

ETHNOMEDICINAL PLANTS OF MALIKA FOREST, BAGLUNG, WEST NEPAL

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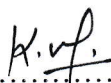
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Kirtipur, Kathmandu, Nepal

May, 2024

DECLARATION

This thesis entitled “**ETHNOMEDICINAL PLANTS OF MALIKA FOREST, BAGLUNG, WEST NEPAL**” submitted as the partial fulfillment for the degree of Masters of Science (M.Sc.) in Botany to the Central Department of Botany, Institute of Science and Technology (IOST), Tribhuvan University, Nepal, is a research work carried out by me under the supervision of Dr. Deepak Raj Pant, Associate Professor, Central Department of Botany, Tribhuvan University. The research work is original and has not been submitted earlier to any university or institute, here or elsewhere, for the award of any other degree.



.....
Kul Shekhar Upadhyaya

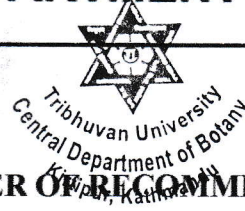
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LETTER OF RECOMMENDATION

This is to certify that the dissertation work entitled “**ETHNOMEDICINAL PLANTS OF MALIKA FOREST, BAGLUNG, WEST NEPAL**” has been carried out by **Mr. Kul Shekhar Upadhyaya** under my supervision. This entire research was accomplished on the basis of the candidate’s original work. To the best of my knowledge, this work has not been submitted for any other academic degree. I recommend that this work be accepted as part of the requirement for a Master’s Degree in Botany at the Institute of Science and Technology, Tribhuvan University, Kathmandu, Nepal.

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TRIBHUVAN UNIVERSITY
INSTITUTE OF SCIENCE AND TECHNOLOGY
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LETTER OF APPROVAL

The M.Sc. Dissertation entitled “**ETHNOMEDICINAL PLANTS OF MALIKA FOREST, BAGLUNG, WEST NEPAL**” submitted by **Mr. Kul Shekhar Upadhyaya** has been accepted for the partial fulfillment of his Masters Degree in Botany (Plant Systematics and Biodiversity Conservation Unit).

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Kul Shekhar Upadhyaya

LIST OF ACRONYMS AND ABBREVIATIONS

CBD	Convention on Biological Diversity
DFO	Division Forest Office
ENT	Ear, Nose and Throat
FGDs	Focus Group Discussions
FI	Frequency Index
ICF	Informant Consensus Factor
IUCN	International Union for Conservation of Nature
KATH	National Herbarium and Plant Laboratories
KII	Key Informant Interviews
MAPs	Medicinal and Aromatic Plants
Spp.	Species
UV	Use Value
UF	Use Frequency
WHO	World Health Organization

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ABSTRACT

The Baglung Municipality of Baglung district is located in the West Nepal province of Gandaki. This area is rich in flora and culture. This study documents plant species that are ethnomedicinally valuable in the area. Several plant specimens were prepared during the field tour. During Ethnobotanical analysis quantitative indicators like informant consensus factor (ICF), Frequency Index (FI) and Used Value (UV) were utilized to identify plant species with significant usage in the research area. The study area comprises 180 plants from 59 families. The Asteraceae family was the most dominant while the Saururaceae family had the least presence. The informant consensus factor values ranged between 0.11 to 0.92. The high ICF value was obtained for gynecological disorders while least was obtained for gastro-intestinal disorders. The frequency index showed that *Daphne bhoola*, *Rhododendron arboreum*, *Artemisia indica* and *Zanthoxylum armatum* were the most commonly used plant species with the highest frequency index. Among the plant used 6% had a high use value, 21% had a moderate use value and 73% had a low use value. Among them, highest value was observed for *Zanthoxylum armatum* (2.6) followed by *Daphne bhoola* (2.4).

