

Conservation Malaysia

A Bulletin Supporting Plant and Animal Conservation in Malaysia

Issue No. 2/2006

Specialist herpetofauna a good sign

Amphibians and reptiles which are canopy dwellers, tree-hole breeders and forest-stream inhabitants in FRIM mean the planted forest here is well on its way to full recovery as an ecosystem fit for wildlife



Norsham Yaakob

By Norsham Suhaina Yaakob
(norsham@frim.gov.my)

FRIM is a very popular ground for recreation and environmental education activities. But not many people know that this 600 ha of forest was a rehabilitation effort undertaken on tin mining wasteland and vegetable gardens since 1927.

The 'reforestation' attempt involved a series of planting experiments to test the suitability and performance of various indigenous and exotic species of potential economic importance (Wong et al. 1984). Now after 78 years, the ground is covered with close canopy forests.

The floristic migration plays an important role and must be monitored to see changes in the regeneration and composition of the new 'reforested' areas after more than 70 years. Dispersal of spores and seeds from adjacent forests, either by wind, water or animals provides significant improvements to lower and higher plant diversity, while mature, tall trees with almost a continuous canopy provide sufficient shade for lower, middle-storey plants to establish and flourish.

A rare terrestrial orchid, *Eulopia zollingeri* for example, a new record for Selangor and the third collection for Peninsular Malaysia, was recently found along the Keruing Trail (Sam and Markandan 2003).

A good index of how well a forest has been rehabilitated would be the species richness of its wildlife. An assessment in FRIM on the species richness of amphibians and reptiles, collectively known as herpetofauna, began in April 1999. Nine areas were surveyed monthly for the diversity and distribution of amphibians.

The collection of reptiles was more opportunistic, done during frog surveys and general survey for animals and road kills. Records gathered from the Department of Wildlife and National Parks (DWNP), Institute of Medical Research (IMR) and Raffles Museum of Biodiversity Research (RMBR), Singapore, were particularly helpful.

Thirty-five amphibians, including the limbless caecilian, have been recorded here, representing some 33% of the total number known from Peninsular Malaysia. The most common toad is *Bufo parvus*. Some species are more commonly found around offices and quarters, while others are restricted to their own preferred habitats.

For example, the Sungai Kroh waterfall, a popular picnic area for many visitors, is an important habitat for frog stream

specialists such as *Amolops larutensis* and *Rana hosii*. Two endangered frogs, *Kalophrynus palmatissimus* and *Limnonectes tweedie* are recorded here. FRIM is one of the three areas other than the Pasoh and Kanching Forest Reserves where *K. palmatissimus* have been recorded so far.

Other interesting records include two species of tree frog, *Theloderma horridum* and *Rhacophorus pardalis*, usually found in pristine forests. *Phrynella pulchra*, a leaf-litter frog, was sighted on the tree bark at the canopy walkway which is 30 m above the ground.

FRIM's grounds are also home to at least 94 species of reptiles, 30 species of lizards (four families), 57 species of snakes (seven families) and seven species of tortoises and turtles (four families).

A new record for Malaysia of a skink, *Sphenomorphus tersus*, previously known from southern Thailand (Leong et al 2002) was also collected here, in addition to the fifth specimen of a rare snake, *Anomochilus leonardi* (Norsham 2003).

Twenty-six amphibians (74%) and 79 reptiles (84%) are regarded as forest-specific species. Apart from the true forest species, the remaining species are often known to be either commensals of man, or introduced species. These are often encountered within the built-up areas and/or forest edges. Almost three quarters of the herpetofauna recorded in FRIM are forest-specific.

The forest of Bukit Lagong Forest Reserve in the north is an important physical link to the diversity of fauna and flora within the grounds of FRIM. The forest-specific species had recolonised the regenerated forest from the adjacent primary forest.

Recolonisation of herpetofauna from uphill areas could have occurred either overland, or through waterways, in a southerly wave. Such species richness would not be possible if not for the physical connection to the primary rainforest.

