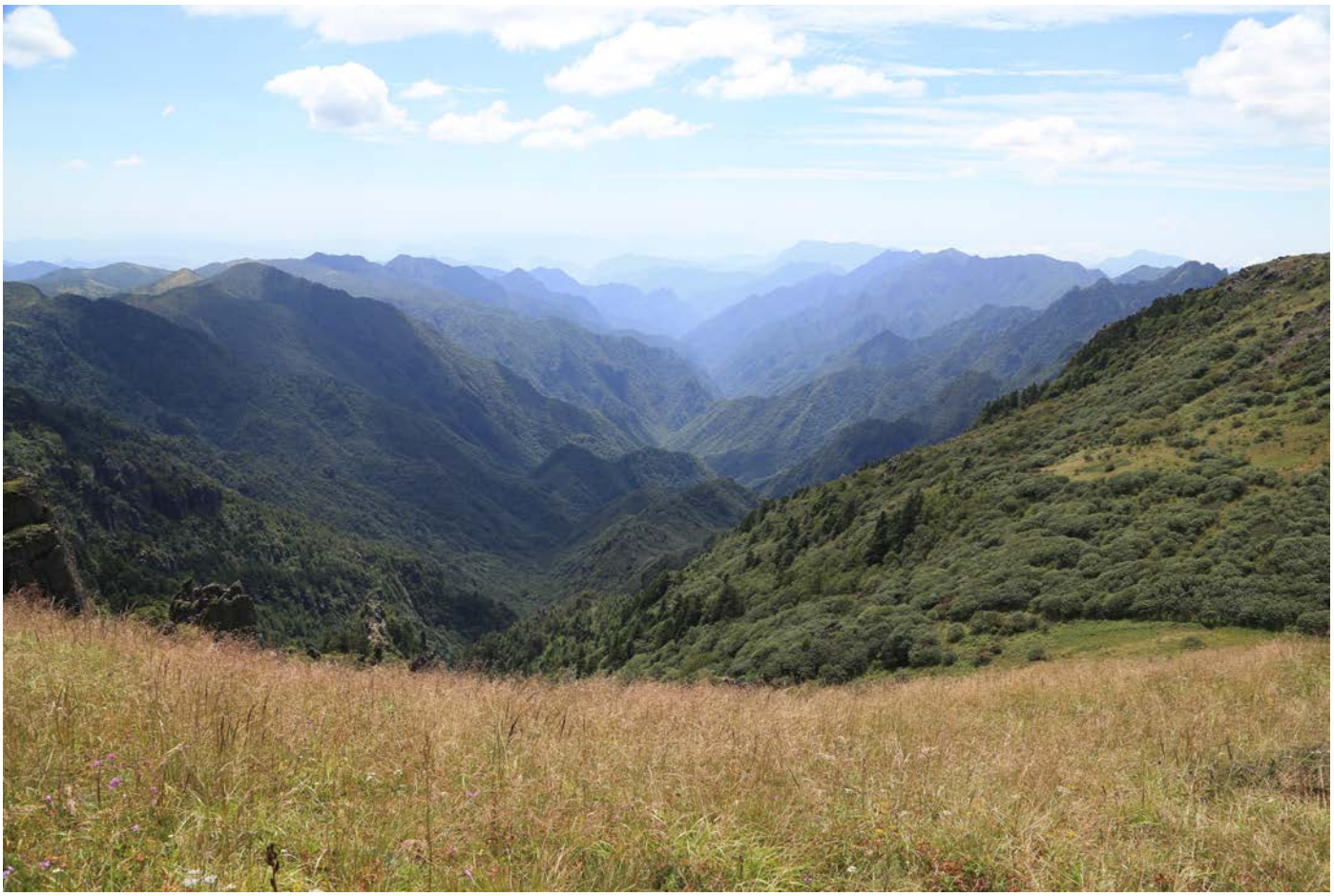
ASIA / PACIFIC

HUBEI SHENNONGJIA

CHINA



Laojunshan Component of the property - © IUCN Bruce Jefferies

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

HUBEI SHENNONGJIA (CHINA) – ID 1509

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

Key paragraphs of Operational Guidelines:
Paragraph 77: Nominated property meets World Heritage criteria.
Paragraph 78: Nominated property meets integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 16 March 2015

b) Additional information officially requested from and provided by the State Party: On 6 September 2015, the State Party responded to issues which arose during the course of the IUCN field evaluation mission. The letter, with accompanying maps, addressed a range of issues and confirmed extensions to the nominated area and buffer zone in the Badong County area. Following the IUCN World Heritage Panel a progress report was sent to the State Party on 16 December 2015 seeking its response to specific proposals concerning connectivity conservation; coordination mechanisms; measures to manage anticipated increases in tourism; and future investment plans for the nominated property. The information in response was received from the State Party on 22 February 2016.

