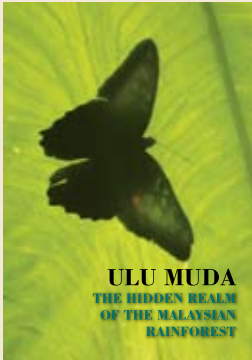




**ULU MUDA**  
**THE HIDDEN REALM**  
**OF THE MALAYSIAN**  
**RAINFOREST**




Front cover photo : A common Mormon butterfly behind a banana leaf

Text : Surin Suksuwan  
 Editor : Dionysius S. K. Sharma  
 Layout : Donovan Louis  
 Publication date : 2008  
 ISBN : 978-983-99601-7-4

Copyright © 2008 WWF-Malaysia  
 No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form without prior permission of the publisher, bona fide education and research use excepted.

Printed by:  
 Sasyaz Holdings Sdn. Bhd. (219275-V)  
 29, Jalan PJU3/48,  
 Sunway Damansara Technology Park  
 47810, Petaling Jaya  
 Malaysia

 Printed on Recycled Paper

Suggested citation:  
 S.Suksuwan. 2008. *Ulu Muda: The Hidden Realm of the Malaysian Rainforest*. WWF-Malaysia, Petaling Jaya.

This booklet was funded by the Malaysian Wildlife Conservation Fund and produced as part of WWF-Malaysia's project titled 'Strengthening the Protected Areas System of Peninsular Malaysia'.












	<b>Background</b>	pages 2 - 3
	<b>Geology</b>	pages 4 - 5
	<b>Hydrology</b>	pages 6 - 7
	<b>Vegetation</b>	pages 8 - 13
	<b>Fauna</b>	pages 14 - 21
	<b>People</b>	pages 22 - 25
	<b>Main Attractions</b>	pages 26 - 27
	<b>Practicalities</b>	pages 28 - 29
	<b>Contacts</b>	pages 30 - 31



Figure 1 : Location Map



For a forested area of its size and significance, Ulu Muda is surprisingly unknown to most Malaysians and the outside world in general. While it is not as famous as Taman Negara, Belum or Endau-Rompin, Ulu Muda is nevertheless an outstanding area for wildlife conservation and nature tourism. It was first proposed as a wildlife reserve by Stevens in a 1968 Colombo Plan study and subsequently proposed as a national park in the 3rd Malaysian Plan. The National Ecotourism Plan lists Ulu Muda as one of ten special places for ecotourism while the National Physical Plan identifies it as an Environmentally-Sensitive Area Rank I. Between the 1948 and 1989 most parts of Ulu Muda were classified as "restricted areas" due to the communist emergency. Since the security restrictions were removed, Ulu Muda has been gradually opened up for tourism activities. The most significant tourism development was the establishment of resorts along the shores of Pedu Lake in the mid-1990s.

The forests of Ulu Muda cover an area of approximately 160,000ha (about twice the size of Perlis) located within the districts of Baling, Padang Terap and Sik in the north-eastern corner of Kedah. Ulu Muda contributes about half of the forest cover of Kedah. Wildlife surveys have shown the area to have substantial populations of large mammals, especially elephants and tapirs, as well as a rich diversity of birds including large flocks of the globally-threatened plain-pouched hornbill. In addition to the Ulu Muda Forest Reserve, the area consists of a number of other forest reserves (see Table 1 below).

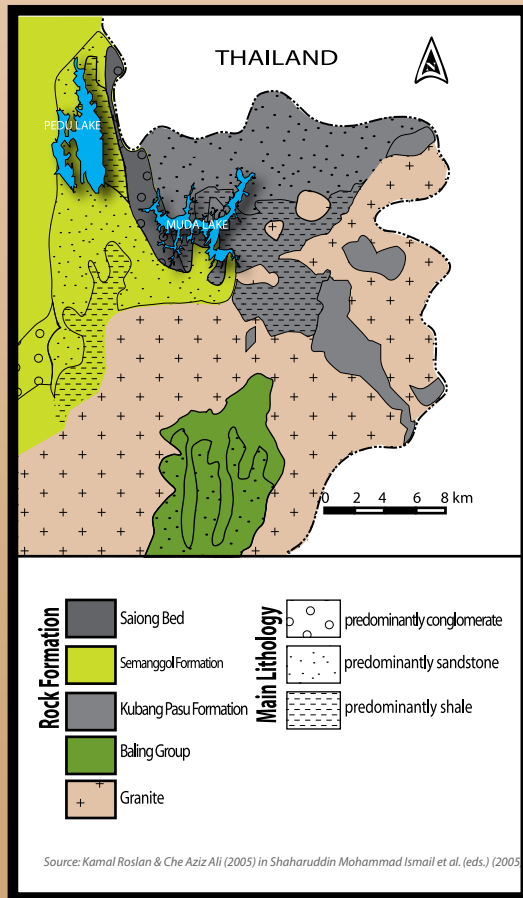
Table 1: Forest Reserves (FR) in the Ulu Muda area

