

# ROYAL BELUM STATE PARK

**Country :** Malaysia

**Date of Submission:** 23/02/2017

**Criteria:** (x)

**Category:** Natural

**State, Province or Region:** Perak, Peninsular Malaysia

**Coordinates:** N50 34 58.34 - 50 56 4.13 and E101 15 30.7 - 101 41 51.46

## Description

The Royal Belum State Park, Perak Malaysia originally, was gazetted as *Hutan Simpan Belum* (Belum Forest Reserve) in 1971 and subsequently in 2007 it was rezetted in accordance with the *Enakmen Perbadanan Taman Negeri Perak 2001 Sek. 6* (Section 6, Perak State Park Corporation Enactment 2001) as a State Park, stately called as the Crowning Glory of the Peninsula. In 2012, it was also gazetted under the Enakmen Perhutanan Negeri Perak (Perak State Forestry Enactment) as well as National Heritage Site which is the highest recognition accorded by the Government of Malaysia.

In the 1970s the importance of the Belum Forest Reserve was recognised for biodiversity conservation by the Colombo Plan Report and further recommendations for biodiversity conservation was made under the Third Malaysia Plan (1976-1980) and in 1988 by the Department of Wildlife and National Parks, Peninsular Malaysia (PERHILITAN). The Royal Belum State Park borders the Halabala National Park, Thailand to the north, thus making the area of about 300,000 ha of a potential transfrontier park and the Peninsular Malaysian state of Kelantan on the east. The Royal Belum State Park was gazetted in May 2007 (*Enakmen Perbadanan Taman Negeri Perak 2001 Sek. 6 No. 519*) for biodiversity conservation to facilitate biodiversity education, research and ecotourism. The Royal Belum State Park is only accessible by boat *via* the public jetty at Pulau Banding (Banding Island) which is situated at the southern part of the State Park.

The total area of the Royal Belum State Park is 117,500 ha and straddles the northern undisturbed and pristine lowland dipterocarp, hill dipterocarp and lower montane forests (up to about 1,533 m above sea level) of northern Peninsular Malaysia forming the northern and strategic component of the Central Forest Spine (CFS). The State Park is considered as one of the oldest, protected, undisturbed and pristine land mass in Peninsular Malaysia of more than 130 million years old, relics of the geological confluence of the southern Gondwanaland supercontinent and northern Laurasian supercontinent. Geographically, about 57% of its area is located in the range of 80-300 m above sea level and 41% in the range of 300-1,533 m above sea level. There is only one main river system, Sungai (River) Perak that originates from the Perak-Kelantan border in the north-east and flows southward to the Straits of Malacca at Bagan Datoh. Among the smaller rivers that are found in the State Park and drain most of the areas are Sungai Kenarong that originates on the west, Sungai Tiang and Sungai Kejar that originate on the east of the State Park, in addition to more than hundreds of smaller tributaries and streams that feed the Lake Temengor.

Geologically, the Royal Belum State Park is situated on the eastern side of the Western Belt of Peninsular Malaysia, right along the tectonic boundary of two continental plates (Sibumasu and East Malaya plates). This area consists of diverse rock formations of mostly metamorphosed marine sedimentary rocks of Early Silurian-Devonian age (~ 440 to 400 m.y. ago) belonging to the Baling Group, and the Triassic granites. The igneous body intrusion that occurred in the Late Triassic age (ca. 220 m.y.) had lifted the area and became a land mass and physical landscape what we observed today. This intrusion and other related tectonic activities resulted from the collision of two supercontinental plates had shaped the area to what it is today as a metamorphed and uplifted Baling Group. This substratum has become the niche and habitats for the rich and diverse biodiversity in the State Park.

### **Justification of Outstanding Universal Value**

As stated above the State Park is part of the Peninsular Malaysian Central Forest Spine (CFS) covering an area of 27,891 ha. It has been considered as the hotspot for biodiversity in Malaysia as it hosts diverse ecosystems and habitats for the many

species of flora and fauna of which many of them are endemic, rare, vulnerable or otherwise threatened in Malaysia and the region. These augur well for environmental education of the ecosystems therein and scientific research in biodiversity not only for Malaysians but also those in the region and the World. It can be considered as another natural gift to the heritage of mankind.