c) Additional literature consulted: Various sources including: BirdLife International (2015). *Important Bird Areas factsheet: Shennongjia Nature Reserve.* Downloaded from http://www.birdlife.org in October 2015. Xiang, Z., et al. (2011). *Does flagship species tourism benefit conservation? A case study of the golden snub-nosed monkey in Shennongjia National Nature Reserve.* Chinese Science Bulletin, 56(24): 2553–2558. Ying JS (2001). *Species diversity and distribution pattern of seed plants in China.* Biodiv Sci 9, 393 398 (in Chinese with an English abstract). Zhang, M., Xie, Z., Xiong, G. and Fan, D. (2009). *Structures and topographical pattern of the tree layer of Fagus engleriana-Cyclobalanopsis oxyodon community in Shennongjia area, Hubei Province, China.* Frontiers of Biology in China, 4(4): 503–512. Zhao, C.M., Chen, W.L., Tian, Z.Q. and Xie, Z.Q. (2005). *Altitudinal pattern of plant species diversity in Shennongjia Mountains, Central China.* Journal of Integrative Plant Biology, 47(12): 1431–1449. Askins, R. A., and Askins, R. (2014). *Saving the world's deciduous forests: ecological perspectives from East Asia, North America, and Europe.* Yale University Press. Chen Z, Yang J and Xie Z. (2005). *Economic development of local communities and biodiversity conservation: a case study from Shennongjia National Nature Reserve, China.* Biodiversity and Conservation 14: 2095–2108. Cowlishaw, G., & Dunbar, R. I. (2000). *Primate conservation biology.* University of Chicago Press. Hong-Wen, H., Oldfield, S. and Hong Qian. *Global Significance of Plant Diversity in China.* In The Plants of China: A Companion to the Flora of China (2015). Huang, J. H., Chen, J.H., Ying, J.S., and Ke-Ping M. *Features and distribution patterns of Chinese endemic seed plant species.* Journal of Systematics and Evolution 49, no. 2 (2011): 81-94. Li, Y. (2004). *The effect of forest clear-cutting on habitat use in Sichuan snub-nosed monkey (Rhinopithecus roxellana) in Shennongjia Nature Reserve, China.* Primates 45.1 69-72.. López-Pujol, J., et al. (2011). *Mountains of Southern China as "plant museums" and "plant cradles": evolutionary and conservation insights.* Mountain Research and Development,31(3), 261-269. Rodrigues, A. S., et al. (2004). *Global gap analysis: priority regions for expanding the global protected-area network.* BioScience, 54(12), 1092-1100. Shen, Z., Hu, H., Zhou, Y., & Fang, J. (2003). *Altitudinal patterns of plant species diversity on the southern slope of Mt. Shennongjia, Hubei, China.* Biodiversity science, 12(1), 99-107.

d) Consultations: 10 desk reviews received. The mission met with senior officials and representatives of the Ministry of Housing and Urban-Rural Development (MoHURD), the People's Government of Hubei Province and the Department of Housing and Urban-Rural Development of Hubei Province. Consultation occurred with staff of the Administration Bureau of Shennongjia National Nature Reserve and with scientists and other experts from various institutions/NGOs such as the Chinese Academy of Sciences, Northeast Forestry University and the Wildlife Conservation Society. In addition meetings were held with the Qingtian Village Committee and other local resident and business representatives.

e) Field Visit: Bruce Jefferies, 19 - 24 August, 2015

f) Date of IUCN approval of this report: April 2016

2. SUMMARY OF NATURAL VALUES

Located in Hubei Province within central-eastern China, the nominated property, Hubei Shennongjia, lies between the Daba and Wudang Mountains. The property is nominated as a serial site partitioned into two components: the Shennongding/Badong component lies to the west with the smaller Laojunshan component to the east. The two parts of the nomination are separated by a national highway

and an approximately 10 km wide corridor which is included in the buffer zone. Extensions to the originally nominated area and its buffer zone were advised by the State Party in supplementary information received in September 2015.

Hubei Shennongjia is located on the eastern edge of the second step of China‘s three step distribution of terrain and spans the watershed between the Yangtze and Han Rivers. Climatically, the nominated property coincides with a transition area between subtropical and warm temperate zones, where warm and cold air masses from north and south meet and are controlled by the distinctive subtropical gyre effect.

A mosaic of protected areas and designations exist in the Shennongjia area. The nominated area covers 73,318 ha and is coincident with the majority of the Shennongjia National Nature Reserve in Fang County and Shennongjia Forestry District. The larger Shennongding/Badong component in the west is 62,851 ha and now includes some 6,231 ha of the northern section of the Yanduhe Provincial Nature Reserve in adjoining Badong County. The nominated property also overlays a National Forest Park as well as a Biosphere Reserves and Global Geopark that are also nationally recognized protected areas. A buffer zone of some 41,536 ha surrounds the nominated area. The breakdown of areas for the nominated property is shown in Table 1.

Component	Component name	Area of compo-nent (ha)	Area of buffer zone (ha)
1	Shennongding/ Badong (Shennongjia (56,620 + Badong 6,231)	62,851	41,536
2	Laojunshan	10,467	
	TOTAL	**73,318**	**41,536**

Table 1: Components and areas of the nominated property and buffer zone (as advised by the State Party, September 2015)

The nominated property has been relatively less affected by Quaternary glaciation than other areas in this region of China and is shaped by unique terrain and climate. These combine to make Hubei Shennongjia a distinctive habitat for numerous relic, rare, endangered and endemic species. The nominated property consists of mountainous terrain with an altitudinal range of nearly 2,700m and exhibits distinct vertical zones or altitudinal belts from the mountain tops to the foothills. Most of the mountains are above an altitude of 1,500m above sea level (asl), and 26 of them are above 2,500m, with six above 3,000m. Mt. Shennongjia, at 3,206m is the highest peak in central China and the surrounding terrain protects a diversity of karst and fluvial landforms with geomorphology derived from glacial and tectonic influences.

The region is considered to be one of three centres of biodiversity in China: the Hengduan; Southern China; and Central China (Shennongjia) regions. Located within the Oriental Deciduous Forest biogeographical province, Hubei Shennongjia preserves several ancient and relic species and offers a record of the ecological and evolutionary processes of Central China‘s flora and fauna during the past 350 million years. The nominated property includes 13 types of vegetation and an intact altitudinal vegetation spectrum across six gradients including evergreen broad-leaved forest, mixed evergreen and deciduous broad-leaved forest, deciduous broad-leaved forest, mixed coniferous and broad-leaved forest, coniferous forest, and bush/meadow.

