Puerto-Princesa Subterranean River National Park

2025 Conservation Outlook Assessment

SITE INFORMATION

Country: Philippines
Inscribed in: 1999
Criteria: (vii) (x)

This park features a spectacular limestone karst landscape with an underground river. One of the river's distinguishing features is that it emerges directly into the sea, and its lower portion is subject to tidal influences. The area also represents a significant habitat for biodiversity conservation. The site contains a full 'mountain-to-sea' ecosystem and has some of the most important forests in Asia. © UNESCO

SUMMARY

2025 Conservation Outlook

Finalised on 11 Oct 2025

GOOD WITH SOME CONCERNS

The spectacular cave system of the site and the natural phenomena of the interface between the sea and the underground river are well preserved although experiencing increasing impacts from the increase in visitors and tourism developments, pollution and illegal activities. The potential impact of climate change and more frequent severe weather events remains unclear. Some degradation of the site’s biodiversity values by tourism pressure, illegal activities and exploitation by the local community is recognized but the extent of the impacts of these threats is unknown given the lack of monitoring data and research. The protection and effective management of the site is hampered by a complex legal framework and some confusion as to what is actually the World Heritage site, and the zonation of land areas within its boundaries to accommodate the residents. Resolution of the zoning of the site as well as ongoing land claims and control of tourism development are all key to ensure effective management and planning in the future. While the impacts of Typhoon Rai are being addressed by the park management, further institutional, financial and technical support is needed by the park to fully rehabilitate and restore damaged ecosystems.

FULL ASSESSMENT

Description of values

Values

World Heritage values

Globally significant habitat for biodiversity conservation **Criterion:(x)**

The Puerto-Princesa Subterranean River National Park World Heritage site includes a full mountain-to-sea ecosystem, protecting the most significant forest area within the Palawan Biogeographic Province. It includes eight intact forest formations: forest on ultramafic soil, forest on limestone soil, montane forest, freshwater swamp forest, lowland evergreen tropical rainforest, riverine forest, beach forest, and mangrove forest (World Heritage Committee, 2012).

High level of biodiversity **Criterion:(x)**

The World Heritage site contains outstanding biodiversity, with the Palawan Moist Forest recognized by the WWF's Global 200 Report as containing the richest tree flora, with high levels of regional and local endemism, and as being the largest and most valuable limestone forest in Asia (World Heritage Committee, 2012). The natural forest is dominated by Dipterocarpus grandiflora (apitong), Intsia bijuga (ipil), and other hardwood species. The extensive rainforest is the habitat for a diverse range of endemic and endangered species of flora and fauna with the site being home to a large number of birds, mammals, reptiles, amphibians and plant species. Endemic mammal species found within the site include the Palawan binturong (Arcticits binturong), Palawan porcupine (Hystrix pumila), Palawan stink badger (Mydaus marchei), Palawan tree shrew (Tupaia palawanensis), Palawan or Philippine pangolin (Manis culionensis), Palawan Bearded Pig (Sus ahoenobarbus), Palawan Flying Squirrel (Hylopetes nigripes) and several species of bats. Dugongs have also been recorded in the marine component of the site. Cave inhabiting reptiles, birds and mammals are found within the extensive cave system formed by the underground river. The reptiles present include snakes, monitor lizards, and sea turtles (IUCN, 1999).

Rare and threatened birds. **Criterion:(x)**

The World Heritage site is home to a large number of bird species, including a number of rare and threatened endemic species such as the Philippine cockatoo (Cacatua haematuropygia), White bellied sea eagle (Haliaeetus leucogaster), Gray imperial pigeon (Ducula piceringii) and the Blue-naped parrot (Tangynathis lucionensis) (IUCN, 2015). The Palawan Peacock Pheasant (Polypectron napoleonis) has also been recorded in this site and is recognized as an internationally threatened species (IUCN, 1999).

Spectacular landscape **Criterion:(vii)**

Puerto-Princesa Subterranean River National Park includes a variety of landforms, the most impressive of which is the karst mountain landscape of the Saint Paul Mountain Range. The topography varies from flat plains to rolling hinterlands and hills to mountain peaks. Much of the site comprises sharp, karst limestone ridges. The limestone mountains have extensive karst features, both surface karst (pinnacles, shafts, dolines and limestone cliffs) in addition to an extensive underground river system (IUCN, 1999; World Heritage Committee, 2012).

Underground river **Criterion:(vii)**

The spectacular karst landscape contains an 8.2km long subterranean river that flows directly to the sea, which introduces a tidal influence to the lower half of the river. The cave system through which the river flows contains dramatic speleothems and several large chambers of as much as 120m wide and 60m high. Its accessibility and navigability up to 4.5km inland allows it to be experienced by the general public on a river cruise unequalled by similar experiences elsewhere in the world (World Heritage

Committee, 2012).

Assessment information

Threats

Current Threats

Low Threat

The integrity of the World Heritage site is dependent upon activities that occur anywhere within the catchment area of the subterranean river and for many of the identified current threats there is a need for more effective control of such activities. Some of the ongoing land use and tourism development activities undertaken within the catchment are inconsistent with conservation of biodiversity values and are causing measurable damage. Related to these changes are issues with land claims and illegal land sales and development. The dramatic increase in visitation over the last decade is also having significant impacts both within the boundaries of the site and in adjacent areas, and close monitoring is required to see whether the new management responses are sufficient. Assessing and indeed effectively addressing the threats to the World Heritage site is difficult in the absence of a new management plan pending since 1999. The management plan is yet to be updated, including the recommended zoning of the site. Clear zonation is key for protecting water quality and quantity and ensuring the long-term viability of the site's Outstanding Universal Value. Progress has been made in regards to a number of the identified threats, including reports of illegal logging and hunting, assessment of protected area occupants, tourism and carrying capacity, and housing and resort developments within the site boundaries. Encroachment into forest areas and poaching, as well as balancing tourism with conservation needs increased management attention so as to avoid this becoming a significant threat.

