IUCN Conservation Outlook Assessment 2014 **(archived)**
Finalised on 26 May 2014

Please note: this is an archived Conservation Outlook Assessment for Phong Nha-Ke Bang National Park. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Phong Nha-Ke Bang National Park

SITE INFORMATION

Country:
Viet Nam
Inscribed in: 2003
Criteria:
(viii) (ix) (x)

Site description:

The Phong Nha-Ke Bang National Park, inscribed on the World Heritage List in 2003, covered 85,754 hectares. With this extension, the site covers a total surface area of 126,236 hectares (a 46 % increase) and shares a boundary with the Hin Namno Nature Reserve in the Peoples Democratic Republic of Laos. The Park’s landscape is formed by limestone plateaux and tropical forests. It features great geological diversity and offers spectacular phenomena, including a large number of caves and underground rivers. The site harbours a high level of biodiversity and many endemic species. The extension ensures a more coherent ecosystem while providing additional protection to the catchment areas that are of vital importance for the integrity of limestone landscapes.
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SUMMARY

2014 Conservation Outlook

Good with some concerns

While the very core of the site's Outstanding Universal Value – the karst landscape and inherent examples of Earth's history – is secure from degradation on a scale which would diminish this value, there is a trend for economic opportunity to overshadow the protection of the karst values represented by the caves. The existing show caves require remedial works to repair what damage can be repaired and more importantly they need infrastructure and policy development to minimize ongoing damage. The opening of additional caves in the buffer zone without adequate planning and development controls and proposals to open wild caves in the Strictly Protected Zone for tourism is particularly concerning. Furthermore, it is of concern that a clear benefit-sharing for local communities is not in place.

Current state and trend of VALUES

Low Concern
Trend: Stable

The conservation trend for the Property's karst landscape values are 'stable' (and possibly leaning towards 'improving' if the proposed extensions proceed) although the more discrete subterranean values presented by the caves are deteriorating. The lack of site hardening infrastructure to prevent damage to the cave and a lack of effective people management and insufficient site presentation are of concern. It is also a worrying trend to see the drive to open new undamaged caves when there is no evidence to suggest that a serious attempt is being made to prevent further damage and undertake remedial works in caves already impacted by uncontrolled visitation.

Overall THREATS

Low Threat

The remote and rugged nature of the property's terrain means that site's geological values for which it is presently inscribed onto the World Heritage List are relatively well-protected from immediate threats, except that the tourist caves Phong Nha and Tiens son have been and continue to be severely degraded by poor management practices and tourism promotion. Quarrying in the buffer zone might become a serious threat, particularly to the scenic values of the area. Biodiversity values of the site, however, are significantly threatened by high pressures from commercial hunters, further road improvements and access of illegal trade networks without management effectively protecting customary use and management rights (Larsen & Nguyen 2012).

Overall PROTECTION and MANAGEMENT

Some Concern

The values of the site related to criterion viii are not at high risk although the management of the show caves is poor and needs to be addressed. Access to wild caves needs to be better managed and further development of show caves or access to wild caves should cease until an approved management plan has been adopted. The EIS process for the road works requires review and rigorous overview of its implementation. Biodiversity values of the site, however, are at high risk due to illegal exploitation activities– issues that are currently not being addressed properly distinguishing customary use rights from intensive hunting, trapping and logging. Furthermore, cultural values notably in terms of high levels of ethnic diversity, cultural landscape values and customary relationships are yet to be effectively integrated in the management.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► **Outstanding karst landforms**
Criterion:(viii)

Phong Nha is part of a larger dissected plateau, which also encompasses the Ke Bang and Hin Namno karsts. The limestone is not continuous but demonstrates complex interbedding with shales and sandstones which, together with the capping of schists and apparent granites has led to a striking series of landscapes ranging from deeply dissected ranges and plateaux to an immense polje. The plateau, which extends into neighbouring Laos, is one of the finest and most distinctive examples of a complex karst landform in Southeast Asia. (SoOUV 2012).

