

Discovery

of the critically endangered
Bruguiera hainesii

(Berus Mata Buaya) in Pulau Layat,
Setiu Wetlands, Terengganu

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Bruguiera (Rhizophoraceae) is the largest genus in the group of mangrove tree families in Malaysia. It comprises five species, i.e., *Bruguiera gymnorrhiza*, *B. cylindrica*, *B. sexangula*, *B. hainesii* and *B. parviflora*. *Bruguiera* trees are commonly found in association with *Rhizophora* species in areas away from the mangroves.

Setiu Wetlands is located in the north of Terengganu and is a part of the Setiu-Chalok-Bari Basin. Setiu Wetlands has nine natural ecosystems, including beach vegetation, coastal forest, mudflats, riparian vegetation, *Melaleuca* freshwater swamp forest and mangrove forest (Nakisah & Fauziah, 2003). The mangrove forest in Setiu harbours *Bruguiera gymnorrhiza*, *B. cylindrica* and *B. sexangula*. We recently discovered another species, i.e., *B. hainesii* in Pulau Layat (Fig. 1). This discovery brings a new record to Terengganu and the East Coast of Peninsular Malaysia. The earliest record for *B. hainesii* in Malaysia was made by Watson in 1928; he noted that it is the rarest among the four species of Malaysian *Bruguiera*. *Bruguiera hainesii* was known then in Selangor and Negeri Sembilan (Turner, 1995) and later reported as a new record for Singapore (Sheue *et al.*, 2005). Four years later this species was recorded in Sg. Santi, Sg. Pulai, Sg. Belungkor and Sg. Redan in Johor and Sg. Miang,

Pahang (Razali *et al.*, 2009). More recently this species was found in Taman Negara Pulau Kukup and Taman Negara Tg. Piai, Johor (Tan *et al.* 2012).

In Pulau Layat, only one *B. hainesii* tree was found. It has a diameter of approximately 16.5 cm and is about 12 m in height. This species is easily recognized in the field by the abundant lenticels on its stem, which contributes to its local name in Malay, Berus Mata Buaya (Crocodile-eyed Brush) (Fig. 2). Its canopy emerges above the canopy of *Hibiscus tiliaceus* (Malvaceae), *Pouteria obovata* (Sapotaceae), *Xylocarpus granatum* (Meliaceae), *Excoecaria agallocha* (Euphorbiaceae) and *Heritiera littoralis* (Sterculiaceae). The tree has been mechanically damaged (Fig.2) but the abundance of saplings and seedlings around the mother tree indicates natural regeneration (Fig. 2). *Bruguiera hainesii* is currently listed as Critically Endangered (CR) under the IUCN Red List. Considering the condition of the solitary tree and that there is no legal protection of Pulau Layat or Setiu Wetlands mangroves, *ex situ* conservation is considered to be the best option to conserve this species. The occurrence of an individual tree of *B. hainesii* in Pulau Layat is not uncommon as Sheue *et al.* (2005) also reported that only two trees of this species were found in Singapore in 2003. With more intensive sampling efforts in Setiu Wetlands we hope that more trees will