▶ Logging, Harvesting & Controlling Trees

Low Threat

(Deforestation)

Inside site, scattered(5-15%)
Outside site

For many years, logging, road widening and conversion to agricultural land were among the main causes of deforestation with additional impacts from illegal developments for tourism (IUCN, 2015). Reports of illegal logging and commercial plantations inside the Puerto Princesa Subterranean River National Park (PPSRNP) appear to be limited to agricultural activities of resident indigenous peoples and developments outside the boundaries of the World Heritage site respectively. These issues do not pose a significant threat to either the superlative beauty of the site or its biodiversity values but require effective management to ensure the impact and threat posed from these issues do not increase. However, in recent years there has been some backlash in efforts to tackle illegal logging, with a PPSRNP ranger being shot and wounded by illegal loggers trying to haul logs within the park boundaries in 2020 (Fabro, 2020b). In 2019 illegal logging was undertaken to open an unauthorized access road leading to PPSRNP, which would expose the park to illegal activities. Active law enforcement led to the park management and other environmental authorities filing administrative charges against the illegal cutting and construction (Ibañez, 2019). Some of the community members tend to do “kaingin” or slash-and-burn farming if they cannot perform their usual livelihood regularly (De Miranda et al., 2020).

▶ Recreational Activities

High Threat

(Increasing tourism and visitation)

Inside site, scattered(5-15%)
Outside site

PPURNP is the most visited cave in the Philippines, welcoming over 330,000 tourists in 2019, 100,000 more than a decade earlier. Scientists have warned that unless visitation is managed, the ecological integrity of caves will be compromised (de Vivo et al., 2009). The tourism management system in place for the World Heritage site at the time of its inscription and subsequent declaration as one of the “New 7 Wonders of Nature” in 2007 did not have the capacity to accommodate the increasing influx of tourists resulting from these declarations and in particular the latter. The system was unable to deal with the increasing number of tourists and in particular their concentration of visits in the morning for short periods of time. This also led to an increase in traffic on the one road that provides access to the main tourism area. Noise and pollution are reported from tourist vans and the motorized boats (bancas) that

bring visitors back and forth from the cave to Sabang (Agnelli et al., 2018). Ecological problems in the cave are mainly related to the diurnal resting of bats, which are disturbed by noise and light generated by the exponential growth in tourism. Swallows and bats are the base for life and food webs in this cave and their conservation need to be a priority (Agnelli et al., 2018). In 2014, the Protected Area Management Board increased the allowable number of visitors to a maximum of 1200 per day, based on a study of the tourism carrying capacity of the site. However, this study failed to accommodate for the concentration of visits in the morning to enable an early start to the tour of the underground river cave system. Surpassing 300,000 visitors per year since 2015, an integrated tourism management plan and a new approach for tourism were needed in order to avoid inevitable future damage to the subterranean river and cave ecosystem. Starting in 2015, sustainable eco-tourism projects were initiated, including through the Philippines-Italy Debt for Development Swap Program (Agnelli et al., 2018; Acero, 2020). The collaboration led to the adoption of a series of prescriptions to minimize the anthropic impact, including opening and closing hours, distance boats can travel in the cave, the use of light sources and audio-guides. Although it was deemed that the current annual limit of 350,000 visitors / year is within carrying capacity considering the underground climate, it was stressed that further increases (in visitor numbers as well as opening hours and number of boats entering the cave) must absolutely be avoided in order to not affect bats, swallows and the cave ecosystem (De Vivio et al., 2020). It is unclear how the damage to tourism facilities by the 2021 typhoon and the post-covid tourism context have impacted tourism management. Although the State Party in 2023 indicated that the impact of tourism on the OUV of the World Heritage site are insignificant and stable (State Party of the Philippines, 2023), it is clear that this issue merits ongoing attention and action.

► Water-borne & other effluent Pollution

Low Threat

(Pollution of the underground river)

Inside site, localised(<5%)

In the past, reports have identified the threat of river pollution due to both legal and illegal activities in the catchment of the underground river. The State Party still identifies water pollution as a current threat even if decreasing (State Party of the Philippines, 2023). There is a need for the issue to be dealt with in the updated management plan, as well as a need to provide regular community awareness campaigns and to establish an integrated land use plan to ensure long-term conservation of the natural values of the site (UNEP-WCMC, 2011). In addition to ongoing programmes promoting sustainable farming, environmental compliance with water and solid waste management among the growing community and tourism related establishments will be dealt with in new strategic management plan, which has been pending for many years, as part of the attempt to address pollution issues.

► Hunting, Collecting & Controlling Terrestrial Animals

Low Threat

(Illegal wildlife trade)

