

Why Hunt Mushrooms in Malaysia ?

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Mushrooms (Fungi) refer to heterotrophic cryptogams whose biologically active mycelium colonises and/or exploits various live and dead substrates. The majority of the annual, short-lived mushrooms (in contrast to the perennial bracket fungi) taxonomically belong to the agarics, boletes and puff balls and are readily recognised by the naked eye. According to their mode of life, three ecological groups are distinguished: parasites (attacking leaves, bark, wood, roots, etc.), saprobes (found on rotting organic matter such as leaves, bark, wood), and (ecto-)mycorrhiza forming fungal species which are symbionts with roots of live, perennial plants, in particular, forest trees.

There are several reasons for the extraordinary richness of macrofungi in Malaysia. Apart from the past geotectonical events reported for this part of South East Asia, Malaysia's equatorial location and its ecosystems are refuges for fungal species with a pantropical distribution. In addition, the Malaysian Peninsula is at the intersection of migration routes within the Indo-Malayan region and the only transit station for plants and fungi recorded today both in the northern and southern hemispheres.

The Indo-Malayan region is renowned as one of the world's most important "biodiversity hot spots". In spite of this, the number and the taxonomy of mushrooms occurring in Peninsular Malaysia and Borneo are only superficially known. In comparison with other tropical-subtropical habitats, the number of recorded fungi is significantly lower indicating that numerous species have yet to be found and formally described. The following statement distinctly illustrates this obvious and overall lack of data for the Malaysian mycota: "Within one mile of the Mt. Kinabalu field station about 66% out of 3000 species of macromycetes are expected



Collecting team at Endau-Rompin, April 2009.

to be novel taxa" (Hawksworth 1993). In other words, knowledge about Malaysia's fungi is still fragmentary and concerted efforts in field work and taxonomic research are needed to unveil the actual diversity of the local fungiflora.

So far only a handful of monographs on Malaysian macrofungal genera can be regarded as substantial contributions to the taxonomical and ecological knowledge of agarics and boletes viz. *Amanita*, *Astrosporina*, *Boletus*, *Inocybe* or *Entoloma*. These few references illustrate convincingly why mycological field work and research is urgently needed in Malaysia to monitor its unique fungi, whose majority is still waiting to be discovered in locally often endangered habitats, in particular the montane oak forests and relict lowland dipterocarp forests.

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At present in Malaysia there are large gaps of information not only about ectomycorrhizal agarics and boletes but also for saprobic and parasitic macromycetes. The present economic wealth of Malaysia and its population are directly dependent on primary products generated in plantations, e.g. of rubber trees and oil palms. It is uncertain how the mycelia of the ecologically adjusted, native (and also accidentally introduced) saprobic and parasitic fungi will interact with introduced alien host plants under long-term stress caused by monoculture and/or climate change. In order to be prepared for any negative impacts, it is imperative to accelerate research in taxonomy and ecology of the largely unknown parasitic and aggressive saprobic macrofungi involved (e.g. *Armillariella*, *Crinipellis*, *Gymnopilus*, *Marasmius*, *Pholiota*, etc.). Under these circumstances it is obvious that more relevant mycological research data are needed with regard to conservation and sustainable management both in native tropical forests and in man-made plantations.

In March - April 2009, joint mycological field work was carried out with the team of Dr. S.S. Lee of FRIM, both in the lowland dipterocarp forests in the Endau-Rompin State Park (Fig. 1) and in montane fagaceous forests of Cameron Highlands. Numerous specimens of agarics (Fig. 2) and boletes (Fig. 3) endemic in South East Asian habitats were collected, carefully annotated, photographed in fresh condition, dried, and are now awaiting identification and publication. The first evaluation of the collections demonstrated that at least one genus (Fig. 4) and several species of agarics and/or boletes are new to science or were discovered for the first time on Malaysian soil. In addition new data and complementary information about rare or poorly known macromycetes with respect to ecology and distribution (Fig. 5) were documented.

- 2. *Entoloma altissimum* (Masse) E.Horak (originally reported from Singapore, first record for Malaysia).
- 3. *Heimioporus japonicus* (Hongo) E.Horak (first record for Malaysia).
- 4. New genus, aff. "Xerula" (Cameron Highlands).
- 5. *Pulveroboletus viridisquamosus* Watling, Turnbull & S.S.Lee (endemic to Malaysia).

Reference:

Hawksworth, D.L. (1993). The tropical fungal biota: census, pertinence, prophylaxis, and prognosis. In: Isaac, S. et al. (eds.): Aspects of Tropical Mycology. British Mycological Society. University Press, Cambridge.

