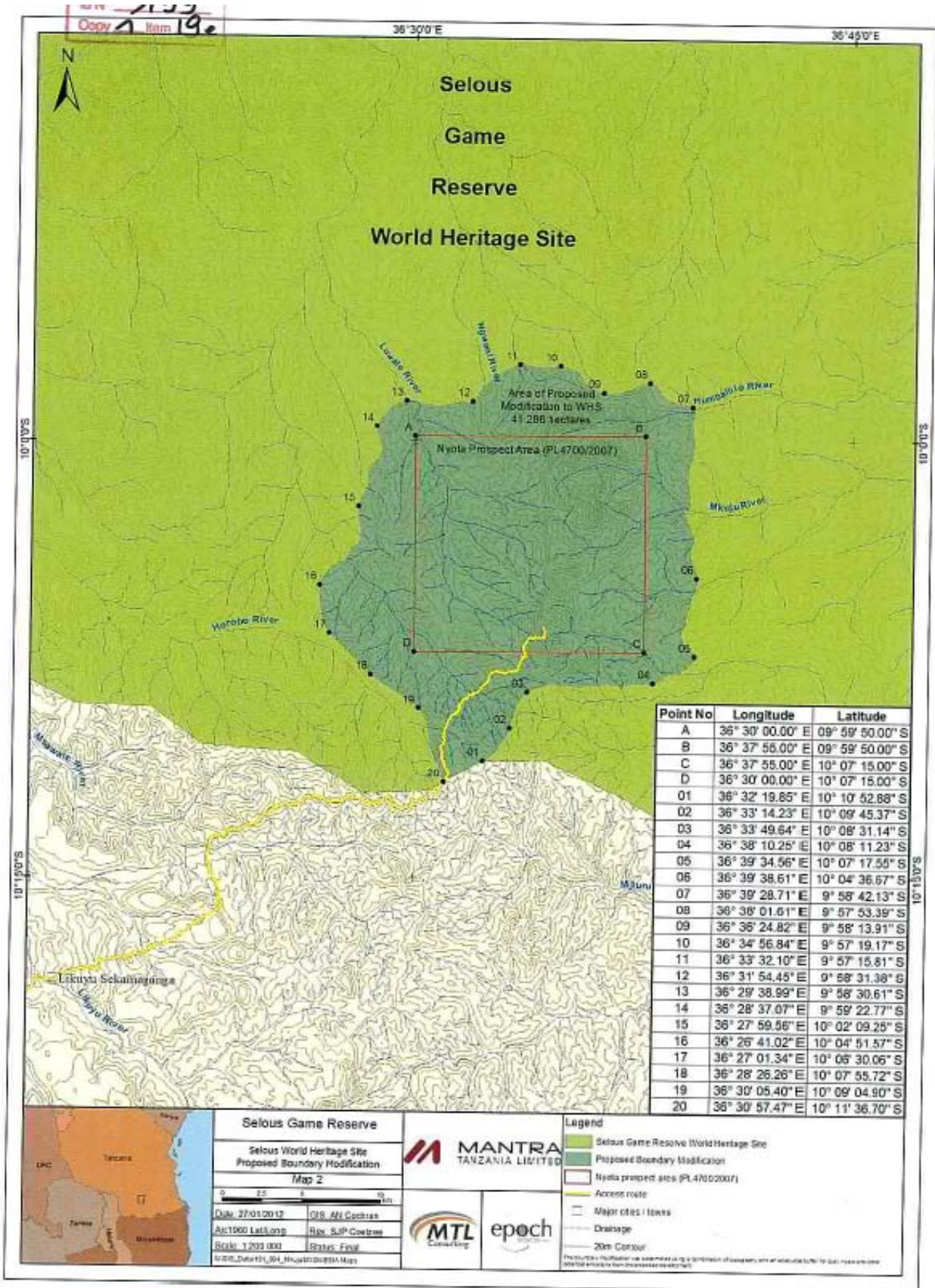
c) ensure that the Environmental Impact Statement has been fully consulted and agreed on with the involvement of all relevant stakeholders;

d) ensure that any revision to the boundaries of the property is in line with the previous decisions of the Committee, including the commitments of the State Party, welcomed by the 35th Session of the Committee, to enhance the continued effectiveness of the Selous-Niassa corridor as a key feature to maintaining the long-term integrity of the property, and also to make proposals for the inclusion into the property of additional land to the effect of further maintaining and enhancing the Outstanding Universal Value of the property.

Map 1: World Heritage Property and area of proposed boundary modification



Map 2: Proposed boundary modification



ASIA / PACIFIC

MANAS WILDLIFE SANCTUARY

INDIA

WORLD HERITAGE MINOR BOUNDARY MODIFICATION PROPOSAL – IUCN TECHNICAL EVALUATION

MANAS WILDLIFE SANCTUARY (INDIA) – ID No. 338 Bis

1. BACKGROUND INFORMATION

Manas Wildlife Sanctuary was inscribed on the World Heritage List in 1985 under criteria (vii) (ix) (x). It was inscribed on the List of World Heritage in Danger in 1992 and was removed from the List in Danger following decision 35 COM 7A.13 taken at the 35th Session of the World Heritage Committee (Paris, 2011), following a prior joint World Heritage Centre/IUCN reactive monitoring mission that was also reported to the same session of the Committee.

As noted in the relevant report on the State of Conservation of the Property supporting the above decision, the mission found that the property, which was inscribed on the List of World Heritage covering 39,100 hectares as the Manas Wildlife Sanctuary, was expanded to 50,000 hectares and designated National Park in 1990. This expansion was never submitted to the Committee for consideration. The mission also noted other potential extensions including those related to proposals of the Bodoland Territorial Council. The mission also suggested a possible transboundary extension of the property with Bhutan.

In point 7 of decision 35COM 7A.13, the World Heritage Committee encourages the State Party to “consider the extension of the property in three stages”, the first of which would be to: “a) Extend the boundaries of the property in light of the expansion of Manas National Park in 1990, taking into account its integrity and long-term viability.”

2. BRIEF SUMMARY OF PROPOSAL

The proposal was included in the report of the State Party following the decision at the 35th Session of the World Heritage Committee, which will be considered under Item 7B of the 36th Session of the World Heritage Committee. This submission provides only very brief and incomplete details of the proposal in factual terms. A table indicates that it would add the Panbari, Kahitama and Kokilabari Reserve Forests to the existing inscribed property. A low resolution black and white scan of a map of Manas National Park is included in the proposal but does not make clear the area proposed for consideration, and the map is not at an appropriate scale to be able to determine the specific boundary proposed. According to the figures provided in the proposal the increase would be from 39,100 to 50,000 hectares, an increase in area of c.28%. The proposal does not make any comment regarding the integrity and long-term

viability of the property, and contains no analysis regarding the legal, institutional or financial aspects of the proposal.

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

It is not possible, based on the information submitted, to provide an assessment of the proposal. IUCN notes that in principle such a proposal should have positive benefits, however IUCN is concerned that:

- a) no adequate maps are provided, and in the view of IUCN the statutory requirements of the Convention regarding the necessary quality of mapping in support of a nomination is not met, and thus the proposal is not complete.
- b) the size of the amendment would be large relative to the existing property. A notional cut-off of 10% increase has generally been considered to be the absolute upper limit for a modification to be considered via the “minor modification” process, considering the Operational Guidelines clearly define such modification as having a minor impact on the extent of the property.
- c) the previous request by the World Heritage Committee clearly was for this matter to be considered as an extension, not a minor boundary modification. An extension ensures that the appropriate level of documentation and mapping for such a proposal is provided.

In detail, the most recent World Heritage Centre and IUCN mission recommended that the State Party consider submitting an extension of the property to the Committee in light of the expansion of Manas National Park. It considered that in management terms the National Park and the currently inscribed Wildlife Sanctuary form one entity and are often confused, even if the differences between the areas are understood by the site managers. The addition of the proposed areas would have a strong potential benefit on the integrity of the property, and would also add to the Outstanding Universal Value in terms of both criteria (ix) and (x). The areas proposed for inclusion contain important habitat for a range of endangered species, including rhino, elephant and buffalo. Furthermore, they are home to important populations of the Critically Endangered (CR) Pygmy Hog (*Porcula salvania*) and the also CR Bengal Florican (*Houbaropsis bengalensis*).

However, the mission also considered that any extension proposal should take into account its integrity and long-term viability, and should not include heavily encroached areas. It appears likely that the areas proposed for inclusion do include heavily encroached areas that may not meet the integrity requirements of the Operational Guidelines.

These substantive issues regarding the additional areas are also a key reason why the process for extension is required, and not a minor boundary modification process, since the revision would have a material (and potentially positive) impact on the defined Outstanding Universal Value of the property. Such an extension would thus likely require the Committee to consider a new Statement of Outstanding Universal Value together with an appropriate review of the integrity, protection and management requirements of the property.

In summary, IUCN considers the intent of the State Party to propose this extension should be welcomed by the Committee, and the State Party should be supported and encouraged to resubmit the proposal through the correct procedure envisaged for such a significant change in the property. In this case, this would be an extension of the property and would need a revised nomination document, supported by appropriate maps and with the due evaluation process and subsequent consideration by the World Heritage Committee. The Committee may also wish to encourage the State Party to continue to consider the other recommended potential extensions that have been previously suggested. Both the World Heritage Centre and IUCN would be willing to provide further technical advice and support to the State Party on these matters.

In summary, it is clear that the use of the minor boundary modification process is inappropriate in this case, and such a process was not the apparent intent of the Committee's past decision which requested submission of an extension of the property. The proposal clearly does not conform to the expectations of a minor boundary modification set out in the Operational Guidelines, since it is both a large change in the area of the property, and would affect its Outstanding Universal Value.

IUCN considers that the proposal to does not meet the requirements for approval as a minor boundary modification of the property.

4. OTHER COMMENTS

None.

5. RECOMMENDATION

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

2. Recalling decision 35COM 7A.13;

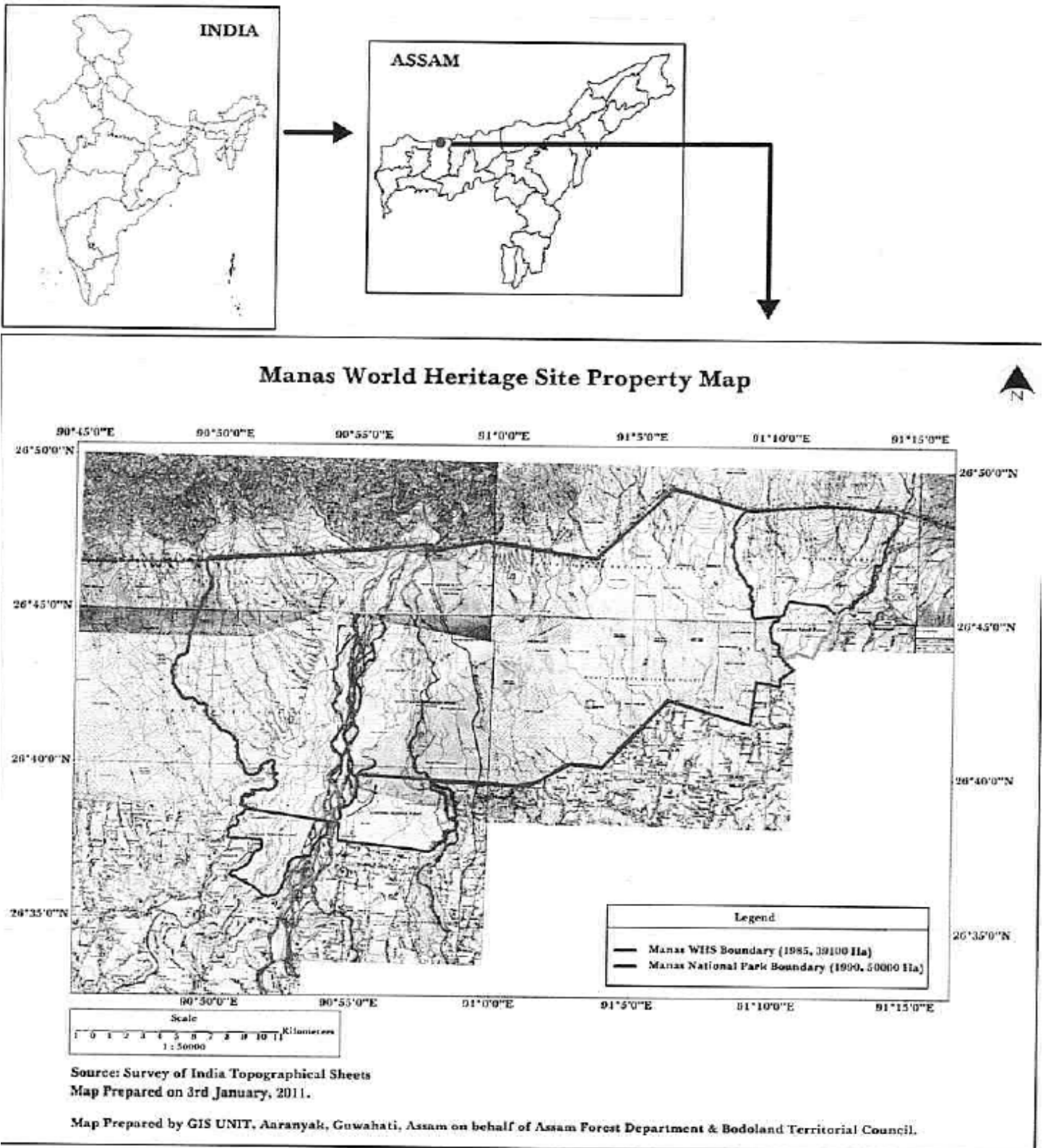
3. Considers that the proposed extension of the boundaries of the property is not appropriate for approval under the process for minor boundary modification;

4. Welcomes the proposal put forward by the State Party to include new areas within the **Manas Wildlife Sanctuary (India)**, to coincide with the full extent of the Manas National Park, noting that the proposal was included within the report on the property considered under item 7B of the 36th Session of the Committee;

5. Recommends the State Party to resubmit its proposal via the process established for significant boundary modifications, including the presentation of the necessary new nomination document, and the provision of adequate maps to the required standards established in the Operational Guidelines;

6. Requests the State Party to also consider the other proposals to extend the property, which were contained in decision 35COM 7A.13.

Map 1: Manas World Heritage Site Property Map



B. MIXED PROPERTIES

B1. NEW NOMINATIONS OF MIXED PROPERTIES

ASIA / PACIFIC

ROCK ISLANDS SOUTHERN LAGOON

PALAU



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

ROCK ISLANDS SOUTHERN LAGOON (Palau) – ID No. 1386

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

114 Property meets management requirements for serial properties

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

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 16 November 2011. The information was received on 28 November 2011, 2 December 2011, and 28 February 2012.

c) Additional Literature Consulted (non-exhaustive): Colin P. (2009) **Marine Environments of Palau**. Coral Reef Research Foundation, Palau and Indo-Pacific Press, San Diego 2009 (and references therein); Hillary A, Kokkonen M and Max L. (2002); **World Heritage Papers 4: Proceedings of the World Heritage Marine Biodiversity Workshop**; UNESCO (2005) **Operational Guidelines for the Implementation of the World Heritage Convention**. UNESCO Paris; UNESCO (2011) **World Heritage List**. <http://whc.unesco.org/en/list>; UNESCO WHC (2003) **World Heritage Reports 12: The State of World Heritage in the Asia-Pacific Region**. UNESCO World Heritage Centre 2003 124pp; **IUCN Red List of Threatened Species 2011**. IUCN Species Programme and IUCN Species Survival Commission <http://www.iucnredlist.org/>

d) Consultations: Five external reviewers consulted. The mission also 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: Jerker Tamelander and Kohei Hibino, 9-18 September 2011.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The Rock Islands Southern Lagoon (RISL) is located within Koror State, one of the 16 states of the Republic

of Palau. Palau is a Pacific Island nation with the centre of its island chain located approximately 850km north of West Papua in Indonesia, 900km east of the island of Mindanao in the southern Philippines, and 3,200km south of Tokyo, Japan. Palau forms the southwestern-most island group of the Caroline Islands of Micronesia. RISL is a predominantly marine site and includes 445 uninhabited limestone islands – commonly called “Rock Islands” from their distinctive features – surrounded by a lagoon with fringing reefs, patch reefs, and shallow water marine areas, which totals 100,200ha in area. The core zone is further surrounded by a buffer zone which totals 164,000ha and entirely consists of pelagic environment up to 12 nautical miles seaward within the jurisdiction of Koror State.

Located near the equator, Palau has a maritime tropical climate characterized by little seasonal or diurnal variation, high temperature and high humidity. Although outside of the main typhoon path, damaging storms occur occasionally and the mean annual precipitation is 3,800 mm. The islands of Palau are located on the pass way of the westward-flowing North Equatorial Current where it turns northward to feed the Kuroshio Current.

The islands of Palau are oceanic and have never been connected to continents or larger islands. The archipelago as a whole is volcanic in origin, formed during the Miocene era, with the carbonate fossil islands within RISL made up of coral reefs uplifted due to volcanic forces and eroded over millions of years. This island formation process has created a geologically complex island system with diverse island and marine habitats within RISL.

RISL is surrounded by an open ocean pelagic system and enclosed by a barrier and fringing reef system that is particularly well developed and continuous on the west side. The outer barrier reef drops off steeply creating reefal and other benthic habitat form the surface and into the aphotic zone. The fore-reefs, reef channels and passes attract an abundance of pelagic fish. The reef system contains approximately 683 patch reefs and 11.6km of fringing reefs. Within the lagoon, there are about 445 karstic islands that range from 10-100m above mean sea level, many of them displaying unique mushroom-like shapes. Islands have limited soil but the

porous and rugged karstic substrate combined with relatively abundant rainfall creates lush vegetation. The islands form complex geographical features and create diverse habitats including inner basins, coves, marine lakes, caves, arches, tunnels, forests, wetlands, sandy beaches, fringing reefs, mangroves, seagrass and algal beds. The occurrence of such diverse habitats in a relatively small geographical area is characteristic of RISL, and supports high biomass, biodiversity and species endemism.

The RISL contains 42% of Palau's 130 endemic plants and 23% of these plants are restricted to the Rock Islands. 53 of Palau's 151 bird species including all of Palau's 9 endemic bird species have been observed in the RISL. RISL is also home to diverse marine fauna and flora. Recent estimates indicate at least 385 species of hermatypic corals are found in RISL. Of the more than 1,350 species of fish recorded in Palau, at least 746 species occur in RISL, including at least 13 of 17 reported species of shark. RISL also provides important feeding grounds and refuge to Palau's dugong population, considered to be the most isolated population in the world. There are no accurate estimation of dugong population in Palau but 35-40 individuals were photographed from the helicopter at one time during a 2010 survey at Ngederrak reef, and dugongs, including calves, are frequently seen feeding and resting in certain locations within RISL.

Among the most distinctive features of RISL are the 52 marine lakes. Marine lakes are isolated bodies of seawater separated from the ocean by a surrounding land barrier. They retain some connectivity to the ocean through fissures, cracks and tunnels within the porous pit and pinnacle topography. Geological formation stage, surrounding environment, and extent of connectivity to the ocean create unique habitats and species assemblages in each lake. Long-term isolation has resulted in high endemism of populations in particularly isolated lakes. Relatively well-studied golden jellyfish found in at least five different marine lakes are genetically, morphologically and behaviourally distinct subspecies.

3. COMPARISONS WITH OTHER AREAS

RISL has been nominated under natural criteria (vii), (ix) and (x). The nomination document provides a comparative analysis that emphasizes marine lakes particularly in the context of criterion (ix).

