The Ferns of Gunong Ulu Kali

by

A. G. Piggott *

Summary

The various habitats on the peak of Ulu Kali and in the surrounding area, the Genting Highlands, are described. Some one hundred species and varieties of ferns found between 5,000 feet and the summit are listed.

Gunong Ulu Kali is the southernmost high mountain peak in the Main Range of Malaya, and is only 20 miles NNE of Kuala Lumpur. The environment and vegetation of the mountain and surrounding area, the Genting Highlands, have been described briefly by Burgess (1969). Before the Hotel and Casino Complex was opened in 1971, this part of the Main Range could only be reached by walking and climbing through the jungle. Now, at Genting Simpah, a road branches off the main Kuala Lumpur/Kuantan trunk road and winds its way to the top. At about 5,000 feet, with one mile still to go, the character of the vegetation changes. The trees are smaller, gnarled and mossy. There are fewer climbers, abundant lower down, and fewer tree ferns. Higher still, the vegetation changes again and becomes the dwarf and scrub forest of the Cloud Zone. The trees here are stunted; there is little or no grass and epiphytes are abundant.

Though few people venture beyond the Complex, the road continues. Your vehicle can take you within yards of the summit of Gunong Ulu Kali (5,814 feet), and along the whole length of the ridge to Bukit Genting Chin Chin. The slopes are steep or precipitous, and treacherous. On a clear morning the views from the ridge are spectacular: neighbouring mountain peaks covered with jungle, the City of Kuala Lumpur, the tin mines, and, in the far distance, the sea. It is cool, refreshing and still. If cloud descends, it becomes chilly, visibility is limited to a few yards and strong winds may blow.

The area studied includes Gunong Ulu Kali and the associated ridge, and also some lower slopes towards the two pumps supplying the Complex with water. The ferns listed were all found between the summit and about 5,000 feet. It was not possible to record every species in all places, but the list does give an indication of their frequency and distribution. For convenience, the area was divided into a number of locations, each the centre of forays into the various habitats nearby.

Ferns of Malaya (Holtum 1966) was used as an aid to identification, but since the publication of the second edition, the author has reappraised the family Thelypteridaceae (1971) in which sense the generic names are used here. Specimens were deposited at the Herbarium of the Royal Botanic Gardens at Kew, and an incomplete set also at the Botanic Gardens, Singapore.

Description of Locations

A is situated at the end of the road along the ridge, 1.75 miles from the car park. The Radar Station occupies the small peak just beyond. There are still remnants of scrub forest nearby, and lower down the steep slopes is montane ericaceous forest, with conifers and Pandanus. Earthmoving has been carried out on a large scale, leaving cleared areas and fresh earth banks. Drainage is channelled

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into a steep mossy valley on the eastern side, and this was where *Habenaria angustata*, a terrestrial orchid, was found. It was growing in mossy peat and on rotting tree-trunks.

*B* is 0.15 mile along the road, back towards the Hotel Complex. The ground drops away sharply to the east. On the opposite side of the road are wet mossy hollows with *Pandanus klossii*, and above them dwarf forest. The trees support an abundant flora of mosses and lichens, and epiphytic ferns and orchids. In September and October some trees were almost covered with pinkish purple orchid flowers. A large crested lizard was first seen here.

*Equisetum debile* was growing in sand near the roadside drain at 0.25 mile. Over a period of one and a half years it developed from a small tuft to a large straggling mass.

*C* is 0.3 mile along, at the point where the road changes from one side of the ridge to the other. Strong winds blow through the gap. Large granite boulders form pinnacles with tree-roots growing over the weathering surfaces. Above the road is dwarf mossy forest; at road level there are cleared areas and earth banks; and then the ground drops away on either side. *Pholidota parviflora* grew here, and *Coelogyne* sp. with fleshy red scarps and drooping racemes of flowers on long pedicels. Further on, the road has been blasted out of the rock of the ridge and there is a precipitous drop of about 1,000 feet on the western side. Here, an almost horizontal vein — apparently decomposing felspar — has been exposed. The road then crosses back to the east side of the ridge.