The southernmost location of *Livistona speciosa* in Peninsular Malaysia

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We were first informed about an unidentified palm growing near the peak of Bukit Tukai in Johor by Mr. Chew Keng Lin, Gunung Ledang Park Manager in May 2009. The news of this palm which was said to be fruiting at that time immediately ignited our interest as it could turn out to be a novel finding from the forest. Bukit Tukai is located about 10 kilometres from the town of Tangkak in Johor.

The trail to the peak was not easy even from the beginning. With an *Orang Asli* guide from the Park, our journey started with a hike through some steep and slippery tracks across cocoa orchards, rubber plantations and abandoned papaya orchards.

After more than two hours of hiking, we finally reached the summit area where the palm grows. At an elevation of 470 m above sea level, the palm grows amongst big boulders and rocks. We spotted three large plants and six smaller ones. Two of the larger plants were fruiting prolifically, and collecting samples for a complete specimen was indeed not to be missed. The larger fruiting tree was about 7 m high and had a diameter of c. 25 cm.

A close examination of the leaves and fruits revealed that the palm is actually a *Livistona speciosa*! *Livistona speciosa* is generally known from Mainland Asia ranging from Bangladesh (Chittagong) to Myanmar, S.E. China, throughout Thailand and Peninsular Malaysia. In Peninsular Malaysia, it is recorded in Kedah, Pulau Pinang, Perak,



The majestic *Livistona speciosa* at the top of Bukit Tukai.

[Continue overleaf >](#)



A bunch of dark greyish-blue fruits.

Petiole with armature.



Germinated seedlings in FRIM nursery.



Kelantan, Terengganu and Pahang (Dowe, 2009). The species was never recorded south of Pahang and in Pahang, *L. speciosa* is known only on the Main Range. The discovery of *L. speciosa* in Bukit Tukai, Johor near the Malacca border now marks the southernmost distribution for the species.

Bukit Tukai is made up of granitic rocks with sedimentary elements. Many layers of sediment are present on these rocks. Bukit Tukai is suspected to have similar geological attributes as Gunung Ledang as the area had been subjected to similar orogeny processes (Abdul Razak *et al.*, 2001). Orogeny refers to forces and events leading to a severe structural deformation of the earth's crust as a result of the engagement of tectonic plates.

The foothill of Bukit Tukai is covered by secondary forest with few large trees. A climbing bamboo of the genus *Dinochloa* grows abundantly here. At elevations of between 200 and 350 m, the thorny *Daemonorops* rattans and *Arenga westerhoutii* palm dominate the vegetation. Towards the summit area, the forest is overshadowed by an immense clump of *Gigantochloa ligulata*. There are also several large clumps of *Pandanus* species. There are no signs of surface water sources along the trail to the peak. The site is the location of the recently described *Cycas cantafolia* and the very rare and critically endangered *Senyumia minutiflora*.

Livistona speciosa is an attractive palm which grows to a height of 25 m. The tip of its leaves droop attractively. It has huge and long inflorescences which may branch up to 4 orders. The flowers are small, greenish-cream in colour and borne in clusters. The shape of the fruits varies from obovate to ovoid. The mature fruits are dark greyish-blue, measuring c. 2.8 cm by 2.2 cm.

Currently, there is an active quarry at the foothill of Bukit Tukai and it is of great concern that one day, quarrying may pose a serious ecological threat to plant populations there. In an effort to conserve the palm population's germplasm, seeds were collected and germinated at FRIM. The seedlings are maintained in the nurseries of the Kepong Botanic Gardens, FRIM. A germination rate of almost 100% was recorded from the seed batch.

References:

Abdul Razak, Y., Suratman, S. & Abdul Rahman, Z. (2001). Progress Report on Geological Heritage Resource Mapping in Kedah, Perlis, Pulau Pinang, Negeri Sembilan, Melaka, Perak and Johor. In Komoo, I., Tjia, H. D. & Leman, M. S. (Eds.), Geological Heritage of Malaysia. 4th Edition.

Dowe, J. L. (2009). A taxonomic account of *Livistona* R.Br. (Arecaceae). Gardens' Bulletin Singapore 60(2): 185–344.

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Special thanks to Mr. Chew Keng Lin for bringing us to the site and to Mr. Abd. Razak Othman for the bamboo identification.

Ornithoboea flexuosa

a rare gesneriad restricted to limestone hills in Kedah

By Rafidah, A.R. (rafidahar@frim.gov.my), Kiew, R., Imin, K. & Rosdi, M.