Shennongjia has been a place of significant scientific interest particularly for botanists and the mountains have featured prominently in the history of botanical inquiry. The site has been the object of celebrated international plant collecting expeditions conducted in the 19th and 20th Centuries. From 1884 to 1889 more than 500 new species were recorded from the area. Shennongjia is also the type location for many species and the subject of more than 620 scientific publications on its natural values. 3,644 vascular plant species have been recorded in the nominated property, an impressive 12.5% of China's total flora. China has the highest concentration of temperate plant genera in the world with nearly 931 genera. The nominated property protects 588 of these genera, a remarkable 63.2% of China’s total temperate genera. The tree species and genus richness of the site is remarkable for a deciduous broadleaf forest type worldwide (838 species of deciduous woody plants, belonging to 245 genera). Furthermore the nominated property exhibits high levels of endemism within the plants. Totally, there are 205 species and 2 genera endemic to the nominated property, and 1,719 species endemic to China.

Hubei Shennongjia protects the largest primary forests remaining in Central China and provides habitat for many species of significant animals in the region. More than 600 vertebrate species have been recorded including 87 mammal, 389 bird, 46 fish, 51 reptile and 36 amphibian species. 4,300 insect species have been identified. The nominated property includes numerous rare and endangered species such as the Golden or Sichuan Snub-nosed Monkey (EN), Clouded Leopard (VU), Common Leopard (NT), Asian Golden Cat (NT), Dhole (EN), Asian Black Bear (VU), Indian Civet (LC), Musk Deer, Chinese Goral (VU) and Chinese Serow (NT), Golden Eagle (LC), Reeve’s Pheasant (VU) and the world’s largest amphibian the Chinese Giant Salamander (CR). The Golden or Sichuan Snub-nosed Monkey *(Rhinopithecus roxellana)* occurs in the provinces of Sichuan, Gansu, Shanxi, and Hubei. The animal is an emblematic species in China, considered as a national treasure of China in the same way as pandas.

The nominated property also contains high levels of globally threatened species. 105 plant species and 48 animal species are listed as endangered on the IUCN Red List and many species are recognised under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Totally, there are 205 species and 2 genera endemic to the nominated property, and 1,719 species endemic to China. High levels of globally threatened species are also present including 105 plant species listed on the IUCN Red List (2014). Among which, 7 species are termed CR, 33 species are EN, and 65 species are VU. 93 species are CITES listed.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier includes a global comparative analysis which contrasts Hubei Shennongjia against selected World Heritage mountain sites. 65 mountainous sites are identified and these are further narrowed to 12 properties which are argued as corresponding to similar physical geographical features, biodiversity and ecosystems as Hubei Shennongjia. Other World Heritage mountain sites in tropical and frigid zones are thus not considered. The sites selected for comparison still include places with very varied biogeographical contexts and so some comparisons to Hubei Shennongjia are not immediately obvious. In these cases the conclusions reached sometimes appear erroneous.

More informative is the comparison made to sites in the same biogeographic province. Here the analysis is eventually filtered down to just two existing World Heritage sites: Mt Huangshan (China) and Shirakami-Sanchi (Japan). The analysis considers six other Tentative Listed properties in the Oriental Deciduous Forest biogeographic province but sites outside of this province are not assessed. Also located in the forested areas of central-eastern China, Mt Fanjingshan is less than 500 kms away in Guizhou Province and is on China's Tentative List, proposed for inscription under the same criteria (ix) and (x). Furthermore only World Heritage properties inscribed under criteria (ix) and (x) are considered whereas inscribed sites under natural criteria (vii) and (viii), including nearby sites on China, such as South China Karst, China Danxia and Mt Sanqingshan are not assessed despite these often possessing significant biodiversity values. The nomination's conclusions contend that Hubei Shennongjia is globally distinctive based upon its unique biodiversity, biogeographical flora, altitudinal natural belts, and ecological and biological processes.

To supplement the nomination's analysis, further detailed assessment undertaken by IUCN and UNEP-WCMC has considered a range of other comparable sites based on biogeography and global priorities. The resulting analysis backs the claims made within the nomination based on analysis of the spatial data and references within the academic literature. In addition a number of expert global reviewers also support and expand, via cited references, on the claims made in the nomination.

Concerning criterion (ix) the nominated property is situated in the Daba Mountains Evergreen Forests ecoregion which is not yet represented on the World Heritage list. Hubei Shennongjia represents evergreen and deciduous broad-leaved mixed forest in the northern hemisphere. Mt. Shennongjia is the highest peak in central China and offers examples of typical mountain altitudinal biological zones in the Oriental Deciduous Forest biogeographical province. The nominated property is widely considered among botanists and plant ecologists to contain the best developed altitudinal vegetation belts found among the world's deciduous broad-leaved mixed forest mountain systems. Shennongjia is also located within a priority ecoregion, the Southwest China Temperate Forest, which is not yet represented on the World Heritage list. WWF notes that the forests within this ecoregion support one of the richest arrays of temperate plant species in the world and provide a home to a number of globally important species including many found within the nominated property such as Clouded Leopard (VU), Chinese Muntjac (LC) and China's Giant Salamander (CR).

For criterion (x) WCMC found that Hubei Shennongjia coincides with an area of considerable global plant biodiversity. The specific natural conditions present at the nominated property have contributed to the conservation of a large number of ancient plants that originated in the tertiary period, including remarkably high numbers of endemic plants when compared to other sites. 205 species and 2 genera are endemic to the nominated property, and 1,719 species are endemic to China. Among the flora 105 plant species are considered globally threatened and 93 species are CITES listed. The property also provides critical habitat for a number of animal species characteristic of this biogeographic province, including endemic and threatened species such as the Sichuan Snub-nosed Monkey (of which a population of 1,200 has been recorded within the property), Clouded Leopard, Asian Black Bear, Forest Musk Deer and Chinese Giant Salamander.