Name of FR	Area (ha)
Ulu Muda FR	105,060
Pedu FR	15,299
Padang Terap FR	12,785
Proposed Bukit Keramat FR	10,226
Chabar Besar FR	8,827
Proposed Bukit Saiong FR	8,191
Chabar Kecil FR	1,184
Proposed Ulu Muda FR (Addition)	1,359
<b>Total</b>	<b>162,931</b>

There are three large man-made lakes within the Ulu Muda area, namely Muda, Ahning and Pedu, formed by the construction of three correspondingly-named dams that regulate water for domestic use and irrigation for most of Kedah, Penang and Perlis. Much of Ulu Muda has yet to be properly explored. A landmark scientific expedition in 2003 organised by the Forestry Department was the first concerted effort at investigating this hidden realm. This initial effort, although producing some impressive results, was merely a glimpse of what lies beneath a deep well of biodiversity. The Kedah State Government has recently expressed its intention to establish a state park at Ulu Muda and this is widely acknowledged as the way forward for biodiversity conservation and nature tourism at Ulu Muda.

Map illustration adapted from A Study of Nature Tourism Development in Ulu Muda / WWF 2002

Figure 2: Geological map of the Ulu Muda area



The geology of Ulu Muda is still not well studied and most of the available information was obtained through remote sensing rather than field surveys. Most of Ulu Muda is composed of hills of above 300m with moderately high peaks. The hills of Ulu Muda are part of the Kedah-Singgora Range which runs in a north-south alignment and forms part of the border of Kedah and Thailand.

In general, the western portion of Ulu Muda is of lower elevation compared to the eastern section. Low-lying plains of less than 200m elevation occur in the valleys of the Muda, Lasor and Bohoi rivers.

Most of the underlying rocks are sedimentary, but with granitic intrusions, comprising the Baling Group, the Kubang Pasu Formation, the Semanggol Formation and the Saiong Bed. The highest named peak is Bukit Genting Kundor (894m) while Gunung Batu Putih (821m) is a quartzite outcrop surrounded by granite.

The oldest geological formation is the Baling Group which is of Silurian-Ordovician origin (about 450 million years old) while the granitic rocks date from the late Triassic Period (about 250 million years ago).

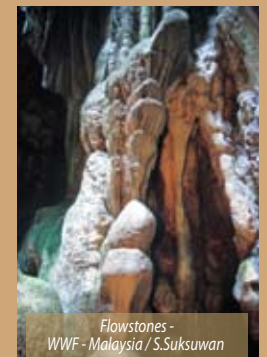
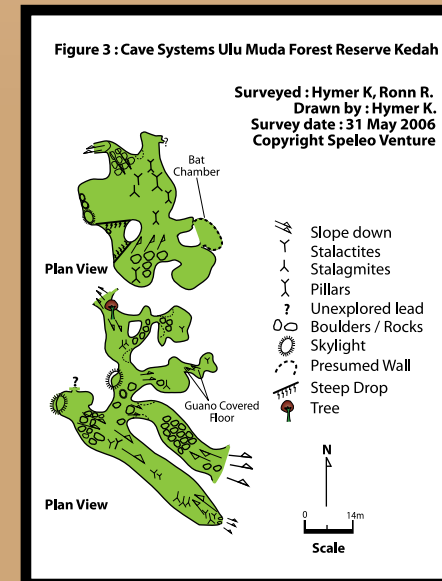
Tectonic activity during the late Triassic Period caused the sedimentary rocks to be uplifted from the seabed to form land. This uplifting process was caused by the intrusion of igneous material which later formed granitic rock in the Ulu Muda area. After land was formed, sedimentation occurred again, but this time along the river valleys. Weathering and erosion over a long period of time gave rise to the topography that can now be observed at Ulu Muda.

One of the most prominent geological features in the Ulu Muda area is Bukit Saiong, a distinctive sandstone hill separating Pedu Lake from Muda Lake. The peak of Bukit Saiong can clearly be seen from the Muda Lake. Of interest is the abundance of smooth white-coloured rocks along some of the streams that are tributaries to the Muda River. Sadly, these rocks, known as *batu lilin* (wax rocks), are now much depleted in the more accessible areas due to over-collection as a result of high demand by rock collectors who prize them for their aesthetic values.

An exciting new development is the recent discovery of limestone near the upper reaches of the Labua River. The presence of limestone in Ulu Muda is a significant find as it is possibly the only limestone area between Baling (to the south of Ulu Muda) and Yala Province in Thailand to the north and east. Although the limestone area does not appear to be very extensive, it increases the value of Ulu Muda as a conservation area as tropical limestone often harbours flora and fauna that are very restricted in their range.



Many limestone hills have unique species of herbaceous plants, snails and other invertebrates such as spiders that are found on no other limestone hill, even neighbouring ones. Most limestone hills also have caves. Rumours of caves in the Ulu Muda area have floated about for many years but this has only recently been confirmed. Two moderately large caves have been surveyed by Hymeir Kamarudin and Rohani Rahmani (Ronn) from the Malaysian Nature Society. The presence of limestone caves provides the opportunity to add caving as another exciting recreational activity for visitors to Ulu Muda.