Keywords: *Ethnobotany, use value, West Nepal, disorders, flora, informant*

शोधसार

बाग्लुङ जिल्लाको बाग्लुङ नगरपालिका पश्चिम नेपालको गण्डकी प्रदेशमा अवस्थित छ। यो क्षेत्र वनस्पति र संस्कृतिमा धनी छ। यस अध्ययनले यस क्षेत्रमा जातीय वनस्पतिगत रूपमा मूल्यवान वनस्पति प्रजातिहरूको अभिलेखिकरण गर्दछ। अध्ययनका क्रममा धेरै बिरुवाका नमुनाहरू तयार पारिएका थिए। एथनोबोटैनिकल विश्लेषणको क्रममा मात्रात्मक सूचकहरू जस्तै सूचनात्मक सहमति कारक (एफआईसी) फ्रिक्वेन्सी इन्डेक्स (एफआई) र प्रयोग गरिएको मान (यूभी) अनुसन्धान क्षेत्रमा महत्त्वपूर्ण प्रयोगका साथ बोटबिरुवाका प्रजातिहरू पहिचान गर्न प्रयोग गरियो। अध्ययन क्षेत्रमा ५९ परिवारका १८० प्रजातिका बोटबिरुवाहरू पाइएको थियो। सूचनात्मक सहमति कारकको मान 0.11 देखि 0.92 सम्म पाइएकोमा स्त्री रोग विकार प्रयोगका लागि उच्च मान प्राप्त गरिएको थियो जबकि ग्यास्ट्रो-इन्टेस्टाइनल विकारहरूका लागि न्यूनतम आईसीएफ मान प्राप्त गरिएको थियो। फ्रिक्वेन्सी सूचकाङ्कले देखाएअनुसार लोक्ता, लालिगुराँस, तिते पाती र टिमुर सबैभन्दा धेरै प्रयोग हुने बोटबिरुवा प्रजातिहरू थिए। प्रयोग गरिएका बोटबिरुवाहरू मध्ये, ६% प्रजातिलाई उच्च प्रयोग मूल्य, २१% प्रजातिलाई मध्यम मूल्य र ७३% प्रजातिलाई कम प्रयोग मूल्यको रूपमा वर्गीकृत गरिएको थियो। तीमध्ये सबैभन्दा बढी (२.६) टिमुरको लागि र त्यसपछि (२.४) लोक्ताको लागि देखिएको थियो।

मुख्य शब्दहरू: एथनोबोटनी, वनस्पति, उपयोग मूल्य, पश्चिम नेपाल,

CHAPTER 1: INTRODUCTION

1.1 Ethnobotany

People have been continuously depend upon plants for life. There continuously exists a relationship between the plant and the individuals over time. The ethnobotanical research is one of the scientific disciplines which help in biodiversity conservation, socio economic development, sustainable use of plant resources and natural resources management. Nepal has a diverse range of biodiversity with assorted ethnic groups and conventional information. Diverse ethnic groups have a lot of information of folk medicinal practices (Manandhar, 1993). Additionally, most communities live in countrysides faraway from cutting edge medication and wellbeing offices. As a result; they have to depend on restorative plant for treating any sickness (Joshi, 2014). These communities utilize around 23% of flowering plants as a medication (Shrestha and Shrestha, 2000). Almost 75% of the population of Nepal depends upon conventional healers for the treatment of different illnesses (Manandhar, 1980).

The term 'Ethnobotany' was coined by John W. Harshberger in 1895. Ethnobotany is the process and pattern of utilization of plants through traditional knowledge for a variety of human needs. It is the interaction of people, plant and culture (Harshberger, 1986). It considered how the neighborhood individuals utilize plant assets agreeing to conventional information. Different ethnobotanical approaches have been created for the think about of plant assets utilized by local people of a specific area (Martin, 1995).Folk therapeutic plants are of incredible significance in present day therapeutic science, industry, and agribusiness (Ghimire, 2008). The information of the restorative utilization of plants has great significance. Such data can lead to the revelation of rough drugs contributing to development of advanced pharmaceutical products (Ghimire, 2008). The inborn information about utilization of plants can be the source of crude data for industry (Ghimire, 2008; Hasan *et al.*, 2013).

Over the previous few decades, the documentation of ethnobotany has made a difference to distinguish the potential therapeutic esteem of plants. Based on conventional utilization, restorative plants are presently being considered for pharmacological potential (Uprety *et al.*, 2010). The documentation of conventional information is distinguished as of incredible significance for present day allopathic

pharmaceuticals (Ghimire, 2008; Uprety *et al.*, 2010). The study of traditional medicines led to the discovery of new drugs like aspirin, ephedrine, ergometrine, digitoxin, and vinblastine and so on. Around 70%-80% of the world's population relies on medicinal plants. Due to their range of cultures and ownership of traditional knowledge; ethnic communities are highly knowledgeable about ways of treating illness (Manandhar, 1993). The expanding quest for restorative plants for large-scale commercial home grown businesses has expanded over-exploitation (Ghimire, 2008). Overuse and increased demand have decreased the supply of medicinal plants, increasing the need for plants with medicinal properties (Ghimire, 2008).

