

Vegetation and prominent flora from Begnash Tal to Tara Hill, Annapurna Conversation Area Project, Kaski district

S. Poudel

Brookfield Int'l College, Kathmandu, Nepal

An investigation of vegetation and prominent flora from Begnash to Tara Hill (a very popular trekking route of Annapurna Conservation Area) was carried out. The vegetation is exposed to different levels of human-induced disturbances. The route followed ascends gradually from Begnash passing through different vegetated areas. The altitude of the study area ranges from 1000 to 3000 masl. The vegetation of the study area comprises different types of forests such as hill sal (*Shorea robusta*), *Schima-Castanopsis*, alder, lower temperate mixed broad leaved forest, oak, upper temperate – mixed broad-leaved, *Rhododendron*, *Betula utilis*, pine and juniper and arid bushes. *Schima wallichii*, *Castanopsis indica*, *Quercus semecarpifolia*, *Rhododendron arboreum*, *Ilex dipyrrena*, *Pandanus nepalensis*, *Daphne bholua*, *Lithocarpus pachyphylla*, *Pterocarpus santalinus*, etc. are the prominent flora of the study area.

Key words: Conservation, broad leaved forest, human disturbances, trekking route, vegetation study

Introduction

Vegetation structure of any forest is determined by the complex array of environmental factors, including topography, aspect and soil besides human interference (Visalakshi 1992). Soil, rainfall, altitude and other aspects are the most important factors that reflect the vegetation distribution of any area. Because these factors vary greatly throughout the country, Nepal has different types of vegetation. The variations in the climate, soil and altitude are responsible for the range of natural vegetation in the country (Chaudhary 1999). Higher plants, with tall vegetation found in Nepal are manifested by some 35 types of forests (Stainton 1972) constituted in different bio-climatic zones from tropical to sub-alpine region. Such altitudinal differences and complexity in physiography provide habitat to grow, evolve and establish diverse plant species creating distinct ecological units in the natural environment.

Population growth in the context of a traditional agrarian technology is forcing farmers on to ever-steeper slopes, slopes unfit for sustained farming even with astonishing elaborate terracing practiced there. Meanwhile, villagers must roam farther and farther from their homes to gather fodder and firewood, thus surrounding most villages with a widening circle of denuded hillsides. Ground-holding trees are disappearing fast from the geologically young, jagged foothills of the Himalayas, which are among the most easily erodable. Landslides that destroy lives, homes, and crops occur more frequently throughout the Nepalese hills (Willan 1967, HMG 1974). The forest has suffered heavily due to increased human activities, which have been the result of change in demography in different parts of the country (Eckholm 1975). Since last few decades,

Nepal's forests have fallen under the axe in an unprecedented rate due to high demand for fuel wood and timber and also for agricultural expansion.

The assessment of the forest quality and its present status in relation to human-induced changes are highly essential for the long-term management and optimum utilization of natural resource. In this paper an attempt has been made to describe the present status of the major vegetation from Begnash Tal to Tara Hill (a popular trekking route in Annapurna Conservation Area Project) during spring of 2000.

Study area

The Annapurna Conservation area is the largest protected area of the country. It was officially gazetted in 1992 and covers 7000 sq. km. Within this conservation area altitude varies from less than 1000 to 8,091 masl, the height of Mt. Annapurna-I – the 10th highest peak in the world. Due to the unique geographical features and various climatic conditions (from sub-tropical and temperate to arid desert type) the area is endowed with excellent habitats for diverse flora and fauna. Being located at the central part of Nepal it occupies an area of great phytogeographical significance in the sense of being the "platform", where eastern and western Himalayan floristic elements merge together. The route followed gradually ascends from Begnash Tal passing through different vegetated areas. It contains over 100 species of orchid, 1226 species of plants (ACAP 1993). The Annapurna region, where lies some of the highest peaks in the world is one of the most popular trekking destination for the visitors in Nepal.