The property exhibits comparatively high levels of species richness when measured against 16 other natural World Heritage and tentatively listed sites. This is especially evident among vascular plants, where Hubei Shennongjia contains an exceptional 63.2% of the temperate genera found across all of China, a megabiodiverse country with the world's greatest diversity of temperate plant genera. The property protects the largest primary forests in Central China and, whilst covering less than 0.01% of China, contains an impressive 12.5% of the country's vascular plant species. As noted above the nominated property exhibits unparalleled tree species and genus richness for a deciduous broadleaf forest type worldwide. Although the Oriental Deciduous Forest province is one of the better represented Udvardy provinces on the World Heritage List, the Shennongjia regional Centre of Plant Diversity has been mentioned in IUCN's 2000 global study as a gap in representation of global biodiversity on the World Heritage List.

In summary, based on additional research which has augmented the comparative analysis within the nomination dossier, IUCN concludes that in the final analysis the nominated property meets the necessary level of global significance to satisfy the requirements of Outstanding Universal Value.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property is all state-owned land. The two components of the property: Shennongding/Badong and the smaller Laojunshan area to the east are both protected within the Shennongjia National Nature Reserve. The extension to the nominated area in the south is protected within the Yanduhe Provincial Nature Reserve in adjoining Badong County.

A wide range of national, provincial and county level laws and regulations affords protection to Hubei Shennongjia and the nominated area is coincident with several other protective designations at national and international level (National Forest Park, global and national level Biosphere Reserves and Geoparks). A buffer zone has been delineated surrounding the property, some of which is included with Shennongjia Nature Reserve and some within Yanduhe Nature Reserve. Some parts of the buffer zone lie within the Global Geopark and other parts are outside the mosaic of formally protected designations.

Public access and use of the nominated area is legally prohibited. Uses are subject to permit and restricted to scientific research, monitoring and management. Nevertheless, as is common in many of China's Nature Reserves, some resident populations exist within the site and zoning systems permit some degree of access for appreciation and education as well as more sophisticated infrastructure in the zones known as "Exhibition Districts".

IUCN considers that the protection status of the nominated property meets the requirements of the Operational Guidelines.

4.2 Boundaries

The boundaries of the nominated area are clearly defined and for the most part encompass the necessary attributes of Outstanding Universal Value. Boundaries have taken into account natural features such as watershed margins and ridges. The addition of areas in the Badong County to the south have significantly improved the integrity of the site and made for a more rational design including a buffer zone which now fully surrounds the property. The 6,231 ha addition covers and elevation range from 700 to 2,900m and adds 36 species to the initial area proposed for nomination. The addition protects a further distinct population of Golden Snub-nosed Monkeys and thus preserves the full habitat range of known populations in Shennongjia.

A key concern regarding the boundaries is the loss of ecological connectivity across the 10km corridor which separates the two component parts of the nominated property and is the location of the arterial road (Highway 209). The road is fenced on both sides and thus impedes some animal movements. Future development in this area could result in increasing pressure to upgrade this road thus further fragmenting the site. IUCN raised significant concerns about this matter, and particularly with respect to the values associated with criterion (ix), noting that the two components, whilst in good condition, are relatively small and do not represent a cohesive conservation unit. The field evaluation noted the intervening corridor areas have varying degrees of degradation however there may be options to create corridors, stepping stones (arrays of small patches of habitat that provide shelter, feeding and resting refuges for individual animals) or other connectivity mechanisms. In supplementary information the State Party has assessed the feasibility of, and committed to establishing enhanced ecological connectivity between the Shennongding/Badong component in the west and the Laojunshan component in the east. Details are provided on a series of connectivity initiatives that would significantly improve the ecological integrity of the property for many of the endangered animal species such as Clouded Leopard, Asian Black Bear, Forest Musk Deer and Chinese Goral which have large ranges and require sizable well-connected areas to ensure the viability of populations.

These proposals will be implemented over the next three years and recognize that much of the now buffer zone between the two components has good forest cover (95-97% in many areas). Proposals include the establishment of two wildlife corridors totaling over 8,700 ha; establishing 11 wildlife crossings (an additional 4 on top of 7 already established); a system of stepping stone sites; and the dismantling of roadside fencing along 30% of the road system. IUCN appreciates the responsiveness of the State Party on these proposals which will enhance the value of the property for key species. The State Party is encouraged to further elaborate the connectivity measures by tailoring management prescriptions to the needs of specific wildlife species ensuring the connectivity strategy is monitored, adaptive and effective in the long-term. Environmental impact assessment should be carried out for the road wildlife crossings and environmental rehabilitation implemented as appropriate in both the corridors and stepping stones. The State Party is further encouraged in time to elevate the protection status of the corridor and stepping stone areas in view of their importance to the ecology of the system. Careful attention will be needed to minimize human-wildlife conflicts in the corridor zones and stepping stones and monitoring programmes should be introduced to assess the utility of these measures.

IUCN considers that the boundaries of the nominated property, including the additional area added during the nomination, meet the requirements of the Operational Guidelines.

4.3 Management

Hubei Shennongjia is comprised of a mosaic of protected areas overlain with other protective designations and the IUCN evaluation has raised with the State Party a range of issues regarding the need to strengthen significantly the integration of management across various areas and disciplines. Institutionally, a

4-tier management structure has been put in place and is considered to be appropriate and well supported at the different levels it represents. The administrative authorities of the different protected areas in the nominated property will be responsible for management under the control of the MoHURD at national level. In its supplementary information the State Party has noted that upon inscription an "Integrated Protection and Management Committee of Hubei Shennongjia World Natural Heritage" will be established to strengthen the comprehensive management of the nominated property as a whole including the added sections in Badong County. The multi-agency governance structure is appropriate and in general there is good support and cooperation evident from all levels of Government. An important area to be addressed in the 4-tier management structure is the lack of formal recognition of stakeholder groups that are outside the government structure. This includes communities, emerging non-government organisations (NGO) and other stakeholders and interest groups. The State Party has indicated its commitment to co-management with concerned communities and will establish an integrated mechanism of heritage conservation and community development for the property.

