IUCN Conservation Outlook Assessment 2017 **(archived)**
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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

2017 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 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. The biodiversity values, are still in good condition, with forest cover largely intact and inaccessible. However, the biodiversity of the property is under increasing threat, with a lack of monitoring data to inform adequate management interventions. While recent law enforcement efforts are reported to have led to a significant reduction in offences, poaching and other illegal resource use remains a significant threat to the property.

Current state and trend of VALUES

Low Concern
Trend: Deteriorating

The conservation trend for the Property's karst landscape values are 'stable' 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. The biodiversity values

remain in good condition, but 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.

Overall THREATS

High Threat

The remote and rugged nature of the property's terrain means that the site's geological values 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. Proposals for the development of a cable car to provide access to Son Doong cave have been noted with concern by the World Heritage Committee, and their status needs to be further clarified. 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).

► Ongoing development of ecosystems

Criterion:(ix)

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. Its cave ecosystems and habitats are unique with high levels of endemism and adaptations displayed by cave-dependent species (SoOUV, 2015). 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 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

Criterion:(ix)

The property includes globally significant ecosystems within the Northern Annamites Rainforests and Annamite Range Moist Forests priority ecoregions. With a forest cover estimated to reach 94%, including 84% primary forest, it is one of the largest remaining relatively intact moist forests on karst in Indochina (SoOUV, 2015).
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).

► Floral diversity

Criterion:(x)

The site is home to over 2700 species of vascular plants, including 133 globally threatened plant species and over 400 species endemic to Vietnam (SoOUV, 2015), as well as one endemic to the property (Hopea hongayanensis, CR). 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. 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.

► Significant species of fauna

Criterion:(x)

The property is home to over 800 species of vertebrates, including 38 animal species endemic to the Annamite range. Several new species to science have recently been found, including cave scorpions, fish, lizards, snakes and turtles, and more species are likely to be discovered. Significant mammals include the endangered Large-antlered Muntjac, Clouded Leopard, and the critically endangered Saola, as well as important populations of primates, including Hatinh langur (EN) endemic to Vietnam and Lao PDR, the black form of the Hatinh langur, sometimes considered as a separate species, red-shanked douc langur (EN) and the largest remaining population of white-cheeked gibbon (SoOUV, 2015). Other primates include 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 which 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). 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).

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

High Threat

The site’s geological values 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 geological 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.

► Water Pollution

Low Threat
Inside site, extent of threat not known

The rapidly expanding tourism activity has provided opportunity for more and more boat operators transporting tourists within the site. While the operation of motors within caves has been stopped there is still the risk of fuel and oil being spilled 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 its way into the watercourses.

► Roads/ Railroads

High Threat
Inside site, scattered(5-15%)
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. Easy access is now provided to additional areas in the west of the site.

► 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.

► Logging/ Wood Harvesting

High Threat
Inside site, extent of threat not known
Outside site

The lack of access to economic opportunities for local communities combined with improving vehicle access both within the Province and the Country means that illegal timber gathering remains difficult to eliminate. There has been progress in controlling illegal timber gathering and removal, but this activity is still a serious issue for the Park (Nguyen&Roberton, 2004; WHC - 35COM 8B,12; Worboys, 2012; SOC report, 2017).

► Mining/ Quarrying

Low Threat
Inside site, extent of threat not known

The illegal quarrying of limestone is widespread throughout the buffer zone and is impacting on the area’s natural and aesthetic values. It is important to control this issue. A clear system for local communities to legally quarry rock outside areas that impact on the OUV of the site needs to be developed and enforced by authorities.

► Changes in traditional ways of life and knowledge systems

High Threat
Inside site, extent of threat not known
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).
The lack of assured and sustainable income generation activities for communities in the buffer zones creates pressure of these communities to exploit resources and values that are sought to be protected through the WHS. The low income of a large number of families living within the buffer zones means that wildlife poaching, quarrying, and other extractive activities will continue until other sustainable opportunities to support livelihoods are assured. Policies should support local involvement in tourism, enforcement and management of the site. There is an urgent need to strengthen community engagement in management approaches taking into account customary rights.

► Tourism/ Recreation Areas

High Threat
Inside site, scattered(5-15%)

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 (Worboys, 2012).