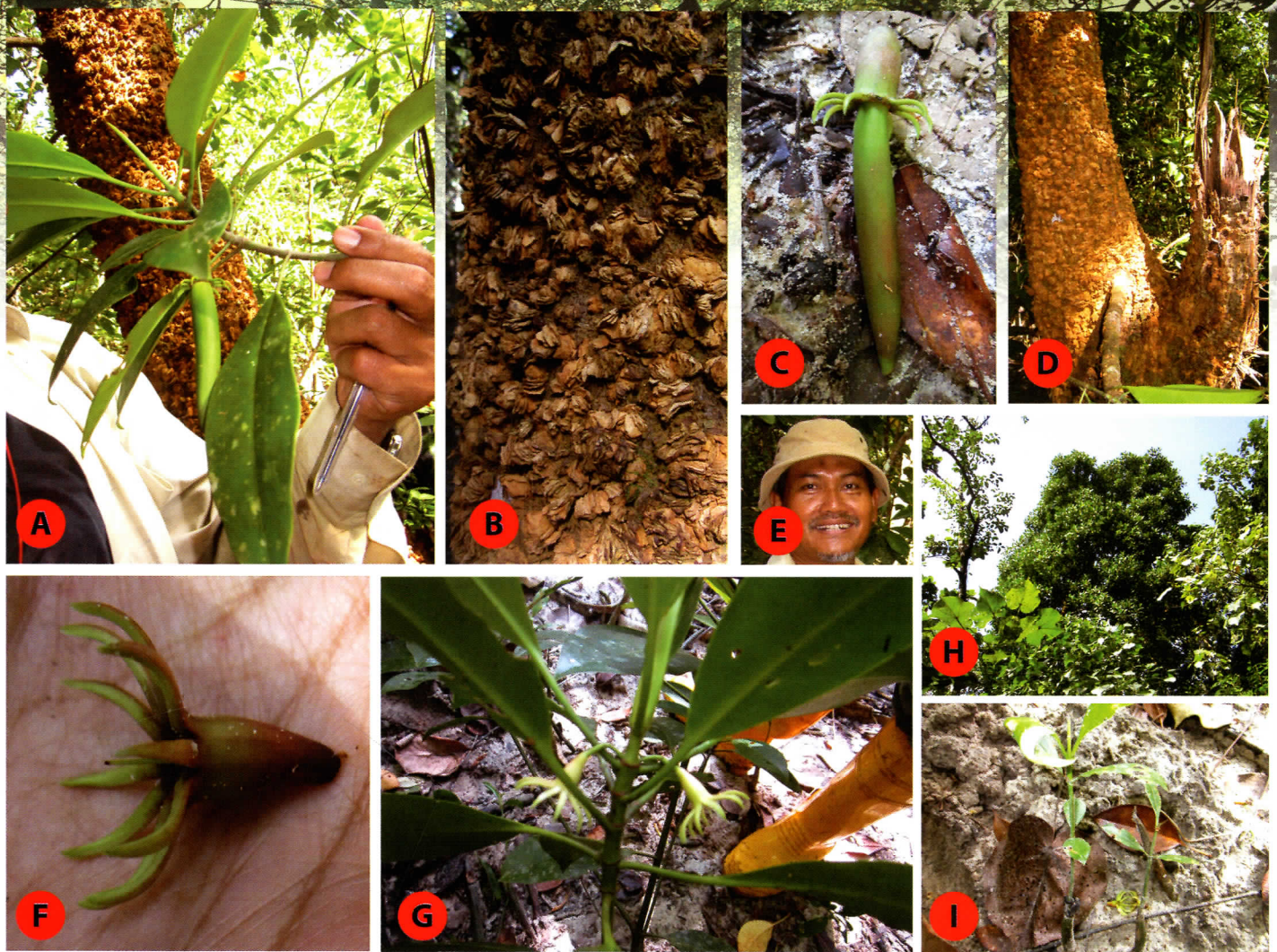


Fig. 2. *Bruguiera hainesii* in Pulau Layat, Setiu Wetlands, Terengganu, A: shoot; B: abundant and prominent lenticels on the stem; C: mature propagule; D: broken branch; E: Muhammad Razali S. confirmed the identification; F: calyx; G: sapling; H: canopy emerging above other species; and I: seedlings.

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In memory of

Uncle Chan

CHAN YEE CHONG

Para-taxonomist *par excellence*

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Mr. Chan Yee Chong, affectionately known by all at the Forest Biodiversity Division as Uncle Chan, passed away peacefully on the 29th of March 2013 after a short spell of illness. He is survived by his wife, Mdm. Loh Amoi and four children, Ms. Chan Chooi Fang, Ms. Chan Chooi Wen, Ms. Chan Mei Xing and Mr. Chan Kean Yeow and a granddaughter Tan Lilian.

He began work at FRIM, then known as Forest Research Institute (FRI), on 1 May 1967 as a Lab Assistant in the Botany Unit. Here he was constantly surrounded by plant specimens both at the Kepong Herbarium (KEP) and in the forest. Eleven years later he was promoted to Research Assistant, serving shortly at Silviculture Unit before being transferred to Forest Ecology, a position he held until his retirement in December 2002. In 1996, he was promoted from Q8 to Q7. During his years of service, he had received three awards, i.e., *Anugerah Khidmat Cemerlang FRIM 1991 (Kumpulan)*, *Anugerah Khidmat Cemerlang FRIM 2001 (Individu)* and the national level award *Pingat Pangkuan Negara 2002*.

