Dong Phayayen-Khao Yai Forest Complex

2020 Conservation Outlook Assessment

SITE INFORMATION

Country: Thailand
Inscribed in: 2005
Criteria: (x)

The Dong Phayayen-Khao Yai Forest Complex spans 230 km between Ta Phraya National Park on the Cambodian border in the east, and Khao Yai National Park in the west. The site is home to more than 800 species of fauna, including 112 mammal species (among them two species of gibbon), 392 bird species and 200 reptile and amphibian species. It is internationally important for the conservation of globally threatened and endangered mammal, bird and reptile species, among them 19 that are vulnerable, four that are endangered, and one that is critically endangered. The area contains substantial and important tropical forest ecosystems, which can provide a viable habitat for the long-term survival of these species. © UNESCO

SUMMARY

2020 Conservation Outlook
Finalised on 02 Dec 2020

SIGNIFICANT CONCERN

The State Party has made significant effort to address all threats to the property in a well planned and sustainably delivered manner, and importantly in collaboration with neighboring countries, NGOs, academia, other government agencies and with local communities. While some threats may continue, the strategies being implemented are geared towards early detection and firm suppression to minimize impact from these threats. Tigers and other endangered species are being targeted for population recovery over a 10 year time frame and there is a structured programme to provide for ongoing enhancement of management capacity. More attention is needed to further understand the impact of resort developments within the boundaries and management of tourism activity within the property should be more proactive in guiding it towards enhancing a proper understanding of its significance and averting the potential for it becoming a playground for the economic benefit of the tourism industry. The positive steps made by the State Party in recent years to minimize or eradicate the identified threats is commendable. However, the proposed development of seven new dams inside the property is a cause of significant concern due to the likely impacts on threatened wildlife species, and clear confirmation is needed that none of these dams will proceed before the rating for this site can be considered to have improved.
FULL ASSESSMENT

Description of values

Values

World Heritage values

▶ Significant natural habitats for a diversity of species, including threatened and endangered species.

Criterion: (x)

The Dong Phayayen-Khao Yai Forest Complex (DP-KYFC) is comprised of five protected areas covering 615,500 ha. The property is internationally important for the conservation of globally threatened and endangered mammal, bird and reptile species, including 1 critically endangered, 4 endangered and 19 vulnerable species. The property contains more than 800 fauna species, including 112 species of mammals, 392 species of birds and 200 species of reptiles and amphibians. The complex protects the last substantial area of globally important tropical forest ecosystem from the Central Indochina biogeographic province in northeast Thailand, and thus provides a viable area for the long-term survival of endangered, globally important species, including tiger, elephant, and banteng. The unique range overlap of two species of gibbon, including the vulnerable Pileated Gibbon, adds to the global value of the complex (IUCN, 2005; World Heritage Committee, 2013; IUCN, 2014a).

▶ Conservation of migratory bird species

Criterion: (x)

The complex plays an important role for the conservation of migratory species including the Near-Threatened Spot-billed Pelican (Pelecanus philippensis) and Endangered Greater Adjutant (Leptoptilos dubius) (IUCN, 2005; World Heritage Committee, 2013).

Other important biodiversity values

▶ Important watershed area.

As a result of its high annual rainfall, large forest area and mountainous catchments, the Dong Phayayen-Khao Yai Forest Complex (DP-KYFC) acts as a critically important watershed for Thailand. The rainfall drains into and feeds five of the country’s major rivers: Nakhon Nayok River, Prachin Buri River, Lamta Khong river, Muak Lek River, and Mun River (World Heritage Committee, 2013).

Assessment information

Threats

Current Threats

In general, the State Party is comprehensively addressing the current threats to mitigate impacts on the property’s OUV. The extent of cattle grazing has been much reduced (if not eliminated), and mitigation against impacts from the Huay Samong Dam and the expansion of Highway 304 is ongoing. The State Party has made notable progress in regard to land use change, encroachment and boundary issues. The implementation of the action plan to suppress illegal logging has shown significant positive outcomes.

▶ Dams/ Water Management or Use

(Development of Huay Samong Dam)

Criterion: (x)

The Thai Cabinet approved the EIA for the construction of the Huay Samong Dam in October 2009 (IUCN, 2011; UNESCO, 2012; IUCN, 2014a) and by 2020 it had been given a royally designated title of
Naruebodindrachinta Reservoir. The State Party has made efforts to mitigate the impact on the property from the construction of the dam and it is essential that there is continuation of these efforts during and post-construction. The 2016 mission noted the dam was already filled to 60% of its maximum capacity with inundation of agricultural land and parts of the property along the boundaries of Thap Lan and Pang Sida National Parks (IUCN, 2017). Concerns pertaining to the impacts from increased access following inundation, introduction of non-native fish species, increased human occupation associated with construction and potential impacts on remaining populations of Siamese Crocodile remain despite the efforts of the State Party to negate these impacts. Cooperation between relevant authorities specifically the Royal Irrigation Department (RID) and Department of National Parks (DNP) needs to continue with a view to improving enforcement of mitigation actions after construction (UNESCO, 2012; IUCN, 2014a; IUCN, 2017). The progress achieved so far, including financial support provided until 2025 by RID to support DNP patrolling of the reservoir by boat, is encouraging. Nevertheless, illegal activities persist, including uncontrolled fishermen on the reservoir, people engaging in illegal activities under the guise of being there to fish (such as poaching and logging) (IUCN Consultation, 2020). The 2019 report of the State Party provides detail of the numerous plans which have been developed for monitoring and preventing environmental impact by the dam. Plans specifically under the responsibility of DNP include reforestation of impacted areas, wildlife evacuation and conservation, encroachment prevention around the dam, establishment of new ranger stations in Thap Lan NP and Pang Sida NP (State Party of Thailand, 2019).