► Tourism/ visitors/ recreation

Very High Threat
Inside site, scattered(5-15%)

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.
The Special National Heritage Plan 2016-2025 should also focus on 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 (Worboys, 2012), and there is a need to strengthen measures to protect caves from degradation and control inappropriate behaviours by cave visitors, such as trampling of sediments, touching formations, smoking, spitting, and littering (personal observation, 2010).

► Hunting (commercial/subsistence)

High Threat
Inside site, extent of threat not known
Outside site

Commercial and subsistence hunting remains a major threat to the biodiversity of the site. Continued management actions and monitoring are required to ensure that wildlife poaching does not become an issue in the future. Control is difficult due to the rugged nature of the country and the relative shortage of enforcement resources and 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. In 2017, the State Party reported that it had increased its law enforcement efforts to deter illegal exploitation of forest products, hunting, trapping and wildlife transport, leading to a reported significant reduction in the number of violations compared to 2015 (Government of Viet Nam, 2017).

Potential Threats

High 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

High Threat

Inside site, extent of threat not known

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)

► Tourism/ visitors/ recreation

High Threat
Inside site, scattered(5-15%)

The proposals to develop pedestrian access facilities, an aerial cable car, 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). Since 2015, the World Heritage Committee has raised concern about proposals for the development of a cable car to provide access to Son Doong cave, which has the largest cave chamber in the world. Although the State Party has stated that it has no intention to proceed with such development (Committee Decision 41 COM 7B.33), continued reports in the media regarding ongoing ground survey work remain a cause for concern.

Protection and management

Assessing Protection and Management

► Relationships with local people

Serious Concern

The relationship between the park and the local people is complex. Their traditional hunting and gathering of forest resources has been restricted by the Park’s conservation goals (Larsen, 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, 2008).

► Legal framework

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, (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).

► Enforcement

Some Concern

The State Party advised in December 2014 of a series of measures to combat poaching and illegal activity within the property, however, at the time of IUCN's evaluation in 2015, concerns remained regarding a lack of funding, staffing and capacity IUCN, 2015). In 2017 the State Party reported on further measures to deter illegal exploitation of forest products, hunting, trapping and wildlife transport, which reportedly resulted in a significant reduction in the number of violations compared to 2015 (SOC report, 2017).

► Integration into regional and national planning systems

Highly Effective

The Property was recognized in the Quang Binh Province Master Plan for Economic Development 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.
While this site is not a transboundary site, encouraging efforts are underway to increase collaboration with Lao PDR. Currently there are several memoranda of understanding and other agreements between the two countries. There are annual or biannual meetings, and a Transboundary Biodiversity Protection Plan and a 2005-2015 Hunting & Wildlife Trade Control Action Plan are in place (IUCN, 2015).

► Management system

Some 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).
The 2014 IUCN World Heritage Outlook noted a need to develop a Management Plan to specify clearly the accountability and responsibility for management and protection of the OUV within the Phong Nha Cave, the Paradise Cave Lease area (50 hectares) and within Paradise Cave itself (Worboys, 2012). Since 2012, A Strategic Management Plan 2013-2025 is in place, which is based on other existing plans, including the Sustainable Tourism Development Plan, the National Park Operation Management Plan, and the Buffer Zone Management Plan (SoOUV, 2015). However, the IUCN evaluation of the re-nomination and extension of the property highlighted the importance of revising the Sustainable Tourism Development Plan to include the extension area (IUCN, 2015).

► 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 the World Heritage Committee's decisions since 2011. The on-going pressure for development of the Son Doong Cave remains (SOC report, 2017), despite the State Party's statement that it has no intention to develop a cable car to the cave (Committee Decision 41 COM 7B.33)
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

Mostly Effective

In 2015, the property was extended in line with past calls from IUCN and the World Heritage Committee. The extended property provides a larger more intact ecosystem that offers additional protection to the water catchments which are so critical to the integrity of karst landscapes. The extension increases the size of the existing site by some 46% and is part of the same karst plateau, covering largely undisturbed forest. The buffer zone encircles the entire extended property to the north, east and south to further strengthen integrity. The land immediately adjacent to the property is either

designated as forest protection area or watershed protection zone. In summary the property represents one of the largest protected karst landscapes in South East Asia. Its boundaries appear to be adequate from an ecological perspective, although the field evaluation concluded that boundaries were difficult to identify on the ground. Furthermore the extension of the property improves connectivity with the karst landscape in Lao PDR (IUCN, 2015).