Since majority of the Plants that are medicinal are collected in the wild, nearby individuals have a discernment of the wild plants as free item and overharvest them (Hasan *et al.*, 2013). So the economical gathering and preservation of medicinal and aromatic plants (MAPs) are most required (Ghimire, 2008). Nearby individuals being a part of a specific range have more data on the condition of normal assets of the zone and the application of inborn information in utilization and preservation can be one of the leading strategies in show days. Conventions, culture, customs, religion, and inborn knowledge of plants have a noteworthy part within the making administration and building procedures. Nepals biological, geographical, historic, cultural diversity of is one of the source and opportunity still in some unexplored area of Nepal geography (Rokaya *et al.*, 2010).

1.2 Phytogeography and Forests of Nepal

Nepal is located in a transitional zone that is made up of different floristic regions: Indo-malesian floristic region in the southeast, Indian floristic region in the South, Sudano-zambeian floristic region in the southwest, Sino-Japanese floristic region in the east, Central Asiatic floristic region in the north and Inrano- Turanean floristic region in the west (Welk, 2015). There are 118 ecosystem, 35 different types of forest and 75 types of vegetation in Nepal Stainton (1972). Dobremez (1976) divided Nepal Himalaya into four biogeographic regions: Eastern, Central, Western and Trans Himalayan. .

Nepal has a remarkably diverse range of flora in a comparatively limited geographic area because to variations in topography, climate and altitude (from 60m asl. in the

Southern Terai to over 8000 m asl. in the northern Himalayas). Nepal has a gift of over 6,653 different kinds of flowers (Kunwar *et al.*, 2015).

1.3 Rationale of the study

The majority of the medicinal plants are accumulated outside in the wild. Recognizing the current status of medicinal plants as well as other forest items is noteworthy for their conservation. The life of human beings is stable because of availability of a variety of services including food and herbal medicine, clean air, water and many more. The information of the utilization of common assets gives approximate data of services which is possible through the documentation of ethno botanical information.

Malika forest is a unique remnant sub-tropical-Temperate forest of western Nepal. It is a home of many subtropical to temperate plants including various threatened species like *Paris polyphylla* (Satuwa) and some Orchid species. Some medicinal plants like *Aconitum ferox* (Bish), *Acorus calamus* (Bojho), *Rheum webbianum* (Chulthiamilo), *Swertia chirayita* (chiraita), *Corydalis chaerophylla* (Pahale) and *Geranium wallichianum* (Raktamul). Some works have been done in this forest, but their contents do not reflect the actual knowledge of plant people relation. There is poor representation of specimens in National Herbarium and Plant laboratories (KATH) not only for the species from Malika forest but also from highlands of Western Nepal, especially Rukum, Rolpa and Baglung districts. A comprehensive study of ethnomedicinal flora of this region is necessary. Conservation of important plant resources is needed within the forest, which is considered most essential for conservation and economic status of local people.

1.4 Objective

The main purpose of this research is to record the knowledge of ethnomedicinal value of the plant species of Malika Community Forest, Baglung district. The Following are the specific objectives:

- Enumeration of plants species found in malika forest area
- To document information regarding the use of medicinal plants from Malika forest area.

1.5 Limitations of the study

The present study has following limitations.

- ✓ This work has been carried out in a small geographical area due to which the finding may not be generalized throughout the country
- ✓ A whole medication practices (dosages, times, and techniques) were not documented due to unwillingness of the respondents to share such information.

CHAPTER 2: MATERIALS AND METHODS

2.1 Study Area

2.1.1 Physiography and location

The study site, Malika forest is located in ward no 5, 6, and 7 of Baglung Municipality of Baglung district, Gandaki province. The study area lies between 28°17'30'' N - 28°19'00''N latitudes and 83°32'30'' E -83°34'00'' E longitudes. Phytogeographically this area comes under western Himalaya (Hara *et al.*, 1979). The forest landscape is unique and maintains greenery of the city. It is a temperate, mixed deciduous type of vegetation managed under community forest user group. The study area is primarily sloped with an elevation range of 1500 m to 2750m. Beldhunga is the highest peak (2750 m) followed by many historical as well as religious peaks like, Karikot, Majhkot, Rangrangkot, and Panchakot.

