

Endemic flowering plants of the Kangchenjunga Landscape, Eastern Nepal: Distribution, life forms and conservation status

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Introduction

Plant endemism and degree of threat are the two main criteria that determine ‘biodiversity hotspots’ (Myers et al. 2002). Endemism is the main criterion for hotspot status determination because endemic species are entirely dependent on a single area for their survival, and by virtue of their more restricted ranges, are often the most vulnerable (Myers 1988). These species, when confined to highly threatened ecosystems, will almost certainly be the first to be affected by extinction, and hence need effective conservation actions (Heywood and Watson 1995).

Identifying biodiversity hotspots is one way to focus conservation programs (Myers et al. 2002). The Kangchenjunga Landscape (hereafter KL) is part of the Himalaya, and one of 34 Global Biodiversity Hotspots (Mittermeier et al. 2004). While endemic species were studied on the Indian side of the KL (see Behera et al. 2002), distribution data are unavailable on the Nepalese side, and thus conservation threats have not been identified. Preliminary screening of the literature shows rich diversity of endemic flowering plants in the KL Nepal. However, this assessment is incomplete and the information on the conservation status of these species is lacking, causing an information gap preventing conservation action. Detail biological and ecological studies are needed to assess the viability of the populations of the endemic species before suggesting appropriate management and conservation strategies (Ghimire 2005).

Objectives of the research

The objectives of this study are (1) to identify the endemic plant species of the KL Nepal, (2) to study the spatial distribution, conservation status and threats, community ecology, and abundance of these species, and (3) assess local uses and traditional ecological knowledge related to endemic species uses, ecology and threats.

Study area

The KL Nepal comprises four districts of Mechi zone in eastern Nepal viz. Jhapa, Ilam, Panchthar, and Taplejung, bordering India in the east and south, China in the North and districts of Koshi zone in the west (Figure 1). The Kangchenjunga Landscape Conservation and Development Initiative (KLCDDI) has been launched in this landscape for integrated conservation and development but plans do not specifically target endemic species.

The physiography of the KL Nepal varies widely from Tarai to High Mountains. The KL Nepal comprises four ecoregions, 11 bioclimatic zones, and 23 forest types. Several of the important plant areas and at least three important bird areas have been identified. Introduction of alien

invasive species, forest encroachment for extension of agriculture, habitat loss and fragmentation due to deforestation, erosion and landslide, over-grazing, and over-exploitation or unsustainable utilization of commercially important species are some of the threats to floral biodiversity throughout the KL Nepal. The Kangchenjunga Conservation Area, only protected area of the KL Nepal, has significant contribution in conservation of the flora and fauna. Several wetlands including Mai Pokhari Ramsar site have been bridging cultural and biological diversity in the KL Nepal (Chaudhary et al. 2014).

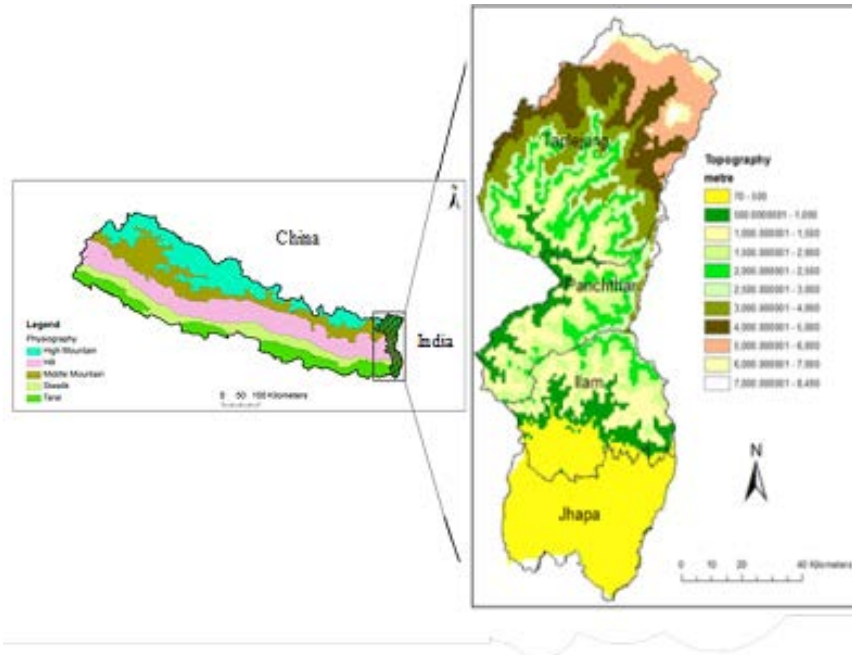


Figure 1: Map showing the districts covering Kangchenjunga Landscape of Nepal

Methodology

Literature review was conducted in the first phase of the research. Five major publications on endemic plants of Nepal were reviewed (Rajbhandari and Adhikari 2009, Rajbhandari and Dhungana 2010, 2011, Rajbhandary et al. 2010) and lists of endemic and sub-endemic plants were prepared.