The nominated property is covered by a management plan prepared at the time of the nomination and responding to issues specific to World Heritage. The nomination dossier also makes reference to a number of other planning documents including the Master Plan of Shennongjia National Nature Reserve (2005-2014); Master Plan of the Shennongjia Forest Park; Plan of Shennongjia National Geopark in Hubei Province (2011-2030); and the Master Plan of Tourism of Hubei. At present the management of the site is somewhat fragmented and lacking cohesiveness, however the management plan if implemented in an integrated way provides an acceptable blueprint for the future protection of the site.

The management zoning system presented in the nominated property is somewhat ambiguous. The nomination dossier makes reference to a range of ecological zones, however, only two "formal" zones are legally possible. The "Prohibited and Limited District" zone includes areas of high conservation value where use is focused on science and teaching. Here low key facilities are permitted and sightseeing, scientific education and scientific tourism presentation are partly allowed. The "Exhibition District" provides for more developed infrastructure and service facilities for tourism. The majority of the nominated area is zoned "Prohibited and Limited District" (97.7%) which provides for a high level of protection and the Exhibition District is restricted to an area adjoining Highway 209. Overlaying this are proposals within the management plan for a system of "Conservation Stations and Points" which appear to be operational areas; however they have stated objectives which target the needs of certain species. The "Conservation Stations and Points" system above provides a more nuanced level of management which is welcomed, however it is not clear how this relates to the formal zoning system. IUCN recommends that the zoning system be reviewed to ensure it is unambiguous, values-based, driven by clear species relevant objectives and harmonized with laws and regulations.

At a field/operational level, management is divided into three levels: Administration Bureau, Conservation Station, and Conservation Point. The staffing structure and capacity are considered satisfactory and the property reports a total of 215 full-time personnel, 93 of which are administrative and professional technical staff, 80% of whom have tertiary qualifications. Staff expertise covers a wide range including: physical geography, geology, environmental protection engineering, administration, botany, zoology, planning, national park and garden management, GIS, tourism management, forestry, water conservation and hydrological engineering and finance and accounting.

Funding is provided through Government appropriations and appears to be stable. This area of Hubei Province has suffered from changes in the local economy, including due to the decline of commercial forestry. There is a clear commitment from the Central Government to invest in conservation and tourism futures for the region. Supplementary information has detailed an impressive 3-year investment strategy which will increase annual resourcing by 20%. A substantial CNY 45 million (USD 6.9m) p.a. has been pledged for the property to support a range of management needs including significant investment in community development and in the Badong County addition to the nominated area. Staffing levels will be increased by 75% by 2018 from the current 93 staff to 163.

Whilst stressing the need for more integrated approaches to management, IUCN considers the management of the nominated property meets the requirements of the Operational Guidelines.

4.4 Community

The nominated property has a long history of human occupation and utilisation supported by archaeological evidence. Today some 7,000 residents live within the nominated area and a similar number in the buffer zone. The nomination and management plan emphasize the buffer zones as transition areas essential to the maintenance of the integrity of the ecosystem, biodiversity and natural landscape of the nominated property. Management is focused on controlling the size and scope of development and uses. Proposed interventions include impact mitigation, ecological restoration, soil erosion control and environmental remediation. The IUCN mission drew attention to shortcomings in management capacity related to the buffer zone.

There are programmes noted in the nomination to relocate people from within the more environmentally sensitive nominated area. Tujia, Miao, and Dong ethnic minority groups are noted from the region however there are no details on specific programmes related to different ethnic groups. IUCN's position on the relocation of communities from protected areas or for other purposes is in line with a number of

international rights-based agreements such as International Labour Office (ILO) Convention 169 and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). Although this is not considered an ideal practice or the first or only option, it remains a legitimate option under certain conditions. IUCN note five essential conditions that should be met for any relocation: 1) no forced relocation; 2) relocation should be properly justified; 3) all communities concerned should agree in full to the relocation and its conditions, through proper consultative and fair process; 4) the communities should be better off after the relocation, more secure; and 5) all the above should be demonstrable, transparent, and accountable.

IUCN has not received concerns about any relocation practices, but the evaluation mission was only able to make a superficial assessment that residents appear to be provided with reasonable education and health services and that relocated families from the property appear to be being provided with accommodation and funds for resettlement. IUCN considers that the State Party should be requested to ensure that any relocation activities respect fully international norms, and to not undertake any further relocation unless it is fully justified.

Some consultation has occurred with local people and there appears to be general support for the nomination. A survey of communities in and around the nominated property was undertaken in 2014 and revealed that most of the respondents (98%) thought it was important to protect the nominated property. However, only 302 resident of the total affected population were surveyed. IUCN notes the need to improve a generally weak engagement of local people in management and decision-making.

4.5 Threats

The mission did not observe or have reported to it any indications that there were adverse effects from development within the two components which make up the nominated area and the forest condition within these areas is considered good. Some areas of the buffer zone are, however, significantly modified and include several villages and towns. Agricultural and tourism development within the buffer zone is also prominent and unsympathetic to wider landscape values. Some encroachment into forest areas for gathering wood and tea cultivation has been reported.

The road corridor (National Road 209) is currently the most significant threat to the ecological functionality of the nominated property as it splits the system into two. The extent of wildlife movement between different components is unknown, however the road is fenced on both sides and the lower reaches of the valley have been subject to disturbance which would impede the passage of wildlife. In this regard the commitments of the State Party to implement a connectivity strategy are welcome.