► **Scientifically significant caves**
Criterion:(viii)

Phong Nha displays an impressive amount of evidence of earth's history. It is a property of very great importance for increasing our understanding of the geologic, geomorphic and geo-chronological history of the region. The Property contains around 140km of known caves making it one of the most outstanding limestone karst ecosystems in the world. The karst formation has evolved over some 400 million years and as such is the oldest major karst area in Asia. The caves demonstrate a distinct series of events which left behind various levels of fossil cave passages (formerly buried and now uncovered palaeokarst); evidence of major changes in the routes of underground rivers; changes in the solutional regime; deposition and later re-

solution of giant speleothems and unusual features such as sub-aerial stromatolites. There is evidence of at least one period of hydrothermal activity in the evolution of this ancient karst system. (SoOUV, 2012)

► Spectacular diversity of cave types

Criterion:(viii)

The long and complex karst formation process has led to the creation of not only underground rivers but also a variety of cave types including : dry caves, terraced caves, suspended caves, dendritic caves and intersecting caves (SoOUV, 2013).

Other important biodiversity values

► Ongoing development of ecosystems

The site hosts many important ecological and evolutionary processes both above and below the ground, particularly so in as much as the isolation of the caves from one another provides opportunity for speciation of cave fauna. The guano deposits of some 40 species of bats found in the forests and caves provide important ecosystem benefits for invertebrate, fish and bird populations and the nine species of primates which occur in the forests help spread seeds within the Property. The enlarged site and its connectivity with the Him Namno, Phou Hin Poon and the Nakai-Nam Theun National Biodiversity Conservation Areas in Laos provides opportunity for many rare and endangered South-east Asian species to move across the landscape thus facilitating opportunity for ongoing evolutionary processes. (Worboys, 2012)

► Habitat diversity

The vast majority (almost 75%) of the PNKB area is covered by tropical dense moist evergreen forest on limestone below 800m ASL, however, there are another 10 recognized vegetation types including low tropical limestone montane evergreen forest above 800m ASL, tropical dense moist evergreen forest on hills above 800m ASL, low tropical montane forest on hills above 800m ASL, tree/shrub savannah on limestone, tree/shrub savannah on hills, riverine forest, bamboo forest, two types of degraded forest and a small area

of cultivated land. (2003 PNKB Nom Doc.). The latter includes important customary shifting cultivation practices.

► Significant species of fauna

Significant Mammals include important populations of primates, including Hatinh Langur (EN), red-shanked douc langur (EN) and southern white-cheeked gibbon. Others primates are the pygmy slow loris(VU), northern pigtailed, stump-tailed, Assam and rhesus macaques. The Laotian rock rat has been recorded at the site. Other smaller mammals include Sunda pangolin(EN), smooth-coated otter(VU), Owston’s civet(VU) and the recently discovered Annamite striped rabbit. Ten species of bat which occur here are listed in the IUCN List of Threatened Species

Significant Birds include 15 species are listed in the Vietnam Red Data Book and 20 in the IUCN Red List of Threatened Species. They include two species of pheasant, Siamese fireback and crested argus. There are wreathed, rufus-necked, brown and great hornbills while other uncommon birds found are the chestnut necklaced partridge, red-collared woodpecker, the recently rediscovered endemic sooty babbler, short-tailed scimitar babbler and the bar-bellied pitta.

Significant Reptiles and Amphibians include 18 species which are listed in the Vietnam Red Data Book and 6 listed in the IUCN Red List of Threatened Species. Among these are the Chinese three-striped box-turtle(CR) and keeled box turtle(EN).

Fish. The 72 fish species quoted in the nomination include four locally endemic including Chela qaungbinhensis, but 162 additional species have subsequently been identified (UNEP-WCMC, 2011).

► Floral diversity

The site is home to 2,651 vascular plant species including 419 species endemic to Vietnam. The floral assemblage, being centrally located is transitional between the northern and southern floristic zones of the country; it includes a wide diversity of families within which are numerous endangered species. At least 13 species are endemic to Vietnam, and one,

Hopea hongayanensis(CR) is endemic to the Property. There are 38 species listed in the Red Data Book of Vietnam Plants and 25 species were listed in the IUCN Red List of Threatened Plants although with new species are continually being discovered this data needs to be updated.
There is also a 50km2 forest (on limestone) of about 2,500 Calocedrus rupestris (EN) and Calocedrus macrolepis (VU) trees, most of which are 500–600 years old. (2003 PNKB Nom Doc.) (UNEP-WCMC,2011). The area also holds important agro-biodiversity values that have co-existed and co-evolved with wider floral diversity.

Assessment information

Threats

Current Threats

Low Threat

Site’s geological values for which it is presently inscribed onto the World Heritage List are virtually immune from any real threat. Poor visitor management and inappropriate tourism developments downgrade the image desired for a World Heritage property but they won’t actually significantly impact on the values. Poor management of the show caves is damaging those caves (and surrounding areas) which are being used but it doesn’t change the fact that they are significant and spectacular caves. Quarrying in the buffer zone might become a serious threat, particularly to the scenic values of the area.