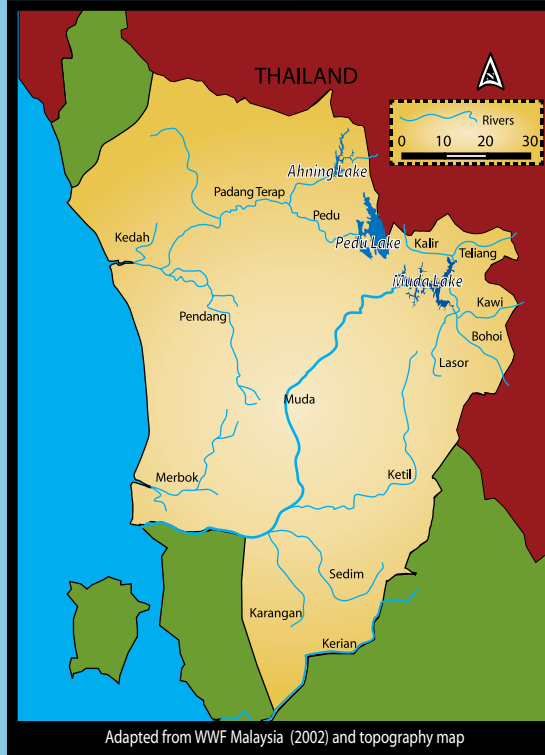


The northern part of Peninsular Malaysia, where Ulu Muda is located, has two distinct seasons – a wet season between the months of May and October coinciding with the south-west monsoon, and a dry season between December and March during the north-east monsoon (which brings rain to the east coast of Peninsular Malaysia). There is also a short dry season in the months of June and July. The average annual rainfall is about 2,000mm, with October usually the wettest month, and another minor peak in April/May.

The Ulu Muda forest forms the headwaters of the Muda River which is the largest river system in Kedah. The important tributaries of the Muda River, upstream of the Muda dam, are Sungai Lasor, Sungai Teliang, Sungai Bohoi, Sungai Kawi and Sungai Kalir. The Pedu, Ahning and Kedah are separate river systems from the Muda River but they also originate from the Ulu Muda area.

The largest of the three lakes in the Ulu Muda area is the Pedu Lake which covers an area of 15,500ha. Although Muda Lake is smaller (5,200ha) it has a larger catchment area and there is a 6.6km long tunnel that channels water from Muda Lake to Pedu Lake. Kedah and Perlis are prone to seasonal drought and water stress, and therefore the Ulu Muda forest plays an important role in regulating water flow to the Muda River and its tributaries.

Figure 4: Major river systems of Kedah



The Ulu Muda forest provides upstream protection of major rivers that supply water for domestic, industrial and agricultural use to the people in the northern areas of Peninsular Malaysia. Irrigation schemes that depend on the Ulu Muda catchment forest supply water to the largest rice-growing state in the country. This has earned Kedah its nickname of the “rice-bowl” of the Malaysia. The area under these irrigation schemes, including the Muda irrigation scheme, is responsible for about 40% of the country’s total rice production and directly benefits the livelihoods of 63,000 families.

The electronics and heavy industries sector centred at Penang Island, Seberang Perai and Kulim in southern Kedah are also highly dependent on the continuous supply of clean water originating from the Ulu Muda forest. Penang has one of the cheapest water rates in the country and this is one of the factors that makes it an attractive location for investments from multi-national companies.





The flora of Ulu Muda is still poorly studied. Prior to the 2003 scientific expedition there had been very few studies conducted on the plant diversity of the area. Even the intrepid botanists of the colonial era had more or less bypassed Ulu Muda. The main primary forest types in Ulu Muda are lowland dipterocarp forest, hill dipterocarp forest and upper hill dipterocarp forest. There are also pockets of riparian vegetation in the floodplains of main rivers, and limestone vegetation.

The forests of Ulu Muda contain elements of Thai-Burmese flora due to their proximity to southern Thailand. From studies carried out thus far, more than 450 species of flowering plants are known to occur at Ulu Muda and there is no doubt that the list will grow much longer as more areas are surveyed. The primary forest near the border with Thailand, for example, has yet to be explored botanically and neither has the recently-discovered limestone area. Limestone flora, in particular, is noted for its high level of endemism, with many species found on only one or a few limestone hills and nowhere else in the world.

The diversity of non-flowering plants in Ulu Muda is also likely to be high. From only one study on mosses, it was revealed that Ulu Muda harbours 107 species of mosses, equivalent to about 21% of the total for Peninsular Malaysia, 66 of which had never been recorded before from Kedah. The number of moss species recorded at Ulu Muda is higher than that recorded so far in Endau-Rompin (Johor) National Park, the Royal Belum State Park in Perak and even Taman Negara National Park (encompassing parts of Terengganu, Kelantan and Pahang).



