

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.

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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).

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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

TABLE OF CONTENTS

RECOMMENDATION	
LETTER OF APPROVAL	
AKNOWLEDGEMENT	i
ABSTRACT	ii
CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	v
ABBREVIATIONS AND ACRONYMS	vi
1. INTRODUCTION	1
1.1 Background	1
1.2 Justification of study	4
1.3 Hypothesis	4
1.4 Objectives	4
1.5 Limitation of the study	4
2. LITERATURE REVIEW	5
2.1 Elevation and species richness pattern	5
2.2 Species richness and forest types	8
3. MATERIALS AND METHODS	10
3.1 Study Area	10
3.1.1 Climate	11
3.1.2 Biodiversity	12
3.1.2.1 Flora	12
3.1.2.2 Fauna	12

3.2 Methodology	13
3.2.1 Sampling design and data collection	13
3.2.2 Forest Vegetation	14
3.2.3 Plant Collection, Herbarium preparation and Identification	15
3.3 Data Analysis	15
3.3.1 Community Structure	15
3.4 Relative Radiation Index	16
3.5 Statistical Analysis	16
3.5.2 Ordination	17
3.5.3 Software's used	17
4. RESULTS	18
4.1 Species diversity	18
4.2 Characteristics of Forest Stands	19
4.2.1 General characteristic of Forest	19
4.2.2 Importance Value Index (IVI) of tree species	20
4.2.3 Species richness and forest type	21
4.2.4 Variation of species richness along elevation	22
4.3 Species composition	22
5. DISCUSSION	25
5.1 Species richness	25
5.1.1 Species richness and elevational gradient	25
5.1.2 Species richness and forest types	26
5.2 Species composition	27
6. CONCLUSION	29
REFERENCES	30
APPENDICES	42
PHOTO PLATES	50

LIST OF TABLES

Table 1: Families with number of genera and species	18
Table 2: Summary of Detrended Correspondence Analysis	22
Table 3: Environmental Permutation test of variables with 1 st and 2 nd DCA axes	23

LIST OF FIGURES

Figure 1: Map of the study area Godavari VDC, with Phulchoki Area	11
Figure 2: Five years average monthly minimum, maximum temperature and rainfall	12
Figure 3: Study Design	14
Figure 4: General characteristics of Forests	19
Figure 5: Importance value index of tree species	20
Figure 6: Species richness and forest type	21
Figure 7: Variation of species richness along elevation	22
Figure 8: DCA diagram	24

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
<i>et al.</i>	:	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