Biodiversity values of the site, however, are significantly threatened by poverty on the park boundary and increasing access opportunity for would-be commercial hunters and forest product gatherers from throughout Vietnam.

► Tourism/ visitors/ recreation

High Threat

Inside site

Visitor management planning, including in particular plans for the management of access to wild caves and a plan for the development and management of all tourist caves within the Park to facilitate the protection, restoration and professional presentation of these caves is urgently required. (Worboys, 2012)

► Commercial hunting

High Threat
Inside site
Outside site

Commercial hunting remains a major threat to the biodiversity of the site.

► Logging/ Wood Harvesting

High Threat
Inside site
Outside site

The low income of many local families combined with improving vehicle access both within the Province and the Country means that illegal timber gathering remains difficult to eliminate. Despite ongoing efforts to control illegal timber gathering and removal this activity is still a serious issue for the Park (Nguyen&Roberton,2004), (WHC -35COM8B,12), (Worboys, 2012)

► Droughts

Low Threat
Inside site

It is recognised that with the regular dry season comes the risk of forest fires (UNEP –WCMC, 2011).
Biodiversity is resilient, as witnessed by the recovery of the site’s forests and biodiversity following the damages caused during the War, and fire will generally cause low level, short term impacts on Biodiversity values; and the impacts may be either positive or negative for biodiversity depending on the intensity and frequency of fires.
Climate change may result in more severe drought periods which would increase the fire intensity risk and increasing tourism access will increase the

fire frequency risk.

► Tourism/ Recreation Areas

High Threat
Inside site

The development of infrastructure within the Phong Nha and Tien son Caves for visitor access is not in line with international accepted standards for the development of showcaves.
The proposals to develop pedestrian access facilities, an aerial cableway, a power supply and tourist cave developments within the Strictly Protected Zone of the Park threaten the Outstanding Universal Value of the site (Worboys,2012)

► Tourism/ visitors/ recreation

High Threat
Inside site

The standards of management of cave visitors is contrary to the needs of protecting the caves from degradation; trampling of sediments, touching formations, smoking, spitting, littering and other inappropriate behaviours are not adequately controlled. (Personal observation, 2010)

► Roads/ Railroads

High Threat
Inside site
Outside site

The 2011 UNEP-WCMC report identifies the Route 20 road as “A major threat to Park’s integrity and its rare primate populations. Construction of the road involved blasting, destruction of forest, large scale erosion causing sedimentation of rivers, and the alteration of river-flows’ and Worboys, in his 2012 report says ‘The environmental impact…of the G20 Road upgrading works is of serious concern as is the potential future use of the completed, improved road.’
The upgrading works and the potential use of the new improved road may pose a threat to the values of the site.

► Tourism/ visitors/ recreation

Very High Threat
Inside site

Visitor use of the Park is growing rapidly - a few thousand in 1995 became 100,000 in 2000, 250,000 in 2005 and more than 300,000 in 2010 and still growing.
Development had been centred on the Phong Nha Cave where problems of water pollution, rubbish and damage to biodiversity are increasing. Remedial measures including training for staff and tourist guides, bans on the use of motor boats and fuel lights in the caves and establishing waste collection systems have been undertaken. (UNEP –WCMC, 2011).
These measures have been variably successful and development has now expanded beyond the Phong Nha Cave precinct.
A visitor use strategy, including specific plans for each tourist cave, is critically needed as is immediate on-ground protection and strict management of access to Son Doong Cave. (Worboys, 2012)

► Water Pollution

Low Threat
Inside site

The rapidly expanding tourism activity has provided opportunity for more and more boat operators carrying tourists to the caves and back. While the operation of motors within the cave has been stopped there is still the risk of fuel and oil being spilt inside the caves.
Plastic bags, bottles and cans as well as cigarette butts and other non-biodegradable refuse are a major problem along most visitor access pathways to and within the caves. Much of it eventually makes it way into the watercourses.

► Subsistence hunting

High Threat
Inside site
Outside site

The PNKB SoOUV (2012) acknowledges that continued management actions and monitoring are required to ensure that wildlife poaching does not

become an issue in the future. The document recognises the control difficulty posed by the rugged nature of the country and the relative shortage of enforcement resources and it recognises that the low income of a large number of families living within the buffer zones means that wildlife poaching will require further efforts into the future if it is not to continually impact the site. There is an urgent need to strengthen community-based management approaches taking into account customary rights.

