

**FLORISTIC STUDY AND VEGETATION ANALYSIS IN
LOWER KANGCHENJUNGHASINGHALILA RIDGE,
PANCHTHAR DISTRICT, EASTERN NEPAL**

A Dissertation Submitted for the Partial Fulfilment of the Requirement for
Master of Science in Botany (Plant Systematics and Phytogeography)
Institute of Science and Technology (IOST)

Submitted by

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November 2009



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INSTITUTE OF SCIENCE AND TECHNOLOGY
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KIRTIPUR, KATHMANDU
NEPAL

RECOMMENDATION

This is to certify that the dissertation work entitled “**Floristic Study and Vegetation Analysis in Lower Kangchenjungha-Singhalila Ridge, Panchthar District, Eastern Nepal**” submitted by **Mr. Jeevan Pandey** has been carried out under my supervision. The entire work is primarily based on the results of his research work and has not been submitted for any other degree. I recommend this dissertation work to be accepted for the partial fulfilment of Master of Science in Botany (Plant Systematics and Phytogeography).

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LETTER OF APPROVAL

This dissertation paper entitled “**Floristic Study and Vegetation Analysis in Lower Kangchenjungha-Singhalila Ridge, Panchthar District, Eastern Nepal**” submitted at the Central Department of Botany, Tribhuvan University by **Mr. Jeevan Pandey**, has been accepted for the partial fulfilment of requirements for Master of Science in Botany (Plant Systematics and Phytogeography).

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ACKNOWLEDGEMENTS

Present dissertation is an outcome of two years of research work. My endeavour alone obviously gets no credit without mentioning the name of those persons who in one way or other equally share the glory of this work.

My heartfelt gratitude and cordial thanks deeply indebted to my research supervisor Prof. Dr. Krishna Kumar Shrestha, Head, Central Department of Botany for competent guidance, valuable suggestion and encouragement through out the period of my study. His advices and ideas have been most fruitful to me. I would like to express my sincere thanks to Prof. Dr. Pramod Kumar Jha, Former Head, Central Department of Botany for his support.

I extend my special thanks to Ms. Sangita Rajbhandary, Mr. Ripu M Kunwar, Mr. Ram C Poudel, Mr. Bhaskar Adhikari, Mr. Nar B Khatri, Mr. Kamal Humagain, and Mr. Man K Dhamala for their continuous support, valuable suggestions, kind cooperation and encouragement during the field work, identification of collected species, and preparation of this report. I am also thankful to HJ Noltie and M Watson, whose helps make to determine and approve newly recorded plant species at the Royal Botanic Garden, Edinburgh (E).

I would like to thank Mr. Bharat B Shrestha for his valuable inspiration and guidance to prepare this report (especially ecological part).

I am obliged to Prof. Dr. Ram P Chaudhary, Prof. Dr. Mohan Siwakoti, and Dr. Suresh K Ghimire for their continuous inspiration and valuable suggestion.

I would like to acknowledge Ethnobotanical Society of Nepal (ESON) and Critical Ecosystem Partnership Fund (CEPF)/WWF Nepal for providing funds and technical supports to carry out the work. I also acknowledge to curators of Tribhuvan University Central Herbarium (TUCH), National Herbarium and Plant Laboratories (KATH) and Royal Botanical Garden, Edinburgh (RBGE) for providing permission to review herbarium specimens and to verify the identified specimens by tallying.

My intimate friends Narayan, Ekananda, Mukti, Govinda, Sishir, Bimal are thanked for their warm affection and cooperation. I am thankful to Mr Yub R Poudel (Shree High Altitude Herbs Growers, Ilam) and Rajendra Rai (Deep Jyoti Youth Club, Panchthar) for their significant help during the entire field work.

Finally, I am indebted to my family for their continuous support in my study. My sincere thanks go to those who help me directly or indirectly to prepare this report.

