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# Floristic Studies on the Northeast Langkawi

***Noorma Wati Haron** and **Rozainah Mohd Zakaria**

Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia
*noorma@um.edu.my

**ABSTRACT** Floristic survey was carried out on some localities in the Northeast of Langkawi. From these localities 69 specimens were collected; 33 were identified to the generic or specific level while 36 were identified to the family level. The distribution of species was discussed and the richness of the limestone and mangrove flora of Langkawi Island warrants the forests to be conserved.

**ABSTRAK** Kajian flora telah dijalankan di beberapa lokaliti di bahagian timur-laut Langkawi. Daripada lokaliti tersebut 69 spesimen telah dikutip, 33 telah dikenal pasti hingga ke peringkat genus atau spesis manakala 36 telah dikenal pasti hingga ke peringkat famili. Taburan spesis dibincangkan dan kekayaan flora batu kapur dan paya bakau pulau Langkawi mewajarkan hutan-hutan tersebut dipulihara.

(flora, Northeast Langkawi, conservation)

## INTRODUCTION

The archipelago of the Langkawi islands is situated on the northwestern shore of Malaysia. It is located just where the Indian Ocean narrows down into the Straits of Malacca. Langkawi consists of 99 islands and a large percentage is limestone. Sanctuary of some of the most ancient rainforests in the world, they are teeming with exotic flora and fauna. In Malaysia coastal limestone only occurs in Langkawi where part of the coast of the main island and many of the smaller islands are entirely limestones. A few studies have been carried out on Langkawi flora and much of the biodiversity of Langkawi island had yet to be studied and documented [1, 2 and 3].

## MATERIALS AND METHODS

Floristic survey was conducted from 4$^{th}$ April until 11$^{th}$ April 2004 involving two researchers, two lab assistants and a student. The areas covered include Gunung Machincang; Gunung Raya, Pulau Langgun, Sg. Kilim; Sg. Kisap; Tasik Dayang Bunting, Telaga Tujoh and Teluk Mempelam (Figure 1).