**Tourism/ visitors/ recreation**

*Low Threat*

**Impact from tourism**

When the site was being considered for inscription on the WH List, IUCN noted the high impact from tourism pressure, in particular at Khao Yai National Park, and noted the needed to be addressed by developing and implementing a ‘whole of complex’ tourism strategy (IUCN, 2005; UNESCO, 2012; IUCN, 2014a). The number of tourist visits to the site doubled from 700,000 in 2001 to 1.4 million in 2006 with continued growth in visitor numbers since then. These high visitor levels must be managed through appropriate visitor use planning based on a careful assessment of the site’s capacity. An early Tourism Management Plan was considered inadequate so a new Sustainable Tourism Management Strategy (2017-2027) for the whole property was adopted in 2017. Development of new resorts, especially around Khao Yai National Park, continues at a high pace, and requires strict regulation to avoid impacts on the OUV of the property. Illegal resort development inside the property, particularly in the area between Khao Yai and Thap Lan National Parks, has been a long-standing significant concern, however there have been no new resort developments in the property since 2014 (State Party of Thailand, 2019).

**Housing/ Urban Areas, Commercial/ Industrial Areas, Tourism/ Recreation Areas**

*Low Threat*

**Encroachment for housing and commercial developments.**

Large-scale encroachment significantly increased after the site was awarded WH status, particularly along the northern boundary of Thap Lan National Park. The local community had previously made efforts to prevent this area from being designated as part of the National Park as they claim ownership of the land (State Party of Thailand, 2011). These issues increased after inscription and there was confusion as to the boundaries of the property, which were recognised as inappropriate and requiring confirmation at the time of inscription (IUCN, 2005). Encroachment remained a threat to the integrity of the property and the State Party has developed a long-term plan to addresses the situation. A map of land use changes and encroachment into the property since inscription was appended to the 2015 State Party report and notes in its 2018 report that it has continued to attach importance to the participation of the local communities in solving the issue of land ownership verification. A 2017 meeting between all relevant agencies was organized to settle the issues of land disputes in Thap Lan National Park noted the background as well as other issues concerning overlapping scope of responsibility, litigation, and law enforcement among these agencies. For the verification process to be more efficient, the DNP established a working group for solving land disputes with the aim of all land rights verification being completed by 2018. The joint meeting among relevant bodies will be conducted if the case on encroachment in the property arises (State Party of Thailand, 2018).

The 2019 State Party report does not provide an update regarding the success of working groups'
efforts to resolve all land disputes by 2018. However it notes that the National Park Act and the Wildlife Protection and Reservation Act have been amended to improve natural resources conservation in protected areas by encouraging community participation in the establishment and management of protected areas, resolution on land problems in forest areas with appropriate measures and approaches to assist the community occupying land in protected areas, and revision of penalty to be in line with the current situations. It notes that a working group will be established to prepare an agreement on “administration demarcation for conservation” as well as the maps, lists of community members and land diagrams. The administration demarcation for conservation must be approved by the National Parks Committee and receive approval from the Cabinet before it can be promulgated as a Royal Decree so that residents residing inside the protected areas can legally occupy the land. This development is considered by the State Party as a reaffirmation of its efforts to engage with the community to address forest encroachment in protected areas (State Party of Thailand, 2019).

**Roads/ Railroads**

*(Upgrade and widening of Highway 304)*

Highway 304 is a busy national highway that runs along the boundary between Khao Yai and Thap Lan National Parks, bisecting the World Heritage site. The IUCN monitoring mission in 2017 noted that expansion works have begun to upgrade the road from two to four lanes, following approval of the EIA and plans for construction of wildlife corridors. The mission also noted considerable progress in regards to the construction of the elevated highway sections, one of the wildlife corridor methods being implemented to ensure connectivity between the two National Parks (IUCN, 2017). While the existing road represents a significant obstacle to wildlife movement, it is hoped that the construction of effective wildlife corridors will have a net positive benefit on movement of wildlife such as tigers and elephants, between Khao Yai and Thap Lan National Parks (IUCN, 2014a). The road and the wildlife corridors were completed in 2019 and initial monitoring results note the presence of wildlife in and around the corridors. To further reduce impacts reforestation works have been carried out adjacent to the road and real-time cameras traps have been installed to monitor wildlife movement. The State Party notes supporting programs to promote wildlife management including effective monitoring and evaluation of wildlife using the corridors to safeguard the OUV of the property (State Party of Thailand, 2019). Many encroachment cases are however still being processed through the courts today (IUCN Consultation, 2020).

**Livestock Farming / Grazing**

*(Grazing of domestic cattle)*

Grazing of domestic cattle in the property was decreased markedly in response to actions by the State Party following decisions from the WH Committee (UNESCO, 2012; State Party of Thailand, 2012; IUCN 2014a). The State Party made further significant steps to reduce the number of illegal settlements and ensure removal of the remaining cattle. The 2016 mission report makes note of the success in reducing cattle grazing within the property. Neither the 2017 nor 2019 State Party reports make any mention of cattle grazing and therefore the current status is unknown but continued efforts are most likely needed in the long term to tackle this threat.