Topographically and geologically, the Royal Belum State Park represents the northern tip of the Main Range (Banjaran Titiwangsa), the backbone of Peninsular Malaysia where nature (i.e. exogenic or surface processes) had crafted the landforms dynamically for over 200 million years. The mountain range acts as the divider between the west and east coast of Peninsular Malaysia, and is extended for more than 480 km to the south to North Johor area. To its east, the Main Range granitic rock intruded a belt of 25 km wide of highly metamorphosed rocks. These metamorphic rocks were interpreted to have originated from Ordovician to Permian shallow to deep marine sediments that belonged to the East Malaya Block with strong Cathaysia affinity. This was the unique geological meeting area of the southern Gondwanaland supercontinent and the northern Laurasia supercontinent. In South-east Asia this is the most significant landmass for the evolution of the tropical geology and biodiversity. These geological formations have become the substratum or the template for the ever-pristine vegetation of those era until today and the forests had housed the oldest, rich and diverse flora and fauna of tropical humid biome.

Biodiversity (Flora): The most iconic flora in the world are the gigantic rafflesias whose flowers are the largest in the plant kingdom. In the world there are about 26 species, in Malaysia there are eight species and in the State Park and its vicinity it is represented by four species namely, *Rafflesia cantleyi*, *R. kerri* and *R. azlanii*, the latest was named after the Patron of the Malaysian Nature Society Heritage Expedition in 1998. The fourth species for Peninsular Malaysia, *R. sumeiae* occurs south of the State Park, as far as currently known. The occurrence of four endemic species of *Rafflesia* in the protected State Park is most significant for biodiversity conservation in the World. The State Park also hosts more than 3,500 species of seed plants and many of them are endemic to the area, hence not found elsewhere in the world and many also are rare in Malaysia and the region. A total of more than 89 species of mosses; 48 taxa of ferns and fern-allies (or lycophytes), more than 374 species in 84

families of flowering plants were listed and recorded including 15 endemic species such as *Etlingera triorgyalis* (Zingiberaceae), *Ternstroemia evenia* (Theaceae), *Orchidantha fimbriata* (Lowiaceae), *Areca tunkui* (Palmae), *Ryparosa fasciculata* (Falcourtiaceae) and *Drypetes oxyodonta* (Euphorbiaceae) amongst others. The keystone family of the tropical flora, the Dipterocarpaceae is well-represented in the State Park with at least 32 species including the gigantic and rare *Shorea foxworthyi*, *S. acuminata*, and etc. Other threatened dipterocarps which are found in the State Park include *Dipterocarpus costatus*, *D. kerri*, *Hopea helfer*, *H. odorata*, *H. sublanceolata*, *Parashorea stellate*, *Shorea faguetiana*, *S. ovata*, *S. parvifolia*, *S. platyclados*, to name a few. The Queen of the flowering plants, the orchids are represented by more than 150 species including the rare and threatened *Cleissostoma complicatum*, *C. williamsonii*, *Plocoglottis javanica* and etc; and aroids are also well-represented by more than 80 species, as far as they are currently known. The gymnosperm is represented by some species of climbing *Gnetum* including the dinosaur-aged cycads, *Cycas macrocarpa* and *C. clivicola* which occur in the State Park. The number of species and individual of plants reflect the highest density of biodiversity per unit area probably in the World. The vegetation of the Royal Belum State Park is typical of the ever-wet and ever-green tropical rainforest of the Sunda Shelf that may be classified as the lowland dipterocarp, hill dipterocarp and sub-montane forests with some elements of deciduous monsoon forests too. The monsoon forest which exhibits deciduous phenomenon in dry season represents the southern portion of the Asiatic influence. The vegetation and flora, hence represent the confluence of the southern Malesian and Australian elements and the northern Asiatic of Thai-Burmese-Indochinese elements. This mixture of the floras augurs well for the conservation of plant diversity. The richness of the plant species and the high endemism occurring in the State Park justify its potential in *in situ* biodiversity conservation in the World.

Biodiversity (Fauna): With respect to fauna biodiversity, the State Park also hosts a total of 10 species of iconic hornbills, the highest number in the country, in the region and is also believed in the world as well, per unit area. As far as recorded, the hornbills have been using the State Park as their nesting and breeding grounds as well as where they find their food sources, namely the fruits. Besides, it also has 80 species of mammals including the threatened Asian elephant (*Elephas maximus maximus*),