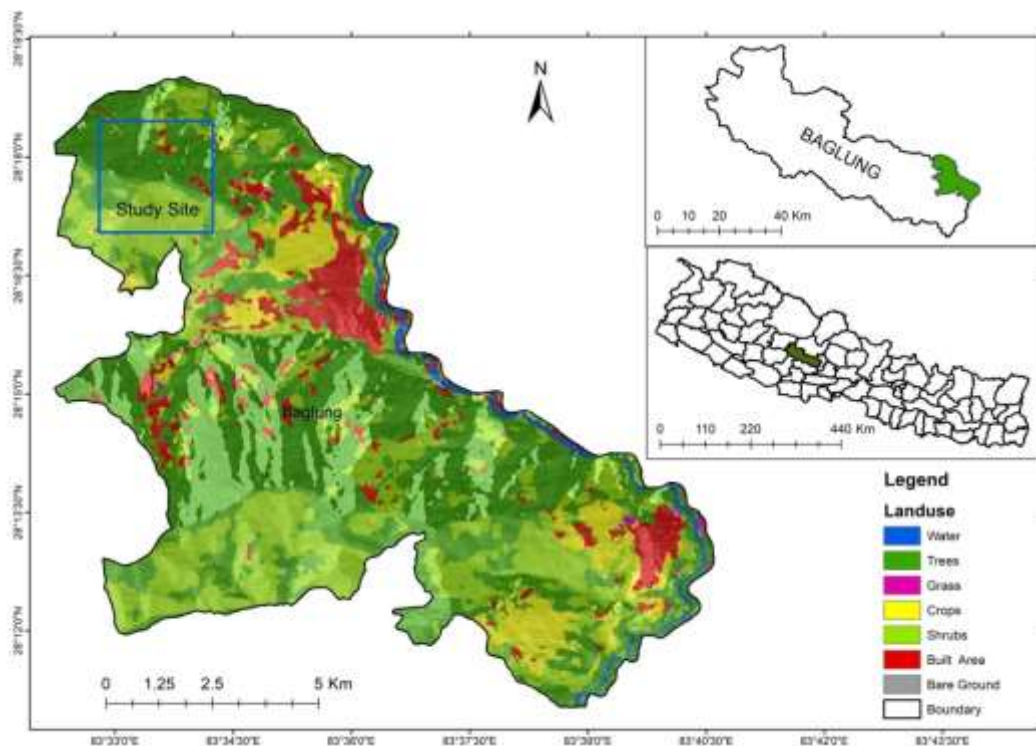


Figure 1: Map showing the study area.

2.1.2 Climate

The Study sites has humid, subtropical climate. The mean highest temperature is 32°C, while the mean lowest temperature is 8°C (Figure 2). Rainfall ranged between 2 to 920.0 mm. Climatic data of Baglung Municipality over the ten years period (2010 – 2021) indicates there is a trend towards rising temperatures from January to August and falling temperatures both at the maximum and minimum from September to December.