Moss cover on fallen log - WWF - Malaysia / S.Suksuwan



Forest and river from the Kuala Labua Base Camp - WWF - Malaysia / S.Suksuwan

A substantial portion of the forest in Ulu Muda has been modified by human activities in relatively recent times. Parts of the Ulu Muda forest were logged between the 1960s and 1990s. Active logging is still going on in the Sungai Weng sub-catchment area where scientific research has been conducted to study the impacts of two different logging regimes – conventional logging and reduced impact logging. The Kedah State Government had made the commitment not to log in the catchment areas of the Muda, Pedu and Ahning dams so as to protect the water resources of Kedah.

The impoundment of the three dams altered the watercourses of the main tributaries of Sungai Muda, creating three large lakes and giving rise to seasonally-inundated floodplains at lower elevations. These floodplains are dominated by grasses, sedges and various species of creepers and climbers. It cannot be denied that logging and the impoundment of the three dams have altered a substantial portion of the natural landscape of Ulu Muda. In the logged areas, there is a scarcity of very large hardwood trees that are typical of primary forests. Under the canopy, the undergrowth is thick in disturbed areas, with many thorny plants and a dense tangle of climbers and vines. During certain times of the year, tree stumps are shrouded by creepers along the riverside, creating a landscape resembling a topiary garden. However, in the more open areas, the profusion of herbaceous plants following forest disturbance provides ample food for herbivores such as elephants, deer and tapir.

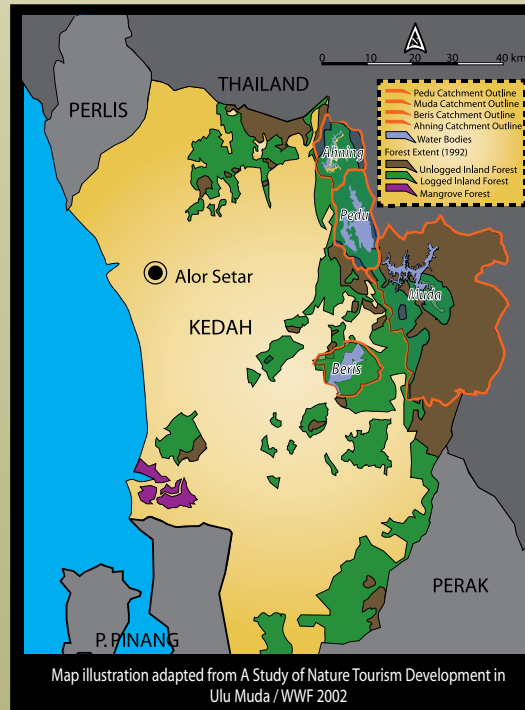
Not much is known of the impact caused by human disturbance in Ulu Muda as there is hardly any documentation on its state before these disturbances occurred. Much of what is known

about the biodiversity of Ulu Muda is gathered from studies conducted mainly at Kuala Lasor and Kuala Labua that are located at the transition zone between primary forest and logged areas, and regenerating logged forest, respectively. Very little is known about the deeper interiors of Ulu Muda, particularly the Sg. Teliang tributary and the area to the east of Sg. Lasor, where the forest has never been logged. These areas are the real hidden realm of Ulu Muda.



'Topiary' garden - WWF - Malaysia / S.Suksuwan

Figure 5: Forest cover and selected dam catchment areas in Kedah



Map illustration adapted from A Study of Nature Tourism Development in Ulu Muda / WWF 2002

While traveling upstream on a boat into the interior of Ulu Muda and walking along the many trails, it would be a mistake to only look out for animals. While tropical rainforests such as Ulu Muda may not have many large, showy flowers more typical of temperate climates, there is much to appreciate for those with a discerning eye. Some of the flora attractions of Ulu Muda are highlighted here.

Bungor trees (*Lagerstroemia* spp.) with large bunches of conspicuous purple or lilac flowers are frequently sighted along lakeshores and large rivers. Cultivated varieties of bungor trees are common in cities and towns as ornamentals.



Bungor flowers - WWF - Malaysia / S.Suksuwan



Kasai - Shamsul Khamis

The kasai tree (*Pometia pinnata*) with attractive reddish young leaves is common along river banks. Like the bungor, it is now widely used as an ornamental tree in urban landscaping. This tree belongs to the same family as the rambutan and the fruits are edible.

Along smaller river tributaries, during certain times of the year, gapis trees (*Saraca* spp.) are covered with bright orange flowers that are a visual feast in the sea of green.



Gapis flowering - S.Suksuwan



Catfish whiskers - WWF - Malaysia / M.F. Lee

One remarkable flowering tree that can sometimes be observed while walking in the forest is *Polyalthia cauliflora*, locally known as janggut keli ("catfish whiskers"). This tree, which is from the same family as the kenanga or ylang ylang, has flowers with long narrow petals that appear in clumps directly from its trunk.