Inside site, scattered(5-15%)
Outside site

Illegal wildlife trade has been noted as a relatively recently emerging threat to the site and its biodiversity and is a general issue and threat across the island of Palawan. Several alarming reports regarding illegal trafficking of the Philippine Pangolin (Manis culionensis), which is only found on Palawan, have recently been published (Gomez and Sy, 2018; PCSD, 2019), including accounts of poaching in both the Puerto Princesa Subterranean River National Park (PPSRNP) and other protected areas on the island (Abano, 2019). A 2020 report published by TRAFFIC found a worrying increase in Philippine Pangolins confiscated from the illegal trade in the Philippines in just the last two years (Sy and Krishnasamy, 2020), although it is not known if any of these were poached in the PPSRNP. It is estimated that Philippine Pangolins have declined up to 95% in the last 40 years and it continues to face pressure (Alberts, 2020; PCSD, 2020). However, some Philippine Pangolins confiscated from the illegal trade have been released back in PPSRNP, as it is seen as one of the safest areas for Pangolins on Palawan (PCSD, 2020; IUCN Consultation, 2020b). The Palawan Council for Sustainable Development also report on large confiscations of marine species, such as turtles and sharks from around the island (Estoya et al., 2017). Despite the lack of reports of illegal wildlife trade impacting species within the World Heritage site, there is increasing concern for a number of species including the Philippine Cockatoo (Cacatua haematuropygia) and the Palawan Forest Turtle (Siebenrockiella leytensis), which are found within the site, after an increase in the number of confiscations involving these critically endangered species. During the Covid-19 pandemic, park rangers have continued to monitor the site, as there is a perceived risk that the lack of income from tourism might drive an increase in illegal poaching, logging and

destructive fishing practices (Fabro, 2020a; Miranda, 2020). However, decades of marine conservation in PPSRNP is now helping to provide locals with abundant fish harvests, and to support to the recovery plan of the community, PPSRNP has been distributing relief goods including moringa seedlings, which also helps wildlife conservation as it is an important food source, particularly for the Katala bird (Ganancial and Sandig, 2000). In conclusion, for the World Heritage site specifically, the illegal wildlife trade is currently seen as a low threat given that the majority of the trade and illegal collection is happening in the broader Palawan. In 2023 the State Party reported how the threat of poaching, subsistence hunting and collection of wild plants was decreasing (State Party of the Philippines, 2023).

▶ **Annual & Perennial Non-Timber Crops, Wood & Pulp Plantations, Terrestrial Animal Farming, Ranching & Herding**

Low Threat
Inside site, scattered(5-15%)
Outside site

(Land use change and illegal activities)

The park administration, which took up office in 2013, has been implementing a number of measures to combat illegal activities (UNESCO, 2014; UNESCO, 2015). In response to serious issues with land claims and illegal land sales, agricultural expansion and development, a new cadastral survey was initiated, and a Survey and Registration of Protected Area Occupants (SRPAO) was conducted in April 2014 (UNESCO, 2014; IUCN, 2015; UNESCO, 2015). To further clarify land use, delineation of zones within the World Heritage site is currently underway, and assessments of socioeconomic indicators using SEAMS (Economic Assessment Monitoring System) have been updated in the four barangays/villages within the site to determine the extent of users and utilization of resources within the site (IUCN Consultation, 2020b). However, it has been reported that areas continue to be titled to corporations and that in 2020, residents and land speculators have started to encroach on the forest areas (LGA report, 2020).

▶ **Water-borne & other effluent Pollution, Garbage & Solid Waste**

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

(Plastic pollution)

Plastic pollution has become an emerging threat to the Philippines, especially in Palawan (Sajorne et al., 2021). Studies investigating macro- and microplastic litter along the coasts of Palawan Island, including Puerto-Princesa Subterranean River National Park, have found high level of plastic pollution (Sajorne et al., 2021, 2022). Collected plastic were mostly fishing line nylon, food packaging and plastic fragments, while polymer types of mainly polyethylene terephthalate (PET) and polypropylene (PP) were found in the beach sediment. While the west coast of Palawan Island showed significantly lower plastic pollution than the east coast, plastic pollution represents a significant issue for the site ecology and biodiversity. Proper strategy, implementation of existing laws, and community participation are needed to address this problem. Local and national government units should intensify solid waste management and educate the public on plastic pollution’s ill effects.

▶ **Severe Weather Events**

High Threat
Inside site, throughout(>50%)
Outside site

(Massive land cover change)

Before Super Typhoon Rai, total forest in the park in 2021 was 16,674 hectares (79.2% of the total land area of the park). The Super Typhoon has damaged 9,619.34 hectares (57.69%) forests and 27.52 hectares (73%) of mangroves. Seventy-three percent (or 6,993 hectares) of the damaged forest were attributed to fallen or uprooted trees whilst 27% (or 2,627) were defoliated forests.
The climate-induced disaster has had a profound impact on the OUV especially for the indicator species within the park. For example, there has been a dramatic contraction, fragmentaion, and diminishing of the quality/suitability of the area of habitat of the Palawan hornbill (Anthracoceros marchei), Palawan peacock pheasant (Polyplectron napoleonis) and Busuanga wart frog (Limnonectes acanthi)- across the park. The species’ long-term survival are greatly compromised as this may contribute to isolation from the rest of the island.
Livelihood of indigenous peoples are also compromised because of the massive land cover change. Rattan and almasiga resin (both coming from forests) are potentially affected as the areas of habitat have been reduced significantly that might lead to reduced harvest (Mallari et al 2023).

Potential Threats

Low Threat

The dramatic increase in tourism and visitation is already noticeable from direct and indirect impacts on the site. A recent project on management of visitation has resulted in some improvements but the planned development of a new wharf along with the yet to be finalised updated management plan, including a detailed tourism plan, means the potential for direct and indirect impacts form the growing number of tourists remains a key concern for the site. With increasing population pressure in surrounding areas, agricultural expansion could also become a more serious problem for the site if not correctly managed now.

