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Universiti Teknologi MARA Pahang Forest Reserve: Forest Park in the Campus

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ABSTRACT

The campus management of Universiti Teknologi MARA (UiTM) Pahang has chosen 'Kampus Khazanah Alam' (Natural Heritage Campus) as its tagline. To support the management in identifying and recognising its natural heritage, a group of researchers from UiTM Pahang, UiTM Shah Alam and UiTM Perak held a joint exploration into UiTM Pahang Forest Reserve from 25th to 27th October 2008 to record its unique biodiversity. The three-day event in the dipterocarp lowland forest was a stint in the natures' wonderland. The exploration declares UiTM Pahang Forest Reserve as a forest park in the campus. This project is considered an important step towards flora and fauna preservation and conservation. However, the effort must be followed up with commitment and sustainable master plans focussing on preserving our precious diversity.

Keywords: *biodiversity, forest park, sustainable, UiTM Pahang Forest Reserve*

Introduction

In the middle of 2008, the campus management of Universiti Teknologi MARA (UiTM) Pahang has decided to use *Kampus Khazanah Alam* (Natural Heritage Campus) as a branding slogan to shows its management's direction. To identify and to recognise the campus' aim, a project was carried out from 25th to 27th October 2008 to explore the beauty of the UiTM Pahang Forest Reserve. The exploration covered the following academic disciplines and studies: Botany, Zoology, Microbiology, Entomology, Dendrology, Ornithology, and Ecology. 31 participants took part in the exploration; 20 academic and non-academic staff from UiTM Pahang, 1 from Perak and the rest from UiTM Shah Alam. 7 of them were photographers whose job was to record all the activities during the exploration. The objectives of the exploration were to 1) gather information on natural richness and diversity, 2) show the beauty of close-ups photographs of flora and fauna, and 3) compile the results of the inventory so as to provide a list of reference materials for further scientific studies.

UiTM Pahang Forest Reserve as a Forest Park

UiTM Pahang Forest Reserve is situated in the district of Maran, Pahang and is a part of the Jengka Forest Reserve. This tropical rain forest covers an area of about 250 acres and is classified as a secondary forest. Despite being logged over a long time ago, the forest is still healthy and supports a diverse range of flora and fauna. This dipterocarp lowland forest supports many types of tropical vegetations, such as forest herbs, shrubs, fruit-bearing trees, timber trees, lianas, rattans and also the lower plants, ferns and mosses. As a norm, the meranti-keruing trees dominate the lowland dipterocarp forest and can be found everywhere, either the big-tall trees or the seedlings on the forest floor.

Fauna is also not lacking in the forest. Although it can be a hard work waiting and searching for the animals in this tropical rain forest, the rewards are great. Inside the UiTM Pahang Forest Reserve, explorers and surveyors have encountered some vertebrates such as wild boars, snakes, bats, rodents and also footprints of cipan (Malayan tapir). Bird watchers have also identified several unique birds present in the forest, including species like hornbills and junglefowls. Some of the most common birds found during daylight are kingfishers, woodpeckers, quails and magpies. Owls have been seen flying around during the night. Invertebrates are diversed and scattered everywhere. Especially in the open area, flying insects such as butterflies, dragonflies and damselflies are easy to see, but hard to catch. Millipedes, centipedes and others can be found underground or hidden behind the rotten leaves or stems on the forest floor.

This forest reserve is a unique environment. Based on past investigation and recent exploration, it is believed that natural richness and diversity are high in this forest. Unfortunately, only a few species of flora and fauna had been compiled, such as a record of meranti trees (Muzamil et al., 2002), fruit-bearing trees (Sarina et al., 2006), medicinal plants (Ainun Jariah et al., 2002; Siti Zaiton and Mazlin, 2006) and freshwater fishes (Muzamil et al., 2006). The richness of species inside the forest reserve has not been investigated or documented in detail, and many of them have not been studied yet. Therefore, scientific research and monitoring are essential for designing a management strategy to conserving the natural heritage of UiTM Pahang so that the UiTM Pahang Forest Reserve can always serve as a forest park in the campus.