Other faunistic records of FRIM included 47 species of butterflies (Tho & Mahyudin 1982), 16 species of trigonids (Zamari 1986), 50 species of termites (Hanstein 1987), 182 birds with 18 migrants (Ong 2003, Ong pers. comm.) and 18 species of mammals (Norsham unpublished).

More on back page



Rhacophorus pardalis - To find me, go to the Engkabang Trail during the wet season.



Limnonectes plicatellus
A prominent bump at the back of your head - you must be a male!



Bufo parvus - Our common resident



Amolops larutensis Stream specialist. Hang on tight, tadpoles, for nature has modified your lower lip which now acts as a sucker



Python versus cobra - What a battle! Contact the author to find out who was the winner.



Polypedates leucomystax Protective of your young - a foam nest to protect fertilized eggs from predators



Dusia arborea An arboreal skink, rather common within the built-up areas of FRIM



Bufo asper Our largest toad, common in many streams and rivers.

The flora of Bukit Charas

Introducing the limestone endemics of the Panching Limestone Formation in Pahang



By Soh Wuu Kuang (wuukuang@gmail.com) and Rusea Go (rusea@fsas.upm.edu.my)

LIMESTONE flora is vegetation that is exceptionally rich in diversity and endemism, but often under extreme threat from quarrying and land conversion activities.

Limestone habitats in Peninsular Malaysia harbour approximately 1,216 vascular plant species from 582 genera and 124 families. Of these, 261 species (21%) are found only in Peninsular Malaysia and 130 of these are confined only to the limestone habitat, i.e. they are limestone endemics. The diversity is accentuated by the fact that such a small area occupied by limestone (0.2-0.3%) in Peninsular Malaysia is capable of supporting between 13 and 14% of the total Angiosperm diversity (Chin, 1977).

Bukit Charas is a limestone outcrop situated approximately 24 km north-west of Kuantan, Pahang. The most striking feature of this 237 m hill is its massive grey calcareous outcrop.

This outcrop is composed of moderately dispersed pinnacles (Pahang Geological Department, pers. comm.). Together with three other nearby outcrops (Bukit Panching, Bukit Sagu and Bukit Tenggek), Bukit Charas is derived from the Panching Limestone lithostratigraphic subdivision. These outcrops are massive, fossiliferous and partly recrystallized.

The Panching outcrop is one of the three formations that constitute the Kuantan Group, and crops out as a narrow band running SSW-NNE in the Panching area approximately 32 km north-west of Kuantan (Metcalfe, 1980a; 1980b).

The flora of Bukit Charas has been partially documented by several botanists from the 1930s. Henderson (1939) was among the first who collected plants from Bukit Charas in 1931 and based on published records, he documented some 22 species growing on the limestone habitat. From this short excursion to Bukit Charas, he discovered

two new plant species, *Paraboea bettiana* and *Tylophora calcicola* (Henderson, 1933). *Paraboea bettiana* was later reclassified into a new monotypic genus, *Emarhendia bettiana* (Kiew et al., 1997).

Piggot, A.G., a fern enthusiast, made collections from Bukit Charas in the late 70s and from this collection, Holttum (1981) described a new fern species which he named *Tectaria cherasica*.

Burt (1978) recognized Henderson's 1931 collection of *Monophyllaea horsfieldii* as a new variant of the species and named it *Monophyllaea horsfieldii* var. *hendersonii*. Following a detailed taxonomic study by Weber (1998), the variant was revised as a new species, *M. hendersonii*.

Between 1984 and 1986, botanical collections were made at Bukit Charas, Bukit Sagu and Bukit Panching by Kiew, Weber and Anthony Samy. Initially thought to be confined to Bukit Charas, their survey indicated that *Emarhendia bettiana* and *M. hendersonii* were found in Bukit Panching. *Monophyllaea hendersonii* was also found in Bukit Sagu. This is not surprising, since it is fairly common for a group of nearby limestone hills to harbour the same floristic assemblage.

For example, Batu Caves, Bukit Takun and Bukit Anak Takun in Selangor share a few endemic species such as *Maxburretia rupicola* (Palmae) and *Impatiens ridleyi* (Balsaminaceae) (Chin, 1980). Considering the close geographic proximity of the four outcrops in the Panching Formation, it is likely for the flora on these hills to be conspecific.