*D*, at 0.4 mile, is rather open. In the valley are larger trees, raising their crowns to the level of the ridge, and tall tree ferns. Earth banks border the road. Fragrant *Coelogyne longibracteata* and *Dendrochilum similis* were common and flowered towards the end of the year.

*E* is at 0.5 mile, with large trees in the valley below. The stunted forest above contains a high proportion of conifers which have the habit of dropping the ends of their branches. *Bulbophyllum angustifolium* was in flower in February. There are wet mossy hollows where epiphytic ferns are abundant and the fruiting bodies of macroscopic fungi can be found.

*F* is very exposed at 0.8 mile, the road running almost along the crest of the ridge. There are fresh earth banks, patches of secondary growth, fallen trees, dwarf forest and the heads of small steep valleys. An established path goes into the forest behind but care should be taken: it often becomes a running stream, and there are scorpions.

*G*, 0.95 mile, is somewhat sheltered. The trees are larger and some have fallen, making identification of epiphytes growing in the crown much easier. *Coelogyne longibracteata* was abundant and flowered late in the year. *Dendrobium cornutum* and *D. atrorubens* produced flowers in July. Wild bananas, ginger and a variety of creepers can be seen. Terrestrial ferns with large fronds grow on the edge of the clearing.

*H* is 1.1 miles along the ridge and there is a large clearing, an abandoned building site, to the east. Beyond this a path leads into scrub forest on a short northerly ridge. The stunted trees, which included *Dacrydium beccarii* and *Rhododendron orion*, are barely 6 feet tall and grow in thick peat and sphagnum root mat. An arborescent grass was growing near the end of this ridge, *Dischidia aesthaphana* and some *Nepenthes* spp. were also here. In July many flowers of *Habernaria angustata* were found. Dwarf forest grows on the other side of the road and mossy hollows drain into streams which pass under the road.

*I*: Gunong Ulu Kali, 1.25 miles along the ridge and 0.5 mile from the Complex. The Television Station has been built on the summit, but just below and across the site of the construction workers’ hut is an area of nearly undisturbed scrub forest.
The twisted trees are covered with mosses, lichens and epiphytes. From here the road winds downhill, with steep debris-covered slopes to the east. Further still the road has been cut into the side of the mountain and the natural environment has been much disturbed. Little remains of the natural vegetation: pioneer species are becoming established.
Locations $J$, $K$ and $L$ cover larger areas, down to an altitude of about 5,000 feet:

$J$ is the land adjacent to the track which leads to the eastern dam and pump house, and begins north of the main hotel and beyond the boating lake. It descends some 1,000 feet, running round the mountain-sides. Deep road cuttings have been made in the steep slopes. The incinerator and main refuse dump are situated along here. This area is much more sheltered than the ridge and some very large trees grow in the main valleys. Near the dam there are small swamps which drain into the streams.

$K$ begins just beyond the incinerator, where a rough track bears off to the right towards Gunong Lari Tembakau. For a while a pack of ‘wild’ dogs inhabited those parts of it where the ground has caved in. Dwarf and scrub forest clothes the peaks, but the slopes are shaded by taller trees. There are some large mossy boulders in one of the wetter patches, and amongst these Cryptostylis arachnitex and Ceratostylis ampullacea were flowering in January.

$L$ is along a track which turns off the main road, one mile down and just below the residence ‘Sri Genting’. It more or less follows the 5,000 foot contour and leads to the western dam and pump-house, directly under the Television Station and the Mushroom Farm. The track has been cut into the side of the mountain. It passes through fairly tall sheltered forest, crossing several streams. Wet rock faces are found near the streams, in places covered with mosses and liverworts, including Marchantia sp., but few Hymenophyllaceae.