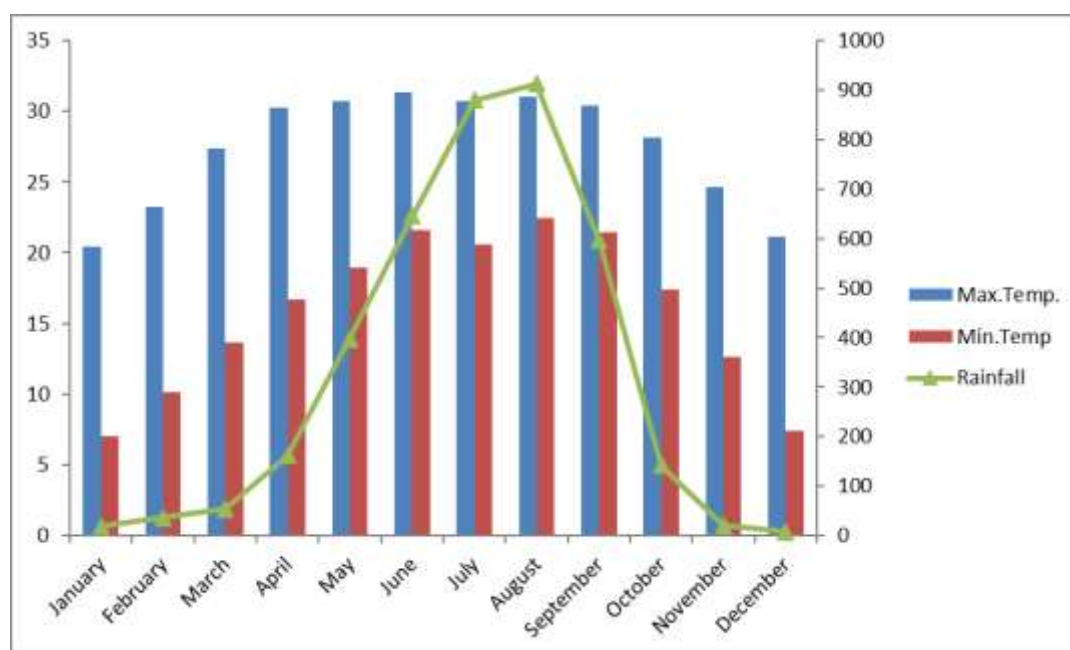


Figure 2: Baglung Municipality Mean monthly maximum and lowest temperatures (°C) and precipitation (mm) during 2010 - 2020. (Source: Department of Hydrology and Meteorology, Station: Baglung, Index number: 0605, 2022)

2.1.3 Vegetation

The study area is located in the Mahabharat range, which has mixed, temperate, deciduous vegetation. *Pinus roxburghii*, *Rhododendron arboreum* and *Alnus nepalensis* are the three main species in the lower elevation. Above 2000 meters, a mixed type of vegetation can be found. The dominant plant species include *Pinus wallichiana*, *Rhododendron arboreum*, *Symplocos ramosissima* and Shrub *Rubus ellipticus*, *Berberis aristata* and *Gaultheria fragrantissima*. The dominant herb species include *Stellaria media*, *Cynodon dactylon* and some herbs with medicinal values such as *Bergenia ciliata* and *Paris polyphylla*.

2.1.4 Ethnicity

There are 15924 households in Baglung municipality. The total population is 56102 of which 26080 are male and 30022 female. The dominant communities living in Baglung Municipality include Chhetri, Kami, Damai, Sarki, Magar and Chhantyal (CBS, 2022). Baglung district residents speak 12 languages similar to their mother tongues, including Nepali (90.05%), Magar (7.95%), Chhantyal (0.59%), Newar (0.53%), Gurung (1.6%), etc. These people belong to a variety of religions, including Sikhism, Christianity, Jainism, Kirat, Buddhism and Hinduism, (CBS, 2022).

2.2 Methods

2.2.1. Ethical issues

Before conducting the study, its objectives were discussed with the local authorities of the study area. First permission was taken from the department of Plant Resources to conduct research. Then permissions were taken from local authorities as well as from informants before documenting their traditional knowledge. During the research, the purposes of the study were clarified to them. During the specimen collection unnecessary collection was avoided for conservation of plants.

2.2.2 Ethnobotanical study

Ethnobotanical study was carried out in the study area during three field visits on August, September and October 2022. In the beginning, a preliminary investigation was carried out to collect ethnobotanical data. Following the initial survey, a focus group discussion was held with people living nearby. During focus group discussions, information on the use of plants locally was acquired through individual interviews. Both some secondary literature and the original data gathered during the field visits served as a basis for the research work. Focus Group Discussions (FGDs), Key Informants Interviews (KII), Participatory observations, Community Resource Mapping and transect walks were the main techniques used to collect data. Two methods: the inventory technique and the Survey (Martin, 1995) were used for gathering ethnobotanical information.

FGD is important and reliable method in order to get the primary data from the field. Three FGDs were carried out in 3 different parts of the community: Beldhunga, Panchakot and Malika. Members of the ward committee, community forest users, local

healers, politicians, teachers and other people participated in discussion. Similarly, Local healers, local knowledgeable people, and Medicinal plant users were selected for key informant interview using the semi-structured interviews. A total of 60 (37 Male and 23 Female) respondents were selected. During the interviews, the medicinal uses, local names, the type of illness treated, the plant parts used, and mode of use was recorded. The field visits were carried out with the local people to collect and identify mentioned medicinal plants for the herbarium. Photographs and videos were taken for further simplicity.