▶ Recreational Activities

Low Threat

(Ongoing increases in tourism and visitation)

Inside site, scattered(5-15%)
Outside site

The dramatic increase in visitation since the declaration of the site as one of the “7 New Wonders of Nature” has been noticeable and previous management efforts might not be sufficient to mitigate the negative impacts of ever increasing visitation. Indirectly such increases are likely to lead to further uncontrolled development within the site as well as adjacent to its boundaries. In turn, this will have impacts on water quality, deforestation, road traffic and a number of other potential issues, which if not controlled could impact directly on the values of the site. However, under the “Support for Sustainable Eco-Tourism in the Puerto Princesa Underground River” project undertaken in 2015-2017, new restrictions to decrease visitor impacts, especially from boats entering the cave, noise and light, were adopted (Agnelli et al., 2018; De Vivio et al., 2020). The Urban and Biodiversity Research, Development and Extension Center (UBRDEC) of the Ecosystems Research Bureau (ERDB-DENR) also has an on-going project to update the carrying capacity of the underground river cave (IUCN Consultation, 2020b).

▶ Annual & Perennial Non-Timber Crops

Low Threat

(Agricultural expansion at the edges of the site)

Outside site

Agricultural expansion is already occurring at the edge of the site. With increasing population pressure in surrounding areas, agricultural expansion could become a more serious problem for the site if not correctly managed now. Land conversion for agricultural expansion may cause an increasing rate of forest and habitat loss, impacting on the biodiversity values while also affecting the spectacular landscape for which the site is known. It may also lead to increases in agro-chemical loadings into the catchment of the underground river ultimately impacting water quality. Ambiguity regarding zones of different use within the World Heritage site has led to agricultural expansion and encroaching on the site. Re-zonation is currently underway, which is urgently needed to establish and implement strict rules regarding allowable activities within the protected area (CCIPH, 2020).

▶ Residential Areas, Commercial & Industrial Areas

Low Threat

(Infrastructure)

Inside site, localised(<5%)
Outside site

Although currently strictly prohibited and enforced, non-compliance with existing PAMB clearances and Infrastructure Guidelines or conflict with other clearances (eg. local or national laws) could potentially become a threat in the future. Development of the wharf complex without due regard to considering and mitigating environmental impacts is also a threat (State Party of the Philippines, 2023).

▶ Changes in Physical & Chemical Regimes, Changes in Temperature Regimes, Changes in Precipitation & Hydrological Regime

Data Deficient

Inside site, extent of threat not known
Outside site

(Climate change impacts)

The impacts of climate change currently remain difficult to assess (State Party of the Philippines, 2023) but could become a threat. Climate change might impact local biodiversity, but also weather patterns such as the 2021 Typhoon which was the strongest storm to make landfall in Palawan (typically considered to be 'sheltered' from natural disasters) in decades.

Overall assessment of threats

Low Threat

Assessing the threats to the World Heritage site in the past has been difficult given the confusion as to what exactly constitutes the World Heritage site and particularly in regards to its boundaries and those of the buffer zone of Puerto Princesa Subterranean River National Park. Although most threats are currently perceived as low, protection of the entire catchment area of the underground river is key to protecting water quality and quantity and ensuring the long-term viability of the site's Outstanding Universal Value. The integrity of the site is dependent upon activities within the catchment and there is a need for more effective control of such activities, many of which are not consistent with conservation of biodiversity values and are causing measurable damage. Of particular concern are issues with land claims and illegal land sales, as well as dramatically increasing levels of visitation. Close monitoring of tourism is also required to see whether the management responses are sufficient to cope with the levels of increasing visitation. The impacts of Super Typhoon Rai in 2021 were significant and raise concerns regrading the future impacts from climate change. Current action of the park management to restore and rehabilitate the damaged areas is commendable.

Protection and management

Assessing Protection and Management

▶ Involvement of stakeholders and rightsholders, including indigenous peoples and local communities, in decision-making processes

Mostly Effective

When PPSRNP's World Heritage status was being scrutinized in 2014, the park adopted a new model in which local communities received economic incentives to support conservation. Local communities are now described as "the invisible fence" that protects the site. The World Heritage site includes land within the boundaries of three Barangays (local administrative units: Cabayugan, Marufinas, Tagabinet) within the City of Puerto Princesa (IUCN, 2015). The site and its surroundings are the ancestral lands of the Batak and Tagbanua peoples (Mallari et al., 2013). Presence of Indigenous Cultural Communities within PPSRNP has greatly contributed to local conservation initiatives and community-based tourism management (CCIPH, 2020). Management of the World Heritage site recognizes the traditional rights and emerging economic opportunities for local communities. Relations with local residents have greatly improved with a more consultative style of management employed by park management, although more remains to be done. Management of the site includes a Protected Area Management Board (PAMB), with representatives from local communities, the tourism sector and other stakeholders. The PAMB also allocates livelihood grants to local communities. Concerns regarding Certificate of Ancestral Domain Claims (CADC) seem to have been resolved, and Ancestral Domain Sustainable Development and Protection Plans have been synchronized with the management objectives and conservation agenda of the World Heritage site. The park also has a local Community Liaison Officer who helps to encourage alternative, sustainable livelihoods and support local communities. The Park also serves as a source of employment (about 80% of the about 200 staff are local), including through Community Based Sustainable Tourism (CBST) associations established within the site. This approach has not only drastically reduced poverty, but also turned former illegal loggers in forest defenders (Amanda, 2022).

▶ Legal framework

Mostly Effective

The World Heritage site appears to have adequate legal protection in place. The Presidential Proclamation No. 212, s. 1999 declared the National Park under the National Integrated Protected Area System Act of 1992 (NIPAS) to encompass the entire catchment area and maintain long-term conservation of the site. The legal owner of the site is the City Government of Puerto Princesa. Responsibility for the management and the protection of the site is provided at a local, or provincial, rather than a national level through a Memorandum of Agreement (MoA) for Devolution that places local ownership of the site, and hence management responsibility, with the City Government of Puerto

Princesa (State Party of the Philippines, 2023).
While management responsibility is placed with the local authority, the site is also covered by the NIPAS, providing national level legal protection of the World Heritage site.