Biodiversity of Forest Park in the Campus

When asked how many plants and animals exist in this forest reserve, it is impossible to give a satisfactory answer. For certain groups, such as meranti trees, the number of species are known quite precisely, but for others, such as forest herbs and shrubs, the state of knowledge is less complete or unknown. The scientific exploration done has shown the beauty of flora and fauna in the forest reserve but it needs more comprehensive scientific study to investigate and describe them in detail. The information below briefly describes the beauty of flora and fauna encountered during the exploration in the forest park.

Fungi

Fungi are neither plants nor animals. Amazingly, these often nondescript organisms can be found everywhere on the forest floor or on the rotten tree barks. During the rainy seasons in the forest reserve, the forest floor is dominated by blooms of fungi. They are classified as club fungi, bracket fungi, coral fungi, jelly fungi, agaris fungi, cup fungi and parasol fungi (Plate 1). They emerge like oyster mushrooms, shiitakes, and truffles covering the forest floor. Some of fungi fruit bodies come out with striking colour, while some of them are dull.

Most fungi are classified as saprophytes, but some are parasites. A few types of wild mushrooms are edible fungi. However, only an expert can identify and safely collect wild mushrooms for eating. Some medicine is derived from fungi such as penicillin, the breakthrough antibiotic that has helped save millions lives. However, some of the fungi are toxic to animals or humans; there are nasty fungi that can wreak havoc to our environment and health. Some parasitic fungi cause leaf damage and root rot in plants.

Lower Plants – Mosses and Ferns

Mosses and ferns are very ancient family of plants. Most are leafy plants that grow in moist areas under the forest canopy. Mosses are seedless, non-vascular plants and play important roles in preventing erosion and nutrient cycling in tropical forests. They are tiny, sometimes microscopic, land-plants that are often overlooked as they are overshadowed by larger higher plants like ferns and flowering plants. A closer look reveals that a mat of moss actually consists of many plants

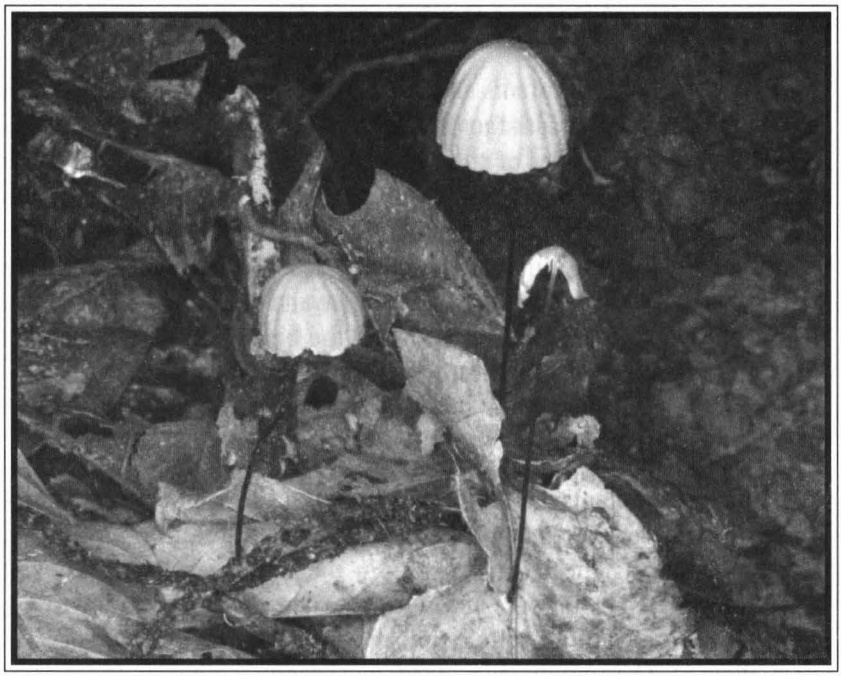

Plate 1: Parasol Fungus (*Marasmius* sp.) has a Cup-shaped like Tiny Umbrella of a Half-centimetre across is Found Growing on Leaf Litter

growing in a tight pack, helping to hold one another up. The mat has a spongy quality that enables it to absorb and retain water.