RISL belongs to Udvardy's Micronesian province. At present there is only one natural/mixed World Heritage site (Ogasawara Islands) and three natural/mixed Tentative List sites in this province. However, the terrestrial ecosystems of the subtropical, volcanic Ogasawara Islands differ considerably from those of the tropical, raised limestone islands of RISL. The Imeong Conservation Area Tentative List site is a predominantly terrestrial site in Palau, while other two Tentative List

sites (Mili Atoll Nature Conservancy (and Nadrikdrik) and Northern Marshall Islands Atolls) are marine atoll environments not comparable with the raised limestone islands, barrier and fringing reefs and marine lakes of RISL. RISL represents a terrestrial ecoregion (Tropical and Subtropical Moist Broadleaf Forest biome) and marine ecoregion (Tropical Northwestern Pacific) that are not yet represented on the World Heritage List. Palau marks the westernmost margin of the Polynesia-Micronesia terrestrial biodiversity hotspot and is identified as a marine biodiversity hotspot by Tittensor et al. (2010).

The Pacific Island region has been identified as an underrepresented region on the World Heritage List, with tropical, coastal and marine island systems and cultural landscapes considered the most under-represented categories in the Asia-Pacific Region (Hillary et al 2002). Recent World Heritage inscriptions have gone some way towards addressing this. However, RISL is distinct from existing sites on the World Heritage List. Of sites with tropical or subtropical marine components, Belize Barrier Reef (Belize), Coiba National Park and Special Zone of Marine Protection (Panama), the Great Barrier Reef (Australia), iSimangaliso Wetland Park (South Africa), Islands and Protected Areas of the Gulf of California (Mexico), Ningaloo Coast (Australia), and Sian Ka'an (Mexico) are located on continental margins. Aldabra (Seychelles), Fernando de Noronha and Atol das Rocas Reserves (Brazil) are located in different ocean basins. Eastern Pacific sites of Cocos Island (Costa Rica), Galapagos (Equador), and Malpelo (Colombia) as well as Papahānaumokuākea Marine National Monument (USA) have notably different hydrographic conditions, geological formations, habitats and species assemblages. Komodo (Indonesia) is a volcanic island without raised limestone whereas Tubbataha Reef (Philippines) is an atoll, and Phoenix Islands Protected Area (Kiribati) is a coral atoll archipelago. East Rennell (Solomon Islands), like Aldabra, is a raised atoll. Ogasawara Islands (Japan) are subtropical while Lagoons of New Caledonia (France) is predominantly a marine site and does not include forest.

Several coral reef sites are already inscribed on the World Heritage list under criterion (vii), and similar mushroom-shaped islands can be seen in Raja Ampat (on the Tentative List of Indonesia). While challenging to compare objectively, the diverse and complex marine and terrestrial habitats of RISL and in particular the maze created by the Rock Islands' iconic mushroom shapes does offer 'exceptional natural beauty and aesthetic importance', it attracts large numbers of tourists and the islands hold significant recreational and cultural value to Palauans.

One measurable aspect of 'superlative natural phenomena' in RISL is the occurrence of marine lakes in high number and density. According to Dawson et al. (2009), about 200 marine lakes are known worldwide, with a large number (i.e. 10 or more) occurring in four locations: Palau, Papua, Vietnam and Bahamas. The 52

marine lakes in RISL slightly exceeds the 47 in the Ha Long Bay World Heritage site and 40 or so occurring in Raja Ampat, while no numbers are available for the Bahamas (currently no Tentative List site). Marine lakes occur at a significantly higher density at RISL (85,900 ha, subject to boundary adjustment), than at Ha Long Bay (150,000ha) and Raja Ampat (5,000,000ha) making it of global significance.

In terms of criterion (ix), RISL is nominated as an outstanding example of the significant ongoing ecological and biological process in the evolution of marine ecosystems and communities of plants and animals, with particular attention to the marine lakes. The physical feature of marine lakes as seawater bodies entirely surrounded by land exhibits biogeographic, ecological, and evolutionary characteristics of “islands” surrounded by ocean. Species endemism within lakes and the ‘replication’ provided by the large number of lakes at different stages of development provides natural laboratories to test evolutionary hypotheses and for studying patterns and processes in the ecology and evolution of marine species and communities. Marine lakes are presently not explicitly represented on the World Heritage List (Ha Long Bay was not inscribed under criterion (ix)). Surveys of marine lakes in Ha Long Bay and Raja Ampat have revealed lower physical diversity than in Palau, with only one lake in each area found to have golden jellyfish. In contrast, five new subspecies of golden jellyfish have been described from different marine lakes in RISL and there remains potential of more discoveries as only few marine lakes have been studied comprehensively to date. The marine lakes of RISL have also yielded important insights into the evolution of marine taxa as evidenced by a number of peer-reviewed publications. The importance of marine lakes and its outstanding diversity in RISL is clearly of global significance.

In terms of criterion (x), surveys of 14 marine lakes have documented 311 marine invertebrate species of which 131 (43%) were previously unknown species that are likely new to science. There is evidence of high endemism in marine lakes due to isolation over geological time scale. The number of lakes yet to be comprehensively surveyed suggests high probability of further species discoveries.

All of Palau’s known endemic birds, mammals, and herpetofauna as well as 40% of Palau’s endemic plants can be found in the RISL, underlining the biodiversity importance of RISL. Palau’s fish fauna represents about 32% of the total coral reef fish fauna in the west Indo-central Pacific region, and the second highest species density of all the “megadiversity countries” in the region.

Comparison of number of species in major taxonomic groups among existing World Heritage sites in the Pacific indicates that RISL has higher coral and fish diversity than a number of existing sites. Of the 18 confirmed Key Biodiversity Areas (KBA) including Important Bird Areas (IBA) and Alliance for Zero

Extinction sites within the marine province ‘Tropical Northwestern Pacific’, eight fall in Palau and in RISL.

Overall the biodiversity of RISL is clearly of significance at least on regional level. However, the marine lakes represent the highest density and probably the most biologically diverse natural habitat of its kind in the world, indicating its outstanding universal value for science as well as conservation. Biodiversity science and conservation value of RISL is further illustrated by the recent discovery of a ‘fossil eel’ of a new taxonomic family in a cave on the outer reef. This finding illustrates the high potential of more new species discoveries within RISL and emphasizes the need for protecting its complex habitats.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

Palau is a signatory of the major relevant international conventions with the exception of the Ballast Water Convention. Palau has been actively promoting conservation at the regional level, particularly in the establishment and promotion of the Micronesia Challenge initiative, which aims to effectively conserve at least 30% of near-shore marine and 20% of terrestrial resources by 2020. Palau also recently declared its Exclusive Economic Zone (EEZ) a shark sanctuary by banning all commercial shark fishing.

At the national level, the Protected Area Network (PAN) Act was passed in 2003 as a comprehensive framework to support state and community level actions for natural resources conservation and sustainable development. Under the Palauan governance system, States have sovereignty and a stronger environmental management mandate than the national government. States are responsible for management of resources within their jurisdiction and development and implementation of protected area and zoning categories. The nominated property falls fully within Koror state, where protected area management is under the jurisdiction of one single authority, the Koror State Department of Conservation and Law Enforcement (KSDCLE). This enables consistent and effective protected area governance.

The customary governance system in Palau remains strong and considerable value and importance is attached to RISL. Most of the land in the nominated property is traditionally owned by the Chiefs of Koror State, and no islands in the property have been awarded to any individuals, lineage or clan. Resources of the sea and the reef are governed by the Koror State constitution, with the State owning all the living and non-living marine resources from the land to twelve nautical miles seaward. The traditional ownership system is effectively prohibiting development for private interests within the nominated property. The traditional Palauan management system called *bul*, whereby the chief of a clan can ban the extraction of certain species at certain

areas and times, has enabled easier introduction of modern conservation strategies into traditional resource management techniques. The Ngerukewid Islands Wildlife Preserve (also known as the ‘Seventy Islands’), Palau’s first conservation area, was originally a *bul* but came to be designated under the state and national law and regulation.

Traditional leaders are influential and respected within Koror State policy. Use and management of the property has historically been the role of traditional leaders, whose role is recognized by the state governing authority and the community. The Rock Islands Executive Committee undertakes regular consultation with traditional leaders regarding management planning. The House of Traditional Leaders is supportive of the RISL World Heritage nomination, having been elemental in initiating it, while seeking to assert its position in decisions influencing the property. This adds complexity to management and decision-making and requires multi layer consultations. However, it has to date successfully served to regulate and restrict development activities within the nominated property. It should be emphasized that conservation of the nominated property is not solely or even primarily about enhancing protection and management of biodiversity and aesthetic values, but also critical to valuing and conserving the traditional governance system and strengthening the synergies between it and statutory law.

In addition to the national environmental legislative framework, over 20 State regulations directly apply to the nominated property, governing resource use, boating and protected areas. RISL has been designated a ‘Conservation Zone’ under Koror State Public Law, and permanent construction or development in the Rock Islands other than tourist-related facilities is prohibited. The nominated property is governed by the Rock Islands Southern Lagoon Area Management Plan, presently undergoing review, based on which a new 5-year plan will be developed. There are six legally designated zoning areas, managed and enforced under the Koror State regulations.

There are several basic restrictions applied to all the zoning areas, including: prohibition of any new mining and dredging activities, no entry of foreign commercial fishing vessels, harvesting restrictions designated in National and State Laws, no damage allowed to any portion of the coral reef ecosystem, etc. The most strict protected area category is the Preservation Zones, prohibiting all kinds of harvesting and access to the area. The Conservation Zones prohibits all kinds of harvesting but they are open for local recreational use and tourism. These regulations control construction and destructive use in the nominated area and are consistent in their objectives to protect the key value of the nominated property.

In response to comments provided during the evaluation of the nomination, the State Party declared a special

management zone of approximately ninety-six square kilometres (96km²) in the area south of the excluded urban area and surrounding the Ngederrak protected area. The special management zone encompasses sea grass beds, patches of coral reef and sandy bottom that provide important resting and feeding areas for dugong. The zone was introduced recognizing that the area is affected by a number of activities including sand mining, some aquaculture, the dolphin facility, outfall of effluent from the sewage treatment plant, as well as relatively intense ship and boat traffic. Koror State authority will ensure that these activities will be monitored and managed in coordination with relevant regulatory agencies. Strict controls and no expansion limits will be proposed objectives for activities in the area as part of the management review process.

The field evaluation team was also told of illegal and unauthorized coral harvest for lime production at the Ngerechong Island, inhabited by two families that claim it, and at Ngereklim Island. The lime produced is for chewing areca nut (a very common practice in Palau) rather than construction, and as such production is rather more modest in scale but reliant on coral harvest from the sea. This is against the law and currently pending court decision. Koror State is anticipating that in the next three years, coral harvesting for lime production in the vicinity of Ngerechong and Ngereklim would cease with harvesting shifting to the northern island state.

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

4.2 Boundaries

The initial nomination dossier described and justified the boundary of the property adjacent to the urban area in the north as well as the boundary to the south adjoining Peleliu State. Boundaries on the eastern and western side of the lagoon as identified in the nomination dossier did not have clear rationale in terms of habitat, species or features they enclose within the property, and there were little explanation offered with regards to how the boundary had been defined. Neither nomination dossier text nor maps described the marine environment outside the lagoon in any great detail, and consequently did not consider sufficiently the connectivity and possible inter-dependence of lagoonal, barrier reef and pelagic near-shore environments. There was also limited rationale for exclusion of lagoonal area to the north of the nominated property (northwest of the Excluded Urban Area).

Consultation with management authorities and stakeholders during the evaluation mission confirmed that boundaries had been defined in a somewhat arbitrary fashion. While traditional management systems as well as state jurisdiction are widely understood and supported, identifying new boundaries specific to the World Heritage nominated portion of RISL was seen as challenging by many stakeholders.

As a result of consultation during the evaluation, the State Party decided to include in the property areas within the lagoon and under the jurisdiction of Koror State to the northwest of the excluded urban area and marine and land at Ngerechong. The boundaries on the eastern and western side of the lagoon were initially based on the contours of the reef but they were redefined to follow the 100-meter depth isobath which is also used by the Micronesia Challenge.

No buffer zone was defined for the property in the initial nomination dossier. While a buffer zone would seem most warranted to the north of the nominated property where it adjoins the Excluded Urban Area, this has been forfeited in order to include several important features in the property itself, including marine lakes, islands and reefs of Nikko Bay. This is defensible and indeed prudent. Activities on and around the islands are subject to appropriate regulations and management attention, which can be further strengthened as recommended in this report.

Absence of a buffer zone to the west and east of the lagoon was justified by identifying the open ocean to be conserved *de facto* through state and national legislation. This explanation lacked clearer rationale for how the property conserves and protects species whose range or habitat extends across the barrier reef and to deeper water. Following discussion during the evaluation, the State Party defined as a buffer zone all Koror State territorial waters, from the redefined property boundaries out to 12 nautical miles to the east and west of the barrier reef. This buffer zone is in its entirety under the jurisdiction of Koror State. However, national restrictions with respect to fishing and other relevant activities also apply. The National Government is mandated to conduct surveillance and monitoring for highly migratory fish and oversee maritime navigation aids within the proposed buffer zone. The designation of this buffer zone was also decided as a precautionary measure in the absence of detailed research on the habitat and species at the deeper slopes and pelagic waters.

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

4.3 Management

The 'Rock Islands Southern Lagoon Management Plan 2004-2008' was developed and adopted in 2005 by the Koror State Legislature and Governor. The development of the management plan was a state-driven initiative responding to a national recommendation that each State to develop and implement management plans. The Management Plan was created through a two-year process that engaged wide range of stakeholders at different levels. The plan, the first of its kind in Koror State, aims to provide comprehensive and coordinated management of the Rock Islands Southern Lagoon, guiding day-to-day management and coordination by the KSDCLE and other stakeholders. It covers all areas

under Koror State jurisdiction, including the entire nominated property, except the urban area around Koror Island.

The Management Plan is intended to be a working document for an on-going cycle of design, implementation and review. It is currently under review, with a new Management Plan due to be in effect from 2011 through 2015. A Management Plan Taskforce Review Team with broad representation and good generation and gender balance oversees the review process. A Technical Committee consisting of the Bureau of Marine Resource and three NGOs provides review and recommendations to the Taskforce Review Team.

Traditional leaders are represented on the RISL Management Plan Taskforce Review Team, and the House of Traditional Leaders has been consulted during the nomination process. More frequent or, if appropriate, formalization of consultation with the House of Traditional Leaders and development of modalities for its participation in management could be considered. While the House of Traditional Leaders provides one mechanism for representation of traditional values in management of the property, it may also be valuable to consider means for further direct involvement of key user groups, including those involved in traditional or recreational harvesting in the property.

A Conservation Action Planning process is underway as part of reviewing the existing Management Plan. The Koror State is working toward a more collaborative effort to develop the new Management Plan by involving more closely stakeholders including technical partners in this process. However, feedback systems for adaptive management in the short-term, including decision-making, prioritization and implementation of activities, as well as information sharing among stakeholders, would benefit from further development. These should be further clarified in the second Management Plan particularly in the context of managing the nominated property to address challenges that may arise as a result of possible World Heritage status and changing pressures and threats, including managing numbers of visitors to Koror and their impact. Enhanced involvement of tourism sector and technical partners in the development, implementation and review process are also recommended.

KSDCLE is the lead management authority of the nominated property. The section has 52 staff out of which 23 are Koror State Rangers, the primary enforcers of the laws and regulations to protect environment and resources within state jurisdiction, including the nominated property. All Rangers go through a staff training course before entering on duty. Findings from the field evaluation mission indicate Rangers have clear knowledge of regulations and professional capacity to perform their duties, and that the roles and responsibilities of the Rangers are well recognized by the different stakeholders.

The Koror State Rangers office enables efficient surveillance of the Ngederrak Conservation Area and good access to other parts of the nominated property. The State Rangers have three fast boats all used for daily patrols, staff transport to the property and other duties. The Rangers conduct daily patrols to monitor activities in the areas used by tourist throughout the RISL. They also conduct 24-hour patrols for poaching and illegal activities that from time to time occur in the property. There is a plan, pending State budgetary approval, to build a surveillance station at one island in the Ngmelis Island Complex near the major dive destinations to increase the efficiency, the patrolling and the fuel. This is consistent with the objectives to strengthen and increase the efficiency of enforcement within RISL. Use of radio equipment for communications between office and patrolling rangers is limited due to the complex formation of the islands, but cell phones are used effectively as a back-up tool. Overall the State Rangers operate effectively considering the size of the area under their jurisdiction and in view of the facilities and equipment at their disposal.

The Bureau of Public Safety, Division of Marine Law Enforcement is the national entity responsible for enforcement of national laws and regulations within the EEZ beyond State jurisdiction, while the Bureau of Marine Resources Division of Fish and Wildlife Protection is enforcing National laws related to fisheries. National and State rangers mostly collaborate well in enforcing regulations, although there is some potential to enhance resource sharing between Division of Marine Law Enforcement and Koror State Rangers.

Koror State collects revenue for conservation and management of environment and resources within their jurisdiction. Permit fees are managed by the Koror State and its use restricted within the State jurisdiction, while the Green Fee is managed by the Protected Area Network Fund (PANF) board of directors for supporting the conservation and management of protected areas registered as part of the national Protected Area Network.

The total revenue of KSDCLE has been constantly increasing from 2009 to 2011 ranging from about USD 2,000,000 to USD 3,000,000. Aside from the personnel expenses, the highest expenditure is on fuel for patrolling. Based on past revenue generation and predicted tourism development the existing Koror State permit fees and the newly introduced Green Fee provide stable and sufficient financing for management of the nominated property. Further elaboration of a business plan for RISL would be beneficial.

One of the beneficiaries of potential World Heritage inscription of RISL is the tourism industry, and several companies have provided strong support to the nomination as well as to the management of the property. Some of the larger and better established tour operators are particularly environment conscious and voluntarily contribute to conservation activities. Palau Pacific Resort

manages a private protected area in front of the hotel (outside the property boundary) in close collaboration with the local community, while some large dive shops are conducting research and monitoring activities to understand and protect some flagship species such as sharks, dugongs, mantas and sea turtles. The Belau Tourism Association (BTA), a consortium of local tour operators with broad if not universal membership, plays a role in controlling activities and provides a collective voice for the industry. There is some scope for strengthening the process for private sector involvement in the development of the Management Plan and planning of conservation areas.

Monitoring, research and some awareness raising activities are conducted by Koror State and wide range of other government and non-government partners. These partnerships are reflected in strong support of the nomination from NGOs, and there is a great degree of goodwill and collaboration between many NGOs. The Palau Conservation Society (PCS), Palau's first local NGO dedicated to conservation, has provided much input to the preparation of the nomination in addition to support in management planning. The Nature Conservancy (TNC) is also putting effort on conservation of nominated property through the Micronesia Challenge initiative. However, at the level of the management authority, a central coordinating mechanism for monitoring, identifying research priorities, knowledge management, dissemination of findings among agencies and to the public, and applying results in a cycle of adaptive management including a management effectiveness evaluation system is not in place. Such a mechanism is an important part of enhancing the Management Plan in its second phase.

Similarly, while many actors provide a range of communication and awareness materials regarding the Rock Islands Southern Lagoon, coordinated arrangements for visitor facilities providing information about the site and management activities are not yet in place. However, existing facilities, including Belau Natural History Museum, Palau International Coral Reef Centre, etc. provide potential facilities.