Bukit Sagu is also known to harbour *Paraboea bakeri*, a local endemic that is found neither on Bukit Charas nor Bukit Panching. As for Bukit Tenggek, it deserves special attention as no botanical collection has been made from this hill. It would be interesting to see how the flora differs in respect to species composition, especially for the narrowly endemic species ranging from Bukit Tenggek in the north to Bukit Panching in the south.

To this date, Bukit Charas has been known to be the type locality of four rare limestone endemic species: *Emarhendia bettiana*, *M. hendersonii*, *Tylophora calcicola* and *Tectaria cherasica*. A recent study at Bukit Charas (Soh, 2002) enumerated a total of 249 species from 175 genera and 82 families. Of the total species documented in Bukit Charas, 30 (12%) species are endemic to Peninsular Malaysia and 18 (7%) are confined to limestone habitat.



Radiating leaves... a close up of *Ardisia sulfruticosa*



Fanning out... the leaves and flowers of *Epithema saxatile*



Scrambling for space... A population of *Morinda calciphila* at the cave mouth.



Remnant survivor... This outcrop of Bukit Sagu has been subjected to quarrying activities.



Dainty beauties... *Begonia gnorata*

Some rare and interesting plants at Bukit Charas

THE peculiar plant *Monophyllaea hendersonii* (Gesneriaceae) consists of a stem and leaf only. It is endemic to Peninsular Malaysia and restricted exclusively to the limestone habitat of the Panching Limestone Formation and adjacent limestones. Our field observations showed that the plant grows on caves overhanging moist cliffs, cave entrances and ledges, both on vertical and horizontal surfaces. The plant dwells very well in both dry and moist conditions. In order to protect itself from desiccation, its leaf undersurface and stem are heavily encrusted with chalk produced from chalk-glands (Burt, 1978). This is an excellent example of an adaptation using resources available from the habitat.

Restricted to the Panching Limestone Formation (Bukit Panching and Bukit Charas), *Emarhendia bettiana* (Gesneriaceae) is frequently found



What big leaves you have... *Monophyllaea hendersonii* growing at the cave mouth.

A ginger lost and found

Geostachys primulina (Zingiberaceae) was rediscovered in Fraser's Hill last year more than 80 years after its type specimen was placed at the Herbarium of the Royal Botanic Gardens Kew in the United Kingdom



By Lau Kah Hoo (laukh@frim.gov.my)

IT WAS in 1904 that Henry Nicholas Ridley, better known as H. N. Ridley, first collected *Geostachys primulina* in Semangkok Pass, Selangor.

He identified the specimen as *Geostachys secunda*, which he had described earlier in 1899. Realising later that this collection was actually an undescribed species, he proceeded to publish a description of it, and named it *Geostachys primulina* (Ridley 1920). Since then, there was no other collection made from the same location, or locations elsewhere in Peninsular Malaysia, thus making the species an endemic.

The type specimen designated by Ridley more than 80 years ago is deposited in the Herbarium of the Royal Botanic Gardens Kew (K), and its isotype in the Herbarium of the Singapore Botanic Gardens (SING) (Newman *et al* 2004).

In an attempt to relocate its population, a search was conducted in 2004 at Fraser's Hill, and a population of *G. primulina* was successfully rediscovered at a slope besides the main road heading to the Jeriau Waterfall at an elevation of 1,020 m. It was indeed a lucky find considering the time gap after it was first found and that the area was cleared previously for road construction. As a

result of this, the site is rather exposed and is covered with secondary vegetation. The distance between the main road and the site was merely a five-minute-hike. Monitoring work at the site has been carried out since then. Efforts to locate *G. primulina* in other sites have proved unsuccessful and it is possible that *G. primulina* is a rare species.

Nevertheless, in May 2005, one of the clumps was seen growing robustly on the slope, with plenty of inflorescences emerging at the base of the plant near the rhizome. A third visit however, showed that the site was being disturbed. The causes of the disturbance were not known; however, animal and human tracks were seen. Activities such as wood clearing were also observed. Fearful that the population will be affected, the team moved one of the young plants from the trail to a more secluded spot.