Ferns are seedless vascular plants, with well-developed internal vein structures. Ferns are abundant and the most diverse in the tropical forest. Fern allies like peacock fern (*Selaginella wildenowii*) are seen creeping on the ground in open and shady area (Plate 2). Epiphytes ferns, such as staghorn fern (*Platycerium coronarium*) and bird's nest fern (*Asplenium nidus*) which are now popular and high demand for horticultural purposes and landscaping, are found on the trunk of trees forest in the forest reserve. Paku resam (*Dicronopteris* sp.), which is the most abundant species of ferns at open area especially along the roadside, contributes to erosion control.

Ornamental Plants

The understorey and forest floor in UiTM Pahang Forest Reserve is in constant shade. The humidity is constantly high and light intensity is

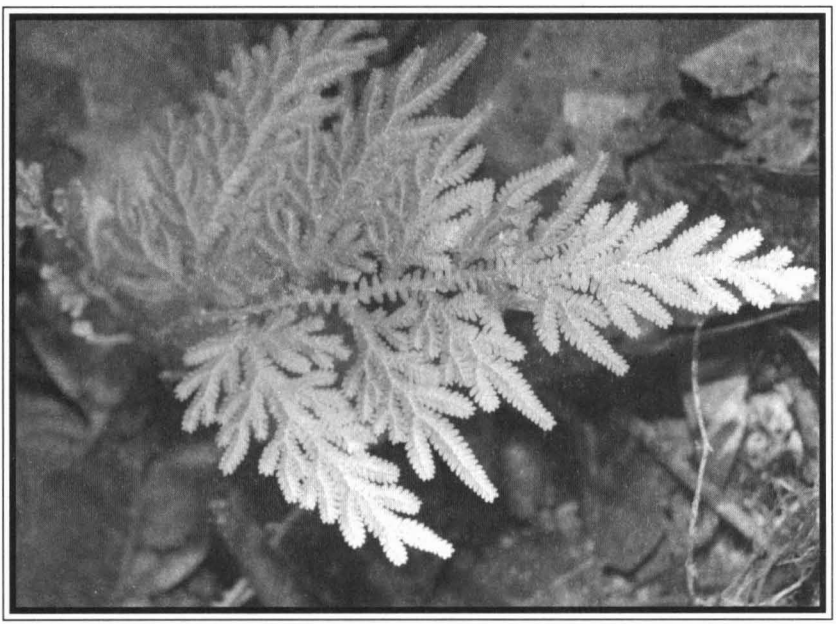

Plate 2: Irridescent Blue Fronds of Peacock Ferns (*Selaginella wildenowii*), a Scrambling Fern-ally seen on the Forest Floor

quite low. However, these can support the herbs, shrubs, ferns and mosses with different types and characteristics. For plants to be considered as ornamental, they typically display unique features that include flower, leaf, scent, fruit, stem and bark. In some cases, unusual features such as thorn and root can also be attractive characteristics for gardeners. Ornamental plants are used for landscaping in garden, along roadside, or as house plants. Plants with beautiful flowers which are typically grown in garden flowers may also be used for cut flowers. During the exploration, many species *in-situ* were identified, and some have potentials as ornamental plants, such as fan palms (*Licuala* sp.) (Plate 3), tiger orchids (*Grammatophyllum* sp.), staghorn ferns, bird's nest ferns and gingers.