[IUCN considers the management of the nominated property meets the requirements set out in the Operational Guidelines.](#)

4.4 Threats

The tourism industry is the largest industry in Palau, sustaining its economy. The number of visitors to Palau during the last decade ranges between 70,000 and 90,000 per year (Palau Visitors Authority statistics). Tourism is likely to increase over coming years, and increasing the number of visitors to the country is a likely development target. The majority of the tourists stay in the urban area of Koror State and visit the Rock Islands and major dive sites within the nominated property. Some infrastructure is already at or close to capacity. There is concern amongst some tour operators that the

number of visitors has already exceeded the carrying capacity at some major destinations, such as the jellyfish lake, Blue corner and German Channel. The number of tourists has also increased the demand for locally caught seafood and some endangered species such as fruit bat. There is also some concern about dive and tour companies operating from abroad and/or as part of charter trips. Some of these reportedly do not follow local rules and regulations or provide insufficient information and guidance to customers. Tour operators in RISL must be owned by Palauans and based in Palau but the authorities are facing some challenges in checking and controlling illegal operators. Overall tourism numbers to Koror and RISL need to be managed carefully in order to avoid negative impacts on the environment.

One marine lake is open to tourism, the jellyfish lake, while other marine lakes are closed except for research purposes. These restrictions are keeping most of the lakes relatively intact. Marine lakes visited during the site evaluation all exhibited unique features as well as fragile ecosystems. However, at several sites there were also some signs of human impact, such as litter. Unregulated visits to marine lakes are reportedly made from time to time by poachers and, only rarely, tourists. Increasing numbers of visitors to marine lakes will threaten to alter these fragile ecosystems and should be avoided. It is recommended that closure of the marine lakes (except the jellyfish lake) is continued and enforcement strengthened, while visits to lakes currently accessible through tunnels at low tide shall be strictly regulated and restricted.

Commercial fishing vessels, in particular offshore long liners, frequently call at Palau Port to land fish, and although some license infringements occur in the EEZ and at times in State waters (12nM) these boats do not operate near the reef and in the lagoon of the nominated property. However, subsistence and recreational fishing by local people, including trolling and spear fishing, are popular. While some of the no-take areas visited during the site evaluation such as the Ngemelis Islands Conservation Zone and Ngerumekaol Spawning Area exhibit comparatively high fish populations, present day fish populations especially of valued target species is well below populations of the 1960-70s. It should be noted that some regulation has been introduced to protect particularly vulnerable and/or ecologically important species, including bumphead parrotfish and groupers. It is recommended that recreational fishing is kept under constant review in light of population trends, and that establishment of further closed areas is considered, in particular around major reef channels and surrounding reef slopes where spawning aggregations occur.

Although some illegal dugong and sea turtle poaching still occurs, a combination of changing values, enforcement of regulations and outreach has reduced poaching, but efforts need to be maintained and possibly increased to safeguard endangered species.

All the sewage from urban area of Koror is pumped to a central facility and treated before discharging to the lagoon. Water quality of the discharge is monitored every six months by EQPB. Benthic biota at the point of discharge appeared healthy at the time of the site visit, including well-developed coral assemblages. The capacity of the treatment facility is reportedly sufficient, however, the capacity of some pumping stations is exceeded during heavy rain, forcing discharge of some raw sewage directly to the sea. It is recommended that water quality monitoring is strengthened and that ecological monitoring at and in the area around the discharge is established.

The 1998 mass coral bleaching event severely impacted reefs in Palau, and killed over 30% of corals. The marine lakes were also impacted and elevated temperature caused mortality/disappearance of jellyfish. However, the event also illustrated the benefits of the complexity of reef habitats to the resilience of RISL. Some locations revealed less bleaching or mortality and faster recovery compared to other locations. While the impacts of increasing climate change effects and acidification remain considerable threats, management of the property for ecological health provides risk reduction.

Sea level rise may also have wide-ranging effects on ecosystems in the nominated property. Notable beach erosion has been observed, and although the cause of such erosion may be due to activities in the area, climate change or both, it is clear that sea level rise poses a threat. Marine lakes could also be affected by sea level rise (and changed rainfall patterns) as water exchange is a major factor characterizing them. Research and monitoring programs need to incorporate indicators of potential impacts of climate change as possible.

Expansion of aquaculture activities poses a potential threat to the property. A farm culturing milkfish for commercial purposes is located near the boundary within the nominated property in the area adjacent to the Excluded Urban Area. Although small in scale, high demand is suggesting future expansion of these farms, with some pressure on the nominated property. A bottleneck to expansion has been the limited capacity of Palau Mariculture Demonstration Center (PMDC) to supply juvenile stock and reducing the costs of pellet feeds. Giant clams are also cultivated at PMDC and the seedling stocks were freely provided to fishers for cultivation on the reefs. It is recommended that existing aquaculture will be managed and monitored under strict control, and that additional aquaculture installations aren't allowed within the nominated property and highly restricted in the vicinity of the property.

Despite the low level of development activities within RISL, there are a few exceptions. Two specially allowed commercial activities take place within the nominated property. The Dolphin Pacific is a dolphin research and amusement facility constructed and commercially operating in a sheltered bay at one of the islands, in proximity to the Excluded Urban Area. The bottleneck

dolphins in the facility (a species not naturally occurring in Palau) have been brought from Japan. Sand mining takes place under license near the Ngederrak Conservation Area. Waters adjacent to both locations appear clean with healthy benthic species assemblages, and no apparent impact was observed beyond the points of impact (construction, mining). It was reported that additional licensing of such activities will not be considered, and these two activities are subject to strict controls and no expansion limits will be proposed as part of the Management Plan review process.

Although relatively few non-native species have become established in the RISL, introduced and invasive species have the potential to alter the structure and balance of the RISL's fragile marine and island ecosystems. Human access to islands and marine lakes are likely to be a strong vector for introduction and needs to be carefully controlled. One notable species introduction is an Anemone introduced to the jellyfish lake open to tourists, which has significantly altered the lake habitat. Strategies to reducing risks of ballast water and hull fouling from foreign vessels visiting the port adjacent to the boundary of the nominated property should also be considered.

All these threats are considered to be within the range of control if proper management is conducted.

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

5. ADDITIONAL COMMENTS

5.1 Nomination process

RISL and in particular the Ngerkewid Islands Wildlife Preserve has been discussed as a potential World Heritage site several times in the past. However, misunderstanding of the role and authority of UNESCO upon inscription have held back nomination, and this issue was still raised and needed clarification in discussions with different stakeholders during the evaluation mission.

World Heritage nomination of RISL was reportedly requested and encouraged by traditional leaders. Preparation of the nomination was carried out by national and state institutions, and with considerable input and support from both NGOS and the private sector. RISL's potential inscription on the World Heritage list was widely endorsed during the mission. Positive commitments of support were also heard from wide range of stakeholders including the House of Traditional Leaders, government agencies, and the tourism industry. The stakeholder involvement and support to the nomination is considered good, and sufficient.

5.2 Additional Comments

Evaluation of cultural aspects of the World Heritage nomination of the property is carried out by ICOMOS. IUCN offers the following comments for consideration.

While the natural aspects of RISL have been a major driving force in the tourism industry, possible world heritage listing under cultural criteria may lead to increased pressures especially on the terrestrial environment. Broader awareness of cultural heritage and past human settlement on the island may increase numbers of visitors to islands previously largely untouched or visited mainly for their beaches. This will require careful management consideration. It is recommended that several sites, perhaps sites that are well documented and with features replicated also at other locations, are opened to visitors, with appropriate infrastructure installed, while other sites remain closed to tourism.

The islands, terrestrial and marine ecosystems and species in the nominated property are of considerable traditional value to Palauan people as well as to the economy of the nation. The current health of the environment in RISL is in part a result of the value people attach to it, and the strength of traditional management systems. At the same time, some traditional uses may constitute potential threats to values of the nominated property if increasing, or if new methods are adopted (e.g. more effective or destructive fishing methods, targeting endangered species). Notably, a number of activities presently carried out in the property are in breach of statutory law, although justified as traditional. Traditional and recreational activities in the property at present level may not endanger the natural values for which the monument has been nominated. Provided they do not change in favour of increased resource extraction they can also increasingly contribute to ensuring these values are maintained.

6. APPLICATION OF CRITERIA

The **Rock Islands Southern Lagoon** has been nominated under natural criterion (vii), (ix) and (x).

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

The Rock Islands Southern Lagoon contains an exceptional variety of habitats within a relatively limited area. Barrier and fringing reefs, channels, tunnels, caves, arches, and coves, as well as the highest number and density of marine lakes in the world, are home to diverse and abundant marine life. The maze of dome-shaped and green Rock Islands seemingly floating in the turquoise lagoon surrounded by coral reef is of exceptional aesthetic beauty.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecological processes

The Rock Islands Southern Lagoon contains 52 marine lakes, more than at any other site in the world. Furthermore, the marine lakes of RISL are at different stages of geological and ecological development, ranging from lakes with high connectivity to the sea to highly isolated lakes with notably different species composition, including unique and endemic species. These features represent an outstanding example of how marine ecosystems and communities develop, and make the lakes valuable as “natural laboratories” for scientific study of evolution and speciation. Five new subspecies of the *Mastigias papua* jellyfish have been described from these marine lakes, and new species discoveries continue to be made both in the marine lakes as well as in the complex reef habitats of RISL.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species

The Rock Islands Southern Lagoon has exceptionally high biological and marine habitat diversity. The marine lakes are unique in terms of number, the density at which they occur, and their varying physical conditions. With low fishing pressure, limited pollution and human impact, as well as an exceptional variety of reef habitat, the resiliency of RISL’s reefs makes it a critical area for protection, including as an area important for climate change adaptation of reef biota, and potentially as a source of larvae for reefs in the region. All the endangered megafauna of Palau, 746 species of fish, over 385 species of corals, at least 13 species of sharks and manta rays, 7 species of giant clams, and the endemic nautilus are found in RISL, and the forests of the islands include all of Palau’s endemic birds, mammals, herpetofauna and nearly half of Palau’s endemic plants. This makes the area of exceptional conservation 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-12/36.COM/8B and WHC-12/36.COM/INF.8B2,

2. Inscribes the Rock Islands Southern Lagoon on the World Heritage List under natural criteria (vii), (ix) and (x)

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

Brief synthesis

The Rock Islands Southern Lagoon is located in Palau, within Koror State and is a 100,200 ha marine site characterized by coral reefs and a diversity of other marine habitats, as well as 445 coralline limestone islands uplifted due to volcanism and shaped over time by weather, wind and vegetation. This has created an extremely high habitat complexity, including the highest concentration of marine lakes in the world, which continue to yield new species discoveries. The terrestrial environment is lush and at the same time harsh, supporting numerous endemic and endangered species. Although presently uninhabited, the islands were once home to Palauan settlements, and Palauans continue to use the area and its resources for cultural and recreational purposes. This is regulated through a traditional governance system that remains an important part of national identity.

Criteria**Criterion (vii)**

The Rock Islands Southern Lagoon contains an exceptional variety of habitats within a relatively limited area. Barrier and fringing reefs, channels, tunnels, caves, arches, and coves, as well as the highest number and density of marine lakes in the world, are home to diverse and abundant marine life. The maze of dome-shaped and green Rock Islands seemingly floating in the turquoise lagoon surrounded by coral reef is of exceptional aesthetic beauty.

Criterion (ix)

*The Rock Islands Southern Lagoon contains 52 marine lakes, more than at any other site in the world. Furthermore, the marine lakes of RISL are at different stages of geological and ecological development, ranging from lakes with high connectivity to the sea to highly isolated lakes with notably different species composition, including unique and endemic species. These features represent an outstanding example of how marine ecosystems and communities develop, and make the lakes valuable as “natural laboratories” for scientific study of evolution and speciation. Five new subspecies of the *Mastigias papua* jellyfish have been described from these marine lakes, and new species discoveries continue to be made both in the marine lakes as well as in the complex reef habitats of RISL.*

Criterion (x)

The Rock Islands Southern Lagoon has exceptionally high biological and marine habitat diversity. The marine lakes are unique in terms of number, the density at which they occur, and their varying physical conditions. With low fishing pressure, limited pollution and human impact, as well as an exceptional variety of reef habitat, the resiliency of RISL’s reefs makes it a critical area for protection, including as an area important for climate change adaptation of reef biota, and potentially as a source of larvae for reefs in the region. All the endangered megafauna of Palau, 746 species of fish, over 385 species of corals, at least 13 species of sharks and manta rays, 7 species of giant clams, and the

endemic nautilus are found in RISL, and the forests of the islands include all of Palau's endemic birds, mammals, herpetofauna and nearly half of Palau's endemic plants. This makes the area of exceptional conservation value.

Integrity

The property has clear boundaries and includes a large part of the lagoonal and reef habitat surrounding the main islands of Palau, as well as most land of coralline origin occurring within Koror State. This ensures a high degree of replication of habitat type. Although past and present use have altered both marine and terrestrial environments, or at least the abundance of resource species, the present conservation status of the property is good. Activities in and around the property that may impact on it are subject to specific management regulations and/or interventions. The inclusion of waters outside the barrier reef and within Koror State jurisdiction in a buffer zone further increases its ecological integrity.

Management and protection requirements

The legislative framework regulating use and management of the environment and its resources is comprehensive and clear. The area falls in its entirety in Koror State, and the management jurisdiction of Koror State Rangers is well known and respected. Management authorities are operating on relatively reliable revenue from tourism. The strength of traditional value systems including resource governance systems is an asset, and can enable management and zoning that accommodate both cultural/traditional and biodiversity conservation needs. Management objectives and priorities are defined in the Rock Islands Southern Lagoon Management Plan. Both legislative framework and management arrangements are conducive to protecting and maintaining the values of the property.

Long term protection and management requirements for the property include the need to prevent negative impacts from tourism, including maintaining access restrictions to vulnerable areas, ensuring visitor numbers are within the capacity of the property, and mitigating adverse effects from development of infrastructure and facilities in Koror. Subsistence and recreational fishing taking place within the property and in designated zones require constant review. However, the property may also

be constructively used for research on and preservation of traditional knowledge of the marine environment. Additional needs include maintaining restrictions on development, including aquaculture, within the property and in the vicinity of property boundaries. An adaptive approach to management of the property and the provision for effective long term monitoring including ecosystem health and water quality are necessary in order to maintain the resilience of the property in the face of climate change.

4. Commends the State Party for its efforts to sustainably manage the nominated property and safeguard its globally significant biodiversity, spiritual, cultural and recreational values, including through modern/statutory as well as traditional/customary governance approaches, and recommends further development of the for direct involvement of key stakeholder groups including the tourism industry in management, as well as close and consistent liaison between state and national authorities in managing the property as a part of the national protected area network;

5. Requests the State Party to embark on a process to address present and potential future negative impacts of tourism on the property and adjacent areas, including through detailed projection of tourism development, careful mitigation planning as well as options for reducing or restricting visitor numbers to vulnerable areas or to the property as a whole;

6. Encourages the State Party to strengthen and formalize coordination and liaison on science and monitoring in the property among national and overseas organizations, with a view to enhancing the use of such information in the adaptive management of the property;

7. Strongly encourages the State Party to ensure effective conservation of the values of the property, including but not limited to marine lakes, habitats of unique or threatened species or where new species discoveries continue to be made, as well as particularly important areas such as spawning sites, including through establishment of further strictly protected areas if required.

EUROPE / NORTH AMERICA

SITES OF HUMAN EVOLUTION AT MOUNT CARMEL: THE NAHAL ME'AROT / WADI EL-MUGHARA CAVES

ISRAEL



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

SITES OF HUMAN EVOLUTION AT MOUNT CARMEL: THE NAHAL ME'AROT / WADI EL-MUGHARA CAVES (Israel) –ID No. 1393

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

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

b) Additional information officially requested from and provided by the State Party: Supplementary information was provided to the evaluation process, covering matters related to integrity, protection, management, stakeholder engagement and other matters, following the evaluation mission.

c) Additional literature consulted: Albert, R. et al (1999) **Mode of Occupation of Tabun Cave**; J. Arch. Sci. Mercier, N. & Valladas, H. (2003) **Reassessment of burnt flints from the Palaeolithic site of Tabun Cave, Israel**. J. Hum. Evol. Segev & Sass. 2009; **The Geology of the Carmel Region**. Geological Survey Israel. Wells, R.T. **Earth's geological History – A contextual framework for assessment of World Heritage Fossil site Nominations**. IUCN Gland; A. Gibbons (2010) **Close Encounters of the Prehistoric Kind**. Science Mag Volume 328; C. Johnson (2002) **The Rise and Fall of Rudist Reefs**. American Scientist Volume 90

d) Consultations: 10 external reviewers consulted. The mission also met with specialists from University of Haifa, University of Tel Aviv and local, regional and national authorities.

e) Field Visit: Friedemann Schrenk, 3-6 October 2011.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The nominated property, the Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves, is located on the western side of Mount Carmel, about 4 km east of the Mediterranean sea shore, in one of the frequent valleys dissecting the dolomitic limestones that dominate the area. The Nahal Me'arot valley lies about 2 km south-east of the town of Atlit, and the Nahal Me'arot / Wadi el-Mughara caves are situated on a cliff at the northwestern face of the valley's southern bank, at the point where Nahal Me'arot opens westward towards the Mediterranean coastal plain. The

nominated property comprises a group of four natural caves (Tabun, Jamal, el-Wad and Skhul) and their geomorphological environs. The 54 ha property is surrounded by a buffer zone of 370 ha which is not included in the nominated area. The four caves are situated within an area of circa 2 hectares, incorporated within the Nahal Me'arot Nature Reserve which covers 310 hectares.

The site is subject to Mediterranean climatic conditions and a large variety of environments are found within walking distance of the caves: riverbeds, hills supporting Mediterranean forests or maquis, swamps, coastal dunes and agricultural fields. These provided in prehistoric times a varied ecotonal setting and an easily accessible catchment area of mountainous and coastal plain terrains. An exposure of a rudist reef (a fossil reef dominated by rudist bivalves from the later Mesozoic, and much older and geologically not connected to the human fossils remains that are the focus of the nomination) of Mount Carmel is a regionally notable geological phenomenon. Due to karst processes, hundreds of caves have formed in the limestones of the Carmel mountains, and about 200 have yielded evidence of early human occupation.

Human fossil remains were discovered at three of the four caves and adjoining terraces of Nahal Me'arot / Wadi el-Mughara:

- Tabun Cave: A complete Neanderthal skeleton (60,000 – 50,000 years BP) and skeletal elements
- Skhul Cave and Terrace: 11 skeletons of Early Anatomically Modern Humans (EAMH) (120,000 – 80,000 years BP)
- el-Wad: Homo sapiens skeletons and skeleton fragments of more than 100 individuals (15,000 – 11,500 years BP)

The Nahal Me'arot / Wadi el-Mughara sites are of globally recognised significance for understanding human evolution because only here remains of Neanderthals (*Homo neanderthalensis*, or regarded by some authors as a subspecies *Homo sapiens neanderthalensis*), originating from Europe, and Early Anatomically Modern Humans (EAMH), originating from Africa, were discovered within the same geological strata. Both fossil human types are key specimens in the

debate concerning the demise of Neanderthals and the origin of *Homo sapiens*. Together with other caves in Israel, the property marks the southernmost geographical extension of Neanderthals and the northernmost geographical extension of EAMH. The fossils and artefacts found in the caves demonstrate a long term co-existence of both hominid species in the Carmel area, and provide a scientific time-scale for the dating of crucial events in human evolution in one of the longest sequences of human presence in the world, from the Lower Palaeolithic through the Neolithic and Chalcolithic periods to the present.

The sites have a firmly established geochronology and thus not only serve as a benchmark for human evolutionary studies, but also have high potential for future interdisciplinary analyses. The palaeoenvironmental changes documented in the caves' sedimentological and palaeobiological record are of high significance for the understanding of human biocultural evolution. These processes can be linked to both regional and global climatic changes such as fluctuations in precipitation, temperature and sea level, and thus provide evidence of the environmental factors that influenced the Neanderthals and EAMH that lived in the area.