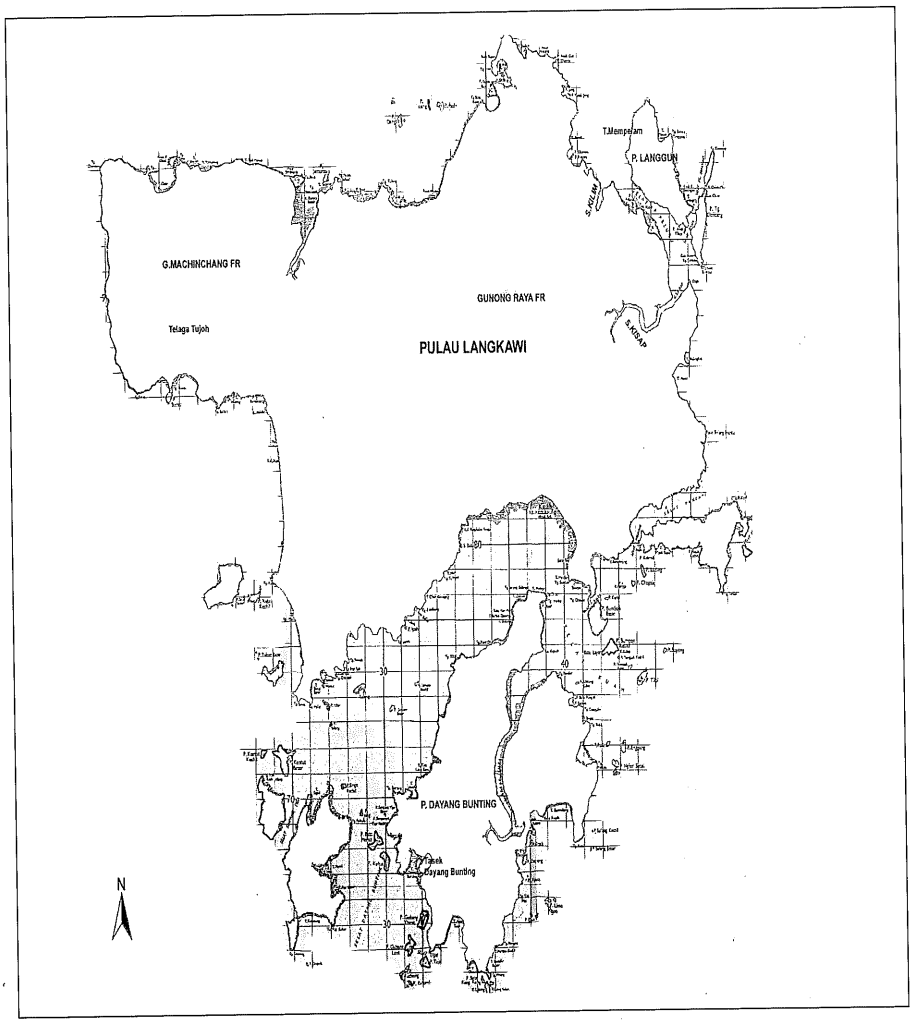


**Figure 1.** General map of Pulau Langkawi showing the localities of specimen collections

Plant specimens were collected, where possible they were identified during the collection, otherwise they were brought back to the lab for identification. Herbarium specimens were also prepared.

## RESULTS AND DISCUSSIONS

From the various locations mentioned above, 69 specimens have been collected; 33 were identified to the generic or specific level while 36 were identified to the family level. The list of the specimens collected is given in Table 2. The vegetation on the limestone of Langkawi is sparse to dense, varies in height depending on the availability of soil and the topography. Some common species include *Barringtonia asiatica*, *Thespesia* sp., *Peltophorum* sp. and *Xylocarpus granatum*.

*Cinnamomum sp., Diospyros* sp., *Eugenia* sp., *Garcinia* sp., *Podocarpus* sp., and *Rhodomyrtus tomentosa* were some of the common species found at Gunung Machincang. Along Sungai Kilim and Sungai Kisap species from the family Rhizophoraceae dominate the areas. Species from the family Rubiaceae are common at Tasik Dayang Bunting and Telaga Tujoh. *Anisophyllea* species are common at Gunung Raya and Telaga Tujoh. *Barringtonia asiatica*, a species associated with sandy beach vegetation was also observed at Telaga Tujoh. Palmae and Leguminosae dominates the scenery of Teluk Mempelam, Pulau Langgun.

*Barringtonia asiatica* has fruits and seeds that are dispersed by water currents. When ripe, the fruits are easily detached from the parent trees and are carried by water current to their new destination where the seed germinates.

Due to the northerly position of Langkawi principally, many species from the Langkawi limestone are not found on limestone further south on the mainland. Trees and shrubs such as *Barringtonia asiatica*, *Thespesia* sp., *Peltophorum* sp. and *Xylocarpus granatum* forms a distinctive coastal limestone vegetation. Langkawi limestone are mainly Ordovician-Silurian hence this older limestone, because they are more weathered, generally provides more residual soil and thus able to support taller vegetation.