**Hunting and trapping**

*(Poaching of wildlife)*

Poaching of wildlife has been an issue in some areas of the property where it was reported to be widespread and frequent (IUCN, 2014a). Previous reports indicate that commercial poaching of high-value species and subsistence level poaching is affecting some large mammals and bird species, particularly from the areas east of Khao Yai and Thap Lan National Parks (UNESCO, 2012; State Party of Thailand, 2012; IUCN, 2014a). The State Party has stated that no incidents of poaching of other wildlife has been reported (although other sources continue to regularly report such cases (IUCN Consultation, 2017)), and notes that illegal loggers of Siamese rosewood bring their own provisions into the forest, indicating that they do not rely on subsistence hunting during their time in the forest (State Party of Thailand, 2017). The 2017 mission noted that innovative approaches to combat poaching are being applied throughout the property, and are showing positive preliminary results. Therefore, wildlife
Poaching is currently considered a low threat, which should nevertheless receive the full attention of park authorities in order to prevent it from increasing in the future.

**Logging / Wood Harvesting**

_{Illegal logging of Siamese Rosewood and illegal harvesting of Agarwood._}

The World Heritage site is home to significant populations of Siamese Rosewood (Dalbergia cochinchinensis), a high value hardwood timber species, increasingly sought after for furniture. Illegal logging of rosewood occurs in all components of the property and the domestic laws and penalties relating to its collection were previously considered inadequate (IUCN, 2014a). Illegal logging of Agarwood (Aquilaria spp) is also occurring in the property to the degree that the majority of Agarwood, especially Khao Yai National Park, has been depleted (State Party of Thailand, 2012). The State Party has significantly increased efforts to address this threat both at a local and international level and developed a 5 year Action Plan to address the illegal logging of and trade in Siamese Rosewood in the property. The State Party also notes that domestic laws and penalties have been enhanced along with a complex international and inter-agency approach to detection (State Party of Thailand, 2019) and suppression of illegal logging activities and provides comprehensive details of the various actions taken in line with four key objectives of the Action Plan which are: (1) prevention of illegal logging; (2) suppression of illegal trade and shipment; (3) promotion of conservation and public participation; and (4) promotion of international cooperation.

In summary it details the increase in efforts to detect and suppress illegal logging activity and cites the number of criminal cases on a steady declining trend from 642 cases in 2014 to 29 cases in 2019. The State Party report states that there is no evidence that suggests illegal logging of other tree species in substitute for Siamese Rosewood (State Party of Thailand, 2019). Caution is needed in interpreting these data however, as other factors need to be considered such as the detection rate of illegal logging incidents. The 2016 mission expressed the need to redefine the indicators of the Action Plan to ensure adequate means of verification to accurately and fully measure the plan's effectiveness (IUCN, 2017).

**Other**

_{Human-elephant conflict_}

Human-elephant conflict (HEC) continue within the site, especially in Northeastern Thap Lan at Soeng Sang, Dong Yai and Wang Mee at Khao Yai. Human lives have been lost as a result of HEC in Thap Lan and Dong Yai. Engagement with local communities, especially through civil society organisation support is leading to encouraging results but HEC mitigation measures need to be expanded further and resources allocated, as this is an increasing problem as the elephant population rises. The situation is also expected to worsen as road traffic increases. There are many reasons why elephants leave the park, but water availability is the main driver. Considering the climatic changes expected over the coming years, there is a need for more water pools deep in the property, to draw wildlife inwards rather than out of the parks (IUCN Consultation, 2017). The recent State Party reports do not address the human/elephant conflict issue which is a problem for much of Thailand, not just for the property although staff are participating in a project to place radio tracking collars on elephants such that their movement from within the property to adjacent areas where conflict generally occurs can be predicted and residents warned of their approach (Salim, 2019). This does not however negate the need for management intervention to reduce the elephants being drawn out of the property.

**Potential Threats**

Major threat arises from the Royal Irrigation Department's proposal to construct seven new dams inside the WH property despite the WH Committee's clear position not to construct any inside the property boundaries. This plan also contradicts the statement made by the State Party to cancel the Lam Prayatham dam. Proposed road reopening issues of concern have been firmly stopped by the State Party and the much enhanced monitoring and enforcement efforts mitigate well against valuable wildlife resources becoming further targeted by poachers.
Dams/ Water Management or Use

(Impacts from potential dam construction)

Very High Threat

Inside site, scattered(5-15%)

The WH Committee had expressed many concerns in the past about the proposals to build a number of dams within the property, but in 2017 the WH Committee explicitly requested the State Party “to permanently cancel plans for any construction of dams within reservoirs inside the property’s boundaries, including the Huay Satone and Lam Prayathan dam projects” (WH Committee, 2017). In response, the State Party confirmed that there will be no construction project that would cause negative impacts on the OUV of the property and specifically noted that the Lam Phrayathan dam would have impact on the OUV and the project will not proceed (State Party of Thailand, 2018, 2019). However in 2020, third party information indicated plans by the Royal Irrigation Department of Thailand to develop seven new dams inside the WH property, including plans for Huay Satone and Lam Prayathan dams (IUCN Consultation, 2020). The seven proposed dams also include the Sai-noi Sai-Yai dam, which the 2016 mission was told would be outside the property. The dams will likely have a significant impact on threatened and endangered wildlife species. In addition to these larger scale dams, small scale check dams have been built in many streams in all parks over the last 5 years, in an effort to help raise water tables and to provide drinking sources for wildlife. However, no ecological studies appear to have been conducted prior to building these dams, and their ecological impact, particularly on migratory species of small fish, is unknown (IUCN Consultation, 2017). There have been recommendations or formal requests in regard to the construction of check dams and the 2019 State Party report provides details of the ongoing development of check dams throughout the property.

Roads/ Railroads

(Reopening and/or expansion of roads bisecting the property.)