the iconic and threatened Malayan tiger (*Panthera tigris jacksoni*), the Malayan gaur (*Bos gaurus hubbacki*), the Malayan tapirs (*Tapirus indicus*) and etc. These big four have been under great threats ever since Malaysia has embarked on intensive agriculture, and the State Park has been their refugia where they could roam the whole range and breed freely, thus ensuring their survival and conservation. In addition, the State Park also contains a total of 18 species of frogs and toads, 67 species of snakes, and amongst the insects, there are more than 132 species of beetles, 28 species with possibly three new species of cicadas, 97 species of moths and 41 species of dragonflies and damselflies had been recorded via a few past scientific expeditions. Recently, two new species of thrips, the pollinating insects of the tropical timber trees were described and reported from the area, namely *Biltothrips perakensis* and *Scirtothrips temengorensis*, both named after the state and forest reserve, respectively. Obviously the biodiversity of the insect fauna is well-underestimated and it is under-studied as well. Probably there are more insect fauna species that are yet to be discovered and recorded from the State Park and only conservation will ensure its richness is ascertained. The long interaction between the ecosystems and habitats of the State Park with the plants and animals in it had paved the future for biodiversity conservation of the tropical humid world. The above statements illustrated the significance of biodiversity conservation and scientific value of the State Park not only to Malaysia, probably South-east Asia but also the tropical old world. As far as it is currently known and recorded there is no extinction yet of the flora and fauna in the State Park.

**Criterion (x):** The Royal Belum State Park contains the most important and significant natural ecosystems and habitats for *in situ* conservation of biodiversity in Malaysia and the World. It represents the largest undisturbed and pristine habitats and ecosystems for *in situ* conservation of both the terrestrial and freshwater river and lake biodiversity in the country. The State Park also contains many endemic, rare and threatened species of flora and fauna in Malaysia and also the World as it contains many iconic but rare, vulnerable otherwise threatened plants such as the gigantic flowers in the Plant Kingdom, *Rafflesia cantleyi*, *R. kerri* and *R. azlanii* and iconic animal species including 14 of the world's most threatened mammals such as *Panthera tigris jacksoni*,

*Elephas maximus*, *Bos gaurus*, *Tapirus indicus* as well as the 10 species of hornbills, the highest number in the country, in the region and in the World in one single locality thus far known. In addition, many species of plants and animals are of known scientific and conservation value in Malaysia and of outstanding scientific and conservation value to the World, in particular the hornbills and *Rafflesia*. In term of biodiversity conservation, as well as the dynamics of a tropical ecosystem, this natural property is deemed to be inscribed as a World Heritage Site and one day may become a potential for the world community to study and appreciate.

### **Statements of authenticity and/or integrity**

The forests complex of Belum-Temengor that make up the core area of the State Park had been intact due to security reasons ever since Independence of Malaya in 1957. However, beginning in 1971 it had been managed and administered by the Perak State Forest Department as a Permanent Reserved Forest. The core conservation area of the Park had been protected under the provision of the National Forestry Act 1984. No part of the area had been degazetted except a small and central part which was inundated by the Temengor reservoir in 1978 and the buffer zones all around the area are more than adequate and remained pristine ever since. In particular an area north of Sungai Tiang had been demarcated as a Permanent Protected Zone for the Malayan tigers. In addition, the Park has also been identified as the Important Bird Area since 2004 by BirdLife International. The inundated area has, however, enriched the State Park with the aquatic life, especially the freshwater fishes and aquatic invertebrates, significantly. In this respect the Royal Belum State Park is the richest area in term of biodiversity constituting the most significant biodiversity conservation area in the country. The gazetted Belum Forest Reserve had been gazetted again in 2007 as The Royal Belum State Park, hence with the double gazettelement the integrity of the State Park is secured through the legislative, regulatory and institutional protections and by means of the management plans such as the Belum-Temengor Integrated Master Plan 2013 and Perak Forest Management Plan 2006-2015. Currently, the Park is managed by the Perak State Park Corporation headed by the Chief Minister of Perak.

As far as the authenticity of the State Park is concerned, no part is lost to pressures from the socio-economic development as the area has been under strict protection of the Forest Department. If ever there is disturbances in the State Park it is due to natural calamities such as lightening strikes, natural death of plants and animals and occasional floodings. The State Park has remained pristine, undisturbed and protected.

### **Comparison with other similar properties**

In Malaysia there are two natural World Heritage Sites, namely the Kinabalu National Park in Sabah and Gunung Mulu National Park in Sarawak, both in Malaysia Borneo. The Royal Belum State Park is the National natural heritage site in Malaysia that includes areas of pristine tropical rainforest and rivers of more than 130 million years old that supports four species of endemic, rare and threatened gigantic *Rafflesia* and 10 species of hornbills, in addition to other large and iconic mammals, herpetofauna, birds, insects and fishes and other wildlife. It also contains the iconic tropical flora consisting of seed plants, ferns and lycophytes, bryophytes and fungi with populations of high natural levels of diversity, endemism, abundance and richness. In Peninsular Malaysia it is comparable to those of National Park (Taman Negara) but the latter has no central water body. The Kinabalu National Park, however, represents the wilderness and landscape of the submontane forest and montane ecosystems and habitat of more than 1,500 m above sea level, hosting the highest mountain in South-east Asia and represents the higher altitude ecosystems of outstanding biodiversity richness and value. In addition, it is younger than the Royal Belum State Park in terms of geological landscapes. It does not contain four species of *Rafflesia*, 10 species of hornbills, the Asian elephant (*Elephas maximus maximus*), the Malayan tiger (*Panthera tigris jacksoni*), the Malayan gaur (*Bos gaurus hubbacki*), and the Malayan tapir (*Tapirus indicus*).