Medicinal Plants

Down on the forest floor where light hardly gets through the closed canopy, herbs and shrubs are found abundantly. Many of them are medicinal plants. Siti Zaiton and Mazlin (2006) listed 42 species of medicinal plants in this forest like gajah beranak (*Goniothalamus*

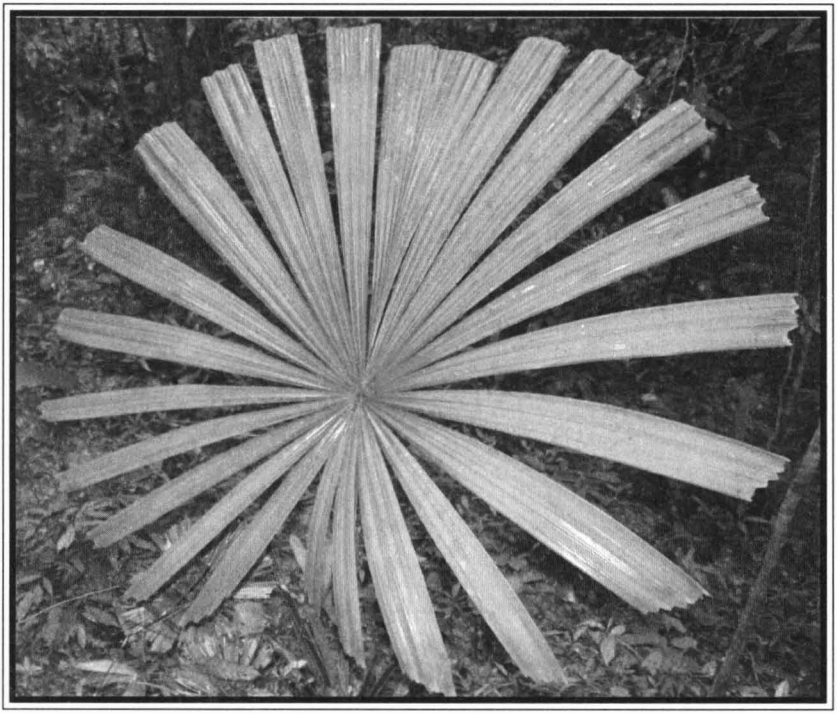

Plate 3: An Understorey Fan Palm (*Licuala* sp.) is One of the Characteristics of the Campus' Forest Park

macrophylla) (Plate 4), lemba (*Curculigo latifolia*), akar suri (*Thottea corymbosa*), and many other valuable species. These plants are commonly found growing on the forest floor, but are often unnoticed as useful plants. Although they are diverse, some have unique and obvious features that help them to be identified and recognised. For example, some of them have amazingly bright colourful flowers, such as rhododendron or senduduk (*Melastoma malabathricum*) and ginger (*Scapaloclamys* sp.) but some are less striking and not attractive at all, like jerangau (*Acorus calamus*) and sireh hutan (*Piper stylosum*). Information on medicinal plants in the forest is still lacking. Further studies should be done to identify other medicinal plants which may grow in this forest and to explore the habitat where they usually grow (so that their growth habit can be described), and to find out their main chemical contents and uses in traditional medicine.

