Plant Diversity of Phulchoki Area, Central Nepal

A Dissertation

Submitted for the partial fulfillment of the requirements of Master's

Degree of Science in Botany (Plant Systematics)

Submitted by

Bijay Gaire

Exam Roll No.: 5800

2064/2066 (2007/2009) Batch

T.U. Regd. No.: 5-2-50-931-2003

Central Department of Botany

Tribhuvan University

Kirtipur, Kathmandu, Nepal

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RECOMMENDATION

This is to certify that the M.Sc. Dissertation work entitled **"Plant Diversity of Phulchoki Area, Central Nepal"** has been carried out by Mr. Bijay Gaire under my supervision. To the best of my knowledge this dissertation work has not been submitted for any other degree in any institution. I recommend this dissertation be accepted for the partial fulfillment of Masters of Science in Botany (Plant Systematics and Phytogeography), from Tribhuvan University, Nepal.

……

(Supervisor)
Dr. Mohan Siwakoti
Professor
Central Department of Botany
Tribhuvan University
Kirtipur, Kathmandu

Date: March 11, 2015

LETTER OF APPROVAL

The M.Sc. dissertation entitled **"Plant Diversity of Phulchoki Area, Central Nepal"** submitted at the Central Department of Botany, Tribhuvan University by Mr. Bijay Gaire, has been accepted for the partial fulfillment of requirements for Master's of Science in Botany (Plant Systematics and Phytogeography).

EXPERT COMMITTEE

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(Supervisor)	**(Head of Department)**
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Professor	Professor
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Tribhuvan University	Tribhuvan University
Kathmandu, Nepal	Kathmandu, Nepal
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Date of examination: April 2, 2015

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March 11, 2015 **Bijay Gaire**

ABSTRACT

The present study aims to find out the relationship between species richness along elevational gradient and forest types. The study was carried out in Phulchoki hill of Lalitpur district. In the study three types of forest have been categorized viz. *Castanopsis* Broadleaved forest, Mixed Broadleaved forest and *Quercus semecarpifolia* forest. The sampling plots were conducted from lower altitude at 1600 m to the upper elevation at 2650 m. Four quadrats of the size 10 m×10 m was laid horizontally at interval of 100 m each on elevational band of 100 m. Plant species were collected from July to August 2013. From the study a total of 230 plant species belonging to 185 genera and 84 families were recorded. Among 84 families Asteraceae was found to be the largest having 14 genera and 16 species each. From the total life forms of plants the angiospermic species richness is nearly equals in Mixed Broadleaved forest and *Quercus semecarpifolia* forest. From the overall IVI of tree species *Quercus semecarpifolia* was the dominant tree species with the highest importance value index (51.53), followed by *Castanopsis tribuloides* (34.38).The cause of the changes of species richness in different forest types may be due to changes in environmental factors. But there is increasing trend of species richness along elevation. The Detrended correspondence analysis (DCA) diagram showed complete turnover of the species i.e., the axis length 4.05 SD units along environmental variables which showed that species is highly heterogenous and rich in beta diversity. On the basis of recorded species, it can be concluded that the study area rich in plant diversity.

Keywords: Species richness, forest types, elevational gradient, importance value index, detrended correspondence analysis

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ABBREVIATION AND ACRONYMS

°C	:	Degree celsius
ANOVA	:	Analysis of Variance
asl	:	above sea level
CDB	:	Central Department of Botany
cm	:	centimeter
DBH	:	Diameter at breast height
DCA	:	Detrended Correspondence Analysis
DNPWC	:	Department of National Parks and Wildlife Conservation
DPR	:	Department of Plant Resources
et al.	:	and others
F	:	frequency
GoN	:	Government of Nepal
GPS	:	Global Positioning System
IVI	:	Importance value index
KATH	:	National Herbarium and Plant Laboratories
m	:	meter
NBS	:	Nepal Biodiversity Strategy
NE	:	north-east
NW	:	north-west
RBA	:	Relative basal area
RD	:	Relative density
RF	:	Relative frequency
RRI	:	Relative Radiation Index
SD	:	Standard Deviation
sp.	:	Species (singular = sp. and plural = spp.)
TUCH	:	Tribhuvan University Central Herbarium
VDC	:	Village Development Committee
WWF	:	World Wildlife Fund