3. COMPARISONS WITH OTHER AREAS

Human evolution during the last 2.5 million years relates to natural as well as to cultural development of early humans. It is best to describe this phenomenon as a process of bio-cultural evolution, where natural and cultural factors are continuously influencing each other both ways.

Six of the seven sites on the World Heritage List related to human evolution were inscribed under cultural criteria only. Ngorongoro Conservation Area, Tanzania, was initially inscribed under natural criteria due to the value of the larger Serengeti ecosystem. Recently, the property was also inscribed under cultural criteria because of the outstanding importance of Olduvai Gorge and Laetoli for understanding human evolutionary history. The current tentative lists contain one hominid site (Konso-Gardula, Ethiopia) in the mixed category, and one site (Djourab, Chad) in the natural category, which due to their age of 6 million years, yielded no cultural objects, but fossil remains only. However, most other human evolution sites on tentative lists are noted for nomination in the cultural category, in line with the Committee's past decisions on the inscription of such sites on the World Heritage List.

The property has been nominated under both natural and cultural criteria, and with considerable overlap in the justifications provided for the application, in particular, of cultural criterion (iii) and natural criterion (viii). In terms of its global reputation, the occurrence of two human types, Neanderthals (at Tabun Cave) and EAMH (at Skhul Cave), within the same Middle Palaeolithic cultural

framework (the Mousterian culture) and in one cave system is unmatched anywhere in the world. Neanderthal remains are known from Europe, Eurasia, the Near East and the Levante. Prominent sites such as Saint-Cesaire and Arcy-sur-Cure, France, and the Neander Valley, Germany, are however considerably younger in geological age than those of Nahal Me'arot / Wadi el-Mughara Caves. Whereas in Europe modern *Homo sapiens* is geologically younger than Neanderthals, at the proposed sites EAMH inhabited the area prior to the Neanderthals. In Europe and Eurasia, the co-existence of *Homo sapiens* and Neanderthals is based mainly on archaeological material, not fossil remains. The nominated property is unique in that it displays skeletal remains of both types of humans.

Although palaeontological evidence from the Mousterian period is also found in the Zagros Hills of North East Iraq and in South West Iran, the more than 50 excavated sites in the Levante are the best studied. Among these, the Nahal Me'arot / Wadi el-Mughara Caves were the first sites where faunal remains were studied for reconstructing palaeoenvironmental and climatic change during early hominin evolution. The caves have been the subject of palaeontological and palaeoanthropological research over a period of 90 years. They were among the earliest sites excavated in the southern Levant and studied in a systematic way as early as the late 1920's, and the research on the site had a major impact on the development of new theories on human evolution.

However IUCN considers the application of the natural criteria to this property is not appropriate despite the importance of the property. Compared with other fossil sites included on the World Heritage List under criterion (viii), the Nahal Me'arot / Wadi el-Mughara Caves represent a very low species / intra-species richness (3 closely related human species or subspecies). Whilst the global importance of the property to human evolution appears clear, there has also been a consistent approach to the evaluation of criterion (viii) in relation to fossil sites, following the principles outlined in the long-adopted thematic study on this matter. IUCN has carefully considered this matter, in this case also in consultation with ICOMOS, and concludes that the property does not correspond to the principles required to apply criterion (viii). This is notably because, notwithstanding that the species in question is human, the intent and principle application of criterion (viii) is to recognise the whole of the record of life, and not evolution at the species level. Within listed fossil sites the nearest comparator to test the application of this principle would be Wadi Al-Hitan, where the principal fossil remains that provide the basis of Outstanding Universal Value are those of early whales, but in this instance the consideration of OUV was applied regarding the transition at the much higher taxonomic level of Order (Cetacea). It should also be noted that human evolution clearly is recognised primarily through the application of the cultural criteria, whereas the evolution of all non-human animal groups, whether extant or extinct, can only be recognised in criterion (viii).

Thus, in the view of IUCN, the application of criterion (viii) to human fossil remains should only be entertained in the most exceptional circumstances, and specifically in situations where a property that demonstrates OUV cannot be found to correspond to the cultural criteria, which is not the case for the nominated property.

IUCN also notes that the suggested justification of criterion (viii) is that the prehistoric settlements of Mount Carmel, scattered along its ridges, ravines and coastal plain, can in part be related to the changing shore line of the past 500,000 years. The nomination suggests that they are analogous to the rudist reef of the Carmel, a late Mesozoic continental shelf edge phenomenon which attests to far earlier regional and global climatic changes and fluctuating sea-levels, and that together, these two phenomena define a cultural-geographic entity. IUCN considers that these phenomena are largely not analogous to each other, and that the relationship of more recent karst processes that forms the caves would be the most obvious geological value that would relate to the use of the area by humans, and especially the creation of the opportunity for the preservation of archaeological and palaeontological evidence. Whilst the rudist reef is clearly an interesting phenomenon, it was formed by physical natural ecological processes long before the advent of any human life on Earth, nor with any particular linkage to the much more recent preservation of the evidence of human presence in the area. There is a very large disjunct (more than 60 million years) between the phenomena.

IUCN notes that, independently of its analysis that criterion (viii) is not applicable to the property, ICOMOS also reaches the same conclusion when the property is viewed through the lens of the cultural criteria, and ICOMOS's comments are set out below in this regard. Thus, IUCN would conclude that there is a potential case for the Committee to consider inscription on the World Heritage List in relation to the cultural criteria, but notes that this will be evaluated by ICOMOS. IUCN does not consider the nomination should be accepted for inscription under criterion (viii). In view of this fact IUCN does not draw further conclusions regarding the application of the requirements for the Integrity, Protection and Management as it anticipates these matters will be considered in relation to the application of cultural criteria to the property.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

An area of circa 310 hectares surrounding the Nahal Me'arot / Wadi el-Mughara site was declared a Nature Reserve (Nahal Me'arot Nature Reserve) in 1971. The property is part of the Nahal Me'arot Nature Reserve and thus protected under the National Parks, Nature Reserves, National Sites and Memorial Sites Law of 1998 and managed by the Israel Nature and Parks Authority (INPA). An agreement between INPA and the

Israel Antiquities Authority (IAA) of 2005 facilitates cooperation, conservation, and effective management of antiquity sites in Nature Reserves and National Parks. Co-operation between INPA and IAA is excellent on all levels. The site is protected by state and statutory laws. The area devoted to visitors' facilities was annexed to the Nahal Me'arot Nature Reserve in 1989. A strip of land along the western perimeter of the proposed buffer zone, designated as agricultural land, is leased to the adjacent settlements, Kibbutz Ein Carmel in the North and Moshav Geva Carmel in the South. The property is also part of the UNESCO-recognised Mount Carmel Biosphere Reserve.

4.2 Boundaries

The four caves which make up the site are located in close proximity to each other, all within a stretch of c.200 metres. The surrounding areas, together with the Nahal Me'arot / Wadi el-Mughara caves, form a complete habitat of prehistoric life, defined by still intact visual and physical boundaries. The topographic setting of the caves is clearly defined by the geographical confines of the westward sloping valley and the rudist reef which forms its two banks, providing a visual basin of the prehistoric habitat as viewed by the succession of communities which occupied the caves and their terraces.

The property and its buffer zones are located on state-owned land. The buffer zone comprises 370 hectares, of which the eastern 4/5 (buffer zone A) is part of the Nahal Me'arot Nature Reserve, and the western 1/5 (buffer zone B) is leased to the adjacent settlements: Kibbutz Ein Carmel to the North and Moshav Geva Carmel to the South. In supplementary information provided to ICOMOS and IUCN following the evaluation mission, the State Party indicates that it will consider the option to develop over time a serial nomination to include further component parts in the region, but is not in a position yet to provide further details.

4.3 Management

In 2003, a Site Conservation and Management Programme which describes all management procedures for the site was prepared, and it currently serves as the foundation for site management. The Management Steering Committee headed by the Hof Carmel Regional Council (HCRC) is highly committed, and includes representatives of all national, regional and local stakeholders, including INPA, IAA, Haifa University, Carmel Drainage Authority, Kibbutz Ein Carmel & Moshav Geva Carmel, the Society for the Protection of Nature in Israel (SPNI), The Society for Preservation of Israel Heritage Sites (SPIHS), and the Carmel Tourism Organization.

Special responsibilities are in place for the management of the property and its buffer zones. The management of the property and buffer zone A, both within Nahal Me'arot Nature Reserve, is defined within the INPA

regulation for National Parks and Nature Reserves and subject to the regulations of the IAA for preserving palaeontological sites. Buffer zone B is jointly managed by the relevant members of the Steering Committee – INPA, HCRC, Moshav Geva Carmel and Kibbutz Ein Carmel.

Management of the site, including the cost of staff salaries and regular maintenance, is financed through the annual budget of the INPA with individual site accounting. Total yearly budget is ca.USD 130,000 of which more than ¾ is covered by income from admission fees and a souvenir shop. It is expected that increasing tourism will improve the funding of activities at the sites.

The permanent staff at Nahal Me'arot Nature Reserve includes a site manager, one ranger, one part-time maintenance worker, and an administrator as well as two educational staff. All staff are well trained and highly committed. Seasonal employees are hired as necessary. The site buildings are well managed and include a Visitors and Educational Centre and a Library. The Regional Learning Programmes offered at the site are of high standard. IUCN also noted the strong and welcome support of the local community which was evident throughout the field mission.

4.4 Threats

At present there are no apparent threats to the site's natural values. The buffer zone is designated as agricultural land (banana growing) by state law and cannot be used for any other purpose. Strict protection and regulation of the fossil resources are in operation. Future paleontological excavations will however be invasive, and therefore require special regulations, which need to be agreed upon by the stakeholders.

Skhul cave, which is considered to be exhausted regarding its sediments but retains historic importance, is not included in the fenced visitors' area, and vandalism is potentially difficult to control. IUCN suggests to include Skhul cave into the protected visitors area. In order to achieve this, it might be necessary to relocate the large pumping station, situated in the wadi at the beginning of the footpath leading to Skhul cave.

5. ADDITIONAL COMMENTS

5.1 ICOMOS comment on application of criteria

As noted above, IUCN has considered carefully the application of criteria to this property, and in line with the new processes of coordination that IUCN and ICOMOS have introduced and are continuing to develop for jointly evaluating mixed properties, IUCN requested ICOMOS views on the application of cultural criteria. IUCN also noted that the human fossils, caves and geological strata of the property are intimately linked to the cultural attributes, which include artefacts and archaeological strata. IUCN also took note of the reflections of the

newly conceived HEADS Thematic Programme of the World Heritage Centre, including the suggestions on possible reflections on the application of criteria (viii) in relation to human evolution.

ICOMOS noted the nomination is made on the basis of criteria (iii), (v) and (viii), and that the justification for criterion (iii) and criterion (viii) advanced in the nomination are somewhat similar. The suggested justification for criterion (iii) notes the nominated property has "become a key site of the chrono-stratigraphic framework for human evolution in general, and the prehistory of the Levant in particular." The main difference in the justifications is the idea included in (viii) that the changing shoreline and fluctuating sea levels provide an insight into the earth's history.

With the exception of the consideration of the evidence for changing shorelines and sea levels, ICOMOS considered that the remaining justifications for (iii) and (viii) are so similar as to suggest that both should not be accepted. They also advised IUCN that ICOMOS considered that the justifications for criterion (iii) is valid in terms of relating them to finds that reflect an extensive period in early human history the full extent of which is outstanding. ICOMOS recommended that IUCN consider this overlap and the difficulties of the cultural and natural criterion being justified in similar ways. ICOMOS does not consider that it would be helpful to inscribe this property for both cultural and natural values for the same (or similar) time sequences for remains of early man.

IUCN welcomes ICOMOS analysis of this matter, and considers that the fact that both IUCN and ICOMOS reached the same conclusion that criterion (viii) is not applicable, for differing but complementary reasons, reinforces the non-applicability of this criterion.

6. APPLICATION OF CRITERIA

The **Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves** have been nominated under natural criterion (viii).

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

The Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves provide unique evidence of the co-existence of Neanderthals and Early Anatomically Modern Humans during upper Pleistocene times, and the correlation of climate change with human evolutionary processes for a period of around 0.5 million years. However, these values relate to the application of the cultural criteria, and notably criterion (iii). The nominated property demonstrates primarily evolutionary change for a single genus (*Homo* spp), making the degree to which it preserves the record of life on Earth much narrower than existing fossil site inscriptions under this criteria, whilst the associations suggested between separate phases of landscape change in the late

Mesozoic rudist reef, which records life more than 60 million years before human presence on Earth, and during the upper Pleistocene, appear to be coincidental. Whilst the property appears to IUCN to have a strong case to be considered as of Outstanding Universal Value, criterion (viii) is not applicable in this case.

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

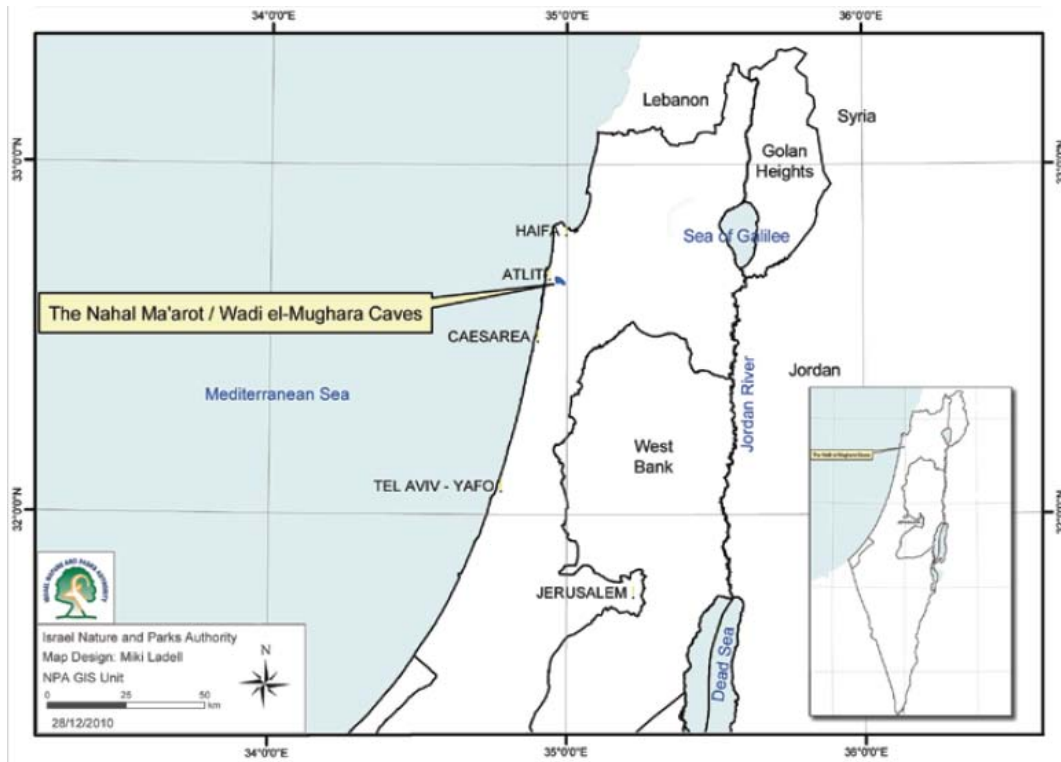
7. RECOMMENDATIONS

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

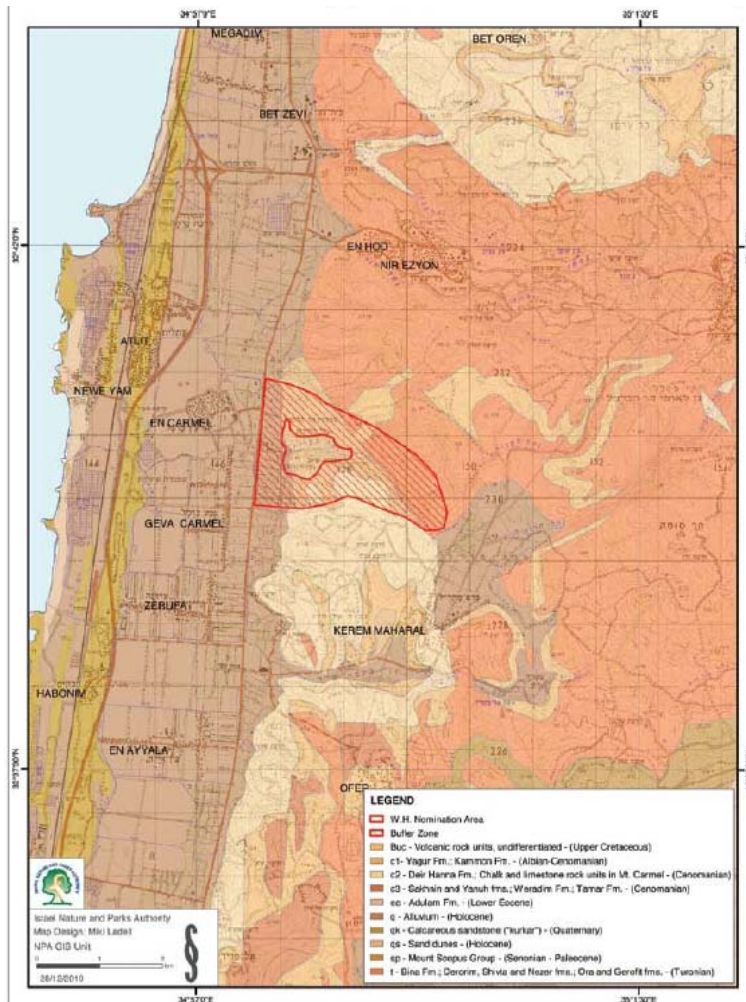
The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;
2. Decides not to inscribe the **Sites of Human Evolution at Mount Carmel: The Nahal Me'arot / Wadi el-Mughara Caves (Israel)** on the World Heritage list under natural criterion (viii).