On the other hand, the Gunung Mulu National Park represents the lowland limestone hills and lowland mixed dipterocarp forests of Borneo that host the largest limestone caves with a high diversity of lowland flora and fauna too, especially those adapted to the limestone and karst ecosystems and high pinnacles of poor nutrients in soils. The

Royal Belum State Park thus represents the largest and oldest lowland tropical rainforests and some ecosystems of lowlands and submontane forests with diverse flora and fauna in Malaysia, bordering Thailand and also the oldest undisturbed area of pristine landscape in Peninsular Malaysia forming part of the Central Forest Spine. This World Heritage Site also does not contain four species of *Rafflesia*, 10 species of hornbills, the Asian elephant (*Elephas maximus maximus*), the Malayan tiger (*Panthera tigris jacksoni*), the Malayan gaur (*Bos gaurus hubbacki*), and the Malayan tapir (*Tapirus indicus*), as well. In other words there is no natural site of high scientific and conservation value that has been enlisted under the World Heritage Site as yet in Malaysia that house the biodiversity of dominantly lowland tropical forests, especially that contains the four species of *Rafflesia*, 10 species of hornbills, the Asian elephant (*Elephas maximus*), the iconic Malayan tiger (*Panthera tigris jacksoni*), gaur (*Bos gaurus hubbacki*), tapir (*Tapirus indicus*), leopard cat (*Prionailurus bengalensis*), clouded leopard (*Neofelis nebulosa*), marbled cat (*Pardofelis marmorata*) and the Asiatic golden cat (*Catopuma temminckii*).

Regionally, it is comparable to:

The Ujong Kulon National Park, in Java, Indonesia which was inscribed in 1991. The above said World Heritage Site is both outstanding in its natural landscape and richness in tropical biodiversity too, namely the flora and fauna of the island of Java. However, it does not contain four species of *Rafflesia*, 10 species of hornbills, the Asian elephant (*Elephas maximus*), the Malayan tiger (*Panthera tigris jacksoni*), the Malayan gaur (*Bos gaurus hubbacki*), and the Malayan tapir (*Tapirus indicus*), as well as many other flora and fauna.

It is also comparable to Dong Phrayayen-Khao Yai Forest Complex, Thailand which is also rich in tropical biodiversity and containing many endangered and vulnerable species of animals and plants of Thailand and southern Asia. In the South-east Asian region currently there is a limited number of natural pristine areas of Outstanding Universal Value and some are also in the process of getting enlisted in the Tentative Lists. In this case the proposed Royal Belum State Park stands out as outstanding and very different from those above in having the endemic *Rafflesia*, 10 species of hornbills, the iconic Malayan tiger (*Panthera tigris jacksoni*), the Malayan gaur (*Bos*

*gaurus hubbacki*), the Malayan tapir (*Tapirus indicus*), leopard cat (*Prionailurus bengalensis*), clouded leopard (*Neofelis nebulosa*), marbled cat (*Pardofelis marmorata*) and the Asiatic golden cat (*Catopuma temminckii*).

Internationally, it can be compared to a number of World Heritage Sites of Outstanding Universal Value in the tropical areas of the world including the Kaziranga National Park (India), Gondwana Rainforests of Australia, Phong Nha-Ke Bang (Vietnam) and Iguacu National Park (Brazil) in term of its tropical biodiversity conservation of natural areas and wilderness.

However, the Iguacu National Park (Brazil) is of Outstanding Universal Values of their own especially for the New World.

That of Gondwana Rainforests of Australia, represents the site of outstanding universal value for the southern continent.

In the Old World those of India, Thailand, Vietnam and the Philippines are comparable to that of the Royal Belum State Park in term of outstanding universal value but they differ in the actual content of flora and fauna biodiversity.

The Royal Belum State Park in Malaysia represents another natural and extremely old tropical rainforest ecosystem of Outstanding Universal Value in term of the humid tropical ecosystem diversity and conservation of rich and diverse tropical flora and fauna in South-east Asia or Sundaland and also of the Asia-Pacific region natural property.