Hubei Shennongjia currently receives approximately 500,000 visitors p.a. with potential to significantly increase should the site be inscribed. The Shennongjia Airport opened in May 2014 and lies only 7-8 kms north of the site. The airport is designed to handle 250,000 visitors annually by 2020 and has markedly opened up access to this area which has traditionally been quite isolated. Experience elsewhere shows that the development of enhanced transport infrastructure has a flow on effect creating opportunities for additional development which can be a positive but also create negative impacts. Additional information indicates the incoming traffic from this new airport has not reached forecasts and has not had a significant impact on the visitation. Furthermore, even at maximum capacity the anticipated numbers of additional tourists arriving by air would be in the order of 80,000 p.a. and not exceed the carrying capacity of the property. Most of the nominated property has a Tourism Master Plan written in 2006 and due for renewal as it expired in 2015. The State Party has indicated this plan will be reviewed in 2016 to account for any anticipated spike in interest in Hubei Shennongjia if inscribed. Despite this, careful monitoring and management will be needed to manage tourism impact which has been reported to generate an average 14% increase in use for Chinese sites following inscription.

Other threats to the property appear to be currently low and the legal protective regime appropriate to dealing with them. Threats from poaching/hunting and illegal harvesting are not currently significant. There is no mining within the nominated property with only small scale quarrying restricted to roadside gravel extraction in the buffer zone. Grazing is also restricted to buffer zone areas.

IUCN concludes that the threats to this property are not currently significant and the nominated areas are reported to be in good condition. The main threats stem from the potential for increased tourism, impact of the corridor and the road acting as a barrier to animal movements.

In conclusion IUCN considers that the integrity, protection and management of the extended property meet the requirements of the Operational Guidelines.

5. ADDITIONAL COMMENTS

5.1 Justification to serial approach

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

a) What is the justification for the serial approach?
Hubei Shennongjia is presented as a serial configuration in two components separated by a corridor within the buffer zone. For criterion (ix) IUCN considers the serial approach is not optimal on the basis of the attributes which express the property's significant values. Separate component parts do not address the integrity of potential Outstanding Universal Value. The new conservation connectivity measures detailed by the State Party in supplementary information provide assurances that ecosystem

function and habitat continuity will be greatly enhanced. The good conservation condition of areas within this corridor suggest they should receive additional legal protection and be added to the nominated area in due course.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the Operational Guidelines?
The two components of the nominated property lie within the same mountain system and are only 10 km apart on average so they are functionally connected within the same biogeographical context. As noted above a serial approach based on distinct and complementary values of the two components is not optimal, and thus the provision of increased connectivity is essential for integrity concerns to be addressed. The two components are not sampling different aspects of the values, rather they share common values. A contiguous or well-connected site would be a preferable configuration.

c) Is there an effective overall management framework for all the component parts of the nominated property?
The two component parts will be subject to the overarching 4-tier administrative structure for the nominated property. Each protected area will be managed by its respective legal authority with coordination via the "Integrated Protection and Management Committee" noted above. The nominated property is subject to a common management plan, however, there is a need to revise the plan to incorporate the recently added extensions within Yanduhe Provincial Nature Reserve in Badong County.

6. APPLICATION OF CRITERIA

Hubei Shennongjia has been nominated under natural criteria (ix) and (x).

Criterion (ix): Ecosystems/communities and ecological/biological processes
Hubei Shennongjia protects the largest primary forests in Central China and is one of three centres of biodiversity in China. The property includes 13 types of vegetation and an intact altitudinal vegetation spectrum across six gradients including evergreen broad-leaved forest, mixed evergreen and deciduous broad-leaved forest, deciduous broad-leaved forest, mixed coniferous and broad-leaved forest, coniferous forest, and bush/meadow. With 838 species of deciduous woody plants, belonging to 245 genera, the tree species and genus richness of the site is unparalleled for a deciduous broadleaf forest type worldwide and within the Northern Hemisphere's evergreen and deciduous broad-leaved mixed forests, Hubei Shennongjia contains the most complete altitudinal natural belts in the world. Hubei Shennongjia is situated in the Daba Mountains Evergreen Forests ecoregion and also within a priority ecoregion, the Southwest China Temperate Forest, both of which are not yet represented on the World Heritage List. It also protects the Shennongjia regional centre of plant diversity which has been identified as a gap on the World Heritage List. In association with its floral diversity the property protects critical ecosystems for numerous rare and endangered animal species.

IUCN considers that the extended property as nominated meets this criterion.

Criterion (x): Biodiversity and threatened species
Hubei Shennongjia's unique terrain and climate has been relatively less affected by glaciation and thus creates a haven for numerous rare, endangered and endemic species, as well as many of the world's deciduous woody species. The property exhibits comparably high levels of species richness, especially among vascular plants, and remarkably contains more than 63% of the temperate genera found across all of China, a mega biodiverse country with the world's greatest diversity of temperate plant genera. The property, whilst covering less than 0.01% of China, contains 12.5% of the country's vascular plant species. The mountainous terrain also contains critical habitat for a range of flagship animal species. 1,200 Golden or Sichuan Snub-nosed Monkeys are recorded in the property. The Golden Snub-nosed Monkeys in Shennongjia are the most endangered of the 3 sub-species in China and are entirely restricted to the property. Other important species include Clouded Leopard, Common Leopard, Asian Golden Cat, Dhole, Asian Black Bear, Indian Civet, Musk Deer, Chinese Goral and Chinese Serow, Golden Eagle, Reeve's Pheasant and the world's largest amphibian the Chinese Giant Salamander. The property has extremely rich biodiversity, contains a large number of type species, and hosts numerous rare species which have been introduced into horticulture worldwide. Internationally, Shennongjia holds a special place for the study of plant systematics and horticultural science.