### List of Genera

Ferns occurring on Gunong Ulu Kali, above 5,000 feet, arranged in families.

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<th>Schizaceae</th>
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This list is incomplete.
LIST OF SPECIES AND VARIETIES

Ferns occurring on Gunong Ulu Kali, above 5,000 feet, arranged alphabetically, with locations and brief notes.

1. *Acrophorus blumei* Ching apud C. Chr. Plate 1.
   Locations: A, E, G, K, L.
   In shady hollows and valleys.

2. *Asplenium caudatum* Forst.
   Locations: J, K, L.
   On rocks by streams.

3. *Asplenium nidus* Linn.
   Locations: J, L.
   Epiphytic on larger trees in the deeper valleys.

4. *Asplenium scordochinii* Bedd.
   Location: J.
   Epiphytes on mossy trees near the dam.

5. *Asplenium unilaterale* Lam.
   Location: L.
   In rocky stream-bed.

   Locations: J, L.
   Epiphyte on mossy trees in wet hollows.

7. *Blechnum orientale* L.
   Locations: H, and between I and Hotel Complex.
   On earth banks and exposed rock faces, often stunted.

8. *Blechnum vestitum* (Bl.) Kuhn
   Locations: A, B, C, E, I, J, K.
   In dwarf forest with *Plagiogyria tuberculata*.

9. *Calymnodon cucullatus* (Nees & Bl.) Presl
   Location: J.
   Small epiphyte on mossy trees near dam.

    Locations: I, L.
    In the open by roadside drains.

11. *Christella arida* (Don) Holtt.
    Location: I.
    In open by roadside drain.

    Location: G.
    First record for Malaya.
    In light shade in mossy hollows.

13. *Coryphopteris gymnopoda* (Bak.) Holtt.
    Locations: A, B, E, I, L.
    In light shade in dwarf forest.
   Location: B.
   On forest edge.

15. *Crypsinus enervis* (Cav.) Copel.
   Locations: A, D, E, G, H, J, K.
   Epiphyte in moderately exposed places.

   Locations: B, E, G, H, J, K, L.
   Epiphyte in open places.

17. *Crypsinus wrayi* (Bak.) Copel.
   Locations: A-C, E, G-L.
   Small epiphyte on very mossy trees.

18. *Ctenopteris contigua* (Forst.) Holtt. Plate 2.
   Location: H.
   Epiphyte in mossy hollow.

19. *Ctenopteris fuscata* (Bl.) Kze
   Locations: E, J.
   Small epiphyte in dwarf forest.

20. *Ctenopteris khasyana* (Hk.) Holtt.
    Location: E.
    Epiphyte in mossy hollow.

21. *Ctenopteris mollicoma* (Nees & Bl.) Kze
    Locations: A, J.
    Epiphyte in exposed situations.

22. *Ctenopteris moultonii* (Copel.) C. Chr. & Tard.
    Location: J.
    Epiphyte in sheltered valley.

23. *Ctenopteris obliquata* Copel.
    Location: J.
    Epiphyte in sheltered valley.

    Locations: H, J, K.
    Larger epiphyte in deep valleys.

25. *Cyathea contaminans* (Wall. ex Hook.) Copel.
    Locations: E, G, I, J, K.
    Large tree fern, on edge of forest and in valleys.

    Locations: F, G, H, J.
    Tree fern on edge of dwarf forest.

    Location: H.
    Tree fern on edge of clearing. I consider this sufficiently different from the
    species in its much reduced pinnae on the base of the stipe, to call it a variety
    for the time being.
    Collections. 21.06.75: 1334 (SING), 1335, & 1337 (K), 1338 (SING).
   Locations: B, C, E, F, G.
   Tree fern in dwarf forest along ridge.

29. *Davallia trichomanoides* Bl.
   Location: J.
   Epiphyte in sheltered valley.