2.2.3 Collection of Specimens and herbarium preparation

The community members helped in the collection of the plant specimens. Flowering plants were collected in different months May to June and August to October 2022. The collection was made by Transit walk method, walking through the trails made by human along the forest covering all the possible habitats. The Collection was mainly focused on ethnomedicinally important plant having flowering and fruiting. Local people were taken during field for proper guidance of trails and collection of unique plants.

The collected specimens were tagged, and field notes were taken including latitude and longitude, elevation, habitat and comments. The collection of plant specimens, herbarium preparation and their preservation was done by following (Bridson and Forman, 1992).

2.2.4 Identification and Nomenclature

The plant species were identified using different methods: field identification with the help of local people with local name, identification at TUCH lab using taxonomic literatures and expert guidance, identification at KATH by examining the housed specimens. Different online plant database and several published literature were used for valid nomenclature and author citation of the plant (Shrestha et al., 2022) and other literature were followed for nomenclature. Online resources like world flora online (<http://www.worldfloraonline.org/>), Catalogue of life (<https://www.catalogueoflife.org/>) and the International Plant Names Index (<https://www.ipni.org/>)_were also checked for accepted scientific name of plant species. The specimens from the herbarium will be placed in the Tribhuvan University Central Herbarium (TUCH).

2.3 Data Analysis

The following numerical parameters were evaluated for the Ethnobotanical plants usage in research area:

The informant consensus factor is used for identifying the categories of ailments first introduced by Trotter and Logan (1986), calculated as:

$$ICF = \frac{Nur - Nt}{Nur - 1}$$

Where 'Nt' is the total number of species used in each ailments category by all informants, and 'Nur' is the number of usage reports in each ailments category. (Heinrich *et al.*, 1998).

A low value suggests that the informants argue on which species should be used to treat diseases, whereas a higher value (near to 1) shows that a significant number of the informants utilize few species. It uses informant consensus data as a means to identify the potentially active medicinal plants. The ICF value is between 0 and 1.

Use value (UV) provides the relative importance of useful species on medicinally important species (Phillips and Gentry, 1993).

$$UV = \frac{Uc}{N}$$

Where 'N' is the number of informants questioned for the given plant species and 'Uc' is the number of use reports stated by each informant for a specific species. It provides information on species having single or multiple purposes.

Similarly, the relative frequency of citation (RFC) was calculated with the formula (Tardio and Santayana, 2008):

$$RFC = \frac{U}{N}$$

Where 'U' = Number of informants who mentioned the application of specific plant species and 'N' is the total number of survey informants that were interviewed.

- ✓ Ethnobotanical data were analyzed in Microsoft excel 2010.

CHAPTER 3: RESULTS

3.1 Enumeration of Medicinal Plants

In present study, as a whole 180 plant species that belongs to 59 families and 128 genera was identified as medicinal plants (Annex 1). The species were distributed in 59 different families. Asteraceae (14 spp.) was the greatest family in terms of species count in the region followed by, Polygonaceae (13 spp.), Fabaceae (9 spp.), Rosaceae (8 spp.) and Lamiaceae (7 spp.) while Aquifoliaceae, Elaeagnaceae and Buxaceae were the smallest families with a very few number of species (Figure 3). Within the study area *Perisicacria* (Polygonaceae) with seven species, was the largest genus followed by *Anaphalis* (5), *Hypericum* (4) and *Lysimachai*, *Galium*, *Globba*, *Impatiens*, *Asparagus*, *Quercus* (each with 3 species) and *Hydrocotyle*, *Begonia*, *Codonopsis*, *Stellaria*, *Lyonia*, *Rubia* and *Eurya* (each with 2 species).