IUCN considers that the extended property as nominated meets this criterion.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC/16/40.COM/8B and WHC/16/40.COM/INF.8B2;

2. Inscribes **Hubei Shennongjia (China)** on the World Heritage List under natural criteria (ix) and (x);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis
Hubei Shennongjia is located in the Shennongjia Forestry District in China's Hubei Province. Shennongjia is on the ecotone from the plains and foothill regions of eastern China to the mountainous region of central China. It is also situated along a zone

of climate transition, where the climate shifts from the subtropical zone to warm temperate zone, and where warm and cold air masses from north and south meet and are controlled by the Subtropical Gyre.

The property covers 73,318 ha and consists of two components, the larger Shennongding/Badong component in the west and the smaller Laojunshan component to the east. A buffer zone of 41,536 ha surrounds the property. Hubei Shennongjia includes 13 types of vegetation which are characterized by a diversity of altitudinal gradients. The Shennongjia region is considered to be one of three centres of biodiversity in China, a reflection of its geographical transitional position which has shaped its biodiversity, ecosystems and biological evolution. Hubei Shennongjia exhibits globally impressive levels of species richness and endemism especially within its flora. 3,644 vascular plant species have been recorded including a remarkable 588 temperate plant genera. In addition 205 plant species and 2 genera endemic to the nominated property, and 1,719 species endemic to China. Among the fauna, more than 600 vertebrate species have been recorded including 87 mammal, 389 bird, 46 fish, 51 reptile and 36 amphibian species. 4,300 insect species have been identified. The nominated property includes numerous rare and endangered species such as the Golden or Sichuan Snub-nosed Monkey, Clouded Leopard, Common Leopard, Asian Golden Cat, Dhole, Asian Black Bear, Indian Civet, Musk Deer, Chinese Goral and Chinese Serow, Golden Eagle, Reeve's Pheasant and the world's largest amphibian the Chinese Giant Salamander.

Shennongjia has been a place of significant scientific interest and its mountains have featured prominently in the history of botanical inquiry. The site has a special status for botany and has been the object of celebrated international plant collecting expeditions conducted in the 19th and 20th Centuries. From 1884 to 1889 more than 500 new species were recorded from the area. Shennongjia is also the global type location for many species.

Criteria

Criterion (ix)

Hubei Shennongjia protects the largest primary forests in Central China and is one of three centres of biodiversity in China. The property includes 13 types of vegetation and an intact altitudinal vegetation spectrum across six gradients including evergreen broad-leaved forest, mixed evergreen and deciduous broad-leaved forest, deciduous broad-leaved forest, mixed coniferous and broad-leaved forest, coniferous forest, and bush/meadow. With 838 species of deciduous woody plants, belonging to 245 genera, the tree species and genus richness of the site is unparalleled for a deciduous broadleaf forest type worldwide and within the Northern Hemisphere's evergreen and deciduous broad-leaved mixed forests, Hubei Shennongjia contains the most complete altitudinal natural belts in the world. Hubei Shennongjia is situated in the Daba Mountains Evergreen Forests ecoregion and also within a priority ecoregion, the Southwest China Temperate Forest both of which are not yet represented on the World Heritage List. It also protects the Shennongjia regional centre of plant diversity which has been identified as a gap on the World Heritage List. In association with its floral diversity the property protects critical ecosystems for numerous rare and endangered animal species.

Criterion (x)

Hubei Shennongjia's unique terrain and climate has been relatively little affected by glaciation and thus creates a haven for numerous rare, endangered and endemic species, as well as many of the world's deciduous woody species. The property exhibits high levels of species richness, especially among vascular plants, and remarkably contains more than 63% of the temperate genera found across all of China, a megabiodiverse country with the world's greatest diversity of temperate plant genera. The property includes 12.5% of the country's vascular plant species. The mountainous terrain also contains critical habitat for a range of flagship animal species. 1,200 Golden or Sichuan Snub nosed Monkeys are recorded in the property. The Golden Snub-nosed Monkeys in Shennongjia are the most endangered of the 3 sub-species in China and are entirely restricted to the property. Other important species include Clouded Leopard, Common Leopard, Asian Golden Cat, Dhole, Asian Black Bear, Indian Civet, Musk Deer, Chinese Goral, Chinese Serow, Golden Eagle, Reeve's Pheasant and the world's largest amphibian the Chinese Giant Salamander. The property has extremely rich biodiversity, contains a large number of type species, and hosts numerous rare species which have been introduced into horticulture worldwide. Internationally, Shennongjia holds a special place for the study of plant systematics and horticultural science.

Integrity

The property covers 73,318 ha and is coincident with the majority of the Shennongjia National Nature Reserve in Fang County and Shennongjia Forestry District. The larger Shennongding/Badong component in the west is 62,851 ha and includes the northern section of the Yanduhe Provincial Nature Reserve in adjoining Badong County. The Laojunshan component at 10,467 ha lies in the east. A buffer zone of 41,536 ha surrounds the property. The property is large enough to encompass all the essential components that form the unique biodiversity, biological and ecological values of the Shennongjia in Hubei. The boundaries are designated and clearly demarcated on the ground.

The property remains in good condition and threats are generally not of significant concern. However, the division of the site by National Highway 209 and the associated 10 km wide corridor is a cause for concern as it impedes wildlife movements and ecological connectivity. The implementation of an effective conservation connectivity strategy involving wildlife corridors, stepping stones or arrays of small patches of habitat, wildlife road crossings and the removal of fences is therefore essential to facilitate ecological connectivity for mobile wildlife, especially those species which normally require sizable habitat ranges.