Uncle Chan had spent 45.5 years, to the very day he passed away, dedicating his life to botanical research at FRIM. His demise is a great loss to the fraternity of Malaysian botany as he had a truly amazing knowledge of the Malaysian flora and through that knowledge made immense contributions to botanical research and conservation of threatened plants. His most significant contributions were the discovery of new species and the re-discovery of populations of many species thought to have been extinct. He is highly respected and as an honour and tribute to his tireless contributions, two plant species which he discovered were named after him, i.e., *Barringtonia chania* (Lecythidaceae) and *Vatica yeechongii* (Dipterocarpaceae), which were named in 1974 and 2004, respectively.

In his early years of employment, through his daily work at KEP, he developed a keen interest in plant identification and diversity and this was the driving force that sustained him to his very last day. As a staff member of the Botany and Forest Ecology Units, he pursued this interest with such diligence that before long, he became renowned as the “living dictionary for botanical identification”. Field trips with him were always amazing – he rattles off the name of the tree just by looking at its trunk and studying a dried leaf collected from the ground. To confirm this, he would proceed to inspect a fresh leaf and then launch into a lengthy explanation telling us about the characters that defined the species. In the office, one would be absolutely certain of getting a scientific name for a small sterile plant twig. Such were his keen powers of observation and his depth of knowledge.....



In 1985, FRIM in collaboration with the National Science Foundation and Smithsonian Tropical Research Institute embarked on a long-term tree population study in Pasoh Forest Reserve in Negeri Sembilan. A 50 ha forest plot was established and all plants above 1 cm diameter had to be measured and named. This provided Uncle Chan the golden opportunity to pursue his interest and through his keen powers of observation and innate memory skills, he was able to define, differentiate and remember characters that are unique to a particular species. His constant field work in Pasoh and other forest areas in the peninsula provided him the exposure he needed to mentally document the degree of variability exhibited by a single plant species. I, and I suspect many others too, had often pressed him, or argued about a name that he had given. Needless to say, I often had to agree with his explanation and concede defeat. Such was the depth of his knowledge on plant variation, an ability that no one in FRIM has yet matched or acquired. It was therefore not at all surprising that he was able to recognise tree species that were likely new to science or species that are very rare. In the course of his ten years' contract working on the conservation of threatened dipterocarps, he had single-handedly discovered ten species thought to have been extinct, a new record-*Dryobalanops beccarii*, at least two new species of *Vatica*; made thorough searches for each and subsequently allowed the remaining team to map the distribution. The conservation group was then able to furnish the information to the Forest Department and other relevant stakeholders, thus allowing conservation action plans to be implemented. He was on a constant look-out for interesting characters and through this, he discovered new species (mentioned above) and re-discovered species thought to be extinct, e.g., *Magnolia pahangensis* (Magnoliaceae), including scores of others. He was, in short, instrumental in expanding the knowledge base of Malaysia's rich plant diversity.


When he retired in December 2002, it became imminent that FRIM would lose this living storehouse of knowledge. At the same time, we began a project on the conservation of threatened plants. We brought him on board with one simple request that he was to look for rare Dipterocarps and other rare species. Since then, he had been the project's field anchor, establishing a solid foundation that eventually led to many conservation successes. The rest of his years with the conservation group are now history.



His noteworthy contributions include the following:

- *Diplodiscus* sp. nov. (Malvaceae) recently collected from Jerangau Forest Reserve (FR), Terengganu.
- At least two new species of *Vatica* (Dipterocarpaceae) awaiting description, one from Jerangau and another from Kledang Saiong FR in Perak.
- *Barringtonia longipes* (Lecythidaceae). This new record (FRI 65056) was collected in July 2009 along a buffer zone by a stream in Compt 95, Jerangau FR.
- *Magnolia pahangensis* (Magnoliaceae), Thought to be extinct at its type locality, Fraser's Hill, Uncle Chan rediscovered the population in 2010. Another population was discovered earlier, in 2009, some 200 km northeast, in Terengganu's Tembat FR.
- Population of *Pentace* sp. A (Malvaceae) was discovered from Bintang Hijau FR in Perak. This is a new locality record.
- Population of *Pentace* sp. B (Malvaceae) was rediscovered in Rompin, Pahang.
- *Diploknema sebifera* (Sapotaceae). This very rare species is known in Lenggong and Sungai Siput in Perak and Bukit Among in Kelantan. Uncle Chan found it at G. Jebak Puyuh in central Pahang. This massive tree is a typical Sapotaceae and to the untrained eye, is easily mistaken as *Palaquium*.
- A population of *Hopea pierrei* (Dipterocarpaceae) was discovered at the limestone hill of Gunung Rapat in Ipoh, Perak. Less than five species of the Peninsular Malaysian dipterocarps are known to inhabit limestone hills hence finding this population is indeed a rare and valuable one.
- A population of the rare *Dipterocarpus acutangulus* (Dipterocarpaceae) in Bukit Tangga FR in Negeri Sembilan.
- Several populations of the rare *Vatica scortechinii* were discovered in Kledang Saiong, Perak.