Ornithoboea flexuosa (Gesneriaceae) is the only species of its genus found in Peninsular Malaysia. Restricted exclusively to the limestone hills northeast of Alor Setar, Kedah, it was first collected by H.N. Ridley on Gunung Keriang. This is the southernmost distribution for the species which is also known from several places in southern Thailand.

Our field observations show that *O. flexuosa* grows only on limestone rocks in shady, moist conditions near the base of hills where it favours overhanging rock faces and stalactites and stalagmites around cave mouths.

The species is now known on Bukit Kaplu, Bukit Hantu and Bukit Koding as well. Populations on these hills are very small and all hills had suffered from severe disturbance. The base of Bukit Koding is now a large recreational park while Bukit Hantu is severely damaged by past quarrying activities. The cave in Gunung Keriang is being developed for recreation with concrete steps planned and the base cleared for a car park and resort. The area is also a dumping site for light industrial waste. Yet, it is here where the largest population can be found. These hills are surrounded by paddy fields and the immediate foothills are vulnerable to burning and/or clearing of the natural vegetation for crop cultivation. There is no buffer zone of natural vegetation around any of the hills that could maintain the damp and shaded conditions that the plant requires. Essentially, nowhere is its habitat secure.

History...

Ridley described the species in 1909 as one belonging to the new genus *Lepadanthus*. It was collected from Gunung Geriang, now spelt as Gunung Keriang. Burt in 1958 showed that it actually belongs to the Indo-Chinese genus *Ornithoboea*.

A critically endangered species...

Clearly without protection of its sites, *O. flexuosa* will face extinction. Being the only representative of this genus in Peninsular Malaysia, the species is worthy of protection and conservation management.



Ornithoboea flexuosa grows to 2 m tall.



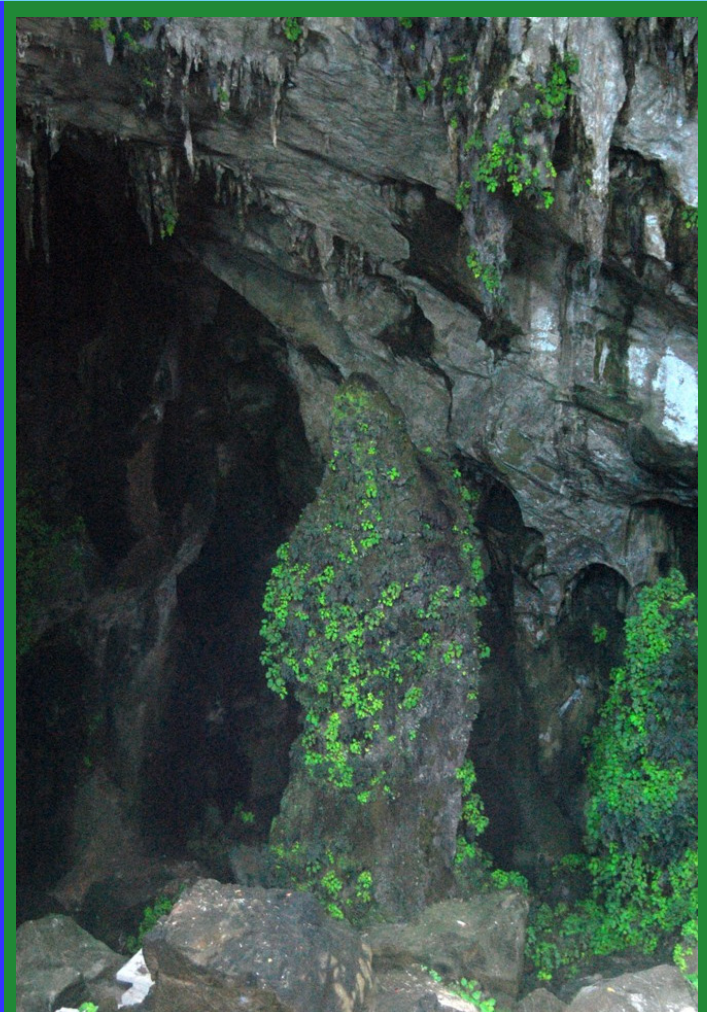
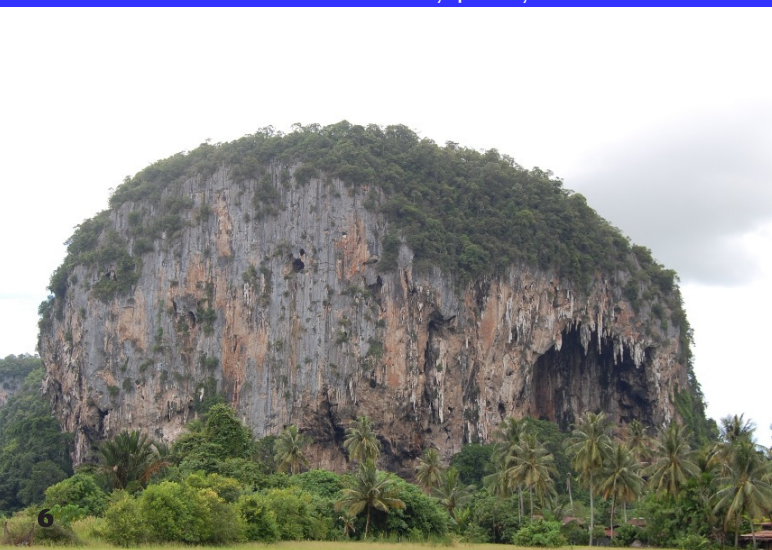
◀ Habit
and
flowers ▶
of *Ornithoboea flexuosa*.