Meranti Sarang Punai, a dipterocarp species found at Ulu Muda- Mariam Jutta

Large dipterocarp trees, many of which are economically important due to their valuable timber, dominate primary forest areas but are generally less conspicuous in logged-over areas. Ulu Muda harbours several dipterocarp species that are listed in the IUCN Red List as critically endangered including mersawa (*Anisoptera scaphula*), keruing (*Dipterocarpus dyeri*), keruing kesat (*Dipterocarpus gracilis*), keruing kerukup kecil (*Dipterocarpus hasseltii*), gerutu (*Parashorea stellata*), meranti batu (*Shorea guiso*) and meranti sarang punai (*Shorea parvifolia*).



Wild Rambai - S.Khamis

Ulu Muda has a rich diversity of wild edible fruit trees including kundang (*Bouea oppositifolia*), wild mangoes (*Mangifera caesia*, *M. griffithii* and *M. quadrifida*), wild rambai (*Baccaurea macrocarpa*, *B. parviflora*, *B. polyneura* and *B. reticulata*), perah (*Elateriospermum tapos*), chestnut or berangan (*Castanopsis inermis*), asam gelugor (*Garcinia atroviridis*), langsung (*Lansium domesticum*), wild rambutan (*Nephelium cuspidatum*) and kembang semangkok (*Scaphium linearicarpum*).

Even in the logged over areas of Ulu Muda, there are some trees that are truly astounding. Tualang trees (*Koompassia excelsa*), usually left untouched by loggers for superstitious and practical reasons, are the tallest in the tropical world and can reach up to around 80m in height. The massive limbs of these trees are usually decorated with large nests made by honeybees (see page 22).



Tualang - D J. Ong

One special feature of Ulu Muda, which is rarely seen elsewhere, is the large number of huge bungor trees (*Lagerstroemia* sp.) For those used to seeing their more slender counterparts in our towns and cities, it can be at first difficult to believe that they could grow to this size. Another common tree in Ulu Muda which can grow to gigantic proportions is the sesenduk (*Endospermum diadenum*) which has impressive buttress roots.

At Kuala Labua, the campsite is shaded by large kelumpang trees (*Sterculia foetida*) of more than 30m in height that shed their leaves during the dry season.



Bungor tree - WWF-Malaysia/S.Suksuwan

Medicine chest



Tongkat Ali - WWF-Malaysia/B.Perumal

It has been said that the rainforest is nature's drugstore and Ulu Muda is no different. Apart from the run-of-the-mill medicinal plants such as Tongkat Ali (*Eurycoma longifolia*), kacip Fatimah (*Labisia pumila*) and hempedu beruang (*Thottea grandifolia*) there are also less familiar medicinal plants, some of which have evocative names such as pecah kelambu ("mosquito net breaker", *Dracaena elliptica*), bujang hilir ("downriver bachelor", *Peliosanthes teta*) and susu ayam ("chicken's milk", *Paramigya lobata*).

A brief survey of the medicinal plants of Ulu Muda documented the presence of at least 56 species that were used by local communities in the surrounding areas. There are six main ways how plants are used in traditional medicine – boiled and drunk as a tonic, eaten raw, used in a bath, as poultice, rubbed directly and smoked like a cigarette. Some plants are used to treat more than one ailment – for example, kacip Fatimah is used for hemorrhoids, rheumatism and recovery after childbirth.



Sesenduk tree - WWF - Malaysia / S.Hogg





Asiatic elephants - WWF - Malaysia / S.Hogg



Clockwork unwinding,  
car alarms and maracas:  
the jungle at night

Jungle frogs and bugs  
sing of sex and violence  
lulling us to sleep

- Greg Normington -  
(Poet and novelist on Ulu Muda)

At dawn, the Ulu Muda forest reverberates with the chirping and melodious calls of birds and the mournful calls of gibbons. At night the sounds are more mysterious, many of them unidentifiable even by experienced naturalists. The dawn chorus and the night orchestra indicate that the forest of Ulu Muda is teeming with life. Other tell-tale signs include the numerous wildlife tracks, with the more commonly-observed ones made by the wild pig (*Sus scrofa*), the barking deer (*Muntiacus muntjak*), the sambar deer (*Cervus unicolor*), the Malayan tapir (*Tapirus indicus*), the Asiatic elephant (*Elephas maximus*), otters and wild cats.

Although large mammals may be the main attraction for Ulu Muda, the area is also rich in other wildlife. The diversity of amphibians and reptiles here is particularly high, and it also harbours many lowland forest birds that are becoming increasingly rare in the country. In addition, the freshwater fauna, including fish and aquatic insects, are well-represented in Ulu Muda. Insects, spiders and a multitude of other invertebrates occupy every imaginable niche in the varied habitats of Ulu Muda. Representatives of these different groups of animals contribute to the "jungle orchestra", ensuring that you will hear many animals on a typical visit to Ulu Muda, even if you don't get to see them all!



Sambar deer - WWF - Malaysia / S.Hogg

Ulu Muda has long been considered an important site for the conservation of large mammals. Theodore Hubback, who wrote the 1932 report, "The Wildlife Commission of Malaya", noted the abundance of wildlife at Ulu Muda. The critically endangered Sumatran rhinoceros (*Dicerorhinus sumatrensis*) has been reported to occur at Ulu Muda but more surveys are needed to confirm its presence.