**Table 2.** Flora of Northeast Langkawi

| No. | Family | Species | Location |
|---|---|---|---|
| 1 | Anisophylleaceae | *Anisophyllea* sp. | Gunong Raya |
| 2 | Anisophylleaceae | *Anisophyllea disticha* | Telaga Tujoh |
| 3 | Combretaceae | *Terminalia catappa* | Teluk Mempelam, Pulau Langgun |
| 4 | Ebenaceae | *Diospyros* sp. | Gunong Machincang, Telaga Tujoh |
| 5 | Euphorbiaceae | *Phyllanthus* sp. | Tasik Dayang Bunting, Telaga Tujoh |
| 6 | Guttiferae | *Garcinia* sp. | Gunong Machincang |
| 7 | Lauraceae | *Cinnamomum* sp. | Gunong Machincang |
| 8 | Lecythidaceae | *Barringtonia asiatica* | Telaga Tujoh |
| 9 | Leguminosae | *Peltophorum* sp. | Teluk Mempelam, Pulau Langgun |
| 10 | Leguminosae | *Canavalia* sp. | Teluk Mempelam, Pulau Langgun |
| 11 | Leguminosae | *Tamarindus indica* | Tasik Dayang Bunting |
| 12 | Malvaceae | *Hibiscus tiliaceus* | Teluk Mempelam, Pulau Langgun |
| 13 | Malvaceae | *Thespesia* sp. | Tasik Dayang Bunting |
| 14 | Myrtaceae | *Rhodomyrthus tomentosa* | Gunong Machincang |
| 15 | Myrtaceae | *Eugenia grandis* | Tasik Dayang Bunting |
| 16 | Myrtaceae | *Eugenia* sp. | Gunong Machincang, Telaga Tujoh |
| 17 | Palmae | *Caryota mitis* | Teluk Mempelam, Pulau Langgun |
| 18 | Palmae | *Oncosperma tigillaria* | Teluk Mempelam, Pulau Langgun |
| 19 | Pandanaceae | *Pandanus* sp. | Teluk Mempelam, Pulau Langgun |
| 20 | Podocarpaceae | *Podocarpus* sp. | Gunong Machincang |
| 21 | Rhizophoraceae | *Rhizophora apiculata* | Sg Kilim, Sg Kisap |
| 22 | Rhizophoraceae | *Rhizophora mucronata* | Sg. Kilim, Sg. Kisap |
| 23 | Rhizophoraceae | *Ceriops tagal* | Sg Kilim |
| 24 | Rhizophoraceae | *Bruguiera parviflora* | Sg Kilim, Sg Kisap |
| 25 | Rhizophoraceae | *Xylocarpus granatum* | Sg Kilim |
| 26 | Rhizophoraceae | *Avicennia* sp. | Sg Kisap |
| 27 | Rhizophoraceae | *Sonneratia griffithii* | Sg. Kisap |
| 28 | Rhizophoraceae | *Bruguiera cylindrica* | Sg. Kisap |
| 29 | Rubiaceae | *Gardenia carinata* | Tasik Dayang Bunting |
| 30 | Rubiaceae | *Ixora* sp. | Tasik Dayang Bunting, Telaga Tujoh, Gunong Machincang |
| 31 | Rubiaceae | *Mussaenda* sp. | Tasik Dayang Bunting, Telaga Tujoh |
| 32 | Rubiaceae | *Uncaria* sp. | Gunong Raya |
| 33 | Verbenaceae | *Vitex* sp. | Tasik Dayang Bunting |

**Continuation of Table 2.** Species identified to family level

| No. | Family | No of species | Location |
|---|---|---|---|
| 1 | Acanthaceae | 6 | Sg Kisap |
| 2 | Ebenaceae | 1 | Tasik Dayang Bunting |
| 3 | Euphorbiaceae | 2 | Tasik Dayang Bunting, Telaga Tujoh |
| 4 | Guttiferae | 2 | Tasik Dayang Bunting, Telaga Tujoh |
| 5 | Lauraceae | 3 | G. Machincang, T. Dayang Bunting, |
| 6 | Melastomataceae | 1 | Gunong Raya |
| 7 | Myristicaceae | 3 | Tasik Dayang Bunting, G. Raya, Telaga Tujoh |
| 8 | Myrtaceae | 2 | Telaga Tujoh |
| 9 | Rubiaceae | 10 | G. Machincang, Tasik Dayang Bunting, G. Raya, Telaga Tujuh |
| 10 | Rutaceae | 1 | Tasik Dayang Bunting |
| 11 | Scrophulariaceae | 1 | Gunong Machincang |
| 12 | Verbenaceae | 4 | Teluk Mempelam, Pulau Langgun, Tasik Dayang Bunting, G. Raya, Telaga Tujoh |

From this study it can be concluded that the areas surveyed are rich in the diversity of species. The high diversity is partly the result of the many different microhabitats. The flora of limestone soil is of great conservation importance because of high species endemism; many of their components are restricted to the habitats and are rare or have very localized distributions. Limestone vegetation is particularly sensitive to habitat disturbance.

Mangrove forest should also be well protected because mangroves play important ecological roles in the coastal and estuarine areas. Their dense stands and extensive root systems reduce coastal and river bank erosion and prevent flooding. Moreover, mangroves are the spawning and nursing grounds for many species of fish and prawns.

Mangrove species have been lost on both coasts of Peninsular Malaysia due to erosion and land clearing to make way for beach resorts and agricultural ponds. The gradual and constant loss of Malaysia's biodiversity should be addressed before it is too late. Much of the biodiversity has yet to be studied and documented [4, 5]. Everyone has something to contribute to conservation and sustainable use of plant resources. Policy makers, scientists and local communities should work and learn together.

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