

DIVERSITY, ABUNDANCE AND DISTRIBUTION OF BEETLES  
IN A MOUNTAIN FOREST, BUNEN, TIBET

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DIVERSITY, ABUNDANCE AND DISTRIBUTION OF FERNS AT BUKIT BAUK  
FOREST, DUNGUN, TERENGGANU.

By  
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## LIST OF ABBREVIATIONS

asl	-	above sea level
cm	-	centimeter
$D_i$	-	density
$D_{mg}$	-	Margalef Richness Index
E	-	East
$E$	-	Evenness Index
e.g.	-	exempli gratis (Latin)
$F_i$	-	frequency
GPS	-	Global Positioning System
$H'$	-	Shannon – Wiener Diversity Index
ha	-	hectare
$H_0$	-	hypothesis null
$H_1$	-	hypothesis alternative
klx	-	kilolux
km	-	kilometer
ln	-	natural logarithm
$m^2$	-	meter square
mm	-	milimeter
N	-	North
$N$	-	total number of individuals
$Rd_i$	-	relative density
$Rf_i$	-	relative frequency
$S$	-	total number of species
$^{\circ}C$	-	degree celcius
%	-	percentage

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## ABSTRACT

Ferns are among the important plant biodiversity components in the Malaysia forests and widely distribute, making it as a good subject for the study of diversity and composition. The study was carried out from 17<sup>th</sup> to 19<sup>th</sup> August 2006 in Bukit Bauk Forest at three different elevations; low elevation (45m), middle elevation (145m) and high elevation (345m) by using five plots at each. A total of 134 individuals from eight species representing seven families of fern species have been recorded in Bukit Bauk Forest. Adiantaceae is represented by two species making it as the largest component with 82% and the most dominant family in the collection. *Taenitis blechnoides* (Willd.) Sw. was the most dominant species with 106 individuals and found in all elevations. While, *Asplenium nidus* L. is represented by only one individual. Fern diversity (Shannon–Wiener Index, 0.94) and richness (Margalef Index, 1.06) were highest in low elevation. The greater evenness was recorded at middle elevation (Evenness Index, 0.75). ANOVA analysis showed that there is significant difference for total species ( $F_{2,21}=0.000$ ,  $P<0.05$ ), while there is no significant difference for total individuals ( $F_{2,21}= 0.551$ ,  $P>0.05$ ) of ferns between three elevations at Bukit Bauk Forest. Overall, the composition of ferns at Bukit Bauk Forest is not diverse.

# KEPELBAGAIAN, KELIMPAHAN DAN TABURAN PAKU-PAKIS DI HUTAN BUKIT BAUK, DUNGUN, TERENGGANU

## ABSTRAK

Paku-pakis merupakan antara komponen penting dalam kepelbagaian tumbuhan di Hutan Malaysia dan tersebar luas, menjadikannya sebagai subjek terbaik bagi kajian kepelbagaian dan komposisi. Kajian ini telah dijalankan dari 17 hingga 19 Ogos 2006 di Hutan Bukit Bauk pada tiga ketinggian berbeza iaitu pada ketinggian paling bawah (45 m), ketinggian pertengahan (145m) dan ketinggian paling atas (345m) dengan menggunakan lima buah plot pada setiap satu ketinggian. Sejumlah 134 individu paku-pakis dari lapan spesies yang mewakili tujuh famili telah dicatatkan di Hutan Bukit Bauk. Adiantaceae diwakili oleh dua species menjadikannya sebagai komponen terbesar dengan 82% dan famili paling dominan dalam koleksi tersebut. *Taenitis blechnoides* (Willd.) Sw. merupakan spesies paling dominan dengan 106 individu serta terdapat pada setiap ketinggian. Manakala, *Asplenium nidus* L. diwakili oleh satu individu sahaja. Kepelbagaian paku-pakis (Indeks Shannon–Wiener, 0.94) dan kelimpahan (Indeks Margalef, 1.06) adalah tertinggi pada ketinggian paling bawah. Kesamarataan paku-pakis paling tinggi dicatatkan pada ketinggian pertengahan (Indeks Evenness, 0.75). Analisis ANOVA menunjukkan terdapat perbezaan ketara bagi jumlah spesies paku-pakis ( $F_{2,21}=0.000$ ,  $P<0.05$ ), manakala tiada perbezaan ketara bagi jumlah individu paku-pakis ( $F_{2,21}=0.551$ ,  $P>0.05$ ) di antara tiga ketinggian yang berbeza di Hutan Bukit Bauk. Secara keseluruhannya, komposisi paku-pakis di Hutan Bukit Bauk adalah tidak pelbagai.