   Location: L.
   Epiphyte, in light shade.

31. *Dicranopteris curranii* Copel.
   Locations: F, G, J, K.
   On fairly exposed earth banks.

   Locations: B, H, I.
   Colonising exposed clearings.

   Locations: F, H, J.
   On side of road cuttings.

34. *Dicranopteris pubigera* (Bl.) Nakai
   Locations: G, I.
   On roadside banks in exposed situations.

35. *Diplazium accedens* (Bl.) Mild
   Location: L.
   In small sheltered valley.

36. *Diplazium asperum* Bl.
   Locations: E, G, H, J, L.
   On edge of forest.

37. *Diplazium speciosum* Bl.
   Locations: B, C, D.
   In fairly exposed situations near end of ridge.

   Locations: G, H, I, J, K.
   Colonising steep earth banks.

   Epiphyte in less exposed places.
   A new species which will be published and probably as *E. robinsonii*.
   Differs from *E. callifolium* and *E. malayense* in having pale brown, thin, flat, 
   entire scales and very broadly pointed lamina. It matches exactly an 
   incomplete specimen collected by H. C. Robinson in 1913 on nearby 
   Gunong Mengkuang.
   Collections: 12.10.74: 1093 (K); 9.11.74: 1095 (SING); 10.11.74: 1094 (K); 
   10.08.75: 1339 & 1340, 1344-1347, 1358 & 1359 (all K).

   Locations: F, G, I.
   In fairly exposed grassy clearings.
41. *Gleichenia longissima* Bl.
   Locations: F, G, H, I, J.
   Scrambling on edge of forest.

42. *Gleichenia microphylla* R. Br.
   Location: I.
   In scrub forest and grassy clearing.

   Locations: B, G, I, L.
   Scrambling on edge of forest.

44. *Gleichenia vulcanica* Bl.
   In and on edges of dwarf and scrub forest.

45. *Goniophlebus persicifolium* (Desv.) Presl
   Locations: J, K, L.
   Epiphyte in sheltered places.

46. *Goniophlebus prainii* (Bedd.) C. Chr.
   Locations: E, G, L.
   Epiphyte on larger trees in valleys.

47. *Grammitis hirtella* (Bl.) Tuyama
   Locations: H, I, J.
   Epiphyte in dwarf and scrub forest.

   Locations: A, H, I.
   Epiphyte in very mossy dwarf forest.

49. *Grammitis reinwardtii* Bl.
   Locations: A, B.
   Epiphyte on mossy trees.

50. *Histiopteris incisa* (Thunb.) J. Sm.
   Locations: D, I, J, K, L.
   Scrambling, on edge of forest.

51. *Histiopteris stipulacea* (Hk.) Copel.
   Location: K.
   On edge of small clearing.

52. *Hypolepis punctata* (Thunb.) Mett.
   Location: E.
   Few patches of small fronds in sandy clearing.

   Locations: A, E, G.
   Abundant on some mossy tree-trunks.

   Locations: B, H.
   Small epiphyte in dwarf forest.
55. *Hymenophyllum exsertum* Wall. ex Hook.
Epiphyte on mossy trees.

56. *Hymenophyllum javanicum* Spr.
Location: J.
Epiphyte in valley near dam.

57. *Hymenophyllum serrulatum* (Presl) C. Chr.
Locations: I, K, L.
Epiphyte in less-exposed forest.

Locations: H, K, L.
Epiphyte in crowns of trees. Easily accessible in scrub forest of small ridge.

Locations: E, G, H, J, K.
In wet mossy rocky hollows, and sometimes on rotting fallen trees.

60. *Lindsaea oblaneolata* v.A.v.R.
Locations: H, K, L.
Climbing in wet hollows; *L. pectinata* of ‘Ferns of Malaya’.

61. *Lindsaea rigida* J. Sm.
Location: I.
In sheltered parts of mossy forest, climbing.