Methodology

This study was carried out in a single field visit from 5 to 20 April, 2000. The field visit attempted to explore the portion of

forested area within the Annapurna Conservation Area Project starting from Begnash Tal at 648 m to Tara Hill at 2940 m altitudes covering from subtropical to temperate bioclimatic zones. Quantitative methods were not applied for this study due to time limit. Different forest areas were observed very precisely. Many herbarium specimens were collected in different bioclimatic zones and were used to discuss the forest composition. The herbarium were identified in National Hebarium, Godavari (DPR, HMGN).

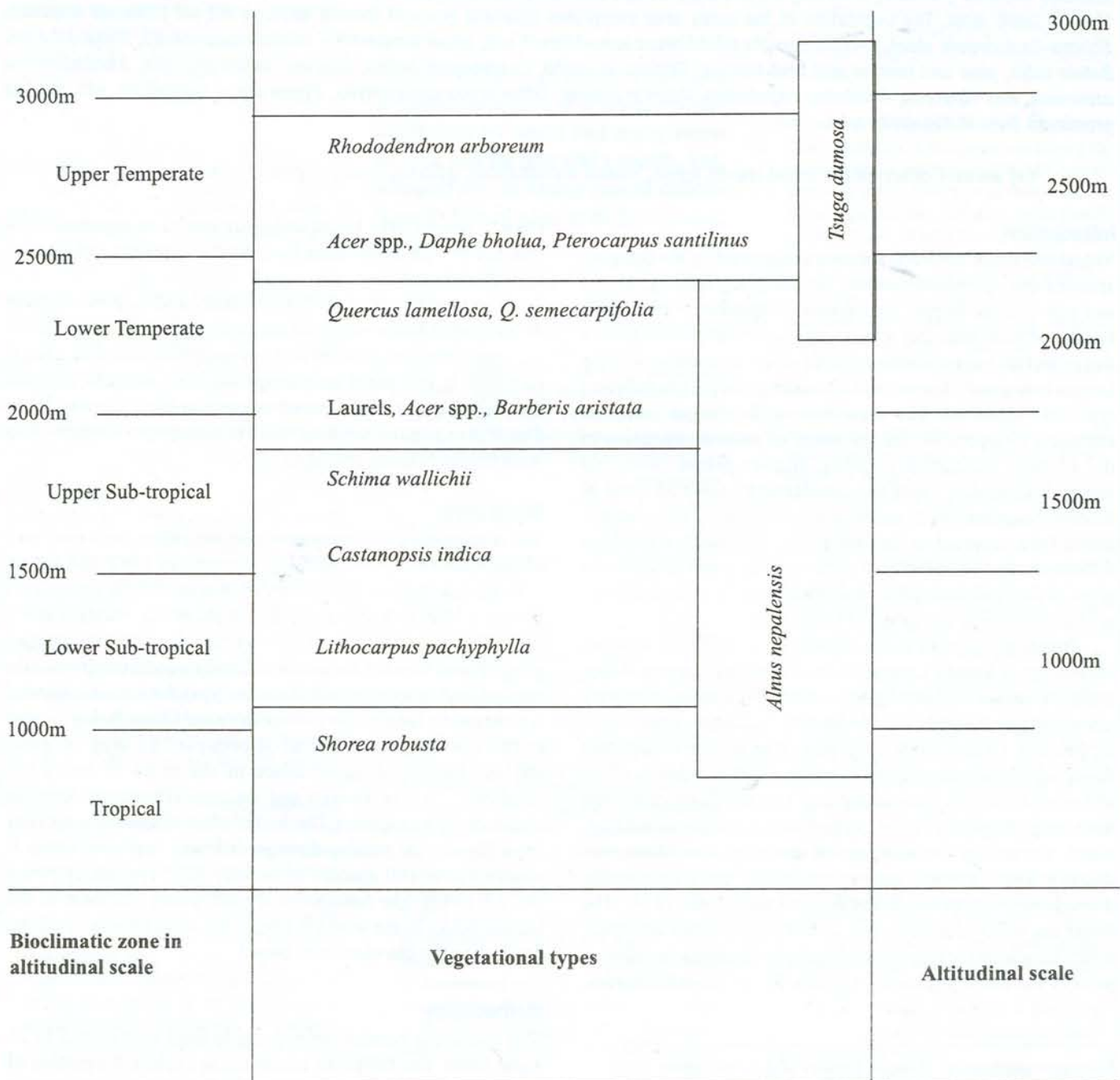
Results and discussion

The vegetation of the study area comprises different types of forests such as hill sal (*Shorea robusta*), *Schima-Castanopsis*,