▶ Governance arrangements — Mostly Effective

The property is legally owned by the City Government of Puerto Princesa, and is being managed by a Protected Area Management Board, a multisectoral board that provides policy direction and over all decision making of the park (State Party of the Philippines, 2023).

▶ Integration into local, regional and national planning systems (including sea/landscape connectivity) — Some Concern

Palawan is covered by an Integrated Conservation and Development Plan, which includes a Forestry Protection Programme, however, there is currently insufficient data available to comment on the effectiveness of this plan, its regional integration and the position of the World Heritage site within this system. The site is largely managed at a provincial (city) level by virtue of the Memorandum of Agreement for Devolution, between the City Government and the National Government, and so appears to be lacking in terms of integration with national planning systems. The City Mayor has full responsibility over the World Heritage site and all management decisions are made by the Mayor in consultation with the Protected Areas Management Board (PAMB) (State Party of the Philippines, 2023). While this arrangement appears to have worked effectively to date there is some concern that changes in management perspectives may occur with changes in the holder of that Office. In addition, the devolution to the local level may limit integration and oversight at a national level. The status of a Bill proposed in 2020 to address some of these issues is unclear.

▶ Boundaries — Some Concern

The current demarcated boundaries of the World Heritage site, aligned with the GPS co-ordinates of the Presidential Proclamation No. 212, s. 1999 of 12 November 1999, includes the entire catchment area of the subterranean river and are adequate to maintain the site's Outstanding Universal Value. Based on the history of confusion around the boundaries and a number of threats to the site considered by the World Heritage Committee in 2014-2015, the development of a zonation plan was recommended, covering also the buffer zone. In 2020 it was reported that unclear zoning created conflicts between the park management, community settlers and developers, and that Multiple Use Zones do not coincide with the Alienable and Disposable Land of 1994, which has led to agricultural expansion, housing development and settlements encroaching on the World Heritage site (CCIPH, 2020). It is unclear if a re-zonation proposal under discussion in 2020 was eventually adopted.

▶ Overlapping international designations — Data Deficient

The property likely overlaps with a Ramsar site, as well as the Palawan Biosphere Reserve. Exact boundaries are not easily available. There are also plans to apply for UNESCO Global Geopark status (State Party of the Philippines, 2023). The World Heritage Site Manager is reported to regularly communicate with the Focal Points of the other designations

▶ Implementation of World Heritage Committee decisions and recommendations — Data Deficient

The property has not been reviewed by the World Heritage Committee since 2015. Earlier decisions focused on issues around tourism, boundaries and occupants within the site. A 2014 IUCN reactive monitoring mission made various recommendations and it appear difficult to assess if all those recommendations have been implemented (e. g. related to the development of Sabang Wharf and a zonation plan).

▶ Climate action — Mostly Effective

While climate change mitigation efforts are reported to be conducted and sustainable lifestyle to be encouraged (State Party of the Philippines, 2023), it remains to be confirmed how climate action is being taken at the site level, both in terms of mapping climate vulnerability of ecosystems and people,

reducing the park's carbon footprint, or actively building resilience.
Post disaster assessments were done following Super Typhoon Rai in 2021. The post disaster extent and condition of various ecosystems and ecosystem services were determined. Detailed restoration and protection plans were developed and budgeted. Active restoration using a suite of restoration strategies are being carried out (IUCN Consultation, 2025).

► Management plan and overall management system — Serious Concern

The World Heritage site is managed by the City Government of Puerto Princesa through the Protected Area Superintendent (PASu) and staff, who report to the City Government and the Protected Area Management Board (PAMB). The role of the PAMB, is to advise on the management of the site and issues related to public participation in protected area management. The PASu and the members of the PAMB hold primary responsibility for reporting to the City Mayor and for implementation of the management plan for the site, along with other key responsibilities for the day-to-day management including tourism and approval of development proposals (Acero, 2020). The 15-member PAMB includes representatives of national agencies, local communities, conservation NGOs and Indigenous peoples' groups (Mallari et al.,2013). A general management plan for the site was drafted in 1999 and it seems no updated plan has been developed since. Attempts to update the plan started in 2002, were taken up again in 2013 and 2020, but no new management plan seems to have been been adopted as of 2025, which is concerning given the urgent need to manage tourism, disaster risk reduction, resilience policies, and monitoring and evaluation protocols (UNESCO, 2014; IUCN, 2015; IUCN Consultation, 2020b). In 2023 the State Party reported that a Strategic Management Plan for 2020-2029 was up for finalization, that High Value Conservation Areas had been identified as well as the new Management Zones and Buffers (2km radius from the park) (State Party of the Philippines, 2023), but this remains unconfirmed to date.

► Law enforcement — Some Concern

The Protected Area Superintendent (PASu) appears to hold the primary responsibility for implementation of the management plan for the World Heritage site, along with other key responsibilities including enforcement of the management and legal framework. The site itself is home to a number of permanent residents and land use varies across the site depending on land tenure. There have been numerous reports of illegal activities including logging and other resource extraction (especially during Covid-19 and post-typhoon Odette in 2021, e.g. Miranda, 2022) but it is difficult to confirm the extent of these activities, especially given the lack of clarity of zones within the site and the areas of disputed land tenure. Poaching of wildlife has been identified by NGOs and project staff working in the area as a high threat to the wildlife and reports of poaching have been made by staff. The resources and capacity to effectively address these threats and provide the necessary enforcement actions are most likely lacking, with the management agency reliant on project specific funding for training and support and staff efforts focused on tourism management. To strengthen and ensure the protection of the PPSRNP's ecological integrity, ranger stations have been established in areas identified as "hotspots" for illegal or harmful practices within the park (Maclang, 2018), and rangers continuously monitor the site to protect the ecological integrity of the site to avoid incidences of poaching of Philippine Cockatoo and the Palawan Forest Turtle (Quitoy et al., 2024).