Very Low Threat

Inside site, localised(<5%)

Concerns exist over suggestions of the reopening of roads currently closed and the upgrading of other roads (e.g. Highway 348 and Route 3462) that bisect the property. Such potential activities would open up access and impact on an area of high biodiversity and have significant impacts on the property and its OUV. DNP has indicated that approval for re-opening and/or expansion of existing roads would not be granted. However, it remains an issue of concern as it remains clear that the Department of Highways is still keen on further development of existing roads (IUCN, 2014a; IUCN, 2017), particularly Highway 348 (IUCN, 2017). The State Party has confirmed that Route 3462 was permanently closed in 2002 and the proposal to expand Highway 348 has been suspended in order to seek alternative options as a result of past Committee decisions (State Party of Thailand, 2018, 2019). The sections of Highway 348 to the north and south of the property have already been widened, and their implications on connectivity and OUV of the property is unclear.

Hunting and trapping

(Poaching and logging of valuable wildlife species)

Low Threat

Inside site, widespread(15-50%)

While currently the threat of poaching of species other than Siamese rosewood is not considered to be significant, there is a concern that illegal loggers may in future target other high value species such as tiger, elephant or pangolin. The State Party contends that there is no evidence that alternate species are being targeted at this time and, having noted the enhanced monitoring and patrolling activities being implemented to suppress illegal logging and wildlife poaching, the protection of the property against this development is strong (State Party of Thailand, 2019). The impacts of the closure of the parks to visitors as a result of COVID-19 is yet to be determined.

Overall assessment of threats

High Threat

The major threats to the integrity of the property and the Outstanding Universal Value for which it was inscribed included impacts from the upgrading of Highway 304 and construction of the Huay Samong Dam, rapidly increasing tourism, continued land use and illegal resort encroachment, illegal removal of high value timbers and inadequate management. Additional threats included cattle grazing within the property, proposals for additional dam and reopening and/or expanding other roads.
within the property.

The State Party has responded positively to requests by the WH Committee and has made significant efforts in addressing these threats. Management of the property has been enhanced and the reopening and upgrading of additional roads have been stopped. A tourism management strategy has been developed and cattle grazing all but eliminated. A 5-year action plan to suppress illegal logging and poaching of wildlife has been successfully implemented and a wide ranging inter-agency approach to monitoring and enforcement has been developed. A long term strategy to resolve encroachment/ownership issues is in place and there is ongoing development of the wildlife corridors associated with the upgrading of Highway 304.

However, reports of the Royal Irrigation Department planning to develop seven new dams inside the property boundaries against the Committee decision raise great concern. It undermines all of the very positive progress the State Party has made in recent years, for which continued vigilance and alert are required to the ongoing potential for illegal logging and poaching to resume as demand for these precious resources continues to grow. Until there are reassurances that the seven dams will not proceed to development, the overall level of threat must be considered to be high.

Protection and management

Assessing Protection and Management

Management system

A revised management plan for the WH site was prepared to update the site’s original 2006 plan. Despite the updated plan, details regarding the resources available to ensure long-term management effectiveness remain unclear and it lacks any mention of the negative impacts of increased tourism and the subsequent potential threats to the site’s OUV (State Party of Thailand, 2012). The 2014 mission report notes that the five Protected Areas (PA) which make up the property are managed by the Department of National Parks (DNP) through offices in each of the PAs. These are overseen by 2 separate regional offices. A WH Facilitation Division within the DNP is responsible for reporting to the WH Committee and for implementation of the Management Plan for the property, however, there is a lack of clarity regarding the position of an overall manager for the property and the relationship between the regional offices and the WH Division is also unclear. The Superintendent responsible for the management of each PA reports to the WH Division which reports to the Director of the Natural WH Office in Bangkok. It further notes that Protected Areas Committees, comprised of representatives from the management agency, local communities and other stakeholders, have been set up to advise on the implementation of the management plan, including issues related to public participation in protected area management. In 2015 a “Road Map” for management of the property presented to the WH Committee included strategies for prevention and suppression of illegal activities; prevention and mitigation of impact caused by the construction of infrastructure; tourism development and administration and management of the property. An Advisory Committee has been established and reports to meet no less than at 3 times per year and will host training programs for all stakeholders in the buffer area of the property (State Party of Thailand, 2018). Apart from this the 2016 mission and subsequent State Party reports do not provide any reference to the management plan for the property nor any indication of its successful implementation (State Party of Thailand, 2018, 2019). The status of the Sustainable Tourism Management Strategy 2017-2027 has not been determined.

Effectiveness of management system

Each of the component PAs which make up the property has its own management plan and an overarching management plan for the property was developed for the period 2016-2020. The appointment of the Head of the Dong Phayayen-Khao Yai Coordination Centre has facilitated better coordination of management across the whole property and there is involvement of different
stakeholders through the Protected Area Advisory Committees (IUCN, 2017). The reports provided by the State Party provide comprehensive details of management achievement for the period 2017 to 2019 in regard to concerns and requests expressed by the Committee particularly in regard to mitigating threats to the property, enhancing international collaboration and improvement in engaging with local communities in managing the property. However, there is no reference in either the 2017 or 2019 State Party reports as to these management achievements synchronize with the provisions of the management plan.

▶ **Boundaries**

The 2014 mission expressed concern that despite the State Party making commitments to a boundary adjustment on numerous occasions the issue had still not been addressed (UNESCO/IUCN, 2012; IUCN 2012; IUCN 2014a) and reiterated the need for a detailed zoning plan for the property. It also expressed the view that a legally designated buffer zone around the property was required as was a clear demarcation of the boundaries (IUCN, 2014a). However, as these expressed concerns did not eventuate in subsequent official requests by the WH Committee the issue of boundary changes, a buffer zone and demarcation of the boundary has not been progressed. The 2016 mission report includes recommendations to continue, strengthen and concentrate efforts to engage local people in the process, to ensure awareness of the boundaries of the property and to closely monitor the level and type of land use and encroachment and develop a detailed plan for zoning of the property to improve management of impacts from areas within the boundaries of the property currently inhabited and under investigation in regards to land tenure. The subsequent meetings of the WH Committee have not addressed the boundary and apart from providing details of progress made in addressing encroachment issues the recent State Party reports do not address the concerns expressed in the 2014 mission report.