Protection and Management requirements
All of the property is owned by the state and has national or provincial protection status. Hubei Shennongjia is subject to a range of national, provincial and local laws and regulations which ensure long term strict protection. A multi-level management system has been established to manage the nominated property. The nominated property is subject to a number of plans and has a specific Hubei Shennongjia Management Plan tailored to World Heritage requirements and aimed at safeguarding the site's Outstanding Universal Value. The management plan needs to be updated to cover management of the Yanduhe Provincial Nature Reserve in Badong County. The management plan should in addition elaborate on measures to integrate different areas of management expertise in a coordinated way across the different protected areas and other national and international designations. The management plan should be a forward-thinking tool that supports adaptive management. Zoning systems should be reviewed to account for the specific habitat and spatial needs of key species.

The property enjoys widespread support among all levels of Government, local people and other stakeholders. The property requires long-term, active management of the buffer zone to ensure that any developments are of an appropriate scale and design which is in keeping with the values of the site. Furthermore that surrounding landuses are sympathetic and local communities benefit from the World Heritage status of the property. Increased attention and capacity is needed to manage issues within the buffer zone.

A concern stems from the potential of tourism use at the property to increase significantly. Significant improvements to transport infrastructure, most notably the opening of the nearby Shennongjia Airport in 2014, has the potential to dramatically increase visitation and consequent impact. Tourism planning, management and monitoring need to anticipate increasing demand and mitigate negative impacts.

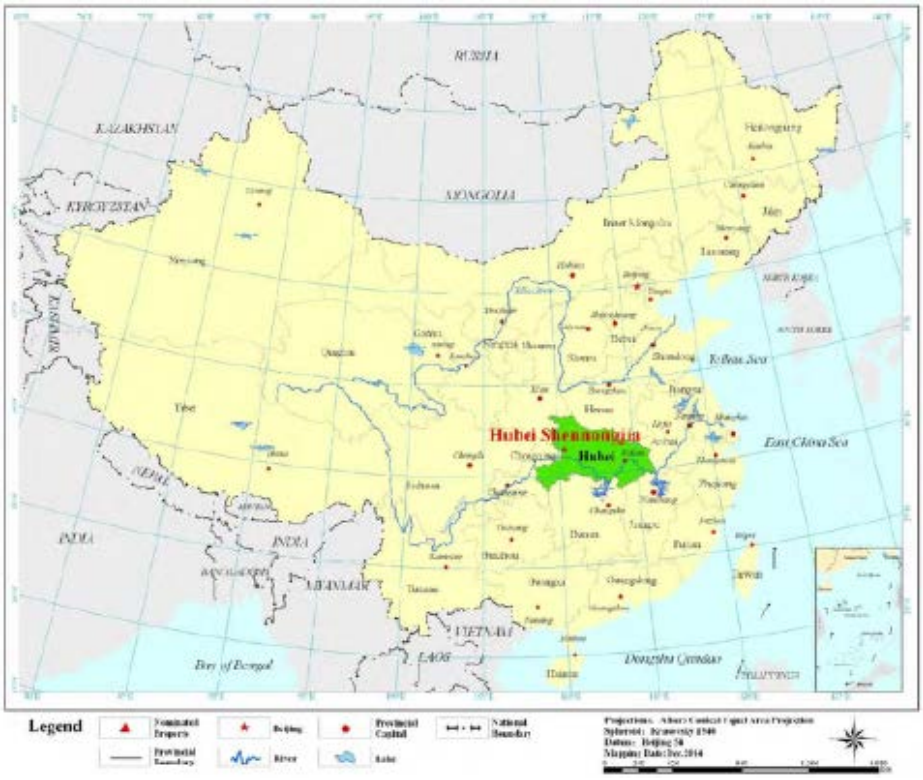
Other threats relate to buffer zone developments and activities. Developments and encroaching landuse such as for tea cultivation need ongoing monitoring. Attention should be given to integrated conservation and community development initiatives in the buffer zones to foster stronger community stewardship of the World Heritage property.

4. Commends the State Party for its efforts to improve the conservation of the property and in particular its expeditious actions to expand the property in the Badong County area and implement a range of ecological connectivity measures to improve integrity during the evaluation process;

5. Notes that the State Party indicates that relocation of people from the property is encouraged by the Integrated Protection and Management Committee, and that such relocation from the World Heritage property is a sensitive matter and requests the State Party to ensure that any relocation activities are voluntary and fully respect international norms. Further relocation activities should not be undertaken unless they are fully justified;

6. Requests the State Party to:
   a) continue to enhance ecological connectivity between the core habitat areas of the property through a range of measures such as wildlife crossings, corridors and habitat mosaics which facilitate wildlife movements and to ensure that management prescriptions are tailored to the specific needs of key wildlife;
   b) upgrade the legal protection to nature reserve standard of wildlife corridor and habitat stepping stone areas which are crucial to the property's ecological integrity and consider nominating these as future extensions to the property;
   c) review the management planning system for the property to fully encompass the new areas added to the property, as well as the functioning of the buffer zones, and ensure an integrated and adaptive approach for the entire property;
   d) update the 2006-2015 Tourism Master Plan to ensure long-term and effective management of the anticipated increases in tourism demand, in particular to specify ecological and social carrying capacities and identify appropriate tourism infrastructure development;
   e) invest further in increased management capacity directed to the property's buffer zone, with a particular emphasis on integrating cultural, social economic and co-management opportunities into the properties management regime;
   f) undertake further research and inventory of key faunal populations including for example a population census of both the flagship species Golden Snub-nosed Monkey and the Giant Salamander;
   g) undertake a review of the property's zoning system to prescribe management policies and actions tailored to the habitat and spatial needs of key species.

Map 1: Location of the nominated property in China



Map 2: Nominated property (2 components) and buffer zone