In this phase (second phase), the final list of endemic plants of KL Nepal is prepared and distribution map is prepared based on the coordinate points. Brochure are being prepared highlighting the ecological importance of endemic species and community awareness programmes are underway in the districts. The conservation status and population of some of the endemic plants is assessed.

In the last phase, the conservation status and population of all the endemic species will be assessed. The threats to these species will be identified.

Results

The map is based on the coordinate points of endemic plants of Nepal that were recorded by various expedition teams made for the collection of flora of Nepal. The points were provided by Prof. Krishna Kumar Shrestha - one of the editors of FLORA OF NEPAL.

The list of endemic plants provided along with this map is the final list of endemic plants of the study area (Figure 2).

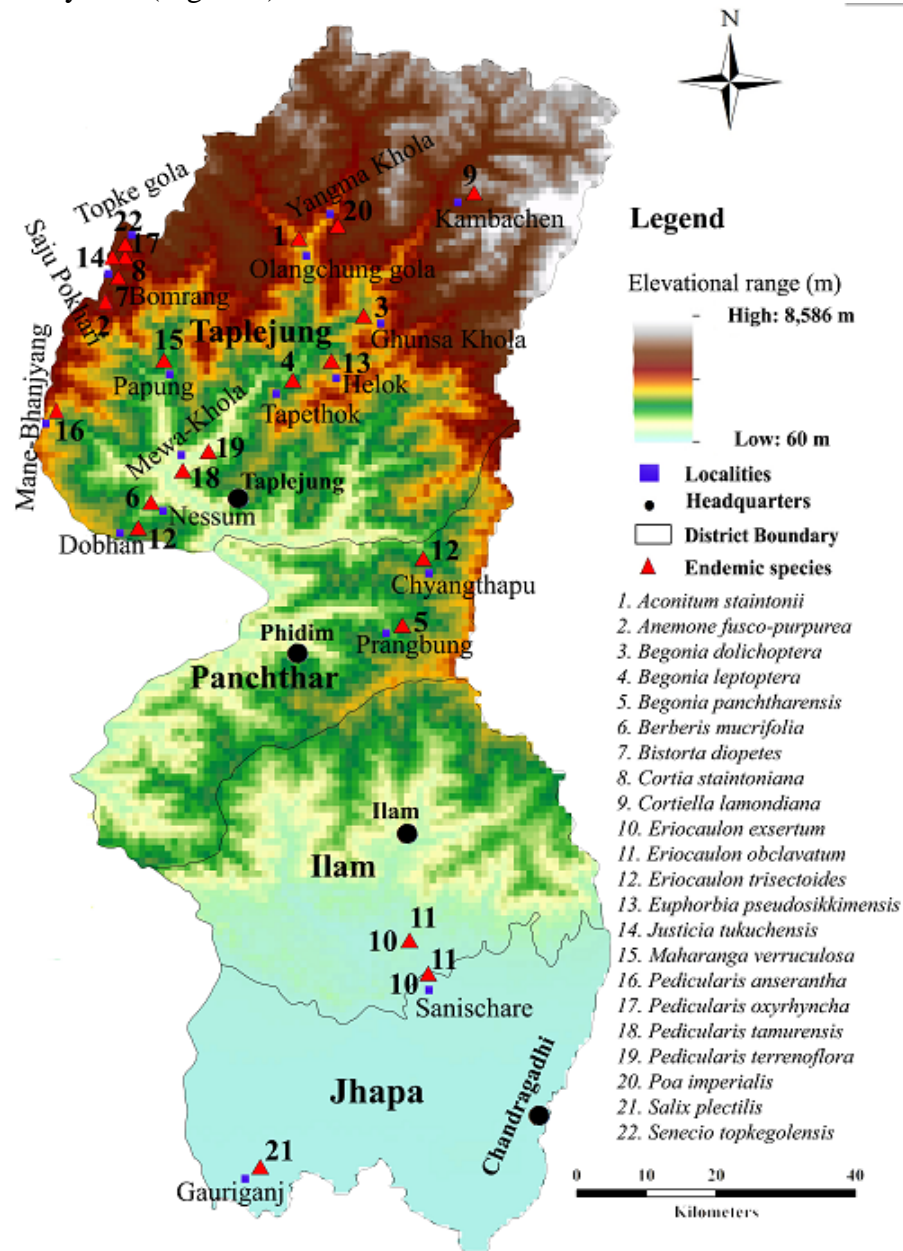


Figure 2: Distribution map of endemic plants of KL Nepal along with the list of endemic species

Limitation of research

My team is experiencing difficulty in locating endemic plants in the field based on coordinate points we have. We were not able to locate species in our recent field visit but we are trying to find out the way by consulting experts.



Begonia panchtharensis S. Rajbhandary, a newly reported endemic plant of KL Nepal (Photo courtesy: Sangeeta Rajbhandary).

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