I in particular and staff members from the Natural Forest and Forest Biodiversity Divisions who had the opportunity to work with him are grateful for that opportunity and for his friendship and mentorship. We will remember his easy disposition tempered with a big heart, broad grins and guffaws of laughter, his eagerness to share his knowledge, his dedication and above all his zest and appreciation for nature and the plant world. We shall miss him very dearly.



Hoya lasiantha (Apocynaceae) – rare or common?

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Flowers of *Hoya lasiantha* with bright-orange reflexed corolla and pale orange corona or horn appendages.

Hoya is named after the botanist Thomas Hoy (c.1750–1822), who was a gardener to the Duke of Northumberland in the United Kingdom. Previously placed in Asclepiadaceae, *Hoya* is mostly distributed in the warm regions of the world and there are 26 species in Peninsular Malaysia, all of which are epiphytic climbers (Turner, 1995). Hoyas are popular ornamental plants and are commonly known as wax plants. They have peculiar and attractive scented flowers borne in umbels. The plant exudes milky sap when cut.

Recently I chanced upon a flowering specimen of *Hoya lasiantha* in Bukit Lagong, Selangor. In Peninsular Malaysia, *H. lasiantha* is recorded from the lowland and hill forests in Selangor and Perak, and is considered rare (Rintz, 1978). It has been confused with *H. praetorii* because the two look similar except that the latter is smaller in size and has pinkish corona or horn appendages. Because of the confusion, *H. praetorii* has previously long been sold as *H. lasiantha* in the horticultural trade. *Hoya praetorii* is indigenous to Indonesia whereas *H. lasiantha* is distributed in South Thailand, Peninsular Malaysia, Sumatra, Borneo and Java.

Quick checks in the Kepong (KEP) and Singapore (SING) herbarium databases show that in Peninsular Malaysia, *H. lasiantha* is known in Selangor (Ulu Gombak and Semenyih) and Johor (Labis and Endau-Rompin). The latest collection was from Tembat in Hulu Terengganu in 2009 and the species may be more common in the peninsula than previously thought of. The reason it is rarely collected could be because it is not easily spotted, as the epiphytic plant usually grows in the canopy. Because of its perceived rarity, ardent collectors of *Hoya* have made this species a must in their wish list.



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Snowy Caterpillar feasting on Merbau foliage - A New Record

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'Merbau' or *Intsia palembanica* Miq., also known as *Anglai* or *Alai* in Peninsular Malaysia (Soerianegara & Lemmens 1994), is a highly priced wood, with a current export royalty of RM270/m³, the same rate as that of the Bornean Ironwood, *Eusideroxylon zwageri* (Anon. 2012). This tree of the Leguminosae family can grow up to 45 m in height, with buttresses up to 7 m high and a diameter exceeding 100 cm. It is widely distributed in Borneo and is also found in India (Andamans), Burma, Thailand and Malesia. Merbau generally grows in the coastal areas, at the edges of seasonal swamps in the lowland forests but sometimes it is found inland, up to 900 m above sea level (Ding Hou 2000). The timber is heavy and fairly durable, much sought after for flooring, furniture and fine furnishings.