62. *Loxogramme avenia* (Bl.) Presl
Location: J.
Epiphyte and on rocks in wet valley near dam.

63. *Macrothelypteris toresiana* (Gaud.) Ching
Locations: A, I.
In the open by roadside drains.

64. *Matonia pectinata* R. Br.
Location: I.
On the top of roadside bank, very exposed, near summit.

65. *Microsorium sarawakense* (Bak.) Holtt.
Location: L.
Epiphyte near dam.

66. *Nephrolepis davallioides* (Sw.) Kze
Locations: E, J.
Epiphyte on few large trees in deeper valleys.

67. *Nephrolepis tuberosa* (Bory) Presl
Locations: I, J.
Fronds small, in peat at edges of clearings.

68. *Oleandra pistillaris* (Sw.) C. Chr.
Locations: G, H, J, K, L.
Straggly shrub in open sheltered places. Plants of a different habit, creeping and producing fronds singly, found on the middle part of the ridge.
69. *Pityrogramma calomelanos* (L.) Link
   Locations: B, E, I, J, K.
   Usually a small plant, rapidly becoming established on earth banks and in clearings.

70. *Plagiogyria tuberculata* Copel.
   Locations: A, B, C, E, F, J, K, L.
   Abundant in wet dwarf forest, with *Blechnum vestitum*.

71. *Pneumatopteris ecallosa* (Holtt.) Holtt.
   Location: G.
   In shade on side of valley.

72. *Pteridium aquilinum* (L.) Kuhn var. *wightianum* (Ag.) Tryon
   Locations: D H, I.
   Colonising earth banks and small clearings, and rapidly becoming more common.

73. *Pteridium caudatum* (L.) Maxon var. *yarrabense* Domin
   Location: H.
   One patch on edge of clearing.

74. *Pteris longipinnula* Wall.
   Location: L.
   In shelter of forest.

75. *Pteris tripartita* Sw.
   Location: I.
   Single well-developed fertile plant on steep slope of debris.

76. *Pteris vittata* L.
   Locations: B, E, I.
   Common by side of road, but fronds often small.

77. *Schizaea malaccana* Bak.
   Locations: H, I.
   In moss on dwarf trees in sheltered hollows.

78. *Scleroglossum minus* (Fée) C. Chr.
   Locations: A, B, G, H, I, J, L.
   Epiphyte in mossy forest.

79. *Scleroglossum pusillum* (Bl.) v.A.v.R.
   Location: H.
   Epiphyte in scrub forest on small ridge.

80. *Sphaerostephanos polycarpus* (Bl.) Holtt.
   Locations: A, B, I.
   In exposed situations by roadside drains. Differs from lowland specimens in having a more hairy lower surface and lacking glands on the upper surface, but matches one collected on Taiping Hills by Day in the 1880s.

81. *Sphenomeris chinensis* (L.) Maxon var. *divaricata* (Chr.) Kramer
   Locations: G, J, L.
   On steep earth banks and cuttings.
   Location: L.
   High-climbing, clothing trunks of tall trees in valleys; upper limit of species about 5,000 feet.

83. *Trichomanes mitiolium* Bory
   Locations: A, B, E, F, H, I.
   Epiphyte in mossy dwarf forest.

84. *Trichomanes obscurum* Bl.
   Locations: C, J.
   In wet peaty hollows.

85. *Trichomanes pallidum* Bl.
   Locations: G, H.
   Epiphyte on shadier side of mossy trees; fronds almost white.

86. *Trichomanes palmatifidum* C. Muell.
   Location: C.
   Epiphyte in moss on dwarf trees. Probably more abundant but difficult to detect.

87. *Vittaria angustifolia* Bl.
   Location: F.
   Epiphyte in mossy forest.

88. *Vittaria elongata* Sw.
   Location: L.
   Epiphyte in shady forest.