The Malayan tiger - WWF - Malaysia / M. Kavanagh

A total of 111 species of mammals have so far been recorded for Ulu Muda, including 50 species of bats. Large mammals that have been recorded here include the Asiatic elephant, gaur or seladang (*Bos gaurus hubbacki*), Malayan tapir, Malayan tiger (*Panthera tigris jacksoni*) and Malayan sun bear (*Helarctos malayanus*).



Tapir caught on camera at Ulu Muda - WWF - Malaysia

There is also a possibility that the critically endangered and extremely rare Sumatran rhinoceros (*Dicerorhinus sumatrensis*) may still be found in Ulu Muda. Seven of the ten species of primates found in Peninsular Malaysia are present in Ulu Muda, namely the white-handed gibbon (*Hylobates lar*), agile gibbon (*Hylobates agilis*), dusky leaf monkey (*Trachypithecus obscurus*), banded leaf monkey (*Presbytis melalophos*), long-tailed macaque (*Macaca fascicularis*), pig-tailed macaque (*Macaca nemestrina*) and slow loris (*Nycticebus coucang*).

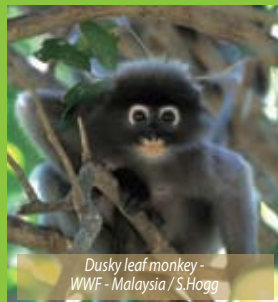


Banded langur - WWF - Malaysia / S.Hogg

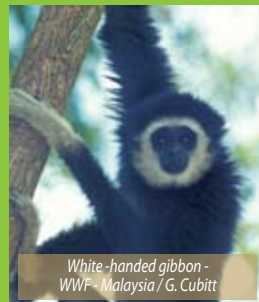
Ulu Muda is one of only two places in Peninsular Malaysia (the other being Belum-Temengor) where the white-handed gibbon and the agile gibbon exist side-by-side. Sightings of the stump-tailed macaque (*Macaca arctoides*) have been reported and if this rare monkey is proven to occur in Ulu Muda, it would be only one of the two such sites in Malaysia (the first being the Perlis State Park) where this primate can be found. Two rare species of rodents, the greater bandicoot rat (*Bandicota indica*), and the lesser bandicoot rat (*Bandicota bengalensis*) are believed to occur in Ulu Muda.



Leopard cat caught on camera at Ulu Muda - WWF - Malaysia



Dusky leaf monkey - WWF - Malaysia / S.Hogg



White-handed gibbon - WWF - Malaysia / G. Cubitt

A saltlick is any mineral spring or ground containing or bearing salt or any other mineral, the consumption of which is conducive to the health or well being of wild animals. The diet of most herbivores is generally poor in minerals and therefore saltlicks play an important role in improving their digestion. Saltlicks are also sites with high tourism potential because of the relatively high probability of wildlife sightings in their vicinity. This potential has been exploited in many locations around the world (including Taman Negara National Park in Malaysia).



Sira Air Hangat - WWF - Malaysia

There are numerous saltlicks in the Ulu Muda area, some with descriptive names – for example, Sira Air Hangat (“Hot Spring Saltlick”), Sira Kawi, Sira Kumbang (“Beetle Saltlick”), Sira Keladi (“Taro or Yam Saltlick”) and Sira Bungor – while others remain un-named. Sira Air Hangat is the most interesting and frequently visited saltlick in the Ulu Muda due to the rare combination of an active hot spring and saltlick. This saltlick is approximately 48m long and 24m wide. During a rapid assessment conducted by WWF-Malaysia in 2005, the water temperature at the hot spring was recorded to be about 60°C. Animals known to visit saltlicks at Ulu Muda include the Asian elephant, the Malayan tapir, deers and wild pigs.



Sira Air Hangat – Ronn



Vapour rising at Sira Air Hangat – Ronn



Rhinoceros hornbill, one of nine species of hornbills found at Ulu Muda – WWF-Malaysia/S.Hogg

Ulu Muda is a haven for discerning birders – so far 175 species of birds have been recorded in the area, many of which are confined to lowland forests that are becoming increasingly rare in Malaysia. Ulu Muda’s significance as a conservation site for birds has led to its listing as an Important Bird Area (IBA) by Birdlife International and it’s Malaysian partner, the Malaysian Nature Society.

Nine of the ten species of hornbills occurring in Peninsular Malaysia have been recorded at Ulu Muda, making it among the best places for hornbill sightings. Large flocks of the plain-pouched hornbill (*Aceros subruficollis*) and the wreathed hornbill (*Aceros undulatus*) were first observed in Ulu Muda by members of the Malaysian Nature Society in July 2004 at Kuala Labua and Kuala Kawi. In a single evening, as many as 1,223 birds were sighted at Kuala Kawi.