▶ **Integration into regional and national planning systems**

The Department of National Parks, Wildlife and Plant Conservation (DNP), under the Ministry of Natural Resources and Environment (MoNRE) is responsible for the management of protected areas in Thailand. A Superintendent manages each of the five protected areas comprising the property. These Superintendents report to the Head of the Dong Phayayen-Khao Yai Coordination Centre, who reports directly to the Director of the Natural World Heritage Office in Bangkok, which is part of DNP (IUCN, 2017), and which was formed following recent approval of changes to the administrative structure within DNP. The Natural WH Office now holds primary responsibility for coordinating responses and for implementation of the Management Plan for the property (IUCN, 2014a). A wide range of other government agencies are involved in development activities such as transport infrastructure, irrigation, dams and rural development. Furthermore poaching and illegal logging operations, which are impacting the property, have wider national and regional implications and also involve multiple agencies. The recent State Party reports provide extensive detail of highly collaborative inter-agency management approaches and international cooperation to address threats to the property. Considerable success has been noted in real-time detecting of the commitment of offenses as well as the control and interception of illegally logged Siamese Rosewood being transported out of the property. Highly successful coordination is also evident between DNP and the Royal Irrigation Department in mitigating threats from dams and the Department of Highways in mitigating the threat from road developments (IUCN, 2017; State Party of Thailand, 2019).

▶ **Relationships with local people**

The relationships with local communities in and around the property have varied greatly from poor to good. There have been significant issues with land tenure and land use change stemming from the initial gazetting of the National Parks and subsequent inscription on the World Heritage (State Party of Thailand, 2011). There had been some involvement of local people in site management through the Protected Area Committees (PAC) that exist for all the protected areas making up the property. Community leaders participate and have a voice in PAC meetings (IUCN Consultation, 2017). In 2019 the State Party report of its enhanced relationship with local people through wider community participation in management through the advisory committees, extensive community awareness and outreach programmes and the formalised land disputes process (State Party of Thailand, 2019). It also reports of
ongoing processes to amend the legislation to acknowledge and accommodate community involvement, which has the potential to raise awareness and empower communities in site management (State Party of Thailand, 2019).

Legal framework

Mostly Effective

The Dong Phayayen-Khao Yai Forest Complex is the property of the Government of Thailand, with the four national parks declared under the National Parks Act B.E 2504 (1961) and the Dong Yai Wildlife Sanctuary declared under the Wild Animal Reservation and Protection Act B.E. 2535 (1992). A lack of coordination between the national parks on the one hand and the wildlife sanctuary on the other leads to some frustration, as the wildlife sanctuary may unilaterally implement plans without consulting the National Parks Division (IUCN Consultation, 2017). Thailand has relatively strong protected area legislation and a number of other relevant laws and regulations in regards to National Parks and Reserved Area Management in Thailand are in place (IUCN, 2011). In 2019 both the National Park Act and the Wildlife Protection and Reservation Act were amended to provide greater protection of natural resources such as vegetation and non-timber forest products, wildlife, scenery, forests and mountains and to improve land use in the protected areas. The amendment also provides for the encouragement of community participation in the establishment and management of protected areas (State Party of Thailand, 2019).

Law enforcement

Mostly Effective

The Department of National Parks holds primary responsibility for implementation of the Management Plan for the property, along with other key responsibilities including enforcement of the management and legal framework. Extraction of resources is prohibited within the boundaries. Poaching of high values species, in particular Siamese Rosewood, has been repeatedly flagged as a concern by the Government, NGOs and local authorities. The resources and capacity to effectively address this threat and provide the necessary enforcement actions were lacking with the management agency reliant on project specific funding for training and support. Strengthened collaboration with other enforcement agencies, such as the police, army, and customs, has been established, to address the threat from illegal logging and trade of Siamese Rosewood (IUCN, 2017; State Party of Thailand, 2018). Enforcement of regulations to control encroachment and land use changes has been addressed by staff training programmes, changes to legislation and community awareness activities. The Action Plan regarding Rosewood poaching details well planned, extensive inter-agency patrol and prosecution measures as well as the extensive international collaboration to suppress the cross-border movement of illegal products. Enhanced law enforcement capability is evidenced by the data provided on increased patrol effort and a corresponding decrease offenses (State Party of Thailand, 2018; 2019).

Implementation of Committee decisions and recommendations

Mostly Effective

The State Party has made commendable progress in addressing the issues raised by the Committee including: (i) the reduction/removal of cattle grazing; (ii) combating encroachment and resolving land use disputes; (iii) mitigating the impacts of the Huay Samong Dam; (iv) preventing the construction of new dams inside the property; (v) halting the expansion of roads in the property; (vi) developing strategies to detect and suppress illegal logging; and (vii) constructing of wildlife corridors as part of the expansion of Highway 304 (IUCN, 2017; State Party of Thailand, 2018; 2019). The effectiveness of actions being taken by the State Party appears to be high and although the WH Committee is yet to consider the 2019 State Party report (at the time of writing) and the outcomes of the 5 year Action Plan to suppress illegal logging, it is obvious that the State Party has made serious efforts to respond to the Committee's concerns. DNP's possible plans to construct 7 new dams inside the property however, would hugely undermine the positive efforts to date and go against the Committee's request not to construct any new dams inside the property.