November, 2009

Jeevan Pandey

ABBREVIATIONS

BM	-	British Museum of Natural History
C	-	Central
CAMP	-	Conservation Assessment, Management and Planning
CDB	-	Central Department of Botany
CITES	-	Convention on International Trade in Endangered Species of Wild Flora and Fauna
E	-	East
Fl.	-	Flowering
Fr.	-	Fruiting
IUCN	-	International Union for Conservation of Nature
KATH	-	National Herbarium and Plant Laboratories, Godavari.
LKSR	-	Lower Kangchenjungha Singhalila Ridge
LSF	-	Lower Subalpine Forest
N	-	North
RBGE	-	Royal Botanical Garden, Edinburgh
sp.	-	species
subsp.	-	subspecies
TU	-	Tribhuvan University
TUCH	-	Tribhuvan University Central Herbarium
USF	-	Upper Subalpine Forest
UTF	-	Upper Temperate Forest
var.	-	varieties
VDC	-	Village Development Committee
WCMC	-	World Conservation Monitoring Centre

ABSTRACT

Eastern Himalayas is one of the globally important sites representing the important hotspots of the South Asia. Floristic study was conducted in Lower Kangchenjunga Singhalila Ridge, Panchthar district East Nepal to explore the plant diversity and assess species composition of tree species along the elevation gradient. The study area covers five VDCs (Sidin, Prangbung, Memeng, Chyangthapu, and Falaincha) from the Panchthar district.

Around 40 days were spent in field expeditions for plant species collection and vegetation sampling. Two extensive field trips were conducted during the research period. First pre-monsoon visit (4-18 June, 2007) was followed by second post-monsoon visit (16 September - 8 October, 2007). Sampling area was divided into three different sites bases on altitude and vegetations viz. Upper Temperate Forest (UTF), Lower Subalpine Forest (LSF), and Upper Subalpine Forest (USF). 63 quadrats (25 quadrats in UTF, 20 in LSF, and 18 in USF) were sampled in forest.

Altogether 320 plants species belonging to five species of Gymnosperms (4 genera and 3 families), 271 species of Dicotyledonae (163 genera and 64 families), and 44 species of Monocotyledonae (37 genera and 16 families) were reported from the study area. The present study area was found to be dominated by Ericaceae with 23 species followed by Rosaceae (21). Six species (viz. *Calamagrostis lahulensis*, *Begonia panchtharensis* (New to world), *Swertia wardii*, *Castanopsis longispina*, *Rubia hispidicaulis*, and *Acronema ioniostyles*) have been recorded as new addition to Flora of Nepal. One endemic (*Heracleum lallii*) and 10 threatened species (viz. *Nardostachys grandiflora*, *Swertia chirayita*, *Magnolia campbellii*, etc.) also recorded from the study area. Archaic plant species like *Magnolia campbellii*, *Taxus wallichiana*, *Myrica esculanta*, and four species from family lauraceae were recorded from the area.

Altogether 41 species of trees were recorded by sampling of 63 quadrats in three different elevation ranges. *Lithocarpus pachyphylla* was the dominant tree species with the highest importance value index (65.21) followed by *Symplocos ramosissima* (31.15) in UTF. *Acer caudatum* was the dominant tree species with the highest importance value index (42.29) followed by *Sorbus foliolosa* (37.25) in LSF. Similarly, *Rhododendron companulatum* was the dominant tree species with the highest importance value index (63.74) followed by *Abies spectabilis* (55.54) in USF. Tree species richness (diversity per 100m²) was higher in UTF (5) than in LSF (4) and USF (3). Simpson's index of dominance (C) for trees was higher in USF (0.185) followed by LSF (0.093) and UTF (0.088). Shannon-Wiener's index (H') was higher in UTF (3.980) followed by LSF (3.598) and USF (3.196).

On the basis of recorded species, this can be concluded that the study area is rich in terms of plant resources and provides habitats for plant species in the sense that documented species are threatened, endemic, and archaic floral species. The community structures of all sites were quite distinct in terms of the contribution of dominant species. The decrease in tree diversity from Upper Temperate Forest to Upper Subalpine Forest is due to the increase in altitude and other environmental factors.

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