Map 1: Location of the nominated property



Map 2: Nominated property and buffer zone



EUROPE / NORTH AMERICA

**PLASENCIA – MONFRAGUE – TRUJILLO:
MEDITERRANEAN LANDSCAPE**

SPAIN



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

PLASENCIA-MONFRAGÜE-TRUJILLO: MEDITERRANEAN LANDSCAPE (Spain) ID No. 1394

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 conditions of integrity or protection and management requirements set out in the Operational Guidelines, in relation to natural criteria

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

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

c) Additional Literature Consulted: Alvarado Corrales, E. (2004) **Reserva de le Biosfera de Monfragüe**. Editorial Everest S.A. La Coruna, Spain; BirdLife International 2011; Carrete, M. and J.A. Donázar (2005) **Application of central-place foraging theory shows the importance of Mediterranean dehesas for the conservation of the cinereous vulture, *Aegypius monachus***. Biological Conservation 126: 582-590; Cuttelod, A. et al. (2008) **The Mediterranean: A biodiversity hotspot under threat**. In: J.-C. Vié, C. Hilton-Taylor and S.N. Stuart (eds) The 2008 Review of The IUCN Red List of Threatened Species. IUCN Gland Switzerland; Derneži, D. (2010) **Ecosystem Profile: Mediterranean Basin Biodiversity Hotspot**. European Environment Agency, Copenhagen, Denmark; Gómez Campo C. (1985) **The conservation of Mediterranean plants: principles and problems**. In: Gómez Campo C. (ed.) (2003). Plant Conservation in the Mediterranean Area. W. Junk Publishers, Dordrecht, The Netherlands, pp. 3–8; Grove, A. T. and Rackham O. (2003) **Mediterranean Savanna: Trees without forests**. In: The nature of Mediterranean Europe: An ecological history. pp 190 - 216. Yale University Press; Hampe, A. 1993; Mangas, J.G. et al. (2008) **The priority value of scrubland habitats for carnivore conservation in Mediterranean ecosystems**. Biodiversity and Conservation 17: 43-51; Médail, F. and P. Quézel, (1999) **Biodiversity hotspots in the Mediterranean Basin: Setting global conservation priorities**. Conservation Biology 13: 1510-1513; Morillo, C. and C. Gómez-Campo (2000) **Conservation in Spain, 1980-2000**. Biological Conservation 95: 165-174; López-López, P. et al. (2011) **Hotspots of species richness, threat and endemism for terrestrial vertebrates in SW Europe**. Acta Oecologica (DOI:10.1016 / j.actao.2011.05.004); Rey Benayas, J.M. & E. de la

Montaña (2003) **Identifying areas of high-value vertebrate diversity for strengthening conservation**. Biological Conservation 114: 357-370; Traba, F. et al. (2007) **Determining high value areas for steppe birds in Spain: Hot spots, complementarity and the efficiency of protected areas**. Biodiversity and Conservation 16: 3255-3275; Viada, C. (2000) **Spain (including the Canary Islands)**. pp. 515-649 in M.F. Heath and M.I. Evans (eds.) Important Bird Areas in Europe: Priority Sites for Conservation Volume 2: Southern Europe. BirdLife International Cambridge UK; WWF and IUCN (1994) **Centres of Plant Diversity: a guide and strategy for their conservation**. Gland, Switzerland and Cambridge, UK Volume 1: Europe, Africa, South West Asia and the Middle East

d) Consultations: Two external reviewers consulted, in addition to commissioned comparative analysis. The mission met with a wide range of officials, representatives and staff of various authorities concerned with “Plasencia-Monfragüe-Trujillo: Mediterranean Landscape” (PMT). Discussions were held with senior and site level staff from Organismo Autónomo de Parques Nacionales (OAPN), Ministry of Environment and Rural and Marine Affairs (MARM); Spanish Ministry of Culture; Monfragüe Biosphere Reserve and National Park; national UNESCO representatives; elected officials and staff from Extremadura Autonomous Community and Trujillo and Plasencia townships. The mission also met with a range of academic specialists in different scientific fields relevant to PMT in addition to a broad range of local stakeholders including landowners, community representatives, NGOs, hunting associations/operators, local farmers and students.

e) Field Visit: Wendy Strahm and Tilman Jaeger, 17-21 October 2011 (joint mission with ICOMOS).

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The nominated property “Plasencia-Monfragüe-Trujillo: Mediterranean Landscape” (PMT) is located in the Extremadura Autonomous Community of south-western Spain, bordering Portugal. This mixed and cultural landscape nomination comprises five component parts and links the medieval towns of Plasencia and Trujillo and the Monfragüe Biosphere Reserve, which includes part of the Monfragüe National Park in its core zone. The National Park is mainly composed of Mediterranean forest and scrubland habitat, while most of the much larger Biosphere Reserve is made up of “*dehesas*”. *Dehesas* are a human-made landscape, described as a traditional agro-silvo-pastoral system, in which scattered specimens of a few tree species (Holm, Cork and some Portuguese Oak, and occasionally other species such as Wild Pear) grow on land that is either cultivated and/or used for pasture. Known as “*montados*” in neighbouring Portugal, *dehesas* have been managed for centuries over large parts of the Iberian Peninsula for livestock (pasture and lopping for fodder), firewood, charcoal, non-timber forests products such as mushrooms and medicinal plants, some farming (using traditional crop rotation), apiculture, cork production, as well as commercial and recreational game hunting.

Plasencia, located to the north of the Biosphere Reserve and Trujillo, to the south, are interconnected by “drover’s trails” called “*Vias Pecuarias*”, which are publicly owned linear corridors used extensively since the 13th century to move livestock from the winter and spring *dehesa* pastures in the lowlands to summer pastures in the mountains. Nine different drover’s trails are included in the nomination with a combined length of 96.6 km.

The property covers an area of 117,973 ha with a buffer zone of 8,856 ha. Note that all buffer zones have also been listed as “components” within the nomination dossier. This is a term typically associated with serial nominations notwithstanding the fact that buffer zones are normally not included as part of the nominated property. Whilst this is not clear in the nomination, IUCN has evaluated the property as a serial nomination. PMT fully or partly includes a number of protected areas designated or recognized at regional, national, European and global level. Monfragüe National Park, the youngest of Spain’s 14 national parks, makes up about 16% of PMT’s total area.

The principal natural values of the nomination occur within the 18,396 ha Monfragüe National Park (IUCN Category II), which was originally designated as a Natural Park in 1979 and then upgraded to National Park in 2007. Biosphere Reserve status was recognized in 2003 for an area of 116,160 ha, and this area has also been designated as a Special Protected Area under the European Birds Directive and a Site of Community Importance. Despite being completely human-made, the *dehesas* are very important as they provide food and habitat for a number of native species, and also support some interesting local breeds of farm animals.

The mountainous Monfragüe National Park harbours the confluence of two major rivers (the Tiétar and the Tajo) which are dammed in their entirety within the nominated property. The nominated property reportedly contains one of the largest areas of Mediterranean forest and scrubland on the Iberian Peninsula. Despite remedial measures which are underway large areas of vegetation have been destroyed relatively recently by eucalyptus and pine plantations which were started in the 1960’s, as well as by clearance of vegetation for hunting.

The nomination records 1,400 taxa of flowering plants from the property noting that this is approx. 16.5% of the flora of the Iberian Peninsula, of which about 100 taxa are endemic to the Peninsula (7.1%). A list of 31 species of conservation concern in Extremadura was also presented, but almost all of these are not threatened at a European level. As noted above the Monfragüe National Park includes large areas of Mediterranean forest although most of the nominated property is covered by *dehesa*. While *dehesa* is an extremely important cultural landscape and can provide extensive spring floral displays, natural habitats elsewhere in Spain are more important in terms of conserving native plant biodiversity.

The key natural value in the property is the variety and in some cases density of important bird species. In total 193 bird species were listed within the property with 130 noted as breeding. The entire property as well as surrounding areas has been identified as Important Bird Areas (IBAs) and Special Protected Areas (SPAs), including Monfragüe National Park and the towns of Plasencia and Trujillo. The nominated area is a very important site for raptors with 24 breeding species recorded. Four of these species were recorded as globally threatened: the emblematic Spanish Imperial Eagle (Vulnerable), the Egyptian Vulture (Endangered), the Lesser Kestrel (Vulnerable - reassessed in 2011 as Least Concern), and the Great Bustard (Vulnerable). The rocky cliffs in the park host some of the largest and easy to observe colonies of Cinereous Vulture (Near Threatened) and Griffon Vultures (Least Concern). Monfragüe harbours a critical breeding population of Cinereous Vultures. Spain is the European stronghold of this species which has a wide distribution from Europe to Asia. Other species such as the Great Bustard and Lesser Bustard are also reported in the nomination to be breeding within the property, although later it is noted in the nomination dossier that the Great Bustard is only found within the treeless “pseudo-steppe” located within the buffer zone surrounding Trujillo.

The nomination lists 44 native mammal species in the property, of which two were introduced in antiquity, the Common Genet and the Fallow Deer. Four other species have been recently introduced, including the invasive American Mink that has escaped from fur farms. Three species have been recently introduced to the property, mostly for hunting: the Iberian Ibex, the Mouflon and the Barbary Sheep. Almost half of the 94 mammal species occurring on the Iberian Peninsula are found within the property. Two species are classified as Vulnerable

(Southern Water Vole and Mehely's Horseshoe Bat) and six as Near Threatened (Garden Dormouse, Cabrera's Vole, Mediterranean Horseshoe Bat, Schreiber's Long-fingered Bat, European Otter and Rabbit). Notably, the most threatened cat species in the world, the Iberian Lynx, was not included in the list of mammals in the property even though it has only very recently been exterminated from the area, with an individual reportedly sighted in 1996. The Grey Wolf (Least Concern but threatened at a European level) also does not figure on the mammal list, even though it has also only disappeared from the area in the 1960's. Other emblematic mammals include otters (Near Threatened) which are reportedly common in the property.

Other faunal values include fish (10 species, five of which are globally threatened); amphibians (12 species, representing 41% of the 29 species occurring on the Iberian Peninsula); reptiles (20 species, representing nearly 70% of the 29 species found on the Iberian Peninsula); and numerous invertebrate species, most of which are not considered threatened at a global or Mediterranean level.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier includes a comparative analysis which has only limited consideration in relation to criterion (x) and by itself does not lend substantial support to the nomination under this criterion. The analysis considers a number of World Heritage cultural landscapes in Spain, Portugal and the rest of Europe, including two mixed World Heritage sites (Pyrénées-Mont Perdu and the Laponian Area). However, it neither makes any comparison of the respective species and habitat values of PMT with any of the selected sites, nor with any other relevant existing natural/mixed World Heritage sites in the Mediterranean.

As has been noted above the natural values of the PMT are concentrated within the Monfragüe National Park, covering only 16% of the nominated property. PMT belongs to Udvardy's Iberian Highlands and Mediterranean Sclerophyll Biogeographical Province. It also coincides with the WWF Iberian Sclerophyllous and Semi-Deciduous Forests Terrestrial Ecoregion. Although the nominated property represents a terrestrial ecoregion that is not yet represented on the World Heritage List or any Tentative List (Table 1), there are over 10 existing natural/mixed World Heritage sites in the same biogeographical province and/or the same terrestrial biome in the Palearctic realm.

In contrast to all existing natural/mixed World Heritage sites in Spain, PMT is not part of a Centre of Plant Diversity (CPD). In addition PMT is neither an Alliance

for Zero Extinction site nor one of the 431 Prime Butterfly Areas in Europe. Data on two other types of Key Biodiversity Areas (KBAs), Important Plant Areas (IPAs) and multi-taxa KBAs, are not yet available for Spain. Although detailed site specific data is limited, it appears that, within Spain, PMT has not been identified as an area of high herpetofauna diversity, a high-value area for steppe birds or a high-priority area for butterfly conservation. Although parts of the region encompassing PMT have been identified as areas of high-value diversity based on criteria such as species richness (amphibians, reptiles and breeding birds) and/or vulnerability (breeding birds and mammals), across taxonomic groups and criteria PMT also appears to be less important than other regions of continental Spain and the Balearic Islands. Several high-value areas are noted in the literature in the north (e.g. Picos de Europa National Park), east (e.g. Ordesa y Monte Perdido National Park, part of the Pyrénées-Mont Perdu World Heritage site) and south (e.g. Doñana National Park / World Heritage site and Los Alcornocales National Park) of continental Spain. Table 1 below supports a view that PMT's natural values, whilst very significant, are well covered within existing World Heritage sites in the Mediterranean.

A number of factors combine to reinforce the strong regional significance of PMT across a number of natural values. PMT ranks comparably with 12 other relevant World Heritage sites in total plant and vertebrate richness. The nominated property's vascular plant species (1404) represent some 17% of those found on the Iberian Peninsula. In addition 34% of Spain's mammal species, 38% of the country's bird species, 31% of its reptile species and 38% of its amphibian species have been recorded in PMT. Various studies have shown Monfragüe National Park to be a good example of a typical Mediterranean ecosystem on the Iberian Peninsula and of significant conservation interest because of its rich avifauna including breeding populations of the Critically Endangered Spanish Imperial Eagle and Near Threatened Cinereous Vulture. Considering the diversity and representativeness of its avifauna, especially its raptor community, PMT is outstanding certainly at the European level: the 130 bird species that breed in PMT include at least seven of the 20 species in Europe that breed only in the Mediterranean biome. With 24 breeding raptor species, PMT is considered a very important area for raptors and one of the very best sites in Europe for raptor watching. However, although PMT supports a rich avifauna, this assemblage is not entirely representative of the Extremadura, as iconic steppe species such as Great Bustard and Little Bustard do not occur in the property itself (only in the buffer zone and elsewhere in the region).

Table 1: Nominated property in the context of biogeographic units and large-scale global conservation priorities

	Nominated property	World Heritage sites in same biogeographical unit/priority region (in bold: sites inscribed under criterion (ix) and/or (x))
Biogeographical province (Udvardy 1975)	Iberian Highlands (46%) and Mediterranean Sclerophyll (54%)	<u>Iberian Highlands</u> : Pyrénées-Mont Perdu. <u>Mediterranean Sclerophyll</u> : Doñana, Gulf of Porto, Ibiza, Ichkeul , Isole Eolie (Aeolian Islands), Meteora, Mount Athos, Pirin, Plitvice , Škocjan Caves and Western Caucasus
Terrestrial biome / realm (Olson et al. 2001)	Mediterranean Forests, Woodlands and Scrub / Palaeartic	Doñana, Garajonay, Gulf of Porto, Hierapolis-Pamukkale, Ibiza, Ichkeul , Isole Eolie (Aeolian Islands), Meteora, Mount Athos, Ohrid, Škocjan Caves and Teide
Terrestrial ecoregion (Olson et al. 2001)	Iberian sclerophyllous and semi-deciduous forests	None
Terrestrial biodiversity hotspot (Mittermeier et al. 2004)	Mediterranean Basin	Doñana, Garajonay, Gulf of Porto , Hierapolis-Pamukkale, Ibiza, Ichkeul , Isole Eolie (Aeolian Islands), Madeira , Meteora, Mount Athos, Ohrid, Škocjan Caves, Teide
Terrestrial Global 200 priority ecoregion (Olson & Dinerstein 2002)	Mediterranean Forests, Woodlands and Scrub	Doñana, Garajonay, Göreme, Gulf of Porto , Hierapolis-Pamukkale, Ibiza, Ichkeul , Isole Eolie (Aeolian Islands), Madeira , Meteora, Mount Athos, Ohrid, Škocjan Caves, Teide
Freshwater Global 200 priority ecoregion (Olson & Dinerstein 2002)	No	N/A
Endemic Bird Area (Stattersfield et al. 1998)	No	N/A
Centre of Plant Diversity (Davis et al. 1994, 1995 and 1997)	No (the Sierra de Gredos CPD lies to the north)	N/A

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

All protected areas in the nominated property and some in the buffer zone form part of the Network of Protected Areas of Extremadura (Red de Áreas Protegidas de Extremadura, RENPEX) established by law in 2007. Different, partially overlapping, national and provincial levels of conservation legislation apply to the nominated property. At the European level, much of the nominated property belongs to the Natura 2000 network under the European Habitat and Birds Directives. Monfragüe was designated as a Natural Park in 1979, and then upgraded to National Park in 2007, providing formally the strongest protection status to this area. The level of protection for the much larger Biosphere Reserve buffer and transitional zones is weaker than the core area national park. Therefore, the future of land use in the *dehesas* depends on economic and political factors rather than formal protected legislation.

The majority of the nominated property is under private ownership, including about 50-60% of the national park. Public ownership of the national park includes the Town Councils, the Extremadura Regional Government, the Ministry of the Environment and Rural and Marine Affairs/Autonomous National Parks Body, and the Ministry of the Environment and Rural and Marine Affairs/Biodiversity Foundation. A total of 16

municipalities, including Trujillo and Plasencia, are located (partially) within the Biosphere Reserve. The *dehesas* are mostly privately owned and managed for livestock and commercial hunting. These uses are in principle compatible with conservation objectives, as the conservation values of the *dehesas* are a function of past and contemporary human use.

IUCN considers the protection status of the nominated property, although complex and overlapping, meets the requirements set out in the Operational Guidelines.

4.2 Boundaries

The National Park enjoys the strongest protection but is of limited size, and clearly the sizable breeding populations of raptors depend on the adjacent landscape and protection afforded by the much larger Biosphere Reserve. The selection of the various components of the nominated property and its overall design do not appear to be based on a nature conservation rationale. The area covered by the Biosphere Reserve provides an umbrella for the conservation of a valuable representation of *dehesas* and, within the national park, for remnants of native forest. However, other key landscape components essential for biodiversity conservation appear to be largely missing. For example the highly valuable pseudo-steppes and the last mostly free-running river are excluded.

The integrity of the property is considerably compromised through the inclusion of large dams and reservoirs within Monfragüe National Park resulting from the damming of the Tiétar and Tajo Rivers. The central area of the national park is dominated by human-made reservoirs, which were created prior to the area receiving protected area status. The dams provide significant domestic, agricultural and industrial benefits, however, they create fluctuating water levels in the park which adversely affect biodiversity as well as landscape values. In addition, prior to becoming a protected area, at least 3,000 ha of the National Park and parts of the Biosphere Reserve were terraced and planted with pine and eucalyptus species. While efforts are underway to remove these plantations, the ecological and visual impact will remain possibly for decades. Reforestation with native species appears restricted to the National Park and its success seems limited, in part due to the seemingly excessive density of herbivores in the area.

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

4.3 Management

The property is a complex mix of land use regulated through various and overlapping legislation and policy. This creates significant challenges for management, effective coordination and harmonization. There are a number of planning instruments at different levels which affect PMT, a situation which is common in Spain. Commendable efforts are taking place to deal with this, especially through cooperative mechanisms set up by the Director of Monfragüe National Park. However, at an overall property scale more needs to be done to harmonize and coordinate management.

The National Park, while having to comply with requirements defined in a Master Plan at the federal level, is mostly managed at the provincial level. The ownership structure gives a strong say to landowners, including in the National Park. Efforts have been made to improve governance through two management cooperative, multi-stakeholder instruments and the process of World Heritage nomination has improved communication among stakeholders through the creation of a Consortium (*Consortio Plasencia, Trujillo, Parque Nacional de Monfragüe y Biodiversidad Territorial*). This Consortium deserves special recognition as a mechanism bringing together a diverse range of stakeholders that have greatly contributed to the improved knowledge and management of the property. However, the coordination of park management with, for example, that of the water/dam authorities appears to be lacking.

Staffing and finance levels for the Monfragüe National Park and Biosphere Reserve are considered adequate. The staffing level is currently 201 drawn from civil servants employed directly by the regional government or recruited by public or private companies. Financing is

provided through European Funds, General State budgets, funds from the Councils of Extremadura, Cáceres and involved towns. Extremadura Regional Government spends an estimated 5m euro per annum on the management of Monfragüe National Park and Biosphere Reserve.

Notwithstanding coordination and management initiatives in place for the Monfragüe National Park and Biosphere Reserve, IUCN considers the management of the nominated property overall does not meet the requirements set out in the Operational Guidelines.

4.4 Threats

Habitat destruction occurs in the Extremadura due to land use changes, including urban encroachment, industrial areas, road construction and damming of water courses. The visual and biodiversity impacts of large dams have been noted above. In the nominated area direct habitat destruction occurs in the surroundings of Plasencia and Trujillo through encroachment by residential and industrial areas, dams and reservoirs in the national park, eucalyptus and pine plantations and recently constructed highways.

A major concern for the *dehesas*, the dominating landscape type within the nominated property, is the lack of regeneration. Livestock grazing must be carefully managed to maintain an artificial equilibrium and financial incentives to increase livestock densities have favoured overgrazing. Unless current trends of degradation are reversed, the economic and ecological functions and services of the *dehesas* are likely to suffer in the future. Similarly active intervention is required to maintain wild and semi-wild populations of game species.

Risks to the values of the PMT exist from infrastructure such as powerlines and roads as well as surrounding development impacts. A nuclear power plant next to Monfragüe National Park and controversial plans for renewable energy developments (wind and solar parks) in the landscape have potential to impact.

Active programmes to remove eucalyptus and pine species are underway in the national park and prospects for recovery are good. Other alien invasive species such as American Mink, Red-eared Slider, American Crayfish and a number of fish species may pose threats.

Fires, especially under the influence of climate change may also pose an increasing threat to the property. More than half of the national park and biosphere reserve staff are currently engaged in prevention and control of fire.