89. *Vittaria elongata* Sw. var. *angustifolia* Holtt.
   Location: L.
   Epiphyte in forest.

90. *Xiphopteris hieronymusii* (C. Chr.) Holtt.
   Epiphyte in mossy forest.

91. *Xiphopteris sparsipilosa* (Holtt.) Holtt.
   Locations: B, J.
   Epiphyte in mossy forest.

**LIST OF UNIDENTIFIABLE NUMBERS**

92. *Asplenium* sp., possibly *A. pellucidum* Lam.
   Location: J.
   Epiphyte in small wet valley near dam.
   Collection. 10.11.74: 1092 (K).

93. *Belvisia* sp.
   Location: L.
   Specimen from small valley near dam.
   Collection. 10.11.74: 1171 (K).

94. *Ctenopteris* sp.
   Location: A.
   Small epiphyte on mossy tree.
   Collection. 12.10.74: 1055 (K).
95. *Cyathea* sp., probably *C. obscura* (Scort.) Copel.
   Location: J.
   Small sterile plant growing near track.
   Collection. 10.11.74: 1217 (K).

96. *Diplazium* sp., near *D. pallidum* Bl.
   Location: J.
   Fertile fronds from side of track.
   Collection. 10.11.74: 1011 (K).

97. *Diplazium* sp.
   Location: L.
   Incomplete fertile frond from edge of forest.
   Collection. 19.07.74: 1085 (K).

98. *Hymenophyllum* sp., possibly *H. polyanthos* Sw.
   Location: E.
   Epiphyte on tree in valley.
   Collections. 12.10.74: 1146 & 1147 (K).

99. *Microlepia* sp.
   Location: G.
   Single plant with sterile fronds only, much more hairy than *M. puberula*;
   under observation but lost during road improvements.
   Collections. 9.11.74: 1175 (K) & 1176 (SING).

100. *Trichomanes* sp., probably *T. maximum* Bl.
   Locations: H, I.
   Fertile fronds from wet mossy hollows.
   Collections. 2.02.75: 1144 (K) & 1145 (SING).

101. *Trichomanes* sp.
   Location: L.
   Sterile frond from mossy forest.
   Collection. 19.07.74: 1248 (K).

The list of fern species was compiled after numerous expeditions to Gunong Ulu Kali over a period of about four years. Records of previous plant collections of that place are few. Burkill (1927) indicates that Burn-Murdoch obtained specimens from the mountain in 1910, and that Robinson sent an expedition to nearby Gunong Mengkuang Lebah in 1913. Ridley (1922-25) mentions the conifer *Dacrydium elatum* growing at 2,000 feet on Gunong Ulu Kali, and the Singapore Herbarium has a record of one of his collections there in 1914. More recently Mrs. Allen (1963) collected ferns at Genting Simpah, a few miles away and at a much lower altitude. And in 1973 and 1975 the staff of the Herbarium, Singapore Botanic Gardens, collected some ferns but mainly flowering plants from the summit of Gunong Ulu Kali. Further visits could well produce records of more and new fern species.

During recent years development has transformed the mountain peak into a new hill resort. This has resulted in changes in the composition and distribution of the flora. In view of the proposed expansion and further development of the Genting Highlands it would be interesting to follow these changes due to those in the habitat.
Acknowledgements

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References


Plate 1.
Top left: *Acrophorus blumei*, part of fertile pinna, × 1.
Top right: *Ctenopteris ienuisecta* and orchid, × 1/2.
Bottom left: *Cyaheia hymenodes*, variety with reduced pinnae, × 1.
Bottom right: *Lecanopteris carnosa*, apex of frond with soral flaps, × 1.
Plate 2.
Top: *Ctenopteris contigua*, part of fertile lamina, × 2.
Centre: *Elaphoglossum* sp., fertile (above) and sterile (below) fronds.
Bottom: *Crypsinus laciniatus*, fertile fronds, × \(\frac{1}{2}\).