Sustainable use

Data Deficient

There is no evidence of sustainable use of the resources within the boundaries of the property with the legal framework prohibiting collection of materials from the National Parks. Pressure from encroachment
and neighbouring land use practices, in particular from tourism in Khao Yai and along the margins of a number of the roads that cross the property are reducing due to management efforts. Park staff working in conjunction with local communities and settlements have made positive steps towards removal of all domestic cattle (IUCN, 2011; State Party of Thailand, 2014; IUCN, 2014a). Increasing tourism pressures are being mitigated by the authorities compliance with limits on the maximum number of visitors although the recent State Party’s reports (2018, 2019) do not provide useful details concerning the implementation of a sustainable tourism plan.

▲ Sustainable finance ▶ Data Deficient
Approximately 50% of funding is obtained from the central government with the remaining 50% coming equally from tourists and commercial operators within the site (State Party of Thailand, 2011). Levels of funding, staff and capacity were considered to be inadequate to keep pace with mounting threats to the property (IUCN, 2014a; IUCN, 2014b). While recent State Party reports (2018, 2019) note that funding has increased from 136 million Baht in 2017 to 166 million in 2018 and 173 million in 2019 showing a serious commitment by the State Party to provide for the adequate management of the property there is not enough information available to determine the sustainability of the ongoing financial support for the property.

▲ Staff capacity, training, and development ▶ Mostly Effective
Whilst all staff are full-time, only a small percentage of the total staff are permanent with the majority being seasonally employed or on short term contracts. While this is standard for Government agencies in Thailand it creates challenges in regards to continuity and capacity and often results in capacity moving from the property to other sites across the country. According to the State Party the staffing resources are inadequate (State Party of Thailand, 2011). This view was supported by the 2014 IUCN reactive monitoring mission and various stakeholder reports (IUCN, 2014a; IUCN, 2014b). Both the monitoring missions and stakeholder reports also note concerns over the small number of permanent staff and the need for improved capacity, training and staff development. However, there is a strong training programme for rangers, supported by the NGO Freeland Foundation, which has in recent years considerably improved their capacity to respond to the threat posed by heavily armed illegal loggers. The special response unit “Hasadin” consists of the most promising rangers, who have received specific training, and who can be deployed anywhere in the property on short notice (IUCN, 2017). In 2019 a transboundary enforcement ranger course was organised by Freeland with participation from Cambodia, leading to improved communication (IUCN Consultation, 2020). Staff training and capacity building is an ongoing priority for management of the property, particularly in the matter of protection against illegal logging and wildlife poaching (State Party of Thailand, 2019).

▲ Education and interpretation programs ▶ Mostly Effective
Whist there are some education and interpretative programs these are largely of an ad hoc nature and there is a need for more programs to be developed and implemented, particularly within local communities (State Party of Thailand, 2011). The visitor centre and facility has been recently redesigned for Khao Yai National Park as the centre of visitation and park management but there is a need to ensure similar education and awareness efforts in the other component parks. Some conservation awareness and educational outreach is conducted in conjunction with Freeland Foundation. This is mostly focussed on the 304 corridor area between Khao Yai and Thap Lan and in areas affected by Human-elephant conflict (HEC) such as Wang Mee at Khao Yai and Soeng Sang at Thap Lan. To expand this a teachers group has been established and they are replicating activities independently. This however is still small scale and should be expanded (IUCN Consultation, 2017). Freeland has also conducted awareness raising activities in schools and villages along the Thai-Cambodia border around Dong Yai and Pang Sida (IUCN Consultation, 2020). The 2019 State Party report provides detail of the recent education and outreach programme which has taken a diverse approach to community education. It has comprised formal lectures, classroom activities, field excursions, field camps and radio broadcasting to foster a broader understanding of nature conservation, forest management and tour guiding in a world heritage property. while the report offers no measure of the impact of the awareness raising effort the programme appears to have been well
Tourism and visitation management

The visitor centre and provision of interpretative programs are adequate for Khao Yai but with the high number of visitors and often strained relationships with local communities there is a need for further programs, guides, and information booths within the site as well as through outreach activities with local communities surrounding and within the current boundaries of the property (State Party of Thailand, 2011). There has been a significant effort to improve relationships with local communities and to expand the outreach and community awareness programmes. It is apparent from a search of social media platforms that tourism is very much focused on Khao Yai, which for a property with the primary role of fauna conservation, is a good management strategy; promoting one part of a complex as the tourism ‘flagship’ leaving management of the remaining component parts of the property to concentrate on biodiversity management. However, while the KYPN visitor center is frequently referred to as ‘interesting’, there is very little reference in any of the user feedback sites about the WH status of KYPN or any of the other component parts that make up the Dong Phayayen-Khao Yai Forest Complex.

Monitoring

Monitoring programmes are hampered by a lack of resources. Several NGOs work in close partnership with DNP to undertake training and improve capacity (IUCN, 2014a; IUCN, 2014b) and also assist with monitoring of populations of a number of species. However, overall monitoring of forest and population trends is largely lacking and there is limited baseline data available to properly assess trends. Although the 2016 IUCN monitoring mission to the property did not have access to detailed wildlife monitoring data and population trends, many wildlife populations, including elephant and gaur, are now considered to be very healthy and increasing. Positive results have also been obtained for some other species, indicating that they are faring better than was previously thought (IUCN, 2017). These anecdotal reports are supported by several recent research publications and one notes that the data collected during a fauna monitoring programme suggests that the property has potential as a regional tiger and dhole recovery site (Ngoprasert & Gale, 2019). In 2018 a new DNP research station was opened at Thap Lan to enable increased wildlife monitoring research. Monitoring as a tool, has been integrated with many aspects of managing the property in particular regarding impacts of the dam and the success of the wildlife corridors associated with the upgrading of highway 304, as part of illegal logging and poaching suppression, impact of using the road on groundwater quality and as a primary tool to detect further encroachment by surrounding land use (State Party of Thailand, 2019).