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

5. ADDITIONAL COMMENTS

5.1 Justification for Serial Approach

a) What is the justification for the serial approach?

From a nature conservation perspective there is no recognizable approach which resulted in the identification of the proposed parts of the nominated property. There are many areas of high conservation importance elsewhere in Extremadura and in adjacent regions of Spain and Portugal. Several well-known areas, including Cabañeros National Park in Castilla-La Mancha, would lend themselves for consideration within a coherent and systematic serial approach.

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

The connection through narrow linear “drover’s trails” is not based on any analysis of ecological connectivity and does not constitute a framework for addressing connectivity. The increasing road infrastructure of Extremadura may constitute a barrier to connectivity. While the massive “drover’s trails” network across Spain is ecologically important and a remarkable system for public access in a mostly privately-owned and fenced countryside, the selection of a few trails for the purpose of this nomination is not significant from a nature conservation perspective. However, from the perspective of the representation of a cultural landscape their inclusion is plausible and positive.

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

There is an enhanced level of coherence and coordination between the National Park and the Biosphere Reserve and a number of commendable initiatives are in place to enhance cooperation. However, the management of the urban area and the adjacent provincial and local protected areas in the nominated property (Plasencia) and its buffer zone (Trujillo) does not appear to be under the umbrella of a joint approach. Likewise, the inclusion of a small proportion of the “drover’s trails” network does not appear to be integrated into an overall management framework.

5.2 Cultural Landscape Approach

IUCN makes the following comments regarding the natural elements of the landscape, in relation to the cultural landscape aspects included in the nomination of the PMT. IUCN notes that the evaluation of the nomination as a cultural landscape is undertaken by ICOMOS.

The most dominant elements in this nomination in terms of area are the *dehesas* and the Mediterranean forest and scrubland (the latter occurring principally in the National Park), which are important landscape components. The *dehesas* which have been included in the nomination are impressive and provide a good

representation of various types in the area, although it is not clearly stated how these relate to the millions of hectares of *dehesas* remaining in Extremadura, Castilla-La Mancha, Andalucía and Portugal.

However, if the property’s value is considered to be its representation of a cultural landscape including associated biodiversity, then a number of landscape elements appear to be lacking. These include the mountain ranges (summer grazing areas and areas with important natural values); the human-made steppes (“*llanos*”, areas also under threat with important natural values); and free-running water courses. Both the *llanos* and the last mostly free-running river in the region (the Almonte) only occur in between the components of the nominated property. The Almonte is one of the last rivers close to a natural state in the whole of Extremadura (even though it is also affected by the Alcantara dams on the Tajo River to which it is a tributary), but just a very small part has been included within the nominated property. In addition, the *llanos* which have traditionally played a strong role in agriculture and livestock-keeping, and are also very important for steppe species such as the Great Bustard, are only represented by minor areas in the buffer zones.

A number of mountain ranges close to the nominated property are recognised as having important biodiversity values, in particular the Gredos in the north, but also smaller ranges such as the Gata, Batuecas, San Pedro and the mountainous Arribes del Duero, where Spain and Portugal meet. It is also notable that the Iberian Lynx breeding and re-introduction programme is taking place in the Gredos.

6. APPLICATION OF CRITERIA

The property has been nominated as a mixed site under criteria (iv), (v) and natural criterion (x).

Criterion (x): Biodiversity and threatened species

The nomination did not present a convincing comparative analysis based on biodiversity values. Supplementary analysis of the comparative natural values suggests that PMT possesses considerable diversity and representativeness within its avifauna, especially the raptor community, which confirms the site’s outstanding value at the European level. Its overall floral and faunal diversity and inclusion of endangered and endemic species rank highly in Spain and on the Iberian Peninsula, but are not considered globally outstanding. Although the property belongs to both a terrestrial biodiversity hotspot and a Global 200 priority ecoregion, both are already covered by a number of existing World Heritage properties.

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

7. RECOMMENDATIONS

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

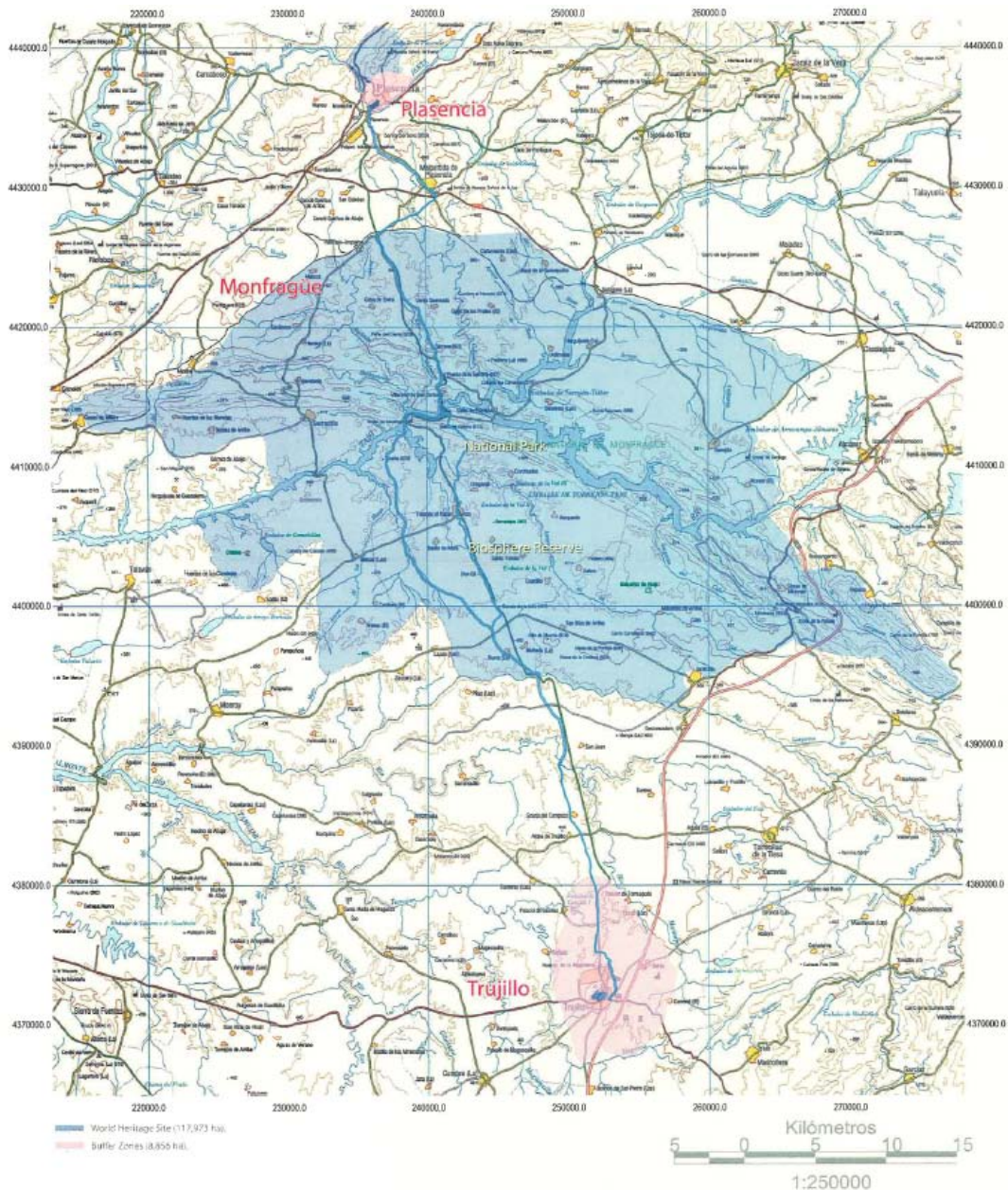
The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;
2. Decides not to inscribe the **Plasencia-Monfragüe-Trujillo: Mediterranean Landscape (Spain)** on the World Heritage List on the basis of natural criterion (x);
3. Recognizes the importance of this region for biodiversity conservation in Europe, and supports efforts to maximize the protection conferred by its designation in 2003 as a UNESCO Man and Biosphere Reserve;
4. Commends the State Party for its continued efforts to work cooperatively between all levels of government, Non Governmental Organisations, local communities and private partners to maintain and restore the cultural and natural values associated with the Plasencia-Monfragüe-Trujillo region.

Map 1: Location of the nominated property in Spain



Map 2: Nominated property and buffer zone



LATIN AMERICA / CARIBBEAN

BANCO CHINCHORRO BIOSPHERE RESERVE

MEXICO



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

BANCO CHINCHORRO BIOSPHERE RESERVE (Mexico) – ID No. 1244 Rev

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

Background note: In 2006/2007 the Banco Chinchorro Biosphere Reserve (BCBR) was nominated and evaluated as a natural site under all four natural criteria. At that time IUCN concluded that the site did not meet any of the natural criteria and recommended the State Party to consider the extension of the existing Sian Ka'an natural World Heritage property to include BCBR. The World Heritage Committee decided however to defer the examination of the nomination to allow the State Party to consider submitting a new nomination of the site as a mixed site taking into account the underwater cultural heritage of the site (Decision 31 COM 8B.19).

1. DOCUMENTATION

a) Date nomination received by IUCN: 11 March 2011

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

c) Additional Literature Consulted: CI MCAP (2004) **Ecosystem Profile: Northern Region of the Mesoamerica Biodiversity Hotspot.** Conservation International's Mexico and Central American Programme; Francisco, D. and A.D. Hoare (2009) **Mexico.** In C. Devenish et al. (eds.): **Important Bird Areas Americas - Priority Sites for Biodiversity Conservation.** BirdLife International, Ecuador, Quito: 85-90; Garcia-Salgado, M. et al. (2008) **Status of Coral Reefs in the Mesoamerican Region.** In: C. Wilkinson (ed.) 2008. **Status of Coral Reefs of the World: 2008.** Global Coral Reef Monitoring Network and Reef and Rainforest Research Center, Townsville, Australia: 253-264; Jordán-Dahlgren, E. and R.E. Rodríguez-Martínez (2003) **The Atlantic coral reefs of Mexico.** *Latin American Coral Reefs*, 131-158; Hillary, A., M. Kokkonen and L. Max (eds.) (2003) **Proceedings of the World Heritage Marine Biodiversity Workshop, Hanoi, Vietnam, February 25 – March 1, 2002.** UNESCO World Heritage Centre Paris France; Kelleher, G. et al. (1995) **A Global Representative System of Marine Protected Areas. Volume II: Wider Caribbean, West Africa, and South Atlantic.** Great Barrier Reef Marine Park Authority, IUCN and The World Bank Washington DC USA; Kramer, P.A. and P. Richards Kramer (ed. M. McField) (2002) **Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef.** World Wildlife Fund Washington DC USA; Cepeda-González, M.F., M. García, A. Vega, C. Lasch y J. Morales (compiladores) (2009) **Planeación para la Conservación de la Reserva de la Biosfera Banco Chinchorro: Un Esfuerzo Conjunto.** The Nature Conservancy, Comisión Nacional de Áreas Naturales Protegidas, Amigos de Sian Ka'an, A.C. y

Unites Status Agency for Internacional Development. Mérida, Yucatán, México; Loreto, R.M. et al. (2003) **Coral reef fish assemblages at Banco Chinchorro, Mexican Caribbean.** *Bulletin of Marine Science* 73 (1), 153-170; Salvat, B. et al. (2002) **Coral Reef Protected Areas in International Instruments: World Heritage Convention, World Network of Biosphere Reserves, Ramsar Convention.** CRIOBE-EPHE, Moorea Polynesia; MacKinnon H., B. and J.A. Aburto (2003) **Critical habitat for migratory land birds, Banco Chinchorro, Quintana Roo, Mexico.** *Bulletin of Marine Science* 73 (1) 171-186; Mumby, P.J. et al. (2004) **Mangroves enhance the biomass of coral reef fish communities in the Caribbean.** *Nature* 427, 533-536; Spalding, M.D., H.E. Fox, G.R. Allen et al. (2007) **Marine ecoregions of the world: A bioregionalization of coastal and shelf areas.** *BioScience* 57: 573-583; Spalding, M.D., M. Kainuma and L. Collins (2010) **World Atlas of Mangroves.** Earthscan, London, UK; Thorbjarnarson, J. et al. (2006) **Regional habitat conservation priorities for the American crocodile.** *Biological Conservation* 128, 25-36; UNEP / IUCN (1988) **Coral Reefs of the World. Volume 1: Atlantic and Eastern Pacific.** IUCN, Gland, Switzerland and UNEP, Nairobi, Kenya; UNEP / IUCN (1988) **Coral Reefs of the World. Volume 2: Indian Ocean, Red Sea and Gulf.** IUCN, Gland, Switzerland and UNEP, Nairobi, Kenya; UNEP / IUCN (1988) **Coral Reefs of the World. Volume 3: Central and Western Pacific.** IUCN, Gland, Switzerland and UNEP, Nairobi, Kenya; Vidal, R.M. et al. (2009) **Mexico.** In C. Devenish et al. (eds.) **Important Bird Areas Americas - Priority Sites for Biodiversity Conservation.** BirdLife International, Ecuador, Quito: 269-279

d) Consultations: Four external reviewers consulted. The mission met with a range of officials, representatives and staff of various authorities concerned with BCBR. Discussions were held with senior and site level staff from the National Commission for Natural Protected Areas (Comisión Nacional de Áreas Naturales

Protegidas – CONANP) as the agency responsible for managing BCBR. Consultations occurred with representatives from the Sub-Directorate of Underwater Archaeology of the National Institute of Anthropology and History; National UNESCO - Mexico; local Quintana Roo Government officials; fishing cooperatives; and local tourism entrepreneurs.

e) Field Visit: Alberto Salas and German Soler, 22 – 29 August 2011.

f) Date of IUCN approval of this report: April 2012

2. SUMMARY OF NATURAL VALUES

The Banco Chinchorro Biosphere Reserve (BCBR) is located off the coast of the Mexican State of Quintana Roo, some 33km to the east of Mahahual, a coastal fishing village. The reserve comprises a rectangular shaped area which covers 144,360ha. A buffer zone area covers 237,200 ha (sea only) and is not included in the nomination. It is an oceanic site to the east of the 1,000m deep Yucatan Channel, which lies between the bank and the coast. BCBR is part of the 1,200km long Mesoamerican barrier reef, the second largest in the world, and is the largest platform reef off the Mexican coast.

The bank is dominated by the Yucatan current which runs from south to north up the east coast and whose eddies and counter-currents affect the whole area. The nominated property is an oval shaped false atoll some 42km long and 16km wide sitting on an underwater ridge of limestone. The bank is composed of reefs and cays enclosing a lagoon of some 80,000ha incorporating a number of shallow marine habitats and reef formations. These include wooded sandy cays, fringing mangroves, seagrass beds, sandy-bottomed lagoons, patch reefs, barrier reefs, and open ocean. Reef growth is most active on the windward side to the east, but less active and discontinuous on the west.

The interior shallow lagoon floor, 2m deep in the north and up to 10m deep in the south, is covered by mud, sand, algae, patchy hard bottom coral communities, and seagrass beds. In the deeper portions of the lagoon to the south, well-developed patch reefs occur. The terrestrial part of the nominated property covers 4,575ha consisting of keys emerging from the northern, central and southern reef systems. There are three keys, Cayo Norte, Cayo Centro and Cayo Lobos. The southern island, Cayo Lobos, is a small sandbank with little vegetation whereas the other two cays are quite large with well vegetated beach berms and small interior lagoons. The largest island, Cayo Centro, contains extensive mangroves and salt-water marshes, as well as lush seagrass beds around the edges. The soils are calcareous with the exception of muddy sand in the lagoons. The cays have no freshwater, and thus there are no native mammals or amphibians on the islands.

Introduced species include rats and cats which impact on native birds and reptiles. Plant diversity is relatively low because of the flat nature of the islands, high salt concentration in the soil, and the long distance from the coast. However, the islands are important stopover sites for migratory birds in the Caribbean Region. Some 135 species of birds are found in the area, including one endemic. The mature mangroves on Cayo Centro are important breeding and nesting grounds for both local and migratory birds. Green, hawksbill, and loggerhead turtles frequent the bank, and Cayo Centro is a breeding and nursery area for American crocodiles.

The coral reefs are the richest in Mexico with 95 species, including 47 species of reef-building corals representing 72% of the reef-building corals in the Caribbean. The reef biodiversity is typical of a well developed coral reef ecosystem with the main components consisting of massive elk horn and deer horn corals, and gorgonians like seawhip coral. The dominant hard corals are mountain, brain, star, lettuce, and fused staghorn corals. The dominant soft corals are knob candelabrum, sea fan, slimy sea plume, and fan coral. Hydrocorals include the fire corals. The accompanying macro-invertebrate life is abundant, with 145 species recorded. There are large numbers of sponges and algae, phytoplankton, zooplankton, copepods and nematodes. Algae number 135 species. There are 31 species of caridean shrimps from 7 families. The area supports the last commercially viable queen conch fisheries in Mexico as well as a stable spiny lobster fishery. The conch fishery is acknowledged to be in serious decline. Reef fish are a key element of the reef system and a resource for regional fisheries. Fish diversity is comparable to other marine areas in the Caribbean, with a total of 199 species recorded, including 121 species of reef fish from 33 families. The most important families are the parrot fish (12 species), groupers (11 species), grunts (11 species), damselfish (10 species), wrasses (9 species), triggerfish (6 species), snappers (6 species), jacks, and barracuda. The oceanic zone is visited by the endangered Nassau grouper and false killer whale. The lagoon is an important spawning ground for marine fish: fish larvae of 36 marine fish families have been found, with larvae being more abundant in the lagoon than in the oceanic zone. Some marine fish even complete their pelagic phase in the lagoon, and at least two viable grouper spawning aggregation sites have been documented. The bank is therefore an important nursery and dispersal centre for marine organisms.

3. COMPARISONS WITH OTHER AREAS

BCBR is one of at least nine marine protected areas with coral reefs on the Atlantic coast of Mexico. The largest of these is also the closest existing natural World Heritage site: Sian Ka'an (c. 50km to the northwest). Across the border, another natural World Heritage site, the Belize Barrier Reef Reserve System (c. 50km to the southwest) is also very close to BCBR. In addition to Sian Ka'an, Mexico has three other natural World Heritage sites: the

Monarch Butterfly Biosphere Reserve, the Whale Sanctuary of El Vizcaino on the west coast of the Baja California, and the Islands and Protected Areas of the Gulf of California. In addition to BCBR, Mexico's Tentative List currently includes six mixed sites and six natural sites. The latter include three at least partially marine biodiversity sites.

The nominated property belongs to terrestrial and marine ecoregions that are already well represented on the World Heritage list. The nearby Sian Ka'an and Belize Barrier Reef World Heritage properties both belong to the same Udvardy Campechean Biogeographical Province, and the same terrestrial and marine ecoregion (Mangrove/Neotropic and Mesoamerican Gulf-Caribbean Mangroves). Río Plátano (Honduras) and two at least partially marine Tentative List sites in southeast Mexico represent the same terrestrial ecoregion but a different marine ecoregion. The key World Heritage sites for comparison are therefore Sian Ka'an and Belize Barrier Reef; however, it is noted that the nomination dossier did not make comparisons between BCBR and Sian Ka'an.

BCBR belongs to a Conservational International terrestrial biodiversity hotspot and a WWF marine Global 200 priority ecoregion that are already well represented on the World Heritage List including the nearby Sian Ka'an and Belize Barrier Reef World Heritage properties. BCBR has not to date been identified as an Endemic or Important Bird Area; an Alliance for Zero Extinction site; a multi-taxa Key Biodiversity Area or a Centre of Plant Diversity.