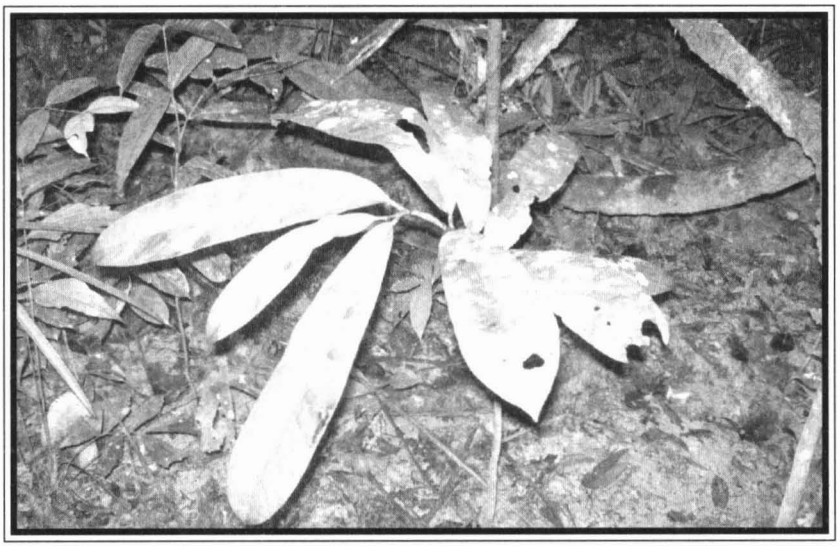

Plate 4: Gajah Beranak (*Goniothalamus macrophylla*) is a Popular Plant used in Malay Traditional Medicine

Timber Trees

A walk through the lowland dipterocarp forest is a rich rewarding experience. Explorers tracking inside the forest are protected from direct sunlight under a canopy of tall, slender trees of dipterocap species. The species that can be encountered in the UiTM Pahang Forest Reserve are damar hitam (*Shorea multiflora*), meranti melantai (*Shorea macroptera*), resak keluang (*Vatica bella*), keruing mempelas (*Dipterocarpus crinitus*) and many others. The diversity of timber tree species makes the forest reserve special (Plate 5). Besides that, big woody lianas drape over boughs or lie coiled on the ground. A diversity of rattans waves their hooked tendrils from timber trees, making the canopy very unique and interesting for scientists to explore the ecology and characteristics of each species.

Vertebrates and Invertebrates

It is believed that many species of animals live in the forest reserve, including the tiger. The roaming of this fierce animal inside the forest is evident from the staff's and students' accounts and the animals' footprints

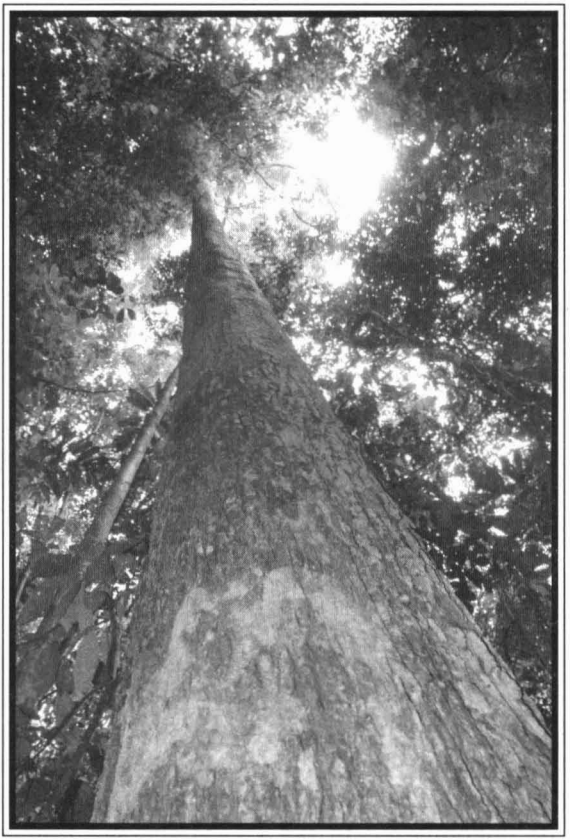

Plate 5: A Tall and Slender of Large Dipterocarp, Meranti (*Shorea* sp.) Grows Well in the UiTM Pahang Forest Reserve

left behind. However, exploration during the day in a short period cannot give away the presence of animals, especially vertebrates in the tropical rain forest. Most of them are either fast moving animals or they are nocturnal. Thus, only a few of them accidently emerged and were seen during the three days of exploration. Common birds seen were kingfishers, magpies and woodpeckers. Freshwater fish such as seluang (*Rasbora* sp.), bagoh (*Puntius lateristriga*) and sebarau (*Hampala macrolepidota*) were seen swimming in the streams. Amazingly, a strikingly coloured snake was found in an open area near the roadside, believed to have fed on a small mammal (Plate 6).

