

A Survey on Orchids in Selected Trails of Gunung Nuang Forest Reserve

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ABSTRACT

Gunung Nuang, which is the highest mountain peak in Selangor at 1493 m, marks the meeting point of three Malaysian states, namely Negeri Sembilan, Pahang, and Selangor. Gunung Nuang Forest Reserve comprises of lowland dipterocarp, hill dipterocarp, upper hill dipterocarp, and montane dipterocarp forest, covering 3.9 % of Selangor land area. Starting from 2005, several collection trips were made to observe and document the flora from the family of Orchidaceae. As a result, 27 species of orchids were found on the selected trails, while 11 taxa remain unidentified. From the collected specimens, 34.9% of Selangor's orchids were represented by the results, indicating the rather high species diversity in the area. From the collections, five species are new records to Selangor. All the specimens were identified based on their morphological vegetative features and floral structures.

Keywords: Orchidaceae, orchid diversity, Gunung Nuang, Selangor

INTRODUCTION

Gunung Nuang (1493 m) is the highest mountain peak in the district of Hulu Langat, Selangor. It is situated at the northern border of Lentang Forest Reserve, Pahang. Hulu Langat Forest Reserve is a watershed forest. The vegetation of Gunung Nuang showed changes with altitudinal differences (Sahibin *et al.*, 2005). Gunung Nuang exhibits a rich diversity of plants including many traditional medicinal herbs. The forest belongs to the tropical rainforest with high annual rainfalls and dense flora and fauna.

There was no attempt to list all the vascular plant flora of the Peninsular Malaysia in a single published list until Turner in 1995. He prepared a catalogue enlisting all the vascular plants in Peninsular Malaysia and Singapore by recording

details of localities. This compilation was done by referring to several renowned publications of plants in Malay Peninsular. In this checklist by Turner (1995), 169 species of orchids were classified as common and widespread species in Peninsular Malaysia, but no exact locality was stated. A total of 105 orchid species were found and recorded in Selangor.

As for Gunung Nuang, there has been no attempt, at least in the recent times, to list the possible occurrence of plants from the family of Orchidaceae. This forest is rich in the diversity of flora and fauna but certain parts have been developed into industrial and residential areas, especially the lowland areas of the mountain. This is so because Hulu Langat Forest Reserve has not attained the status of permanent forest reserve.

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SITE DESCRIPTION AND METHODS

Gunung Nuang

Gunung Nuang is situated at the latitude of 101° 50'E and the longitude of 3° 14'N. It is bordering with Pahang in the north and Negeri Sembilan in the west. In general, Gunung Nuang is a part of the formation of the Main Range, which is running from southern Thailand to the south of Negeri Sembilan. The average temperature for the forest is 20.3 °C while humidity ranges from 90-100%, with the average as high as 99.77% recorded at the altitude of 1350 m (Nizam *et al.*, 2005).

Hulu Langat Forest Reserve covers approximately 31,378 ha and this makes up 3.9 % of the land area in Selangor. Gunung Nuang Forest Reserve is a part of the Hulu Langat Forest Reserve with the highest peak of the area. A portion of the lowland areas to the land altitude of 720 m was once logged in the early 1960's (Latiff, 2005).

Gunung Nuang Forest Reserve exhibits an important role as watershed forest for the state of Selangor, where water enters into the main rivers such as Sungai Langat and several smaller rivers which are channelled into two reservoirs, namely

Semenyih Reservoir and Pangsun Reservoir (Nizam *et al.*, 2005).

The study sites covered Compartment 63 – 67, in which each compartment has at least a river flowing in the site. The samplings of the present study were done along the riverbanks and also some inland trails which were about 300 m away from the river. The land elevation of the selected trials ranges from approximately 100 m to 700 m above the sea level (a.s.l.).

Methods

Field explorations and specimen collections of orchids were carried out in the selected trails in the forest reserve between January 2005 and November 2006. Most of the specimens were photographed in the natural habitat and their characteristics were documented. Fresh specimens collected for identification were preserved into herbarium specimen via standard herbarium procedure. All herbarium specimens were deposited in the Herbarium of Biology Department, Faculty of Science, Universiti Putra Malaysia. Some of the plants collected were brought back to UPM and cultivated as *ex situ* conservation in the green house.