► Changes in traditional ways of life and knowledge systems

High Threat
Inside site
Outside site

Several ethnic minority communities living in the PNKB area were “discovered” in the late 1950s and 1960s and with the creation of the Park were resettled in a new area in line with wider national policies
Apart from these communities living within the core area a number of other ethnic minority communities live in the buffer zone and have customary relationships with the forestlands of the PNKB area, making the total ethnic minority population some 11,000 (GFA 2006).
Population growth in the region is rapid and poverty is widespread, with many people dependent upon the exploitation of forest products as part of their livelihoods. (UNEP –WCMC,2011)

► Mining/ Quarrying

Low Threat
Inside site

The illegal quarrying of limestone is widespread throughout the buffer zone and is impacting on the area’s natural and aesthetic values. It is a difficult issue to control due to the lack of clear guidelines as to where responsibility lies and complicated by the economic needs of the local communities who, during times of need increasingly turn to illegal quarrying to generate income.
Poverty on the Park boundary will always be the primary threat to the biodiversity of the Park. Displaced impoverished communities who had traditionally used the area for sustenance hunting and gathering of forest products will forever ponder this concept of conservation as they continue to harvest whatever they can to feed hungry families.

It gets worse as communities shift to cash economies when rare orchids, edible bird nests and Rhino horn become just as attractive as wild boar and deer which now become a ‘cash-crop’ rather than an edible crop.
For karst areas it is not just the biodiversity at risk. As hunting and gathering produces less and less return the landscape itself can be harvested and sold. As the local population expands and wild meat and other forest product diminishes, the opportunity to ‘cash in the limestone’ will become more and more attractive to local people.

Potential Threats

Low Threat

With careful planning and timely appropriate responses the negative physical impacts of the roadwork can be ameliorated.
However, facilitation of easier and rapid transport for poaching activities poses an increased threat to biodiversity values of the site.

► Roads/ Railroads

Data Deficient
Inside site

The G20 road cuts through the Park along the boundary between the Strictly Protected Zone and the Restoration Zone and extends to Laos. The impacts include soil erosion run-off effects that may affect caves; the potential pollution of caves from petroleum wastes and width-of-road impacts to fauna movement. Potential future impacts include heavy vehicle traffic and improved access for poachers and illegal activities. (Worboys, 2012)

Protection and management

Assessing Protection and Management

► Staff training and development

Some Concern

The Investment Plan for the Property includes training of staff and guides and the available documents make note of training having been provided for

enforcement and community liaison.
In 2010 some of the guides and management staff participated in a training and development program at Mulu NP. The effectiveness of such training is yet to be assessed. There is yet to be a consistent capacity building effort directed at targeting communities and enabling effective co-management.

► Relationships with local people

Serious Concern

The relationship between the park and the local people is not particularly positive. Their traditional hunting and gathering of forest resources has been over-run by the Park's conservation goal. (Larsen PB. 2008)
Development of the tourism industry is providing employment and business opportunities for some (perhaps as much as 2% in legal activities and a few more in illegal activities such as supplying game meat to restaurants serving tourists) but certainly not all. The Park management authority has long endeavoured to curtail hunting by local people to the point of confiscating their guns, (UNEP-WCMC 2011) an act which in itself would have generated much ill will towards the park and probably achieved little.
A similar tension exists in regard to limestone quarrying. The park management authority sees it as local government's role to police and the local government doesn't see it as a serious problem compared to the poverty of the people. (Vietnews -2011)
'The area encompasses customary use and settlement areas of Vietnam's smallest ethnic minority communities. However, their livelihood concerns have not become an integral part of the management of the protected area. Benefit-sharing
mechanisms are highly inadequate. In most discussions, communities are described as "problems" rather than as rightful actors in conservation decision-making; they therefore underline the need to address their current concerns.
Despite an increase in conservation and development funding, livelihood concerns and community participation in the management of PNKB
are far from resolved. Food security and livelihood vulnerability remain key challenges, in particular for the area's ethnic minorities. (Larsen PB. 2008).