alder, lower temperate mixed broad leaved forest, oak, upper temperate – mixed broad-leaved, *Rhododendron*, *Betula utilis*, pine and juniper and arid bushes.

From the Begnas (648 m) to Parche (2060 m), there is not any remarkable natural forest area. The area is characterised by the presence of *Schima-Castanopsis* forest along with hill sal forest. Hill sal (*Shorea robusta*) is confined to dry south slope in a range of 1000-1500 masl. *Schima-Castanopsis* forest includes *Schima wallichii* and *Castanopsis indica* which grows on north face from 1000-2000 masl. On the damp valleys it grows with *Pandanus nepalensis* and *Cyathea gigantea* (tree ferns). The area also possesses riverine forest around the Madi river. The most frequent species of this area were *Schima*

Figure 1: Vegetation types in the study area (Begnash Tal to Tara Hill)



wallichii, *Castanopsis indica*, *Shorea robusta* (hill sal), *Misua ferrea*, *Ficus glaberrima*, *Ficus roxburghii*, *Bombax ceiba*, *Rubus ellipticus*, etc. Other species found in this area were *Rhododendron arboreum*, *Brassiopsis* sp., *Smilax* sp., *Myrica esculenta*, *Prunus cerasoides*, *Phyllanthus emblica*, *Woodfordia fruticosa*, etc. Some herbaceous species present in this area were *Frageria* sp., *Chillenthus* sp., *Gentiana ornata*, *Oxalis* sp., *Eupatorium* sp., etc. The riverine forest along the Madi river was mainly represented by the *Bombax ceiba* with *Butea monosperma*. Other associated species were *Engelhardia spicata*, *Sapinus insigni* along with *Alnus nepalensis* in the moist part of the riverside.

The forest vegetation becomes more conspicuous after Parche (2060 m) and the place seems to be a transitional zone between villages and the natural forests which extend right up to Tara Hill (2940m). The vegetation of lower belt of this area was much influenced by the human activity and domesticated animals. For this reason the trees of this forest were with much restricted height and forest floor was almost clear with the formation of meadows at intervals due to wide canopy gaps. The whole area was characterised by presence of lower temperate mixed broad leaved forest, oak forest, upper temperate – mixed broad leaved forest and *Rhododendron* forest. From the Parche to Naulikherka (1860m), there was found dense shrub vegetation of *Barberis aristata* and *Pyracantha* sp. The lower temperate mixed broad-leaved forest species include *Quercus lamellosa*, *Rhododendron arboreum*, *Castanopsis indica*, *Lindera nacusa*, *Litsea monopecta*, *Lithocarpus pachyphylla*. The upper region of this area comprises few patches of *Tsuga dumosa*. These species were found to make dominant forest. According to Champion and Seth (1968) and Troup (1921), high elevation (2150m-3500m) forests of central Himalaya are composed mostly of evergreen broad-leaf species, especially *Quercus semecarpifolia* (oak) and *Rhododendron arboreum*, and conifer species. Thus evergreenness is predominant throughout the central Himalayan forests, except in some pockets where stands of winter deciduous species like *Aesculus indica*, *Alnus nepalensis* (alder) (especially along the water courses), *Acer* sp., *Betula utilis* and *Pyrus vestita* exist. Species which represent the lower forest strata were *Daphne bholua* (Lokta), *Cythea gigantea*, etc. Ground flora was represented by *Primula* sp., *Meconopsis* sp., *Saccharum* sp., *Fragaria* sp., along with different species of ferns and grasses. Heavily cut trees of *Rhododendron arboreum* were seen in this area. In the upper belt, i.e., above Naulikherka up to Tara Hill, the area was covered by luxuriant broad leaved *Rhododendron* forest dominated by *Rhododendron arboreum* with *Quercus* species. *Quercus* sp. is distributed throughout the whole length of Nepal forming principal forest type, but in this area it could not be found as major component of the forest. Other associated tree species include *Quercus glauca*, *Q. lamellosa*, *Lindera nacusa*, *Ilex* sp., *Lithocarpus pachyphylla*, *Tsuga dumosa*. At the north-west facing slope (around 2000m-3200m) the forest was highly dominated by *Pterocarpus santalinus*. Due to the presence of dense canopy cover, the ground vegetation was much reduced. The potential production of herbaceous vegetation in open area (sparse tree crown) is greater than that of beneath the canopy (Ellison and Huston, 1958) due to the fact that the shades below