Research

In recent years the DNP has participated in programmes of international collaboration on research and database development and has allocated funds to conduct research which enhances capacity to support protection of the property (State Party of Thailand, 2019). Projects completed in 2018-2019 include: a study on distribution, habitats, and population of large mammals; rehabilitation of Siamese Rosewood population in Ta Phraya NP; survey of wildlife abundance in Khao Yai NP; and spatial distribution of important tree species in the property. In 2017, the DNP signed an MoU with the Foundation for Khao Yai National Park to promote cooperation among education institutions, NGOs, conservationists, and national and international experts for the conservation of tigers and other endangered wildlife species in the property. The MoU has several key strategies including: (i) enhancing efficiency and capacity building in patrolling for park rangers; (ii) developing a wildlife population survey and poacher surveillance systems; (iii) establishing a Wildlife Research Center in the property; (iv) raising community awareness and promoting public participation in a wildlife conservation volunteer system; and (v) creating anti-wildlife poaching and trade campaigns.

Overall assessment of protection and management

As with the management of external threats to the property, there had been concerns about the capacity to deal with internal issues. These included impacts from road upgrading; encroachment, cattle grazing and illegal logging. Encroachment and illegal logging had increased dramatically.
Dong Phayayen-Khao Yai Forest Complex - 2020 Conservation Outlook Assessment

Following inscription of the property. While some threats had been addressed by concrete action to reduce cattle grazing and implement activities to mitigate impacts during construction of the Huay Samong Dam there were still concerns about the capacity of management to identify and mitigate against impacts on the property’s OUV. In more recent years the DNP has made considerable efforts to enhance management capacity in the property. Inter-agency and cross border collaboration has produced some excellent outcomes in terms of reducing the impact of the expansion of highway 304, notable progress has been in suppressing illegal logging and wildlife poaching and a consultative process is being implemented to address the encroachment and land use issues. However, the proposed plans by DNP to construct seven new dams within the property, contrary to the WH Committee's decision and the State Party's previous statements question the inter-agency structure and decision-making. A collaborative approach to encouraging research which contributes to management of the property is noted. There is a high level of tourism pressure on the Khao Yai NP part of the property but insufficient data is available to make a comment on the degree to which tourism access to the property contributes to fostering an understanding of its significance which, if properly developed should lead to enhancing its long term protection. There is no evidence that suggests high quality site presentation has been or is being developed.

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

Earlier State Party Reports, monitoring missions and various stakeholder consultations had reinforced concerns regarding the effectiveness of management in addressing threats to the property. These included development of infrastructure such as dams and roads; poaching and illegal logging pressure and the aspirations of would-be tourism operators wanting to capitalize on the World Heritage site as a valuable tourism asset. Of particular concern was encroachment pressure, and whilst management responses had been unprecedented, efforts were failing to address the issue and stem the external forces (UNESCO, 2012; State Party of Thailand, 2014; IUCN, 2014a; IUCN, 2014b; IUCN, 2017). These impacts were seen to be potentially compounded by possible new dam developments and further road developments. More recent State Party reports note the successful efforts undertaken to address the illegal trade in Siamese Rosewood at a national and regional level, in cooperation with various government institutions in Thailand, and with neighboring countries and international organizations. Inter-institutional cooperation has also seen the impact of the dam and road expansion mitigated and proposals for additional infrastructure developments which would impact the OUV have been abandoned. The issue of encroachment and disputed land has been appropriately addressed by a programme of monitoring, a review of legislation and the implementation of a consultative process to clarify ownership and use of disputed land.

Best practice examples

The efforts undertaken by Thailand to improve regional collaboration on halting the illegal trade in Siamese Rosewood are an example of Best Practice. This includes the successful inclusion of all rosewood species in CITES Appendix II, and the establishment of a regional dialogue with transit and destination countries. There is an opportunity to expand this regional collaboration to include other countries, as well as to broaden its focus to include other priority species that are subject to illegal or unsustainable legal trade. The recently signed MoU foster research which contributes to the protection of the property’s endangered wildlife populations is further evidence of best practice management.

State and trend of values

Assessing the current state and trend of values
World Heritage values

**Significant natural habitats for a diversity of species, including threatened and endangered species.**

Data on the current status of key species found within the property such as Asian Elephant and Gaur is improving and indicating healthy and growing populations. Monitoring of some other species is also indicating positive results. However, data on Siamese Crocodile and Banteng continues to be largely unavailable (IUCN, 2017). In the wider context of declining habitats within SE Asia it is clear that the importance of the forest complex is greater than ever for a wide range of rare and endangered species. Issues of encroachment, road construction, illegal logging and poaching impact on the site’s value as significant habitat for the more than 800 faunal species present, particularly for the high value species such as tiger and elephant, as well as for a number of the plant species such as Siamese rosewood. Ultimately this is also impacting on the wider globally important forest ecosystem. Efforts directed at reducing illegal grazing and mitigating the impacts from the Huay Samong Dam have been effective (IUCN, 2014a), and progress is being made on mitigating the impacts of the expansion of Highway 304 (IUCN, 2017), although measures to enhance wildlife connectivity are yet to be fully implemented. Serious impacts arising from the threat of illegal logging and continued pressure from encroachment pose a threat to the site’s values (State Party of Thailand, 2014, 2017; IUCN, 2014a). The results of the 5 year action plan to improve the detection and suppression of illegal logging are very encouraging as are the measures taken to address the effectiveness of prosecution of wrong-doers. The development of an MOU to direct research which contributes to the protection of the properties wildlife is a very positive proactive step forward as are the efforts to engage more effectively with local communities to resolve the encroachment and land use disputes, and to involve those communities in management of the property (State Party of Thailand, 2019). If any of the seven dams proposed inside the property are realised, this value will drastically be modified.