► 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. For the period 2007-2015 the government allocated about 200,000 USD annually to support payment of salaries, office operations and construction and activities of the Management Board. Given that there are about 202 full-time permanent staff and 266 contract staff, this allocation would appear to be inadequate. Ticket sales and tourism activities generate about 1 million USD per year (IUCN, 2015).

► 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.

► 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 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 World Heritage Committee 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 the 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 visitation management

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.
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). There is a noted need for up-to-date data on large mammal species to confirm the population status of reported large mammals including tiger, Asiatic black bear, Asian elephant, giant muntjac, Asian wild dog, gaur and the recently discovered saola.

► Research

Some Concern

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. Nevertheless, the 2015 IUCN evaluation of the extension of the property noted that the absence of systems and a comprehensive approach for data management, research, monitoring and scientific collaboration constituted a weakness in management, and considered that a research strategy should be established to address this weakness (IUCN, 2015).

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, and 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, 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**
Low 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, and increasingly Son Doong cave, offer the most significant opportunity to present the World Heritage values of

the park and therefore are scientifically significant (Pers. obs.). While existing show caves have been impacted by inappropriate visitor management, the overall scientific significance of caves in the property currently remains high. However, visitor management in the property will need to be significantly improved in order to avoid further negative impacts on and deterioration of these caves.

► Spectacular diversity of cave types

Low Concern
Trend:Deteriorating

The concept of ‘spectacular’ is based upon how people perceive and appreciate a subjects physical attributes. Tourism in Quang Binh Province, is focused on the spectacular Phong Nha Cave and to a lesser extent the Tien son Cave, and increasingly on Son Doong cave.
Maintaining the ‘spectacular’ aspect of the caves is critical to the sustainability of the tourism industry. It is vital to maintain the OUV and ensure ‘carrying capacity’ is appropriate to maintain the values and integrity of the caves. The carrying capacity of more than 1400 per day was established with no consideration for or provision of visitor/cave protection infrastructure or visitor management strategies (Tran Nghi et al., 2007). The current overall state of conservation of caves in the property remains good, but the primary show caves have been severely impacted, which is reason for some concern, as new caves are being targeted for development of facilities for visitation.

► Ongoing development of ecosystems

Low Concern
Trend:Stable

The forests of the property are largely undisturbed, covering 94% of the property, of which 84% is considered to be primary forest. The surface and underground ecosystems of the property are linked through perennial and ephemeral streams and a complex subsurface riverine system (IUCN, 2015). Concerns exist regarding pollution of water courses with solid waste, however, the ongoing development of ecosystems is largely undisturbed.

► Habitat diversity

Good
Trend:Stable

The diversity of habitats remains largely undisturbed.

► Floral diversity

Data Deficient
Trend:Data Deficient

There are noted concerns about illegal resource extraction from the property, including for timber and non-timber forest products. However, insufficient data is available to assess the current status of the property's floral diversity.

► Significant species of fauna

Low Concern
Trend:Deteriorating

There are significant data gaps in terms of the populations of animal species. However, empirical evidence points to noticeable declines in some species, including pigs, binturong and primates. According to the 2017 State of Conservation report on the property, many large mammal species, including tiger, Asian elephant, Asiatic black bear, saola and dhole have not recently been recorded, and the 2015 IUCN evaluation also noted a decline in large mammal species sightings (IUCN, 2015; SOC report, 2017). However, the forest cover in the property remains largely intact, and the inaccessibility of much of the property may be a contributing factor to the lack of observations of some species. The property, particularly when noting the connection with the adjoining Hin Nam No protected area in Laos, constitutes one of the largest and least disturbed tropical karst forests in Southeast Asia.

Summary of the Values

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

Low Concern

Trend: Deteriorating

The conservation trend for the Property’s karst landscape values are ‘stable’

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. The biodiversity values remain in good condition, but 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.

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

Data Deficient

Trend: Data Deficient

Additional information

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.

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 has operated over a number of years to strengthen conservation, alternative livelihoods and increase tangible benefits for buffer zone communities. It proposed 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). It is important that the successes and lessons learnt from the management of the site are incorporated into the long-term management of the site and its OUV.
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	.	A program to provide ongoing training for park guards to more effectively support park guides in controlling visitor behaviour, particularly in the caves.	
2	.	A program to provide ongoing training for park guides to more effectively provided site interpretation presentations to park visitors	
3	.	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	

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