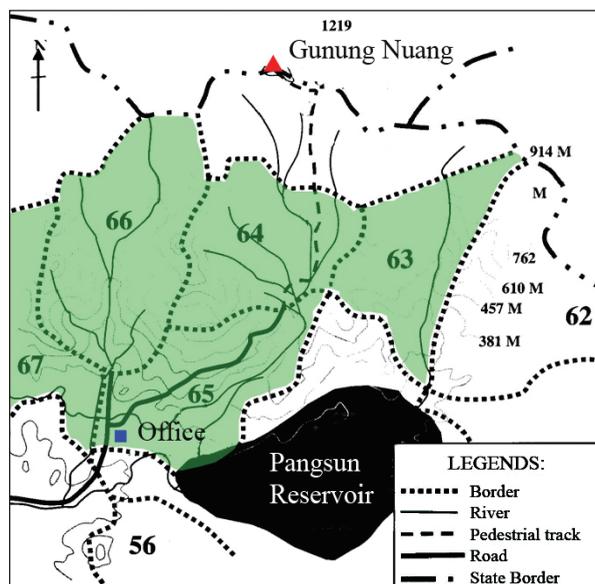


Fig. 1: Sampling collection areas in Gunung Nuang Forest Reserve, Selangor

RESULTS AND DISCUSSION

A total of 38 orchid species, belonging to 23 genera, were identified during this study (Table 1). Of the collected specimens, 27 were identified into their respective species level, and the remaining 11 were only identified to the genus level as the specimens were incomplete, due to lack of flowers. Five species collected, namely *Dendrobium anosmum*, *Liparis lacerata*, *Pennilabium struthio*, *Plocoglottis plicata*, and *Pomatocalpa spicata*, are new records for Selangor (Table 1). Therefore, a total percentage of 34.9% from Selangor's orchids were found in the study site. These results clearly show the great diversity of orchids for a small area of less than 31,378 hectares.

Based on the observations of the collected specimens, there were not many differences between the collected species and the cited species in the reference book. Nevertheless, some minor morphological characters were found to slightly differ in terms of the colour and sizes of the flowers, length and width of the leaves, and the plant habitat. Despite that, the key characters which identify them into their respective genus still remain similar between the collected species and the cited ones.

The orchid species found in this study comprises of terrestrials, epiphytes, and lithophytes. Most of the orchids were collected in the shady areas of the forest with the altitude of 250 m to 700 m a.s.l. Most of the epiphytic orchids were growing abundantly on tree trunks

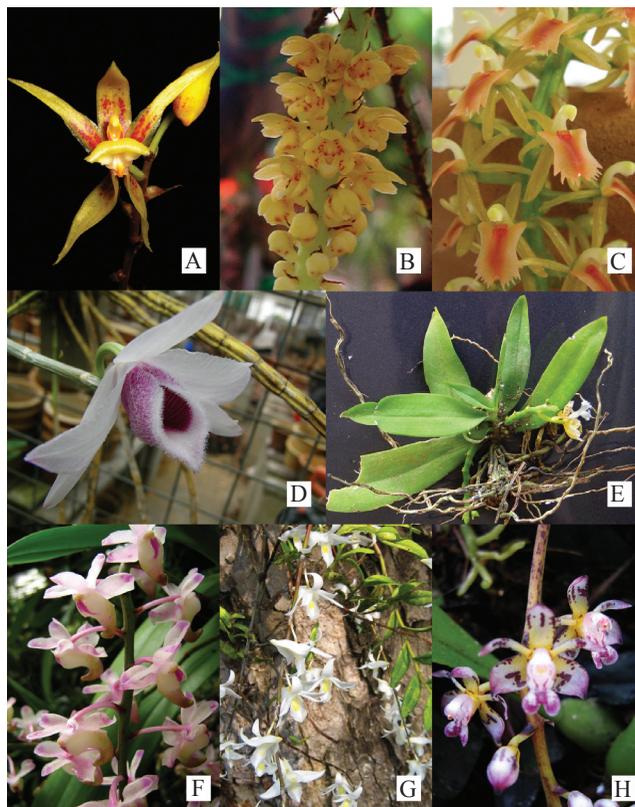


Plate 1: New Record* and Orchids of Gunung Nuang. A. *Plocoglottis plicata**, B. *Pomatocalpa spicata**, C. *Liparis lacerata**, D. *Dendrobium anosmum**, E. *Pennilabium struthio**, F. *Aerides odorata*, G. *Dendrobium crumenatum*, H. *Thecostele alata*