Wreathed hornbill – WWF-Malaysia/M.Kavanagh

Prior to this, the only other site in Malaysia where large flocks of these two species are known to occur is the Temengor Forest Reserve. The plain-pouched hornbill is listed in the IUCN Red Data Book as vulnerable to extinction. Other globally-threatened bird species found in Ulu Muda include the Malaysian peacock-pheasant (*Polyplectron malacense*), masked finfoot (*Heliopais personata*), blue-banded kingfisher (*Alcedo euryzona*), and straw-headed bulbul (*Pycnonotus zeylanicus*). Ulu Muda is the only confirmed breeding site in Peninsular Malaysia of the hooded pitta (*Pitta sordida muelleri*) and is the northern-most location for the occurrence of the rare dusky eagle owl (*Bubo coromandus*).



Great Argus pheasant caught on camera trap at Ulu Muda –WWF-Malaysia



Straw-headed bulbul – WWF-Malaysia



Masked finfoot- WWF- Malaysia /S.Hogg



Tiger shrike photographed at Ulu Muda – WWF-Malaysia/S.Hogg



Reticulated python - WWF-Malaysia/S.Hogg



Great anglehead lizard - WWF - Malaysia / S.Hogg



Theloderma lacin - Daicus Belabut



Spiny hill turtle - WWF - Malaysia / S.Suksuwan

Ulu Muda is particularly rich in reptiles and amphibians partly because it represents the southern limits for many species of mainland Asia. Surveys have so far shown that there are more species of amphibians occurring here than in Endau-Rompin National Park, with over 50 species recorded in the Weng sub-catchment area of Ulu Muda, compared to 27 for Endau-Rompin. One of these species is an entirely new species, tentatively named *Theloderma lacin*, which has also been found in southern Thailand and Taman Negara.

So far, a total of 63 species of reptiles have been recorded in the area comprising five turtle species, 25 lizard species and 33 species of snakes. The most commonly encountered reptiles in Ulu Muda are the common skink (*Mabuya multifasciata*), the great anglehead lizard (*Gonocephalus grandis*) and black bearded gliding lizard (*Draco melanopogon*).

The presence of large lakes and many pristine rainforest streams and rivers in Ulu Muda provides a diversity of habitats for freshwater fish. A preliminary study on the fishes of Lasor River showed that there is moderate diversity comprising a mixture of Peninsular Malaysian species and those more commonly found in Indochina. There is potential for the introduction of sport fishing in Ulu Muda as an additional source of tourism revenue for the state government. Important food and aquarium fish found in Ulu Muda include tengas (*Neolissocheilus soroides*), sebarau (*Hampala macrolepidota*), baung (*Hemibagrus nemurus*) and ratu (*Devario regina*).



Ikan Tengas - Amiruddin Ahmad



Ikan Ratu - Amiruddin Ahmad

Although they may not be as spectacular as larger animals to most nature tourists, invertebrates (animals without backbones) are the most dominant animal life form on the planet, both in terms of abundance and diversity. They function as pollinators, parasites of other animals, scavengers, decomposers and seed dispersers, and help improve soil conditions. Studies on the invertebrates of Ulu Muda have just begun but the limited data available indicates that the area has considerable diversity of insects, spiders and other members of this varied group.



Lantern bug - WWF - Malaysia / S.Hogg

For example, a preliminary study on the wasp fauna of Ulu Muda carried out during the 2003 scientific expedition indicates that there are more subfamilies of the brachonid wasps compared to Danum Valley in Sabah. Five new species of cicadas were also discovered during the scientific expedition.

One of the most distinctive and easily-spotted insects in Ulu Muda is the lantern bug (*Pyrops* spp.). This creature has a strange trunk-shaped extension on its head topped with a red "bulb" at the end, hence its name. It usually appear in pairs on the lower trunk of trees and has been observed several times at the Kuala Labua base camp. Butterflies, moths and stick insects are other attractive insects to look out for at Ulu Muda.

Spiders are among the most frequently encountered invertebrates and Ulu Muda is a fertile ground for spider enthusiasts. Orbweb spiders (Order Araneidae) spin large circular webs in which they lie waiting for their unsuspecting victims. Other spiders, such as the tarantulas (Family Theraphosidae), do not make webs but rely on their speed and venom to catch their prey.



Damselfly - WWF - Malaysia / S.Suksuwan

At the rivers and water-logged areas, aquatic insects abound, including dragonflies and damselflies (Order Odonata), mayflies (Order Ephemeroptera) and caddisflies (Order Trichoptera). These insects spend at least part of their life cycle in the water where they serve as an important source of food for fishes and waterfowl. When they emerge from the water, they are eaten by insectivorous birds and frogs.



Scorpion - WWF - Malaysia / S.Hogg



Huntsman spider WWF - Malaysia / S.Hogg

Any discussion on the invertebrates of Ulu Muda would not be complete without mentioning leeches. Rest assured, these blood-sucking creatures are present in great numbers here. Although a major nuisance to many, they do not carry any serious diseases and are mostly harmless. The sooner you accept them as a natural part of the landscape, the sooner you will focus on enjoying your 21 visit to Ulu Muda.