► Sustainable finance — Some Concern

PPSRNP considers itself self-sustaining since 2008 without DENR allocations. They only operate using entrance visitor fees and distribute a portion to IP-managed community-based sustainable tourism (CBST) areas (State Party of the Philippines, 2023). A Payment for Ecosystem Services (PES) was explored in the early 2020s but seems not to have been finalized yet (Domingo et al., 2022). It appears the PPSRNP Fund is currently limited because of bureaucratic barriers as it falls under the financial management system of the City. A Special Law to rectify the situation is being considered. In 2023 the State Party highlighted how the available budget is acceptable but could be further improved to fully meet the management needs, and how existing sources of funding are secure over the medium-term and planning is underway to secure funding over the long-term (State Party of the Philippines, 2023).

► Staff capacity, training and development — Some Concern

The original 1999 management plan as well as other relevant documents note that in the face of increasing visitor numbers more staff training in park planning and management is required to ensure effective management of the World Heritage site. However, there has never been a training program for staff apart from some training for cave guides, and a small local capacity building programme for local communities (State Party of the Philippines, 2023). The lack of training and development is further complicated by the contractual nature of staff appointments with no permanent positions and all staff on short-term contracts. Acero (2020) reports that the number of park rangers was increased from 11 in 2013 to 47 in 2019, with 6 serving as Protection and Conservation Component Heads. Regular foot patrolling is conducted by the park rangers within the park's boundaries and 4, 9, 20 and 8 rangers were assigned to the villages of New Panggangan, Marufinas, Cabayugan and Tagabinet respectively. A marine biologist and environmentalist are employed to monitor the condition of the subterranean river. Motorboats and other vehicles have also been provided by the management for rapid mobilization of rangers and other staff to monitor activities in the area (Acero, 2020). In its 2023 Periodic Reporting Report, the Philippines indicated that capacity is especially needed for risk preparedness (State Party of the Philippines, 2023).

► Education and interpretation programmes — Some Concern

It would seem there is no actual plan for education and interpretation in the site, despite a mentioning in draft management plans, and the work of a Community
Liaison Officer who assists with awareness of the site and its values among local communities and residents. Education and interpretation activities are restricted by budget and capacity and remain limited to short-term projects and
activities. The Puerto-Princesa Subterranean River National Park has been serving as a destination for both national and international educational field trips, and through the Integrated Support to Indigenous People and other programmes, the management has provided trainings and seminars to Community Based Sustainable Tourism (CBST) associations and educational opportunities for Indigenous People in the area, including free education to improve literacy rate. The installation of an information kiosk and mini-museum to display the culture and biodiversity of the area at Sabang Wharf has been discussed for a while, but has not yet been secured.

► Tourism and visitation management — Some Concern

Tourism remains the major source of funding for the property (State Party of the Philippines, 2023), as well as a major income source for local communities (Miranda, 2022). However, as tourist numbers continue to increase, more staff training in park planning and management is required to ensure effective management of tourism activities. The threats posed by uncontrolled access from outside developments remain present and difficult to control despite limitation of the number of visitors per day. Tourism is being addressed through tourism management objectives set out in the management plan. The site's tourism program aims to enhance visitor's experience with nature while protecting the natural values. Annual visitor numbers between 2018 and 2023 ranged between 300.000 and 340.000. A study calculated how the site lost about 3 million USD (Php 172,997,905.00) which was attributed to the foregone 281,441 international tourists and 335,687 domestic tourists from 2020-2021 (Quitoy et al., 2024).

► Sustainable use — Some Concern

The World Heritage site overlaps with ancestral lands and local communities use the forest within the buffer zone for subsistence and livelihood purposes. However, the level to which this is allowed and indeed monitored is unclear in the absence of a zonation plan which covers the buffer zone. Threats from both legal and illegal resource extraction remain throughout the forest, with potential impact on the Outstanding Universal Value of the site itself (Miranda, 2022). It is currently not known the degree to which illegal extractive activities may be occurring within the site, and monitoring capacity and resources are currently not sufficient for fully effective monitoring of illegal activities such as illegal logging, slash and burn agriculture, conversion of forest to agriculture and other resource extraction. Increased monitoring capacity and resources are required if fully effective law enforcement is to take place to successfully manage the site.

► Monitoring — Some Concern

The park keeps visitor statistics and also water quality is regularly monitored although data on the health of the river is not always available. Although, Acero (2020) note that a marine biologist and environmentalist are employed to monitor the condition of the subterranean river, undertaking quarterly water analysis, and forest cover assessments are carried out through satellite imaging. In addition, monitoring of the biodiversity of the site is limited and only recently have ongoing monitoring programmes been established. This includes recording of sea turtles and regular monitoring of the bat numbers within the underground river cave system, the latter initiated after concerns about noise and light disturbance from increasing tourist numbers. Data is lacking in terms of monitoring of other species within the site.