► Legal framework and enforcement

Some Concern

Designated as a Nature Reserve in 1986, Phong Nha - Ke Bang became a National Park in 2001. A Management Board, established in 1994, is responsible for protection of forest resources and biodiversity. Cave conservation and tourism services are the responsibility of the Cultural and Ecological Tourist Centre under the Management Board. The Property is also included in the Special National Heritage List (2009), and the Special Use Forest system (1999). It is effectively protected by a number of national laws and government decisions which prohibit any action that may have a significant impact on the OUV of the Property therefore the legal framework would seem to be strong. (PNKB-SoOUV, 2012)However there is some confusion with overlapping sites involving different ecosystems or overlapping designations (such as PNKB being also a WHS). The central system has responsibility for policy formulation and systems management, but the Property relies on financing from the Provincial People’s Committees. (Larsen 2008). The current enforcement approach is highly dependent on short-term contract protection force and needs to establish formal mechanisms and allocate resources for community-management (Larsen and Nguyen 2012).

► Integration into regional and national planning systems

Highly Effective

The Property was recognized in the Quang Binh Province Master Plan for Economic Development in for 1997-2010 and it is logical to assume that it is also included in the current plan (or planning process at the very least).
The 1997- 2010 plan included an Investment Plan, maps and classifications of forest types, land uses and zoning.
The Investment Plan included Programs for Protection, Forest and Wildlife Regeneration, Education & Scientific Research, Infrastructure, Tourism & Education and a Socio-economic Program.

► Management system

Serious Concern

To be effective the provisions of a Park Management Plan must be legally recognized by the government and the management of the property must be in accordance with the Plan. In particular, there is a need to explore and develop equitable co-management mechanisms and modalities in

collaboration for customary use areas (Larsen & Nguyen 2012).
In the absence of an appropriate Management Plan which specifies how the OUV of the property will be preserved, there were at least two other plans in process that proposed developments within the Property in August 2012. (Worboys,2012)
This is inconsistent with a good management system.
There is no approved plan for the development and management of PNKB although there are processes advocating developments within the Property active at present time. Despite advice to the contrary, approval has being given to develop access to and tours within the Son Doong Cave. (2013, Personal observation).
A Management Plan is needed to specify clearly the accountability and responsibility for management and protection of the World Heritage OUV within the Phong Nha Cave, the Paradise Cave Lease area (50 hectares) and within Paradise Cave itself. (Worboys, 2012)

► Management effectiveness

Some Concern

In the absence of an approved management plan the effectiveness of management becomes very difficult to gauge although the following observations are gleaned from the available reports and publications.
• Law enforcement efforts are not effectively preventing the ongoing collection of game, timber and non timber forest products from the Property.
• There is a lack of clear guidelines about enforcement in the buffer zone.
• There is a lack of effective and equitable co-management mechanisms
• The EIS procedure and oversight of implementation of the roadwork is lacking.
• Despite advice to the contrary new caves are being developed for tourism.
• Visitor control within the existing show caves is sub-standard.
• Despite repeated requests for a visitor management plan, one has not been developed.
While the various documents make several notations about steps to improve such things having been taken, no empirical data has been made available to assess the effectiveness of such steps.

► Implementation of Committee decisions and recommendations

Serious Concern

The plans to develop access to and within Son Doong Cave directly threaten the OUV and are not consistent with UNESCO's World Heritage Committee 2011 decision. The on-going pressure for development of the Son Doong Cave remains (Personal obs. 2013)
The environmental impact on the World Heritage OUV of the G20 Road upgrading works observed in August 2012 is of serious concern as is the potential future use of the completed, improved road including impacts on community forest & land tenure security
The World Heritage Committee and IUCN have both previously expressed concerns about the threat of road developments in Phong Nha-Ke Bang National Park. (Worboys,2012)

► Boundaries

Some Concern

The integrity of any karst area is dependent upon the quality and quantity of the water input and the watershed affecting the Property is not fully included within the present boundary.
The boundary needs to be reviewed and expanded to ensure it can more effectively protect natural values of the Property. (IUCN evaluation Doc. 2003)
Yet, such expansion should be accompanied by effective social safeguard measures to reflect customary forest and land holdings. The internal zones and the external buffer zone are well defined and functional from a conservation perspective. (WHC-35COM 8B-12).