the trees control the herbaceous vegetation to grow. Tree effect on the herbaceous layer, which accompanied by a characteristic floristic composition for each bio-type, develops better under the sparse tree crown than in open (Apko *et al.* 1997). The ground flora was represented by *Primula* spp., *Potentilla* sp., *Fragaria* sp., *Oxalis* sp., *Lycopodium* sp., *Gentiana* sp., etc. along with different species of ferns and grasses.

Conclusion and recommendation

The Annapurna Conservation Area is one of the perfect trekking destination of the country with luxuriant forest. This area is less restrictive and more flexible than conventional national parks and reserve. In this area people are permitted to continue their traditional subsistence activities which are integrated into a framework of sound resource management and ecological development. The program is multi-dimensional, striving to balance the needs of the local people, trekkers and natural environment. This area is also the habitat of diverse ethnic group who are practicing their traditional knowledge of medicinal plants. Several workers have made survey on vegetation and carried out extensive research on medicinal plants of this area. On the basis of conclusion I would like to make some recommendation for the further conservation of this area.

The human interferences threst to the forest which may alter the vegetation, installing teashops, small rest houses and 'bhatish' (small houses made for staying overnight for the long walkers), along with domestic animals, that are fed from the forest fodder, amidst the jungle. Similar type of condition was observed in a next trekking route, Kalinchok area by Subedi and Sharma (1994-1995). The studied area is situated near the densely populated village. Such type of encroachment should be visualised as soon as possible by management level, and control measures should be taken effectively. Although Annapurna Conservation Area Project was implemented with the purpose of promoting biodiversity through conservation, cutting down the trees for roofing, making furnitures, and construction purpose in large quantity illegally contributed for the destruction of big trees of this area. Such practice should be immediately stopped where ACAP office should play more active role.

As mentioned earlier, this region is inhabitat by various ethnic groups. They have the long history of using plants to cure various diseases locally. Gurungs are the main ethnic group living in this area. This region harbours quite a large number of economically and medicinally important plant species. Some of the plants like *Neopicrorhiza scrophulariifolia*, *Paris polyphylla*, Chautaa Jhor (Asclipidiaceae), *Corydalis chaerophylla*, *Dactylorhiza hatagirae*, *Swertia chirayta*, *Mahonia napaulensis*, etc. are very good medicinal plants and *Daphne bholua* is economically very important plant as it is used to make Nepali paper. An inventory of the useful plants is felt highly urgent for proper management and sustainable supply of these valuable resources in future.

The midhills are most suitable place in Nepal for the visitors who come to see our luxuriant forest, ecchanting mountain views, zigzag and up and down trekking trails, serpentine perennial rivers for their natural beauty, enjoyable waterfalls and for the animals and plants that occur in them. ACAP is the

most popular trekking route of the country. By proper management, it is essential to promote eco-tourism in this area. To promote the eco-tourism, the local community must be made aware of the role of threatened, economically and ecologically important biodiversity that helps to utilize the biodiversity wisely for their basic needs. ■

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