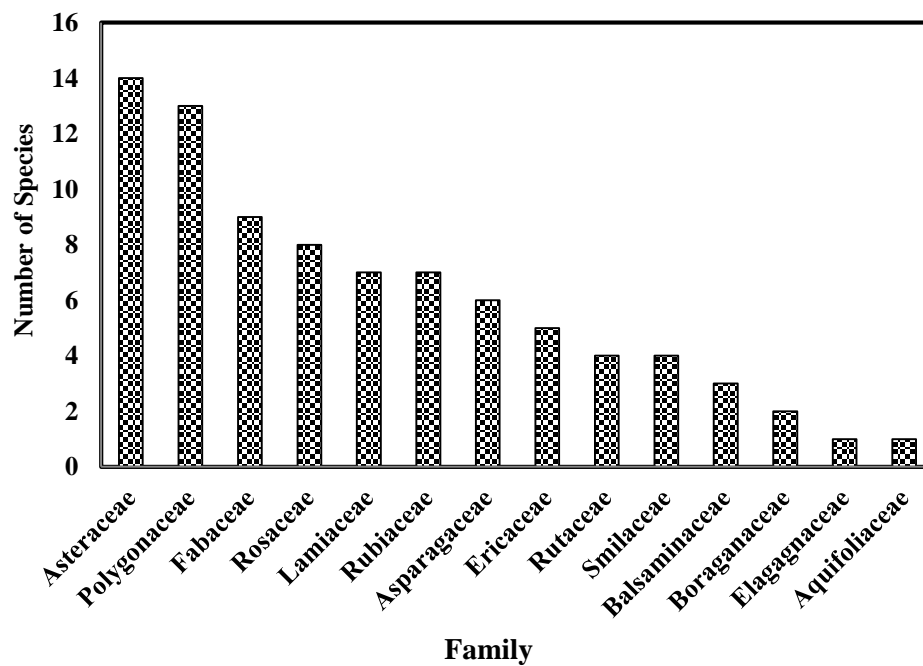


Figure 3: Families with number of species.

3.2 Life Forms of Medicinal plants

Among the species found in the study area, 58.3% were herbs, 17.8% Shrubs, 7.2% Climbers and 16.7% Trees. (Annex 1).

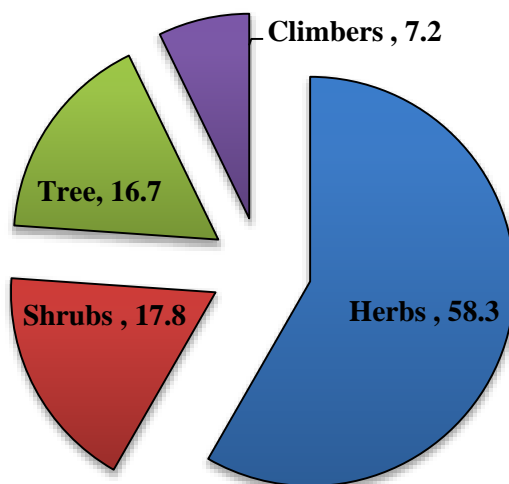


Figure 4: Life forms of the medicinal plants.

3.3 Parts Used

Various plant parts were utilized for multiple purposes. Altogether 8 different parts such as leaves, Fruits, Shoots, Roots, Seed, Bark, Flower and Whole parts have been utilized in several natural medicinal uses. The majority of the time, the whole plants (65 species) were utilized, followed by leaves (63 species), root (57 species), fruits (36 species), shoot (23 species), Flowers (19 species), bark (19 species) and seed (16 species).

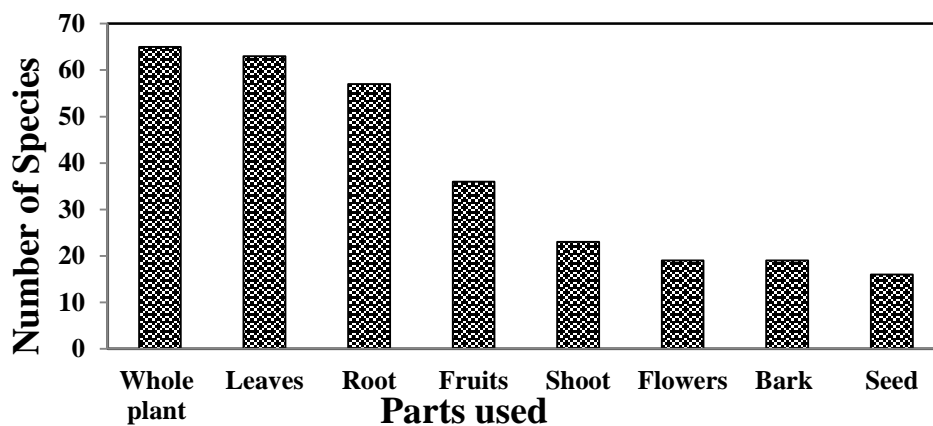


Figure 5: Parts used in different species.