► Sustainable finance

Serious Concern

The 2011 UNEP-WCMC report notes the enforcement is hindered by the lack of funding for staff and the World Heritage Committee noted that additional financial assistance is required for
• staff training and equipment to strengthen law enforcement,
• management and monitoring capacity,
• adoption of a management effectiveness evaluation framework,
• improved heritage interpretation
• conservation at local and landscape scales
(WHC-35COM 8B-12)
In particular, finance for local and landscape scales should target ethnic

minority communities living in the area and co-management mechanisms to complement central management approaches

► Sustainable use

Serious Concern

The literature indicates a number of problems pertaining to sustainable use. One report indicates that the collection of certain plant species has ceased only because they can no longer be found and the abundance of certain fauna (pigs, binturong and primates) has noticeably declined. (UNEP-WCMC,2011)
The impact of inappropriate lighting, inadequate site hardening and lack of behavioral control has caused significant damage to the to the Phong Nha and Tien son caves. (Pers. obs., 2013)
The planned development of access to and within Son Doong Cave severely challenges a commitment to sustainable use.
Significantly, the WHC has observed that ‘Environmental Impact Assessments must be undertaken and complied with to ensure that any infrastructure and tourism developments being considered within the property and adjacent areas do not adversely affect the Outstanding Universal Value of the Property’ and the Worboys report (2012) recommends that Management Board be formally accountable for approval or non-approval of such assessments.
A major sustainable use challenge concerns inadequate protection of customary use rights and equitable resource management planning. Customary forest use areas are currently not effectively mapped out or recognized. Subsistence use and traditional agriculture is conflated with external pressures without adequate regulatory protection mechanisms (Larsen and Nguyen 2012).

► Education and interpretation programs

Data Deficient

Presentation of ‘World Heritage’ at Phong Nha-Ke Bang National Park has commenced, though more needs to be done; a management plan should identify a strategic approach to the presentation of the site and its WH values. (UNEP-WCMC, 2011; Worboys, 2012).

► Tourism and interpretation

Some Concern

Site interpretation signage has been prepared and guides have received some training in preparing and delivering site interpretive tours although no effectiveness of these steps has been observed. (Pers. Obs.)
How the World Heritage OUV and its presentation is managed within the Paradise Cave Tourist Lease area needs to be clarified. (Worboys,2012)
Further work is needed to incorporate benefit-distribution mechanisms for tourism development to ensure that local communities not merely benefit as service providers.

► Monitoring

Serious Concern

Apart from tracking growth in visitation and revenue flows there appears to be no other monitoring programs in place.
A 2004 report quantifies the number of recorded poaching offences for the previous year but there is no systematic process to track this against change following increased enforcement and education programs.
‘The lack of a completed management plan is emphasized by the omission of indicators for measuring the state of conservation of biodiversity and natural processes such as water quality’ (UNEP-WCMC 2011).

► Research

Mostly Effective

As part of a new management program for the National Park, a research unit was established in 2003. Research on the area’s biodiversity and cave systems continues and new caves and new species of both flora and fauna are regularly found. Cave exploration was curtailed by the dangerous conditions but in 2009 it culminated in the discovery of the Son Doong cave. (UNEP-WCMC,2011). Mapping of customary use areas and cultural values is another key research priority, where data is currently lacking to facilitate their incorporation in management planning.

Overall assessment of protection and management

Some Concern

The values of the site related to criterion viii are not at high risk although the management of the show caves is poor and needs to be addressed. Access to wild caves needs to be better managed and further development of show caves or access to wild caves should cease until an approved management plan has been adopted. The EIS process for the road works requires review and rigorous overview of its implementation. Biodiversity values of the site, however, are at high risk due to illegal exploitation activities– issues that are currently not being addressed properly distinguishing customary use rights from intensive hunting, trapping and logging. Furthermore, cultural values notably in terms of high levels of ethnic diversity, cultural landscape values and customary relationships are yet to be effectively integrated in the management.

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Serious Concern

From the documents available it appears that the biggest external threats are :
• an increasing demand (and capacity to pay) for illegal timber and non-timber forest products, especially wildmeat, within the province, the country the region.
• improving access to and within the Property
• a large impoverished community living in the buffer zone of the Property who are willing and able to access the property in order to supply the demand.
• Lack of protection of customary user rights and a clear co-management strategy
(UNEP-WCMC,2011, Larsen PB. 2008, Larsen and Nguyen 2012)
The responsible authority’s capacity to address these threats is low and there is some evidence for widespread institutional corruption. (Roberton, 2004, Vietnews, 2011)

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Outstanding karst landforms**

Good
Trend:Stable

The topography of the Property provides a high degree of ongoing protection from forces which would damage its geological values although these values would be greatly enhanced by expanding the boundary to include the adjoining Hin Namno karst in Laos. While such expansion is not imminent the neighbouring provincial authorities of both countries have met many times to discuss co-operative management of the two reserves (UNEP-WCMC, 2011) and the desirability of this transboundary property remains an important issue underlined by the World Heritage Committee(27COM 8C.8)

▶ **Scientifically significant caves**

High Concern
Trend:Deteriorating

Although the relatively recently discovered Son Doong cave, reputedly the largest in the World, is yet to be scientifically evaluated in a formal sense, it is clearly a significant part of the sites karst related values (SoOUV, 2012). The actions being taken to develop access to and within this cave are a threat to the site’s OUV and represent a worrying trend in the attitude to management of the Property. As the primary attraction to the Park, the Phong Nha Cave and the Tien son cave offer the most significant opportunity to present the World Heritage values of the park and therefore are scientifically significant. (Pers. obs.)

