

# **Woody plant Species Diversity in a Subtropical-Temperate Ecotone Forest of Central Nepal**

**A Dissertation**

**Submitted for the partial fulfillment of the requirements of Master's  
Degree of Science in Botany (Plant Systematics)**

**Submitted by**

**Bhishma Prasad Paudyal**

**Exam Roll No.: 5799**

**2064/2066 (2007/2009) Batch**

**T.U. Regd. No.: 5-1-33-228-2000**

**Central Department of Botany**

**Tribhuvan University**

**Kirtipur, Kathmandu, Nepal**

**2015**

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## RECOMMENDATION

This is to certify that the M.Sc. Dissertation work entitled "**Woody plant Species Diversity in a Subtropical-Temperate Ecotone Forest of Central Nepal**" has been carried out by Mr. Bishma Prasad Paudyal 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 to 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

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Date: April 5, 2015

## LETTER OF APPROVAL

The M.Sc. dissertation entitled "**Woody plant Species Diversity in a Subtropical-Temperate Ecotone Forest of Central Nepal**" submitted at the Central Department of Botany, Tribhuvan University by Mr. Bishma Prasad Paudyal has been accepted for the partial fulfillment of requirements for Master's of Science in Botany (Plant Systematics and Phytogeography).

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Date: 5<sup>th</sup> April 2015

Bhishma Prasad Paudyal

## ABSTRACT

Main aim of this study was to find the relationship between woody species richness along the elevational gradients in a Subtropical-Temperate Ecotone Forest of Central Nepal. Forest stand was sampled on northern slope of Resunga Region, Gulmi district. Standard quadrats each of 10 m × 10 m size were laid after dividing the forest stand into seven horizontal bands of 100 m elevation. Five quadrats located randomly at least 100 m apart from each other were laid on each elevation bands using systematic sampling method. All the woody species present within the quadrat were recorded whereas herbs were recorded from both inside and outside of the quadrats in the study area. Plants having diameter more than 10 cm at breast height (137 cm) were considered as trees and other woody plants were considered as understory shrubs. Diameter at breast height (DBH) was measured for all individuals of trees. IVI and diversity indices were calculated for trees and understory shrubs. Altogether 236 plant species under 79 families and 191 genera were identified. Among them, 196 species of Dicots belong to 155 genera and 68 families; 39 species of Monocots belong to 34 genera and 10 families. Gymnosperm was represented by single species (*Pinus roxburghii* Sarg.). Woody species richness along the elevational gradient showed the hump shaped pattern with elevation. The Detrended Correspondence Analysis (DCA) and Canonical Correspondence Analysis (CCA) were used to show species composition of woody species.

**Keywords:** Species diversity, elevational gradient, woody species, Detrended Correspondence Analysis (DCA), Canonical Correspondence Analysis (CCA).

## ACRONYMS & ABBREVIATIONS

|               |   |
|---------------|---|
| &             | And                                       |
| °C            | Degree Celsius                            |
| cm            | centimeter                                |
| DBH           | Diameter at breast height                 |
| e.g.          | Exempli gratia (for example)              |
| eds.          | Edition                                   |
| <i>et al.</i> | et alia (and others)                      |
| GPS           | Global Positioning System                 |
| ha            | hectare                                   |
| ind           | individual                                |
| IVI           | Importance value index                    |
| KATH          | National Herbarium and Plant Laboratories |
| m asl         | Meter above sea level                     |
| m             | meter                                     |
| mm            | millimeter                                |
| RBA           | Relative basal area                       |
| RD            | Relative density                          |
| RF            | Relative frequency                        |
| S.E.          | Standard error                            |
| SD            | Standard deviation                        |
| <i>sp.</i>    | Species                                   |
| Spp.          | Species (plural)                          |
| TUCH          | Tribhuvan University Central Herbarium    |
| VDC           | Village Development Committee             |
| viz.          | Videlicet (namely)                        |

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