Like most gingers, *G. primulina* has a swollen modified part at the base called the rhizome. This plant is supported firmly above the ground with stilted roots. With its leafy shoots growing up to 100 cm and having glabrous leaves of up to 35 x 11 cm, *G. primulina* is considered a medium-sized species. Its leaves are whitish on the upper surfaces and dark maroon underneath. The inflorescence bracts are eye-catching, shiny dark red with pointed tips. The labellum of *G. primulina* is dull yellow, with fine transparent lines. The edges of the labellum are crenulated. Corolla lobes are reddish translucent. No fruits were produced during the monitoring period.

The survival of this endemic species is of concern. With only one small population in a single locality, threats to the population are overwhelming. However, the probability of the species occurring in other sites currently not known to botanists cannot be excluded and this was



A shade pale... *G. primulina*'s dull yellow of a flower

clearly shown in the discovery of this population.

In the meantime, however, attempts to establish the population using the *ex-situ* approach is being undertaken by a team from Forest Research Institute Malaysia. *In-situ* conservation of the area should be given consideration as not all the germplasm materials can be conserved *ex-situ*.

References:

Newman, M., Lhuillier, A & Poulsen, A. D. 2004. Checklist of the Zingiberaceae of Malesia. *Blumea Supplement* 16. Nederland: Naational Herbarium Nederland.

Ridley, H. N. 1899. The Scitameneae of the Malay Peninsula. *Journal of the Straits Branch Royal Asiatic Society* 32: 157-160.

Ridley, H. N. 1920. New and Rare Species of the Malayan Plants. *Journal of the Straits Branch Royal Asiatic Society* 82: 201.



Bract-red... the inflorescence of *Geostachys primulina*



Two-faced... the glabrous leaves of *Geostachys primulina* with an upper surface shine and a maroon under surface

From previous page

Some rare and interesting plants at Bukit Charas



Peeping out... *Enneanodia belliana*, a plant endemic to the Panching Limestone Formation

overhanging cave roofs and beneath other plants on the cave floor. Isolated populations of mature individuals were regularly encountered on moist cave ceilings.

Recorded in Johor (Sg. Teberau) and Pahang (Bukit Charas), *Ardisia suffruticosa* (Myrsinaceae) was first discovered by Ridley in 1923 in Sg. Teberau on sandy soil. The second collection was made in Bukit Charas by Henderson (1939). This rare shrub grows abundantly on the hill slopes of Bukit Charas under forest canopy. The species is very distinctive with its whitish venation which makes it an attractive horticultural plant.

Growing in cave

light... *Tectaria cherasica*, a rare fern endemic to Bukit Charas.



Blooming orchids can be easy

Contrary to popular opinion, growing these plants need not be painstakingly difficult. Take *Dendrobium aphyllum* and *D. anosmum* for example...



By Dr Chieh Wean Choong* (cwc75@yahoo.co.uk)

ORCHIDS have for years been cultivated for their beauty and variability. Growing them is often seen as an expensive hobby needing special care and attention. However, this may not always be true. Some orchids are easy to maintain and bloom, while others thrive even under neglect!

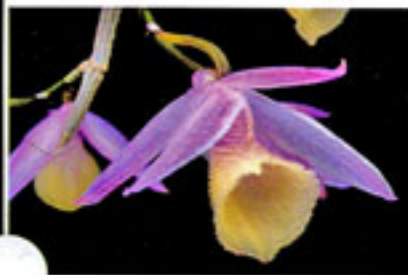
There is a huge variety of orchids to be grown. Of the many genera offered in the market, quite a number are brightly coloured hybrids spanning every imaginable hue in the colour spectrum for flowers. However, the trend is shifting towards hybrids producing pastel flowers as more begin to appreciate these soothingly attractive softer tones. Many breeders overlook this as a result fewer hybrids of such tones are available. Nevertheless, the genetic material for producing soft-toned flowers exists in nature. Pastel orchid hybrids notwithstanding, it is noted that most orchid species do not have attractive flower colours.