BCBR is one of three offshore banks / islands in the Mexican Caribbean, the other two are the Arrowsmith Bank and Cozumel Island. Whilst the property's reefs are considered to be in relatively good condition, its reef species and habitats are representative of other reefs in the Caribbean and share many characteristics with the atolls in the Belize Barrier Reef. Similarly the marine fauna of BCBR does not stand out globally but in some taxonomic groups it is more diverse than that of nearby Sian Ka'an: BCBR has a higher coral and fish diversity than Sian Ka'an, which has more birds and algae, but is less diverse than the Belize Barrier Reef in several major taxonomic groups for which data is available. In addition, Cozumel Island has a higher bird, fish and algae diversity but a lower coral diversity. Globally, a number of World Heritage sites show considerably higher diversity in all or several of the taxonomic groups, sometimes by an order of magnitude or more. A number of wide-ranging marine mammals and reptiles (green,

hawksbill, and loggerhead sea turtles and the American saltwater crocodile) occur in BCBR as well as many existing World Heritage sites and BCBR does not appear of global importance for any of them. Table 1 illustrates the relative ranking of BCBR's species richness with 22 other properties. BCBR's values are complementary to existing properties within the Caribbean and Gulf of Mexico, however it does not stand out globally (for example corals: ranked 14th of 21; fish ranked 20th of 22; birds ranked 12th of 22).

An analysis of the nominated property's relative importance for globally threatened species (Critically Endangered, Endangered or Vulnerable on the IUCN Red List) ranks BCBR 9th out of 21 comparable World Heritage sites. There is nevertheless, strong evidence of the regional significance of BCBR stemming from a 2002 WWF study which ranked BCBR as one of the top nine high priority conservation areas within an overall 26 areas examined within the Mesoamerican Caribbean Reef (MACR) Region. The biodiversity values of BCBR stand out regionally on several criteria such as species richness, trophic linkages, habitat connectivity, habitat complexity, habitat representation, and ecological and evolutionary phenomena. All reviewers of this nomination also emphasized the national and regional significance of the property and its complementarity with nearby sites such as the Sian Ka'an World Heritage site.

Mangroves cover approximately 95% of the total vegetated area of the cays of BCBR and are made up of four species. Compared to several other Mexican protected areas, including for example the nearby Sian Ka'an WH site, sites such as the Turneffe Islands (part of the Belize Barrier Reef World Heritage site), Tobacco Cay and Curlew Bank in Belize, BCBR has a relatively limited mangrove cover. The Gulf of Mexico is a globally important seagrass area and six of Mexico's eight seagrass species occur along the coasts of the Yucatán Peninsula. Three of these make up most of the seagrass beds of BCBR (nomination). Two of the three species are widespread in Sian Ka'an, Belize Barrier Reef and Everglades (where seagrass beds cover 38% of the park).

The terrestrial fauna of BCBR is relatively poor with one bat species, few reptile species, no amphibian species (nomination), and only 23 resident bird species. However, 24% of the bird species of the Mexican state of Quintana Roo have been recorded in BCBR, which is a critical stopover site for migratory bird species crossing the Bay of Honduras.

Table 1: Number of species in major taxonomic groups in the nominated property and relevant existing World Heritage sites

Site	Natural criteria	Size (ha)	Coral	Molluscs / Sponges	Algae	Fish	Birds
Caribbean and Gulf of Mexico							
BCBR	(vii)(x)	144,360	95	104 / 35	135	199	135
Belize Barrier Reef	(vii)(ix)(x)	96,300	100	?	247	500	187
Cozumel Island	-	11,988	67	? / 27	296	264	239
Everglades	(viii)(ix)(x)	592,920	?	?	?	275	366
Sian Ka'an	(vii)(x)	528,000	83	103 / 24	171	175	339
Elsewhere							
Aldabra Atoll	(vii)(ix)(x)	35,000	210	?	?	287	65
Cocos Island National Park	(ix)(x)	199,970	32	500 / ?	?	300	87
Coiba National Park	(ix)(x)	270,125	58	453 / 14	?	760	147
East Rennell	(ix)	37,000	300 (Sol. Isl.)	?	?	759 (Sol. Isl.)	43
Galapagos Islands	(vii)(viii)(ix)(x)	14,066,514	120	?	?	460	57
Great Barrier Reef	(vii)(viii)(ix)(x)	34,870,000	2,904	4,000 / 1,500	450	1,500	242
Ha Long Bay	(vii)(viii)	150,000	232	211 / 19+	91	400	200
Henderson Island	(vii)(x)	3,700	29	305 / ?	?	190	19
Lagoons of New Caledonia	(vii)(ix)(x)	1,574,300	510	802 / 151	322	1,695	105
Ningaloo Coast	(vii)(x)	705,015	300	650 / 155	1,000	738	200
Ogasawara Islands	(ix)	7,939	226	?	?	795	195
Papahānaumokuākea	(viii)(ix)(x)	36,207,499	57	378 / ?	353	258	68
Phoenix Islands Protected Area	(vii)(ix)	40,825,000	200		?	500	44
Rock Islands Southern Lagoon	(vii)(ix)(x)	85,900	401	?	119	746	56
Shark Bay, Western Australia	(vii)(viii)(ix)(x)	2,197,300	95	218 / ?	?	323	230
Socotra	(x)	410,460	283	129 / ?	124	730	192
Tubbataha Reefs Natural Park	(vii)(ix)(x)	130,028	396	?	71	479	99

(Sources: Table 7 on page 42 of nomination; information from nominations, IUCN evaluations and IUCN / UNEP-WCMC data sheets)

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is owned entirely by the Mexican government. Legal protection is provided by a 1996 federal decree which established the Banco Chinchorro as a Biosphere Reserve.

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 reserve include the atoll and surrounding waters, and are considered adequate for management and conservation. The reserve comprises a rectangular shaped area which covers 144,360ha. The buffer zone area covers 237,200ha (sea only) and is not included within the nomination.

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

4.3 Management

Management of the area is carried out by the National Commission for Natural Protected Areas (CONANP) of Mexico. There is an Advisory Council of representatives from research and academic institutions, NGOs, social organizations including fishing cooperatives, and federal and state governments. Several other agencies, such as the Environmental, Naval, Communication and Transportation Ministries, along with the Tourism Advisory Sub-Council, assume responsibility for aspects of the BCBR.

The aim of the management is to ensure the continuity of the reef ecosystem and the conservation of its natural resources through sustainable use. The main economic activities are tourism and fishing, both of which are incorporated into a participatory management programme. A master plan for the management of the reserve was prepared in 2000 and updated in 2009. It covers, for example, protection and surveillance; natural resource management; restoration and reforestation of damaged habitats; cay conservation (including rat and cat eradication); disaster and waste control; ecological research and surveys; fishery studies; fisheries and tourism use; environmental education and publicity; finance, administration, operation and training.

Monitoring is conducted from ten field survey stations on a range of issues such as coral cover and mortality, algal cover, sponges, conch and lobster larvae, spawning sites, fish abundance, seagrass cover, sedimentation, water quality, and forest characteristics. There is a core area of 4,575ha within the nominated area with special

management. Within this core area the only activities permitted are: research, monitoring, environmental education, ecological restoration and conservation. This core area includes different areas within the reserve comprising all of the marine and terrestrial environments present in the BCBR such as mangroves, sea grasses, internal lagoons, corals and others. These zones within the core area have been chosen for their importance for breeding or nursery areas for key species such as cone conch and lobsters. Another aim of the reserve has been to raise the quality of life for fishermen through training and self-management of fisheries activities. Fishing communities have been persuaded to adopt responsible measures including respect for a closed season; minimum legal fish sizes; specific quotas of species caught; no use of nets, air tanks or compressors; and for setting ceilings on boat numbers and cooperative members.

BCBR has a total permanent staff of twelve. Staff are appropriately qualified in fields relevant to managing marine protected areas such as marine biology, oceanography, fisheries, reef ecology and eco-tourism. Some of the local fishers are working as guards. The BCBR is adequately funded and equipped. The federal government provides about US\$ 300,000 annually which is supplemented by other revenues such as entry fees and charges for tourist activities such as diving and boating. Approximately US\$ 100-150,000 a year is provided through NGOs and international donors (WWF, Amigos de Sian Ka'an, GEF and USAID). A Trust Fund, established with GEF support provides recurrent resources.

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

4.4 Threats

The BCBR personnel in 2009 determined the main threats to the reserve as: 1) non sustainable fishing and commercialization of illegal fishing resources, 2) climate change (sea level rise, water temperature rise, and increase in the frequency of hurricanes), 3) incompatible programs and political decisions in areas surrounding BCBR, 4) introduction and proliferation of exotic species 5) inadequate management of solid residues and sewage waters 6) unsustainable tourism practices.

An important threat to the bank are hurricanes and epidemic diseases such as black band and white band, and coral bleaching resulting from global warming: in nearby Belize there were massive coral die-backs related to El Niño in 1995 and 1998. Predation on the native reptiles and birds by cats and rats on Cayo Centro and rodents on Cayo Norte is a problem, however an eradication project, led by the NGO Amigos de Sian Ka'an, is proposed.

There are no permanent human settlements except for a naval out-station on Cayo Norte, the reserve guard base and 15 seasonal cabins used by fishermen during the lobster season from July to February. Two main species are fished, spiny lobster and queen conch, by three fishing cooperatives, totalling some 130 individuals (as at 2005) who are based in the mainland communities of Mahahual, Xcalak and Chetumal City. Illegal fishing and overfishing of threatened species and the profitable conch and lobster, and pollution by fishermen's wastes have decreased since the co-option of their cooperatives but this threat still persists. Sewage treatment plants for fishing settlements have been installed and a regional plan for waste control has been established.

Tourism use of the reserve is on the rise. Snorkelling and scuba diving, especially wreck-diving, and underwater photography are major attractions, however the annual number of visitors is relatively low (approximately 500). There are 12 known named wrecks and the wrecks of 18 galleons from the 16th–17th Centuries when this sea was first mapped as part of the Spanish conquest, and when the black rat may have been introduced. Additional tourism activities include fly-fishing, boating, sea kayaking, swimming and bird watching. Separate subzones have been defined for catch and release sport fishing, diving and wreck-diving. Coastal tourism is a potential threat, however the Territorial Development Plan aims to control tourism numbers through a bed limitation of 20,000 beds around Mahahual. This coastal village receives between 2,000 to 6,000 cruise ship tourists per annum. These cruises visit Mahahual on average 150 days per year; resulting in increased risk of pollution or collisions from heavy maritime traffic. However, there are a number of initiatives to alleviate the environmental and social impacts of cruise ships. Protective measures such as boundary and mooring buoys are being installed to manage tourism impact. Furthermore, the directives of BCBR are working to declare the Reserve a "Particularly Sensitive Sea Area" thereby strengthening protection.

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

5. ADDITIONAL COMMENTS

As noted above BCBR is situated in close proximity to two other World Heritage properties Sian Ka'an and the Belize Barrier Reef, both of which belong to the same Udvardy biogeographical province, and the same terrestrial and marine ecoregion. IUCN's evaluation of this property in 2007 recommended that BCBR be considered as an extension of the Sian Ka'an natural WH property. The IUCN field evaluation pointed out that the values of the nearby Xcalak Reserve are highly complementary to those of BCBR. The regional significance of BCBR argues for it to be logically considered as part of an overall conservation strategy for the values of the Mesoamerican Caribbean Reef Region.

6. APPLICATION OF CRITERIA

The **Banco Chinchorro Biosphere Reserve** has been nominated under criteria (vii) and (x).

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

The nomination argues for the application of this criterion on basis of the relatively isolated false atoll formation of karstic origin. The aesthetic beauty of the shallow lagoon with its clear waters, ecosystem diversity and changing color patterns - known as "cloudscape" are emphasized together with the associated behaviors and life cycles of marine species. The presence of shipwrecks on the reef dating back to the 16th century is also argued to contribute to aesthetic value. None of these characteristics, however, can be considered unique or best represented at the Banco Chinchorro. The atolls within the Belize Barrier Reef Reserve System World Heritage property have similar characteristics and BCBR does not stand out among many other similar environments globally in terms of uniqueness in size or diversity.

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

Criterion (x): Biodiversity and threatened species

The values of BCBR argued in support of this criterion include the diversity of habitat types characteristic of tropical coral reef ecosystems, which serve as refuges for threatened and endangered species; the isolation of the reserve and its natural processes, which provide an opportunity to study theories concerning species evolution, extinction, and colonization, and interactions among species and their adaptation to isolated environments; and the importance of the reserve for in-situ conservation of complex food networks. The biodiversity values of BCBR are demonstrable of regional significance and are especially complementary to the values of other World Heritage sites within a 50km radius – Sian Ka'an and the Belize Barrier Reef World Heritage properties. Furthermore BCBR's attributes are common characteristics of most tropical reef areas and better represented in other marine protected areas already inscribed on the World Heritage List.

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

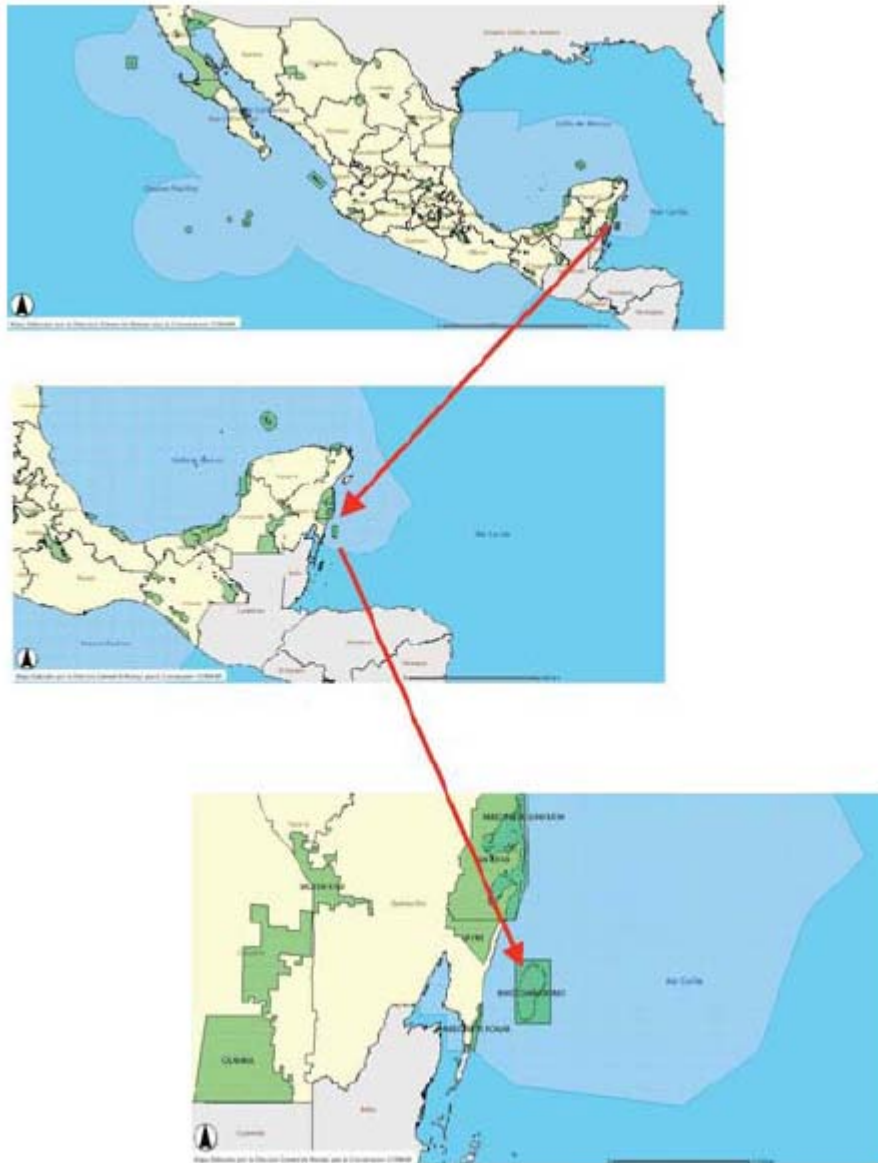
7. RECOMMENDATIONS

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

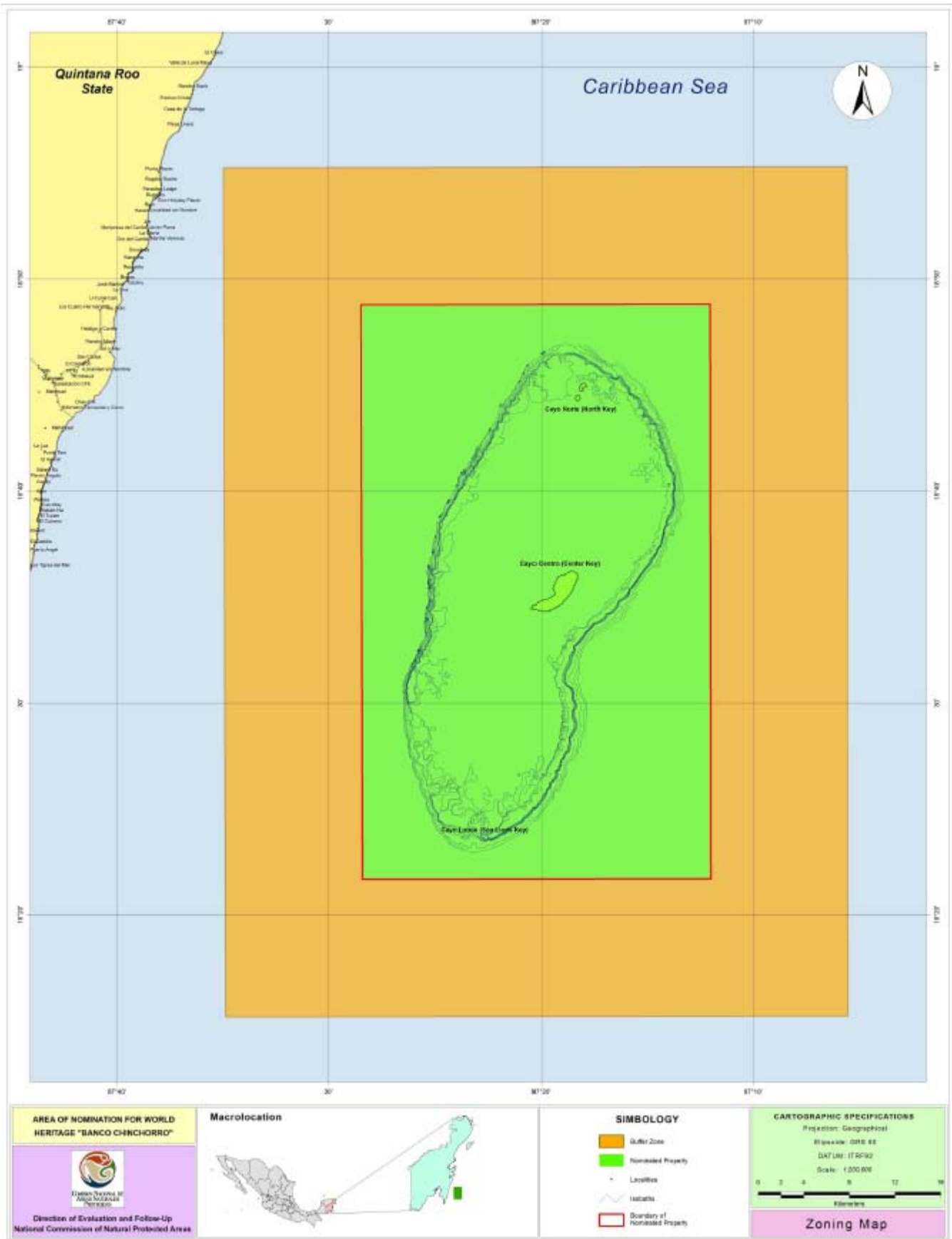
The World Heritage Committee,

1. Having examined Document WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;
2. Recalling decision 31COM 8B.19, adopted at its 35th session (Paris, 2011);
3. Decides not to inscribe the **Banco Chichorro Biosphere Reserve, Mexico**, on the World Heritage List on the basis of natural criteria (vii) and (x);
4. Commends the State Party for its continued efforts in conserving the nominated property, as well as the NGOs, local communities and the private partners that are contributing to these conservation efforts;
5. Recommends the State Party to continue efforts to enhance ecological connectivity between protected areas in the Mesoamerican Caribbean Reef Region and recommends the State Party to study the potential for the nominated property as a possible serial extension to existing World Heritage properties in this region.