▶ **Spectacular diversity of cave types**

High Concern
Trend:Deteriorating

The concept of ‘spectacular’ is based upon how people perceive and appreciate a subjects physical attributes. Tourism in Qhang Binh Province, followed closely by the expanding forest based activities, is focused on the spectacular Phong Nha Cave and to a lesser extent the Tien son Cave. Maintaining the ‘spectacular’ aspect of the caves is critical to the sustainability of the tourism industry and yet a ‘carrying capacity’ study in 2007 completely disregards the damage to the caves attributes caused by visitors because these caves are not within the strict protection area of the National Park. The carrying capacity of more than 1400 per day was established with no consideration for provision visitor/cave protection infrastructure or visitor management strategies. (Tran Nghi et al.2007)

Other important biodiversity values

► Ongoing development of ecosystems

The site hosts many important ecological and evolutionary processes both above and below the ground, particularly so in as much as the isolation of the caves from one another provides opportunity for speciation of cave fauna. The guano deposits of some 40 species of bats found in the forests and caves provide important ecosystem benefits for invertebrate, fish and bird populations and the nine species of primates which occur in the forests help spread seeds within the Property. The enlarged site and its connectivity with the Him Namno, Phou Hin Poon and the Nakai-Nam Theun National Biodiversity Conservation Areas in Laos provides opportunity for many rare and endangered South-east Asian species to move across the landscape thus facilitating opportunity for ongoing evolutionary processes. (Worboys, 2012)

► Habitat diversity

The vast majority (almost 75%) of the PNKB area is covered by tropical dense moist evergreen forest on limestone below 800m ASL, however, there are another 10 recognized vegetation types including low tropical limestone montane evergreen forest above 800m ASL, tropical dense moist evergreen forest on hills above 800m ASL, low tropical montane forest on hills above 800m ASL, tree/shrub savannah on limestone, tree/shrub savannah on hills, riverine forest, bamboo forest, two types of degraded forest and a small area of cultivated land. (2003 PNKB Nom Doc.). The latter includes important

customary shifting cultivation practices.

► Significant species of fauna

Significant Mammals include important populations of primates, including Hatinh Langur (EN), red-shanked douc langur (EN) and southern white-cheeked gibbon. Others primates are the pygmy slow loris(VU), northern pigtailed, stump-tailed, Assam and rhesus macaques. The Laotian rock rat has been recorded at the site. Other smaller mammals include Sunda pangolin(EN), smooth-coated otter(VU), Owston’s civet(VU) and the recently discovered Annamite striped rabbit. Ten species of bat which occur here are listed in the IUCN List of Threatened Species

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Fish. The 72 fish species quoted in the nomination include four locally endemic including Chela qaungbinhensis, but 162 additional species have subsequently been identified (UNEP-WCMC, 2011).

► Floral diversity

The site is home to 2,651 vascular plant species including 419 species endemic to Vietnam. The floral assemblage, being centrally located is transitional between the northern and southern floristic zones of the country; it includes a wide diversity of families within which are numerous endangered species. At least 13 species are endemic to Vietnam, and one, Hopea hongayanensis(CR) is endemic to the Property. There are 38 species

listed in the Red Data Book of Vietnam Plants and 25 species were listed in the IUCN Red List of Threatened Plants although with new species are continually being discovered this data needs to be updated.
There is also a 50km2 forest (on limestone) of about 2,500 Calocedrus rupestris (EN) and Calocedrus macrolepis (VU) trees, most of which are 500–600 years old. (2003 PNKB Nom Doc.) (UNEP-WCMC,2011). The area also holds important agro-biodiversity values that have co-existed and co-evolved with wider floral diversity.

Summary of the Values

► Assessment of the current state and trend of World Heritage values

Low Concern

Trend: Stable

The conservation trend for the Property's karst landscape values are 'stable' (and possibly leaning towards 'improving' if the proposed extensions proceed) although the more discrete subterranean values presented by the caves are deteriorating. The lack of site hardening infrastructure to prevent damage to the cave and a lack of effective people management and insufficient site presentation are of concern. It is also a worrying trend to see the drive to open new undamaged caves when there is no evidence to suggest that a serious attempt is being made to prevent further damage and undertake remedial works in caves already impacted by uncontrolled visitation.