TABLE 1
Orchids collected from Gunung Nuang, Selangor

No.	Species	Descriptions
1	<i>Acriopsis liliiflora</i> (Koenig) Ormerod	Epiphytic to 30 cm tall; on riverside trees
2	<i>Aerides odorata</i> Lour	Epiphytic to 40 cm tall; on semi-shaded tree trunks; flowers sweetly scented
4	<i>Agrostophyllum glumaceum</i> Hook.f.	Epiphytic clump to 30 cm tall; on riverside trees
3	<i>Agrostophyllum majus</i> Hook.f.	Epiphytic clump to 70 cm tall; on exposed trees
5	<i>Bulbophyllum patens</i> King exHook.f.	Creeping epiphyte; on riverside trees
6	<i>Bulbophyllum</i> sp. 1	Creeping epiphyte; on semi-shaded trees
7	<i>Bulbophyllum</i> sp. 2	Creeping epiphyte; on Semi-shaded trees
8	<i>Bulbophyllum</i> sp. 3	Creeping epiphyte; on riverside trees
9	<i>Calanthe ceciliae</i> Rchb.f.	Terrestrial to 50 cm tall; on shaded slopes and riverbanks
10	<i>Ceratostylis subulata</i> Blume	Epiphytic clump; on shaded branches near riverside
11	<i>Coelogyne</i> sp. 1	Epiphytic to 20 cm tall; on shaded trees
12	<i>Coelogyne</i> sp. 2	Terrestrial to 50 cm tall; on rocks by the rivers
13	<i>Coelogyne</i> sp. 3	Epiphytic to 30 cm tall; on tree trunks
14	<i>Corymborkis veratrifolia</i> (Reinw.) Blume	Terrestrial to 180 cm tall; on the shaded slopes; flowers slightly scented
15	<i>Cymbidium</i> sp.	Epiphytic to 50 cm tall; on fallen logs
16	<i>Dendrobium acerosum</i> Lindl.	Epiphytic to 15 cm tall; on semi-shaded trees and fallen trees
17	<i>Dendrobium anosmum</i> Lindl.*	Epiphytic to 50 cm tall; on tree trunks
18	<i>Dendrobium concinnum</i> Miq.	Epiphytic to 15 cm tall; on semi-shaded trees and fallen trees
19	<i>Dendrobium crumenatum</i> Sw.	Epiphytic to 1 m long; on exposed trees; flowers with fresh scent
20	<i>Dendrobium truncatum</i> Lindl.	Epiphytic to 15 cm tall; on semi-shaded trees and fallen trees
21	<i>Flickingeria convexa</i> (Blume) A.D. Hawkes	Creeping epiphytic; on semi-shaded trees
22	<i>Liparis lacerata</i> Ridl.*	Epiphytic clumps to 15 cm tall; on mossy cushion on rock and trees
23	<i>Oberonia</i> sp.	Epiphytic to 15 cm tall; on semi-shaded trees and fallen trees
24	<i>Pennilabium struthio</i> Carr.*	Epiphytic to 10 cm; on riverside tree branches
25	<i>Pholidota articulata</i> Lindl.	Pendulous epiphyte to 50 cm long; on riverside trees
26	<i>Pholidota imbricata</i> Hook.	Epiphytic clump to 20 cm tall; on trees and rocks
27	<i>Plocoglottis plicata</i> (Roxb.) Ormerod.*	Terrestrial to 50 cm tall; on shaded slopes and riverbanks
28	<i>Pomatocalpa latifolia</i> (Lindl.) J.J.Sm.	Epiphytic; short-stemmed; on semi-shaded tree trunks
30	<i>Pomatocalpa spicata</i> Breda*	Epiphytic; short-stemmed; on semi-shaded tree trunks
29	<i>Pomatocalpa</i> sp.	Epiphytic; on semi-shaded tree trunks
31	<i>Robiquetia spatulata</i> (Bl.) J.J.Sm.	Hanging epiphytic; on twigs of canopy
32	<i>Tainia paucifolia</i> (Breda) J.J.Sm.	Terrestrial to 60 cm tall; on semi-shaded riverbanks
33	<i>Thecostele alata</i> (Roxb.) C.S.P. Parish & Rchb.f.	Epiphytic clumps about 20 cm; on semi-shaded trees
34	<i>Thelasis pygmaea</i> (Griff.) Blume	Epiphytic clumps; on shaded trees with mosses
35	<i>Thrixspermum centipeda</i> Lour.	Hanging epiphytic to 10 cm long; on exposed trees
36	<i>Thrixspermum</i> sp.	Hanging epiphytic to 30 cm long; on exposed trees
37	<i>Vanilla griffithii</i> Reichb.f.	Climber; on trees in fairly open places
38	<i>Vanilla</i> sp.	Climber; on trees in fairly open places

* New records to Selangor

near the streams and high humidity areas. Nevertheless, the higher region towards the peak of the mountain was not covered and might possibly be explored in future research.

As for *Plocoglottis plicata*, there are no records of the orchid collections by Seidenfaden and Wood (1992) and Turner (1995). However, it was stated to be distributed in Peninsular Malaysia by Comber (2001). This particular genus might be grouped together as *Plocoglottis javanica* because of the similarity in the colour of the flower. Nevertheless, some distinguished characters, such as the distribution of red spots and the curvature of petals and sepals, differentiate *P. plicata* from *P. javanica*. Further observation and collections can be made in order to confirm the existence of the former species in Peninsular Malaysia. This species, *P. plicata*, is widespread in Gunung Nuang, particularly in the semi-shaded areas near the streams.

CONCLUSIONS

Gunung Nuang Forest Reserve shows a great diversity of orchids. A total of 38 species from 27 genera were collected in the selected trails. Meanwhile, 5 orchid species were documented as the new records for Selangor. This finding indicates the richness in the diversity of orchids in Selangor, particularly in Gunung Nuang Forest Reserve. These results have thus increased the number of orchid species documented in the state of Selangor.

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