Ornithoboea flexuosa is a perennial herb that grows to a height of 2 m, but it is much shorter when growing precariously on vertical limestone rock faces. It has exceptionally thin, delicate leaves that are remarkably sticky. Each pair of leaves is well developed but one is usually larger than the other. Pale purple flowers are borne on long, rather drooping inflorescences. There is a conspicuous tuft of hairs at the base of the corolla tube and a cirlet of thickened tissue below the upper lobes. Species of this genus have spirally-twisted fruits, but since *O. flexuosa* fruits are only 5 mm long, the twist is hardly developed.



Gunung Keriang (top) and Bukit Kaplu (below)
surrounded by paddy fields



Ornithoboea flexuosa on stalagmites and stalactites

The White-breasted Woodswallow

Artamus leucorhynchus

of Hj. Dorani

By Pan, K.A. (pankhangaun@frim.gov.my)
& Nor Azlin, M.F.



Second bird from right preening its chest.



Birds startled by a passing vehicle.



Left bird preening the underside of lifted wing.

While on an assignment in a year-old planted mangrove stand adjacent to an oil palm and coconut orchard at Kampung Haji Dorani (3° 38.273' N, 101° 01.0129' E), approximately 5 km south of Sungai Besar, Selangor, several swallows were observed flying between 7:30 and 9:30 a.m. Some were catching flying insects in mid-air about 5–15 m above the ground. Species that came to mind were the Pacific Swallow *Hirundo tahitica* and the Barn Swallow *H. rustica* – these are common here. One bird particularly stood out from the rest with its black head, white chest and belly. It looked almost like the White-bellied Munia *Lonchura leucogastra*, if not for its swallow-like wings, slightly longer beak and larger size.

Sensing something peculiar, I quickly assembled my digiscope. One was perching on a TV antenna but it vanished as quickly as it appeared. The quickly-taken photograph clearly showed that it did not have the diagnostic chestnut-red forehead and throat of the Pacific swallow. The bird also made whek, whek, whek, whek calls as it flew by. The morning was getting late and I thought I was going to miss seeing the bird again but then, from afar, I spotted four black-headed, white-breasted rather stout birds perching on a branch that could barely support their weight.

Based on these characteristics, the birds were identified as the White-breasted Woodswallow (WBW) (Robson, 2000; Wells, 2007). The bird is sympatric with the Pacific and Barn Swallows. According to MNS-BCC (2005), this species is found in the peninsula and occurs primarily along the coasts of Perak and Selangor. In the Orient, the bird ranges from the Andamans to the Greater Sunda Islands, Bali, the Philippines, New

Guinea and beyond to the Fijian Islands. Little is known of their breeding biology, behaviour and survival (Wells, 2007).

Currently, WBW is not protected under the Protection of Wildlife Act 1972 of Peninsular Malaysia. Globally, this bird is listed as *Least Concern* with a strong affinity to paddy and coastal areas. Due to its restricted distribution in the peninsula, this insectivorous specialist may well serve as an indicator for the ecosystem integrity of their habitat.

References:

Malaysian Nature Society–Bird Conservation Council (2005). *A Checklist of the Birds of Malaysia*. MNS Conservation Publ. No. 2. 39 pp.

Robson, C. (2000). *A Field Guide to the Birds of South–East Asia*. New Holland Publ. 504 pp.

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Errata for Bulletin series #11. Macrofungi of Fraser’s Hill. Page 8.

Paragraph 1. missing word at the end of the paragraph. “However ... many has yet to be identified”.

Caption for *Perenniporia* sp. It causes white rot in wood.

Left bird preening its lower back.



Third bird from right preening its shoulder.



A male WBW scanning for food.