► Research — Some Concern

The addition of a resident park biologist in 2020 and work to update the species list for the site are concrete indications of research activities, but there is limited data available regarding plans to continue such work on an annual basis or to conduct recurrent targeted research. The exception to this is a regular monitoring of the bat species inhabiting the cave system, initiated after concerns about the impacts from the high number of tourist boats entering the cave system. As part of the efforts to solidify the strategic management plan, a High Conservation Value Areas Assessment was undertaken, including biodiversity assessments conducted in January-February 2020 (CCIPH, 2020). Research has focused on the impact of tourism (Agnelli et al., 2018; De Vivio et al., 2020), caves (Laventa) and species. An expedition a few years ago found two new troglobitic species, a cave-dwelling huntsman spider (Heteropoda simoneallmannae sp. nov.) (Jäger, 2018) and a scorpion (Chaerilus agnellivanniorum sp. n.) (Lourenço and Rossi, 2019). Latest research seems to have focused on the impact of Covid-19 (Quitoy et al., 2024), and ferns diversity (Delos Angeles et al., 2022).

► Effectiveness of management system and governance in addressing threats outside the site — Some Concern

A number of ongoing issues threatening the World Heritage site remain, in particular the lack of updated management plan since 1999 (a new management plan for 2020-2030 was predicted to be completed by December 2020 but was cancelled in the Covid-19 context). Ineffective management is perhaps the most serious threat to the site. While there has been a clear and significant improvement in management of the site since the new park administration took up office in 2013, a lack of resources and an all be it necessary focus on management of tourists takes up the majority of the limited resources, rather than overall site
management. Subsequently this means management effectiveness remains an issue for the site. The large numbers of visitors to the site and the resulting infrastructure to accommodate them remain key management challenges. In light of the substantial impacts of Covid-19 and the considerable damage from Typhoon Odette in 2021 (destroying many trees, houses and park/tourism facilities), the park management and PAMB have taken laudable efforts to balance biodiversity conservation/ protection and tourism inside the site, yet much work remains to be done.

► Effectiveness of management system and governance in addressing threats inside the site — Some Concern

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park/tourism facilities), the park management and PAMB have taken laudable efforts to balance biodiversity conservation/ protection and tourism inside the site, yet much work remains to be done.

Overall assessment of protection and management

Some Concern

The protection and effective management of the site is hampered by the continuous absence of a management plan, zonation plan and tourism plan since 1999. This is particularly concerning since World Heritage sites are required to have a management system in place. This leads to a lack of clarity regarding which activities are permitted inside the site and where they are permitted in regards to core habitat for biodiversity and subsequently hampers management efforts. As the majority of pressures on the site originate from tourism activities in key areas and from developed areas within and adjacent to its current boundaries, and considering the unfavourable socio-economic status of many communities both occupying and surrounding the site, the development of a management zoning plan is essential to effective protection and management of the site. Core areas of habitat to maintain the biodiversity within the site need to be identified and provided with increased levels of protection, while ensuring that the entire site is protected against undue developments within and adjacent to its boundaries. In the absence of such information and plans, effective protection and management will remain challenging. In light of the substantial impacts of Covid-19 and the considerable damage from Typhoon Odette in 2021 (destroying many trees, houses and park/tourism facilities), the park management, PAMB and local communities have taken laudable efforts to balance biodiversity conservation and tourism inside the site, yet much work remains to be done.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Globally significant habitat for biodiversity conservation**

High Concern
Trend:Deteriorating

Biodiversity values are being impacted by increasing levels of tourism both within and around the World Heritage site, illegal activities including land clearing and developments and inadequate protection. Although measures, such as developing sustainable alternative livelihoods, have been taken to address some of these issues, there are still reports on illegal logging, road construction, as well as possible poaching and illegal wildlife trade (Abano, 2019; Ibañez, 2019; Fabro, 2020b). Habitat loss, forest fragmentation, land-use change and excessive resource extraction still remain as major threats to biodiversity and it is clear that the existing management regime needs to be refined (CCIPH, 2020). Most of the threatened species in Puerto-Princesa Subterranean River National Park (PPSRNP) are known to occur in forest areas below 1000m, which are areas designated as either Buffer zone, Controlled Use Zone or Multiple-use Zone where timber extraction, and agricultural and commercial development are permitted (Mallari et al., 2011). The mismatch in PPSRNP's zonation system needs to be addressed to optimize the benefits to biodiversity and the local people living in and around the protected area. Forest-cover change analysis from 2009 to 2019 revealed a negative net loss of forest areas of about 89ha. The forest loss poses a threat to critical ecosystems that serve as a refuge to rare, threatened and endemic species. In addition, predictive models of suitable habitats (survival envelopes) showed high species congruence within PPSRNP, but also a substantial reduction of suitable habitats over the last 20 years, increasing species vulnerability to further degradation and climate change (IUCN Consultation, 2020a; CCIPH, 2020). The results suggest that upon updating the PPSRNPs management plan, revisiting the management zones of the park should create a subzone for forest restoration and rehabilitation, which includes riparian zones, as these areas supply as inlet water towards the underground river (IUCN Consultation, 2020a; CCIPH, 2020). After Super Typhoon Rai, almost 60% of the forest was damaged and results of the green assessment showed massive contraction, fragmentation and degradation of the

quality of suitable habitats for rare, threatened and endemic species of plants and animals in the park (Mallari et al 2023).

▶ High level of biodiversity

High Concern
Trend:Data Deficient

While significant progress has been made regarding a number of previously identified threats, only a limited amount of data from monitoring in regards to specific species and biodiversity of the site is available and this makes it difficult to measure the impacts on the biodiversity values for which the site was inscribed. A High Conservation Value Assessment of the PPSRNP World Heritage site has been undertaken in 2020, which noted that most of the endemic and threatened species of mammals were observed at higher elevation. Anthropogenic activities and threats might be one of the reasons for the migration of lowland endemics (such as the Palawan or Philippine Pangolin, Manis culionensis) to higher elevations. It further concluded that most of the species of amphibians and reptiles in Palawan are still understudied. A lack of connectivity between key habitat areas within the site has also been identified as a threat to the conservation of some species. A recent study also documented 39 fern species (Delos et al, 2022). After Super Typhoon Rai, almost 60% of the forest was damaged and results of the green assessment showed massive contraction, fragmentation and degradation of the quality of suitable habitats for rare, threatened and endemic species of plants and animals in the park (Mallari et al 2023).