**Conservation of migratory bird species**

The justification noted above for the overall biodiversity values of the property more than likely applies also to the values of the property for migratory species such as the endangered Spot-billed Pelican and critically endangered Greater Adjutant as much as it does for resident populations.

Summary of the Values

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

The 2014 and 2017 IUCN missions affirmed that a number of issues highlighted as threats to the OUV of the property in previous State Party reports, monitoring mission reports and decisions made by the World Heritage Committee, remained as threats to the property. While progress had been made on a number of the threats, a lack of updated monitoring results made it difficult to measure the impacts of measures taken on the biodiversity values for which the property was inscribed. The indications from very recent studies that the number of tigers present in the property is increasing. International and inter-agency collaboration to suppress illegal logging and wildlife poaching in the property reveal that the much increased patrolling and monitoring effort has a coinciding steady reduction in offenses. In addition, the DNP has embarked upon a collaborative research programme focussed on increasing the populations of endangered wildlife species in the property in parallel with a comprehensive programme of enhanced community awareness of the property and their involvement in its management. These initiatives combined with an ongoing programme of enhancing the competency of staff indicate a positive trend in the protection of the property’s World Heritage values.
The site remains an important watershed area for Thailand. It includes the catchment for five of Thailand’s major rivers. Specific data has not been sourced to assess the baselines and trends in water quantity and quality emanating from the site. However, as it is likely that threats such as large-scale encroachment, road construction, tourist resort development, dam construction and human occupation would impact upon hydrological patterns and processes it is important to maintain the efforts being made to suppress these threats.

Additional information

Benefits

Understanding Benefits

Outdoor recreation and tourism, Natural beauty and scenery

The waterfalls and creeks within the property, together with the variety of flora and fauna and forested landscapes, attract millions of visitors every year for recreation and education purposes (World Heritage Committee, 2013).

Factors negatively affecting provision of this benefit:
- Overexploitation: Impact level - Low, Trend - Increasing
- Habitat change: Impact level - Low, Trend - Increasing

Water provision (importance for water quantity and quality)

The Dong Phayayen-Khao Yai Forest Complex, with its high annual rainfall, acts as a critically important watershed for Thailand, draining into and feeding five of the country’s major rivers: Nakhon Nayok river, Prachin Buri river, Lamta Khong river, Muak Lek river, and Mun river (World Heritage Committee, 2013), the last of which flows into the Mekong. However, this important environmental service is also why the property is threatened from dam developments.

Factors negatively affecting provision of this benefit:
- Climate change: Impact level - Moderate, Trend - Continuing
- Pollution: Impact level - Low, Trend - Continuing
- Overexploitation: Impact level - Moderate, Trend - Continuing
- Habitat change: Impact level - Low, Trend - Increasing

Importance for research, Contribution to education

The site provides an outstanding opportunity for education and awareness for the local, national and international community about regional biodiversity. It also provides an important site for research as it represents and includes valuable habitat for over 800 species of flora and fauna including some of the world’s endangered species. The property protects some of the largest remaining populations in the region of many important wildlife species and is the only known location where White-headed and Pileated Gibbon species have overlapping ranges and interbreed.

Factors negatively affecting provision of this benefit:
- Invasive species: Impact level - Low, Trend - Increasing
- Habitat change: Impact level - Low, Trend - Increasing

the MoU regarding a structured research program to better understand the floral and faunal populations
of the property serve well to enhance this benefit

▶ **Wilderness and iconic features,**  
**Cultural identity and sense of belonging**

The property is home to a number of local communities, many of which have inhabited the area for many generations. These communities were present prior to the designation of the National Park and World Heritage Property.

▶ **Direct employment,**  
**Tourism-related income,**  
**Provision of jobs**

Tourism continues to increase for the property and with high numbers of visitors many of the services to support them are provided by local communities both within the property and through tourism related activities adjacent to the site.

Efforts should be made to ensure that tourism does more than provide income for the local people. It should also be structured to enhance people knowledge of the property's values and its global significance.

**Summary of benefits**

The property occurs in an area of heavy rainfall and acts as a critically important watershed for the entire country. Significant opportunities exist to quantify this ecosystem service value and argue for the protection of the site's OUV as a contribution to watershed quality. The value of a healthy functioning natural system of this extent is critical to supporting human activities and should be factored into national decision-making regarding conservation and development. The importance of this site for Thailand's substantial tourism industry should also be further quantified to ensure that this is well managed and sustainable and that benefits flow back to local people and communities. More effort is required to enhance the health and recreation and knowledge benefits derived from the property.

**Projects**

**Compilation of active conservation projects**

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<th>Organization</th>
<th>Brief description of Active Projects</th>
<th>Website</th>
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| 2  | Freeland Foundation                      | Various cooperative projects with DNP and others including:  
Enforcement Capacity Building (in partnership with DNP)  
Park-based Monitoring Capacity Building (in partnership with DNP)  
Wildlife Monitoring (in partnership with DNP)  
Conservation-based Community Development | http://www.freeland.org/ |
| 3  | DNP, Foundation for Khao Yai National Park Protection | - to conserve, protect and the restore the tiger population and other endangered wildlife species in the property and increase of the population of endangered wildlife by 50 per cent by 2027. - to promote cooperation among education institutes, NGOs, academia, conservationists and national and international experts in doing research which can applied to wildlife species protection in the property. | |
# REFERENCES

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