Map 1: Location of the nominated property



Map 2: Nominated property and buffer zone



B. MIXED PROPERTIES

B2. MINOR BOUNDARY MODIFICATIONS OF MIXED PROPERTIES

ASIA / PACIFIC

TASMANIAN WILDERNESS

AUSTRALIA

WORLD HERITAGE MINOR BOUNDARY MODIFICATION PROPOSAL – IUCN TECHNICAL EVALUATION

TASMANIA WILDERNESS (AUSTRALIA) – ID No. 181 Quater

1. BACKGROUND INFORMATION

The background information to this proposal is noted substantively in documents WHC-10/34.COM/INF.8B1.Add and WHC-10/34.COM/INF.8B2, which were considered at the 34th Session of the World Heritage Committee (Brasilia, 2010), and previously following a World Heritage Centre and IUCN monitoring mission to the property in 2008. At its 34th Session, the World Heritage Committee approved a minor boundary modification that added a series of identified forest reserves into the property, with the exception of the one area that is the subject of the present proposed minor modification, the Southwest Conservation Area south of Melaleuca to Cox Bight, an area of 3,810 hectares. The reason for the delay was the continued presence of mining licenses in this area. In decision 34 COM 8B.46, the Committee welcomed the intention of the State Party to add the area to the property when mining licenses had expired.

2. SUMMARY OF PROPOSED BOUNDARY MODIFICATION

In its report on the property, which also provides the basis for consideration of the State of Conservation of the property under item 7B of the 36th Session of the Committee, Australia reports on the implementation of decision 34COM 8B.46 and related earlier Committee decisions regarding the South West Conservation Area (Melaleuca-Cox Bight). It agrees that mining is not appropriate in the World Heritage property, and reports that the Australian and Tasmanian Governments have worked closely together to ensure an end to mineral exploration licensing in the Adamsfield Conservation Area within the World Heritage property. Australia has also committed AUS\$500,000 from the Caring for our Country (2010–2012) initiative to assist the Tasmanian Government to implement the relevant World Heritage Committee Decisions.

The State Party reports that mining issues have been resolved. The remaining leases have now been relinquished voluntarily and lessees appropriately compensated by the Tasmanian Government, thus enabling the addition of the Southwest Conservation Area (Melaleuca–Cox Bight) to the existing World Heritage Area. It notes the proposal completes consideration of the proposal for extension put forward in 2010, as noted above.

3. IMPACT ON OUTSTANDING UNIVERSAL VALUE

IUCN has previously evaluated the impact of the proposed minor modification in relation to natural values, as part of the overall proposal made in 2010. The relevant details are provided in the documents referred to above, and in summary the modification provides a further positive addition to the integrity of the property, and is of an appropriate size to be considered as a minor boundary modification as per the Operational Guidelines. In its evaluation of the previous modification proposal, IUCN considered that the State Party proposal related to the Conservation Area south of Melaleuca to Cox Bight was reasonable, and looked forward to this area being added to the property when the mining leases have been resolved.

IUCN considers the proposed modification meets the requirements of the Operational Guidelines.

4. OTHER COMMENTS

As a mixed site, ICOMOS will evaluate the proposal in relation to the listed cultural criteria, and the Committee is advised to adopt a decision conforming to the joint advice of IUCN and ICOMOS.

IUCN notes that the property will also be considered under item 7B of the agenda of the 36th Session, and that its boundaries have been considered in a range of previous Committee decisions, and thus recommends the Committee recall these other decisions in its decision on the proposed minor boundary modification.

5. RECOMMENDATION

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;

2. Recalling decision 34COM 8B.46;

3. Approves the minor modification of the boundaries of the property **Tasmanian Wilderness (Australia)** in line with the proposals of the State Party, and as previously considered by the World Heritage Committee;

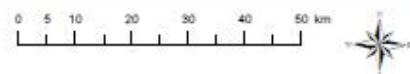
4. Reiterates its recommendation that the State Party consider further minor modifications to the boundaries of the property, considering the past decisions of the World Heritage Committee on boundaries in relation the natural and cultural values.

Map 1: Map of Tasmanian Wilderness Areas showing areas added in 2010 and Southwest Conservation Area (Melaleuca–Cox Bight) proposed addition



Tasmanian Wilderness World Heritage Area - proposal for boundary modification

- World Heritage Area boundary
- World Heritage Area (land area)
- Areas that were added in 2010
- Southwest Conservation Area (Melaleuca to Cox Bight)
- Waterbodies
- Principal Road
- Minor Road
- Walking Tracks
- Major rivers



Map produced by:
 ERIN, Australian Government Department of Sustainability,
 Environment, Water, Population and Communities (5/1/2012)
 Projection: WGS84 MGA Zone 558 Scale: 1:700,000 (A3 size)
 Data Sources:
 World Heritage Area, Protected Areas - Tasmanian Government
 Waterbodies; Waterways - Geodata Topo 250K, Geoscience Australia

ASIA / PACIFIC

MOUNT HUANGSHAN

CHINA

WORLD HERITAGE MINOR BOUNDARY MODIFICATION PROPOSAL – IUCN TECHNICAL EVALUATION

MOUNT HUANGSHAN (CHINA) – ID No. 547

1. BACKGROUND INFORMATION

Mount Huangshan is a mixed property of 15,400 hectares which was inscribed on the World Heritage List under criteria (ii), (vii) and (x), in 1990. The property has previously been considered at the 20th and 22nd Sessions of the World Heritage Committee.

2. BRIEF SUMMARY OF PROPOSAL

The proposal of the State Party is to note the correct area of the property and to extend its existing buffer zone, to ensure conformity of the boundaries of the property with national protection legislation. Information submitted by the State Party to the World Heritage Centre sets out a clear proposal for this as a minor boundary modification, and may be summarized as follows.

The State Party notes that Mount Huangshan World Heritage property is also a National Park of China. ‘The Master Plan of Huangshan National Park’, approved by China's State Council in 2007, registers 16,060 ha as the core area of Huangshan National Park and 49,000 ha as the buffer zone.

In the proposal the boundary of the property remains unchanged; however, the area data of the property is now updated from 15,400 ha to 16,060 ha as a result of different measurement methods. There is therefore no proposal to modify the extent of the property, only to note its corrected size, which is larger than previously recorded.

The current buffer zone of the Mount Huangshan property is 14,200 ha. The proposed buffer zone of the property of 49,000 ha will add five more towns and a tree farm adjacent to the property, namely, Tangkou Town, Tanjiaqiao Town, Sankou Town, Gengcheng Town, Jiaocun Town and Yanghu Tree Farm. The buffer zone will follow the existing administrative boundaries of these areas.

3. IMPLICATIONS FOR OUTSTANDING UNIVERSAL VALUE

The State Party notes the present buffer zone of the property is comparatively small and was planned mainly for the protection of visual landscape and environment, and without equivalent considerations regarding ecological integrity, facilities coordination and the feasibility of management. The proposed buffer zone

addresses these concerns, covering a 4 km isolation zone for the efficient prevention of the *pine wood nematode disease*. It also notes that a more efficient ecological compensation fund will be implemented among the neighbouring communities, and notes that establishing consistent buffer boundaries and administrative boundaries will help clarify the responsibilities for buffer zone management, and enhance the feasibility of management measures, such as the protection of resources and environment, tourism development and the coordinated development in support of local communities.

The State Party further notes that negative impacts will be reduced markedly in the property through improved protection of water, air and geological resources, the establishment of the monitoring systems and fire control facilities, enhanced control of tourism and other management measures in the buffer zone. The extended buffer zone will ensure the good protection of the authenticity and integrity of the property, and maintain the outstanding universal value of the property.

Appropriate legal measures appear to be in place for the buffer zone. Institutionally, Huangshan Municipal Government is in charge of coordination of the property and the buffer zone, and will also ensure personnel for the coordination with the buffer zone. A special section of ‘The Master Plan of Huangshan National Park’ is dedicated to provide guidance for the operation and management coordination within the buffer zone. The local government of Huangshan District is also preparing ‘The Special Plan for Huangshan Buffer Zone’ to coordinate resource protection, tourism service facilities, traffic and other aspects of the buffer zone, which will help avoid the conflicts and duplication. The State Party also reports that funds will be allocated for improved management of the buffer zone, and other assistance will be provided.

IUCN considers the submission by the State Party is very clear, provides evidence of positive benefits to the protection of Outstanding Universal Value of the property, and consideration on the legal and institutional requirements to implement the proposal, if approved. IUCN also considers that in principle it is good practice to align, where possible, the boundaries of World Heritage properties with the relevant national instruments that provide for their effective definition, protection and management. IUCN has received information via its network that draws attention to the effective management of Mount Huangshan and the progress achieved by the State Party, local site managers, the associated local government and other

organizations since inscription on the World Heritage List. The revision also may provide increased opportunities to improve local community engagement and benefit sharing.

IUCN considers the modification is appropriate to be considered through the minor boundary modification provisions of the Operational Guidelines as it does not impact the size of the property, and it enhances the effectiveness of the protection and management of the property's established Outstanding Universal Value. There are clear and logical proposed boundaries, and the benefits in terms of enhanced protection and management have also been clearly explained. IUCN notes that in the latest approved version of the Operational Guidelines, a revision to Paragraph 107 specifically encourages the creation of buffer zones via the minor boundary modification process.

IUCN considers that the proposal to extend the existing buffer zone of Mount Huangshan meets the requirements for approval as a minor boundary modification of the existing property.

The correction of the area of the actual property is an administrative matter and not a modification of the property, and thus has no impact on Outstanding Universal Value. This correction should be noted and updated by the World Heritage Centre in the official records of the World Heritage Convention. The retrospective inventory is foreseen as the appropriate mechanism for such corrections, and IUCN therefore draws this matter to the attention of the World Heritage

Centre for their consideration, and to determine whether such a matter should be recommended as a specific part of the decision of the World Heritage Committee.

4. OTHER COMMENTS

As a mixed site, ICOMOS will evaluate the proposal in relation to the listed cultural criteria, and the Committee is advised to adopt a decision having considered the joint advice of IUCN and ICOMOS.

IUCN notes that this is a high quality submission of a minor boundary modification and can be regarded as a model for other States Parties to follow in submitting such modifications, notably in cases where buffer zones are proposed for creation or extension.

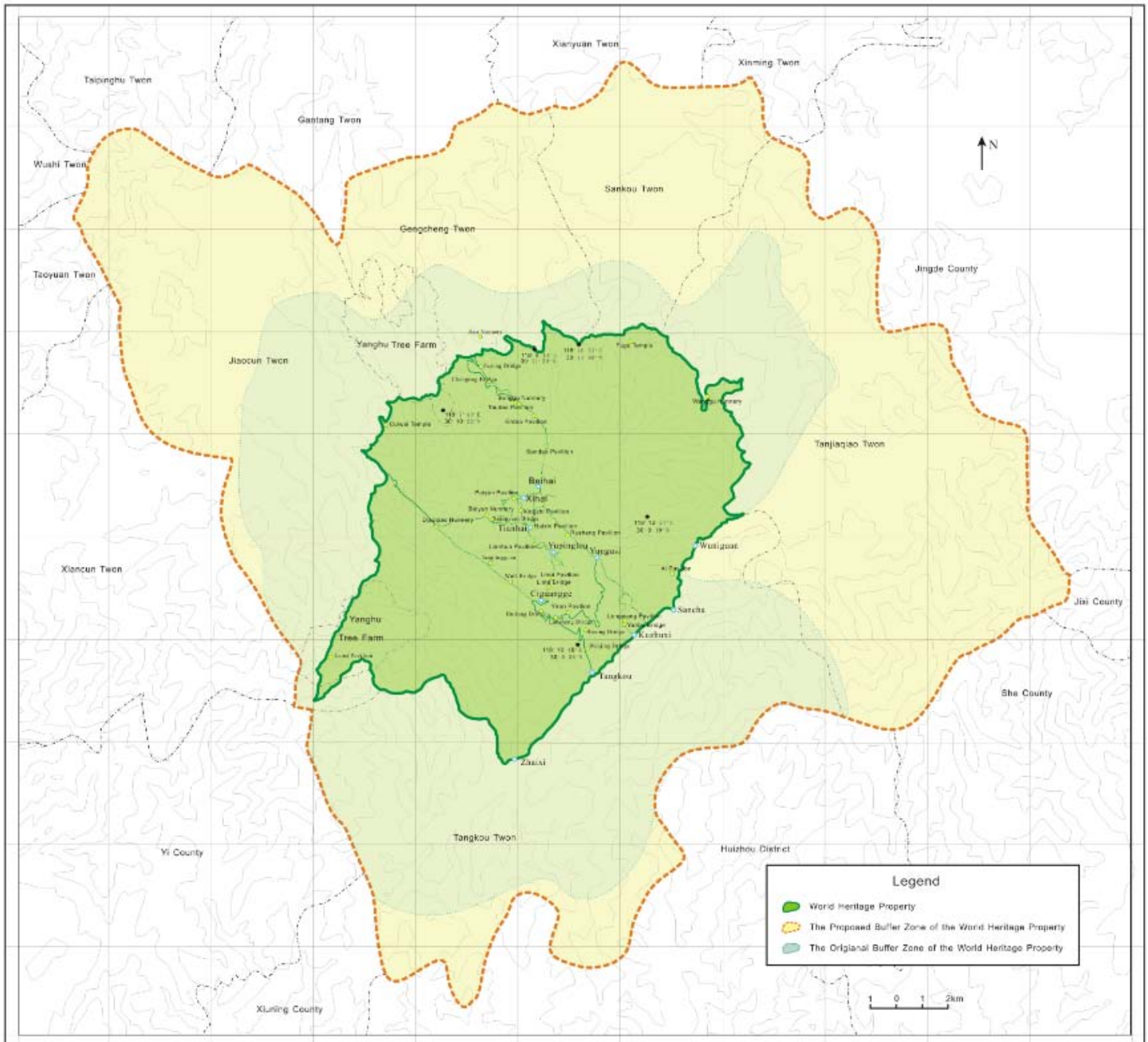
5. RECOMMENDATION

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

The World Heritage Committee,

1. Having examined Documents WHC-12/36.COM/8B and WHC-12/36.COM/INF.8B2;
2. Approves the minor modification of **Mount Huangshan (China)** to extend the buffer zone to the property, in line with the proposals of the State Party.

Map 1: Proposed buffer zone extension



C. CULTURAL PROPERTIES

C1. NEW NOMINATIONS OF CULTURAL PROPERTIES

ASIA / PACIFIC

CULTURAL LANDSCAPE OF BALI PROVINCE

INDONESIA

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

CULTURAL LANDSCAPE OF BALI PROVINCE, THE SUBAK SYSTEM AS A MANIFESTATION OF THE TRI HITA KARAN PHILOSOPHY (INDONESIA)

ID No. 1194 Rev

IUCN undertook a desk review of this cultural landscape nomination to provide inputs to ICOMOS on the natural components of this property. IUCN considers that the nomination documents clearly demonstrate a rationale for considering the property a “combined work of man and nature”. While the nomination includes areas with a high degree of intervention in the natural landscape, the natural and semi-natural systems of the hills and waters of the landscape, and wild species of fauna and flora that are integral components of it, provide the “canvas” on which has been superimposed the cultural landscape including elements such as the rice terraces, traditional irrigation systems, temples, and villages. IUCN notes the detailed documentation on the functional and spiritual aspects of this landscape, and the associated social and religious institutions, especially the system of cooperative resource management sustained by self-governing democratic institutions.

The natural aspect of the cultural landscape most critical for its protection and conservation relates to the management of water, which is the key environmental element of the Subak System of rice terrace management. It is also a critical element in maintaining the visual quality of the property. One significant challenge in this regard is the protection of water quality, and the maintenance of water flows. This is especially critical considering growing development pressures, fragmentation of the landscape and pollution from agricultural chemicals.

While effective watershed management is essential to the conservation of the Subak Systems, the nomination file does not clearly identify the geographical extent of the upper watersheds that feed the Subak Systems, nor indicate how they will be managed. The maps provided in the nomination documents make it difficult or impossible to work out the extent of the upper watersheds for each Subak System. Ideally, they should be clearly outlined on each of the maps and included within the boundaries either of the buffer zone of the property. If this is not possible, other effective conservation means should be put in place and be considered an integral part of the protection of the Subak water management system. These measures should be clearly set out in the nomination, tied to specific geographical areas on the maps, effectively implemented on the ground, and monitored on a regular basis. The most notable example is Lake Bakur. While the lake itself is included within the boundaries of the nominated area, the watersheds that feed the lake are not. It is not clear from the nomination how the quality, quantity, and flow rates of waters that feed Lake Bakur will be guaranteed.

Based on the considerations outlined above, IUCN recommends that the State Party be requested to submit clear maps of the upper watersheds of each Subak System, and provide an indication of how each will be protected and managed to guarantee the quality, quantity, and water flows required to maintain the health of these systems.

EUROPE / NORTH AMERICA

THE LANDSCAPE OF GRAND PRÉ

CANADA

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

THE LANDSCAPE OF GRAND PRÉ (CANADA) – ID No. 1404

IUCN considered this cultural landscape property based on a desk review of the nomination and the comments of 3 external reviewers. Key points noted by IUCN for the consideration of ICOMOS are as follows:

1. The case for the Gran Pré Landscape as a “combined work of man and nature” appears to be clearly articulated in the nomination document.
2. ICOMOS and IUCN reviewers have noted the property sits adjacent to the globally significant Southern Bight, Minas Basin Ramsar site, and have questioned whether this should be included in the nominated property. IUCN considers that this internally important wetland appears to be appropriately protected as a Ramsar site. Whilst it possesses important natural values, it does not appear to be an essential component of the Landscape of the Gran Pré, as nominated.

EUROPE / NORTH AMERICA

BASIN OF THE NORD-PAS-DE-CALAIS

FRANCE

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

BASIN OF THE NORD-PAS-DE-CALAIS (FRANCE) – ID No. 1360

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 World Heritage Panel considered that a convincing case for considering the nominated cultural landscape "a combined work of man and nature" is not made in the nomination documents. The Panel further questioned whether mining landscapes in general should not qualify for cultural landscape status under the Convention, as the interaction that took place between man and nature would have involved substantial and destructive alteration of the environment. A large number of waste tips had developed nature conservation values which have been identified for protection under French law, and some also have European designations. A survey of these has been undertaken recently with a view to classifying their nature conservation value. These should be clearly identified in the nomination document and included in the site management plan.

The altered flora and fauna in previously mined areas, as well as areas of semi-natural vegetation in the region, whilst of nature conservation importance at the national level, cannot be considered to present a phenomenon that is, of itself, of Outstanding Universal Value.

In relation to protection and management issues, the French regional nature park of Scarpe-Escaut (IUCN Category V) covers part of the nominated area. However, it is difficult to confirm the degree of cohesion between the established protected areas and the decision to include part of it in the WH nomination. The State Party should be asked to explain how the boundaries of the nominated property relate to the regional nature park, and how the world heritage nomination will relate to and support its management.