▶ Rare and threatened birds.

Low Concern
Trend:Data Deficient

As with the overall biodiversity values of the site, there is limited data available to assess the current state and trend of rare and threatened bird species. The exact number of bird species recorded within the site varies between sources (Manalo et al., 2016; PPSRNP, 2016; CCIPH, 2020), but include a number of rare and threatened endemic species such as the Philippine cockatoo (Cacatua haematuropygia) and the Palawan Peacock Pheasant (Polypectron napoleonis). The Philippine cockatoo is under threat from illegal wildlife trade but there is no data available in regards to its status in the site. Most of the threatened and endemic birds of Palawan are associated with primary forests. However, anthropogenic pressures (such as slash and burn, trapping, logging, etc.) in the lowland forest might have negatively affected many species and driven them to higher elevations where the forests are more intact (CCIPH, 2020).
Super Typhoon Rai, damaging almost 60% of the forest may also have knock-on impacts on avifauna, however there are no data currently to support this (Mallari et al 2023).

▶ Spectacular landscape

Low Concern
Trend:Stable

The nature of the karst landscape that dominates the site provides spectacular landscapes and an impressive backdrop to the underground river. It encompasses a range of landscapes and topographies varying from flat plains to rolling hinterlands and hills to mountain peaks. Much of the site comprises sharp, karst limestone ridges, which are unlikely to be diminished by visitation. However, threats from land use change and developments have the potential to impact on the landscape, particularly through deforestation and the removal of limestone in areas adjacent to the site's boundaries. These issues and threats are worrisome but currently considered of low concern to this particular World Heritage value.

▶ Underground river

Good
Trend:Stable

The underground river flows directly to the sea through an underground system that includes caves with chambers as much as 120m wide and 60m high. Seawater enters and mixes with freshwater up to 6 km from the cave entrance, and a very rare kind of helictite, referred to as ‘calcite grass,’ grows extensively from the cave floor of the "150 Year Gallery" (de Vivo et al., 2013; de Vivo et al., 2009). This provides opportunity for the general public to visit the caves on a river cruise unequalled by similar experiences elsewhere in the world and is a hardy resource unlikely to be diminished by visitor use even when such use is excessive in number. Although the spectacular karst cave system through which the river flows remains in a good state, issues of siltation and pollution of the underground river are worrisome and need future monitoring and management. Programmes and collaborations with farmers are underway to

promote organic and sustainable farming, preventing construction of dams and to raise awareness of wastewater discharge flowing down in the underground cave.

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values** — **Low Concern** — **Trend: Data Deficient**

The current condition of the 'outstanding natural phenomena' including the underground river and the karst landscape, remains good and overall the trend remains stable despite the threats faced by the site, specifically those from increasing visitation. The typhoon in 2021 is a cause of concern because of the significant loss (ca. 60%) of forest cover affecting biodiversity and ecosystem services. The biodiversity values of the site are under increasing threat due to the impacts resulting from increasing tourism and visitation, illegal activities including poaching and logging, land clearing and developments, alongside an expanding local population, which is gradually eroding the integrity of the habitats and the biodiversity they support within and around the site. However, there are a lack of data to confirm the impacts on the high level of biodiversity and rare and threatened birds in particular.

Additional information

Benefits

Understanding Benefits

▶ **Importance for research, Contribution to education**

The site provides an outstanding opportunity for education and awareness for local, national and international communities in terms of its biodiversity as well as the underground river and karst landscape. It also provides an important site for research as it represents and includes one of the world's most impressive cave systems, featuring spectacular limestone karst landscapes, pristine natural beauty, and intact old-growth forests and distinctive wildlife. It includes a full mountain-to-sea ecosystem, protecting the most significant forest area within the Palawan Biogeographic Province and is home to a number of endemic species.

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

▶ **Outdoor recreation and tourism, Natural beauty and scenery**

The site offers tourism activities that are significant to local, regional and international communities. Tourism is increasing in the area with local and regional tourists contributing to this increase and provides an opportunity for recreation and time in nature.

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

In terms of this benefit over exploitation relates to over use as well as extraction of natural resources.

► **History and tradition,**
Cultural identity and sense of belonging

The site 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 the World Heritage site, with numerous Ancestral Domain Claims covering areas of the site.

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

► **Carbon sequestration,**
Soil stabilisation,
Coastal protection,
Water provision (importance for water quantity and quality),
Pollination

The majority of the site is forest covered with the boundaries covering the entire catchment for the subterranean river. It includes a marine component with the property encompassing the coastal area and including a number of mangrove forested sections. A number of local communities live within the boundaries of the site with the intact forest providing a number of ecosystem services not only for these communities but the wider Palawan population.

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

Summary of benefits

The benefits from the PPSRNP are largely in the conservation value of the ecosystem, including the extensive cave system and the unique biodiversity it contains. The forest that covers the catchment of the river provides habitat for a number of species of global conservation concern, as well as in mitigating accelerating climate change impacts through carbon storage, and protection of local infrastructure and populations from extreme weather events, the frequency of which may increase under climate change. There are also economic benefits in terms of job creation and tourism with the included marine area also potentially aiding in local fisheries.

Projects

Compilation of active conservation projects

№	Organization	Brief description of Active Projects	Website
1	Palawan Conservation Corps	Community Based Environmental Restoration and Conservation of Damaged Areas of Puerto Princesa Subterranean River National Park.	

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