**Kedah State Forestry Department :**

**Jabatan Perhutanan Negeri Kedah**

Tingkat 8, Bangunan Sultan Abdul Halim  
Jalan Sultan Badlishah  
05000 Alor Setar, Kedah  
Tel: +604-7333844  
Fax: +604-7310610

**Pejabat Hutan Daerah Kedah Tengah**

08000 Sungai Petani, Kedah  
Tel: +604-4212835  
Fax: +604-4252835

**Department of Wildlife and National Parks (Peninsular Malaysia):**

**Jabatan PERHILITAN Kedah**

Tingkat. 9, Wisma Persekutuan,  
Jalan Kampung Baru,  
05664 Alor Star, Kedah  
Tel: +604-7302245  
Fax: +604-7342012

**Department of Fisheries:**

**Pejabat Perikanan Negeri Kedah**

Tingkat 5, Wisma Persekutuan  
Jalan Kampung Baru  
05000 Alor Setar, Kedah  
Tel: +604-7342135, 7342137  
Fax: +604-7304623

**Kedah State Tourism Action Council :**

**Majlis Tindakan Pelancongan Negeri Kedah**

Kompleks Pelancongan Negeri Kedah  
Jalan Raja  
05000 Alor Star, Kedah.  
Tel: +604-7351030, 7328296  
Fax: +604-7327914

**MADA & MADA Resort :**

**Muda Agricultural and Development Authority (MADA)**

Ampong Jajar  
Lencong Barat  
05990 Alor Setar, Kedah  
Tel: +604-7728255  
Fax: +604-7722667

**Further Reading**

Buchmann, S., D. Cohn & P. Mirocha. 2007. *The Bee Tree*. Cinco Puntos Press, El Paso, Texas, USA.

Chong, M.H.N., S.H. Tang & S. Suksuwan. 2005. *Management Recommendations for Wildlife Saltlicks with Special Reference to Sira Air Hangat at Ulu Muda Forest Reserve, Kedah*. WWF-Malaysia report produced under Project MY0163c.

McLeod, D.S. & Norhayati Ahmad. 2007. A New Species of *Theloderma* (Anura: Rhacophoridae) from Southern Thailand and Peninsular Malaysia. *Russian Journal of Herpetology*. Vol. 14 (1): 65-72.

Phang, F.K. 2004. The Plain-pouched Hornbills of Ulu Muda. *Pencinta Alam* (December): 5.

Shaharuddin Mohammad Ismail, Che Hashim Hassan, Mohd. Puad Dahalan, Jalil Md. Som, Norhaidi Yunus & A. Latiff. 2005. *Hutan Simpan Ulu Muda: Pengurusan, Persekitran Fizikal dan Biologi*. Jabatan Perhutanan Semenanjung Malaysia, Kuala Lumpur.

Stevens, W.E. (Colombo Plan ecologist). 1968. *The Conservation of Wild Life in West Malaysia*. Unpublished report by the Office of the Chief Game Warden, Federal Game Department. Ministry of Land and Mines, Seremban, Malaysia.

Wong, S. L. 2007. *Telling the Hunter's Tale*. The Star newspaper (Malaysia) 4 March.

Wong, S. L. 2007. *Collecting from 'Hitam Manis'*. The Star newspaper (Malaysia) 4 March.

WWF-Malaysia. 2002. *A Study of Nature Tourism Development in Ulu Muda, Kedah Darulaman: Formulation of a Spatial and Conceptual Guideline for the Sustainable Nature Tourism Development of the Forests of Ulu Muda*. A report produced by WWF-Malaysia for the State Government of Kedah, Malaysia.

Yeap, C.A., A.C. Sebastian and G.W.H. Davison (compilers). 2007. *Directory of Important Bird Areas in Malaysia: Key Sites for Conservation*. Malaysian Nature Society, Kuala Lumpur. (MNS Conservation Publication No. 8).

# ULU MUDA

## THE HIDDEN REALM OF THE MALAYSIAN RAINFOREST



In the northern end of Peninsular Malaysia bordering Thailand, there is a relatively unknown expanse of lush rainforest almost twice the size of Singapore, and accessible mainly by boat. Upon entering this ancient forest, the visitor enjoys a feeling of seclusion rarely felt elsewhere in this increasingly crowded planet. In the rainforest of Ulu Muda there are rivers, lakes, caves and scattered saltlicks, including one that spews steamy hot sulphuric water that provides much-needed minerals for wild animals.

This book gives a glimpse of what Ulu Muda has to offer as a key site for wildlife conservation and nature tourism. Its geology, hydrology, flora and fauna are briefly introduced with a generous dose of colourful photos and maps, and useful nuggets of information for the would-be visitors.

Ulu Muda has so far escaped the attention of even well-travelled nature enthusiasts but for those who make the extra effort, they are usually rewarded with soothing green vistas, a free performance by the “jungle orchestra”, and for the very lucky, a glimpse of the wild inhabitants of the forest.