► Assessment of the current state and trend of other important biodiversity values

High Concern

Trend: Data Deficient

The biodiversity values are coming under increasing threat as the local population expands and collection of wild meat and other forest products are geared towards supplying lowland and international market demands. 'Forest-related subsistence and cash-related activities continue to form the backbone of local economies, particularly of ethnic minority communities. Shifting-cultivation practices, hunting and gathering form the basis of food

security, although hunting, trapping and participation in selective logging of high-value timber species have become a source of cash.'(Larsen,2008). There is a need to clearly distinguish between subsistence practices and intensive operations driven by outsiders. Furthermore, agro-biodiversity values are currently not valorized as part of the landscape and are currently being undermined by restrictive policies.

Additional information

Key conservation issues

▶ Community support

National

The national and provincial community is demonstrating an ongoing and increasing demand for wild meat and other forest products. The local communities feel disaffected from what they see as their traditional use. While people continue to be trapped by poverty without adequate recognition of their rights and an effective and sustainably financed approach to involve them in the management and benefits, the natural resources within the park will continue to be viewed as something to eat or preferably, to sell to the institutionalized network of traders supplying the wider community (Larsen, 2008). (Larsen and Nguyen 2012).

▶ Management effectiveness

National

The effectiveness of management will be enhanced preparation, adoption and implementation of a legally binding development and management plan for the park and the buffer zone which provides clear lines of responsibility for planning, resourcing, implementation, enforcement, monitoring and reporting. Such plans need to invest in co-management approaches to address the gaps and limitations with the existing system (Larsen and Nguyen 2012).

▶ Protection of caves

Regional

The values of the caves cannot be subservient to the economic opportunities they present. Infrastructure development and behaviour management must be elevated to meet the basic guidelines for the management of show caves in a protected area. Cave management should also reflect and incorporate local values.

▶ Sustainable financing of non-tourism activities

National

Urgent mechanisms must be put in place to ensure that essential activities such as monitoring, enforcement, co-management, benefit-sharing mechanisms and community extension programs are provided in planned and ongoing manner rather than the (apparent) ad hoc manner which has been the case to date.

▶ Law enforcement

Regional

Enforcement activities within the Property must be supported by collaborative activities within the buffer zone and the province in a planned and transparent manner to overcome the apparent network of support by officials. In particular, devolution of enforcement mechanisms to community institutions should be explored as an alternative to short-term contract based protection staff.

▶ Monitoring

Local

Quantifiable monitoring programs are urgently required to assess the impacts of non-tourism related programs.

Benefits

Understanding Benefits

▶ Outdoor recreation and tourism

The site offers a range of recreation opportunities which in turn are

converted into tourism industry products

▶ **Contribution to education**

The site provides an outstanding opportunity to educate the national and international community about the history of the earth.

▶ **Importance for research**

The sites geology and geomorphology contribute to a greater understanding of earth history and geology.

▶ **Wilderness and iconic features**

The local people maintain cultural ties to the area and its natural resources

▶ **History and tradition**

Archeological sites are present in the Phong Nha Cave.

▶ **Water provision (importance for water quantity and quality)**

Water catchment protection.

▶ **Is the protected area valued for its nature conservation?**

In-situ conservation of species of significance

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects

1	KfW, GTZ	The Project Integrated nature conservation and sustainable management of natural resources in Phong Nha-Ke Bang National Park sets out an ambitious plan to strengthen conservation, alternative livelihoods and increase tangible benefits for buffer zone communities. It proposes a “package” of “village development and land use/land allocation plans, allocation of forest area, reforestation, joint patrols, training and technical know-how transfer, improved sustainable land uses (e.g. firewood, rattan), and financial incentives (Larsen,2008)
2	Flora and Fauna International	Primate conservation program.
3	Dirk Euler, Frankfurt Zoo	A collaborative pilot project to improve the effectiveness of on-ground law enforcement management.(Worboys,2012)

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	.	The MIST management information system could be used as a tool to integrate information collected by patrols for park managers to plan more effective enforcement strategies	
2	.	A program to provide ongoing training for park guides to more effectively provided site interpretation presentations to park visitors	
3	.	A program to provide ongoing training for park guards to more effectively support park guides in controlling visitor behaviour, particularly in the caves.	

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