A few wild orchids are worth planting. These are easily grown, propagated, brought to flower and most important - not as yet endangered. For a start, we focus on some of our native orchids from the genus *Dendrobium*. This genus, found mainly in Asia, has always been a favourite. The genus *Dendrobium* is further divided into sections that are more related to each other. Noted for their beauty, species from the section *Dendrobium* have long, pendulous stems and pseudobulbs bearing leaves in two alternating ranks.

The *Dendrobium aphyllum*, for example, is a free-flowering epiphyte found mainly in the northern and central part of the country. The term *aphyllum* means 'without leaf'. If you like soft tones, the flower will appeal with its lovely combination of mauve on the sepals and petals, and a lip sure to be welcomed as a garden curiosity. After a pseudobulb reaches a certain size, the drooping stem loses its leaves and after rain, flower buds start emerging from the leafless stem (Seidenfaden and Wood, 1992)! This leafless characteristic enhances its beauty.



Soft appeal... the mauve and cream *Dendrobium aphyllum*



Very fragrant... the white variety of *Dendrobium anosmum*



Very fragrant... the white variety of *Dendrobium anosmum*

The plant also rewards you with a faint but pleasant fragrance, detected close to the plant if it flowers in sprays.

If you like *D. aphyllum*, you might consider *D. anosmum* too, found mainly in the northern part of the country. A larger plant, it is closely related to *D. aphyllum*. Like *D. aphyllum*, it drops its leaves and flowers after a downpour. The sepals and petals are also mauve, but a darker shade than that of *D. aphyllum*. The lip is the colour of the sepals and petals, with two large blotches inside and short hairs all over. The flower emits a strong but sweet perfume that complements its beauty. There are also other varieties available: flowers entirely white, or near white with dark mauve blotches. The entirely white variety, commonly called the 'alba' (white), is even more fragrant.

Propagating these two species is very easy. Small plantlets or 'keikis' will emerge from the stem axils after flowering and can be transferred to other pots to establish new plants. This is the time to introduce or exchange plants with friends that may already have an orchid collection themselves.

Fertilise them once in a while. They grow well under cool shade. Drench them on coarse brick and charcoal potting mix, once in the morning and once in the evening. Whether you are from the 'talk to your plants' school or not, you will soon discover that it's not so difficult cultivating orchids after all.

Reference:

Seidenfaden, G. and Wood, J.J. 1992. The Orchids of Peninsular Malaysia and Singapore. Olsen & Olsen, Fredensborg, Denmark, p388.

*Dr Choong is a biotechnologist specialising in plant molecular biology in Applied Agricultural Research Sdn. Bhd. His interests include gardening, travelling and photography.

Sam, Y.Y. & Markandan, M. 2003. Rare orchid found in FRIM. *FRIM in Focus*. Oct-Dec. 2003. Pp. 7.

Tho, Y.P. & Mahyudin, A. 1982. The butterfly fauna of the grounds of the Forest Research Institute: species record. *Malayan Nature Journal* 35: 77-81.

Wong, K.M., Tho, Y.P., Kochumen, K.M. & Yap, S.K. 1984. The grounds of the Forest Research Institute at Kepong - A Botanical Park. Paper presented at the International Symposium on Botanic Gardens of the Tropics. KOMTAR, Penang, Malaysia. 17-19 December 1984.

Zamri, M.R. 1986. *Kajian kelakuan bersarang dan taburan sarang kelulut di I.P.P. Kepong*. B.Sc. Tesis. University of Malaya. 95 pp.

Gonocephalus grandis A diurnal arboreal lizard having a penchant for stream edges



From cover page

Specialist herpetofauna a good sign

References:

Leong, T.M., Norsham, Y. & Das, I. 2002. *Sphenomorphus tersus*. *Herpetological Review* 33 (1): 149

Norsham, Y. 2003. A record of *Anomochilus leonardi* Smith, 1940 (Anomochilidae) from Peninsular Malaysia. *Hamadryad* 27 (2): 285-286.

Ong, T. 2003. Birds of FRIM. *Siri Alam dan Rimba* No. 6. Forest Research Institute Malaysia.