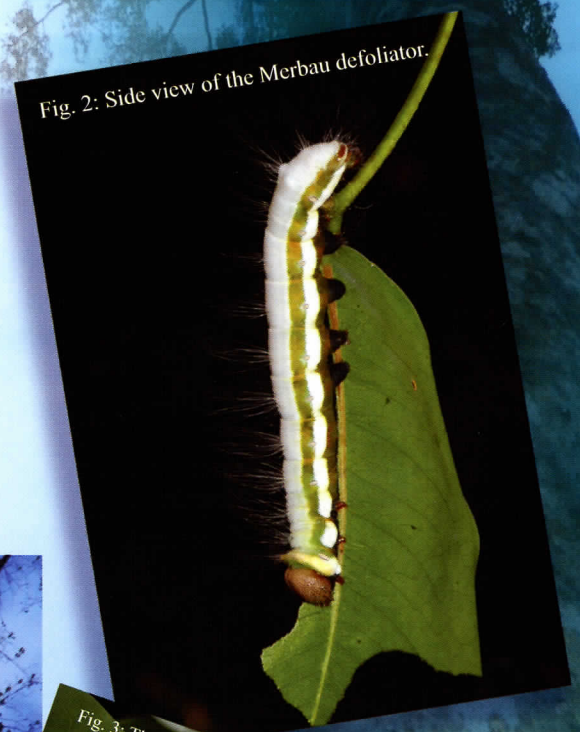


Fig. 2: Side view of the Merbau defoliator.



Fig. 3: The fake eyes of the caterpillar are prominent.

Fig. 1: A towering 39 m tall *Intsia palembanica* tree.

While surveying some Merbau trees at Sepilok, a caterpillar was found feasting voraciously on the ovate leaflets. The aforesaid culprit is dressed up in a “white, snowy jump suit” and loosely covered with long white hairs. It has a lateral yellowish green band on both sides of the body where the spiracles were located. The fake eyes made up by a pair of huge rounded structures gives it a menacing appearance, presumably to ward off intruders. When disturbed, it often lifts the posterior part of its body, which is likely to be a defensive posture. In contrast to the other parts of its body, the prolegs are bluish black in colour. The caterpillar was monitored in captivity in a plastic container lined with tissue and was fed with leaves of its host plant. The mature caterpillar measured about 8 cm in length. A day before it pupated, the white colouration faded and several yellow spots became strikingly prominent. On the first day, the pupa was green but later turned dark brown, measuring about 3.5 cm in length. After 15 days of pupation, the adult moth emerged. Based on Holloway (1983), it is clearly a *Phalera sundana* (Lepidoptera: Notodontidae). The moth has a wing span of 7 cm and a body length of 4 cm. Distributed in southern Thailand, South East China, Sundaland and the Philippines (Holloway, 2011), it is common in the lowland rain forests, including alluvial and kerangas forests.

To date, only *Cossus chloratus* (Lepidoptera: Cossidae) was recorded feeding on the foliage of *Intsia palembanica* (Robinson et al., 2001); no other information on Merbau defoliator is available. Hence, this defoliation observation is a new record.

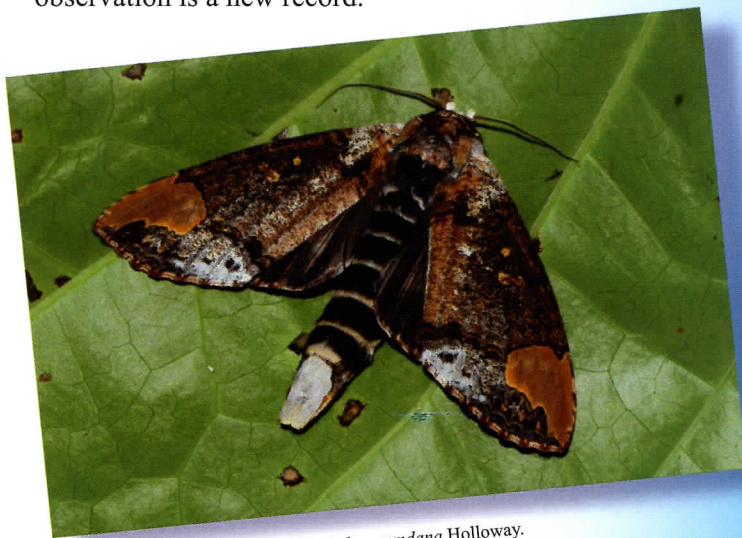


Fig. 6: The newly emerged moth, *Phalera sundana* Holloway.



Fig. 4: The mature caterpillar before pupation.



Fig. 5: The dark brown pupa.

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