The exploration has focused on invertebrates, especially insects which make up the largest group of animals that live in the forest. They include brightly coloured butterflies, dragonflies and beetles, camouflaged stick insects, huge colonies of ants and many others. All

are interesting and they show the unique characteristics living in their own habitat (Plate 7).

Researchers in UiTM Pahang must take the opportunity of the diverse animals in this forest reserve and be ready to propose further comprehensive scientific studies. They should investigate and identify the richness of the species in this forest. Studies that can be taken may include the species abundance and its frequency, the distribution of the species and its population, and the characteristics found among animals including the adaptation to a life in the forest.

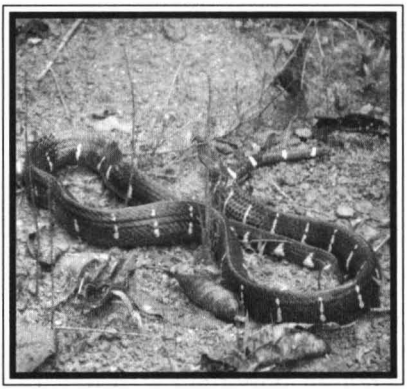

Plate 6: A Resting Snake

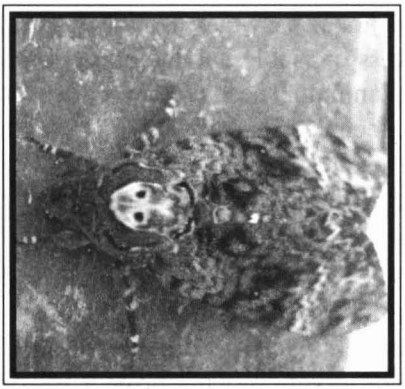

Plate 7: A Unique Mask-shaped on Top of Flying Moth

Future Prospects

In general, forest reserve as a forest park can be used for research, education and recreation. It also plays an important role for soil protection, water catchment areas and various other purposes. Forest reserves are either productive (for the selective extraction of resources such as timber, rattan and bamboo) or protective (for conservation). Thus, preservation and conservation of natural environment is a priority in maintaining and surviving the natural richness and biodiversity. Dyke (2003) mentioned that conservation is an interdisciplinary, holistic science including both natural and social science. Involvement in conservation helps us to understand the process in nature so that we can safeguard the prospects of the future.

UiTM Pahang or *Kampus Khazanah Alam* is a site that can offer an experience of a homely rural village atmosphere and many attractions to be grasped. The area where the site is located is rich in diverse natural

attractions for research, education and recreation. Facilities including a hall or lecture area, gazebos, bathing facilities and an open campsite are available in the forest. Besides that, a variety of environmental education programmes are offered to accommodate different groups such as jungle trekking and orienteering.

Since the richness and diversity of the species here is not really known to the public, it is high time for the management of UiTM Pahang consolidated a plan of action to preserve and conserve this natural heritage before it is lost forever. To balance the conservation of our natural resources and heritage with the development needs of our nation is not an easy task. However, we can prevent further fragmentation and loss of viable habitats through proper planning and sensible land use planning. These efforts will ensure the forest park of the campus stay green, lush and alive.

Conclusion

The flora and fauna in the UiTM Pahang Forest Reserve are unknown inhabitants in the forest. More efforts should be directed to the understanding of their habitats, potential beneficial uses and their conservation. This project is considered an important step towards flora and fauna preservation and conservation. Implementing sustainable development, where development of the economic and social sectors is combined with enhancement of the environment, is encouraging and should be fully supported by the UiTM Pahang campus management. This includes both environmental planning and decision-making in the right way. After all, keen public participation is a clear and healthy indicator of a sustainable biodiversity in *Kampus Khazanah Alam.*

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