3.4 The Informant consensus factor (ICF)

In this study, with a mean value of (0.51), the informant consensus factors value ranged from (0.11) to (0.92). The greater ICF value (0.92) was observed for gynecological problems which are followed by ophthalmic use with ICF value (0.91). Use of plants as toxin had ICF value (0.78) while use in dental and oral problems had ICF value (0.75). The lowest ICF value (0.11) was observed for gastro-intestinal disorders. . The ICF value for different ailment categories and each type of ailments list of plant species is shown in (Table: 1).

Table 1: Informant consensus factor (ICF) for different ailments.

S.N	Ailment	Details of ailment category	Nt.	Nur	Fic	Plant Species
1	Cut and Wounds	Cut wounds and bleeding	34	57	0.41	<i>Anaphalis contorta</i> , <i>A. margaritacea</i> , <i>Anthriscus nemorosa</i> , <i>Asparagus filicinus</i> , <i>Bauhinia purpurea</i> , <i>Berberis aristata</i> , <i>Bistorta amplexicaulis</i> , <i>Boeninghausenia albiflora</i> , <i>Breynia retusa</i> , <i>Carex cruciata</i> , <i>Corydalis chaerophylla</i> , <i>Cyperus difformis</i> , <i>Gaultheria fragrantissima</i> , <i>Galium elegans</i> , <i>Hypericum choisianum</i> , <i>Impatiens discolor</i> , <i>Iris decora</i> , <i>Lindera pulcherrima</i> , <i>Myrsine semiserrata</i> , <i>Parochetus communis</i> , <i>Persicaria capitata</i> , <i>Pieris formosa</i> , <i>Plantago depressa</i> , <i>Pseudognaphalium adnatum</i> , <i>Rubus paniculatus</i> , <i>Rumex nepalensis</i> , <i>Sarcococca hookeriana</i> , <i>Skimmia arborescens</i> , <i>Stellaria nepalensis</i> , <i>Swertia paniculata</i> , <i>Taraxacum eriopodum</i> , <i>Taxus wallichiana</i> , <i>Thalictrum foliolosum</i> , <i>Zanthoxylum oxyphyllum</i> .
2	Dermatological disorder	mumps, allergies, burns and Skin related diseases	22	40	0.46	<i>Asparagus filicinus</i> , <i>Bistorta amplexicaulis</i> , <i>Cyanthillium cinereum</i> , <i>Didymocarpus aromaticus</i> , <i>Eriocapitella rivularis</i> , <i>Hedera nepalensis</i> , <i>Henckelia urticifolia</i> , <i>Houttuynia cordata</i> , <i>Hydrangea febrifuga</i> , <i>Lyonia villosa</i> , <i>Lysimachai evalis</i> , <i>Cathetus parvifolius</i> , <i>Pilea symmeria</i> ,

						<i>Plantago depressa, Schima wallichii, Smilax menispermoidea, Smilax ovalifolia, Stellaria himalayensis, Swertia paniculata, Taraxacum eriopodum, Tsuga dumosa, Vicia hirsuta .</i>
3	Dental and Oral	Oral and Toothache , swelling of gums.	6	21	0.75	<i>Myrsine semiserrata, Rubia wallichiana, Schima wallichii, Stellaria himalayensis, Zanthoxylum oxyphyllum, Zanthoxylum armatum</i>
4	Fever and Headache	Fever and Headache	32	57	0.44	<i>Hypericum japonicum, Indigofera exilis, Impatiens insignis, Justicia simplex, Leucas decemdentata, Maharanga bicolor, Lysimachai laxa, Oplismenus undulatifolius, Osbeckia stellata, Oxytropis duthieana , Paspalum distichum, Persicaria pubescens, Cathetus parvifolius, Agrimonia pilosa, Asparagus racemosus, Bidens pilosa, Euphorbia hirta, Gonostegia hirta , Houttuynia cordata, Hydrocotyle himalaica, Hydrocotyle nepalensis, Hypericum choisianum, Premna bracteata, Rumex nepalensis, Schizotechium paniculatam, Smilax aspera, Symplocos lucida, Thalictrum foliolosum, Viburnum erubescens, Wikstroemia canescens.</i>

5	Gasto- Intestinal disorders	Stomach related disorders, gastritis, constipation, diarrhea, dysentery , indigestion	56	63	0.11 <i>Zanthoxylum oxyphyllum,</i> <i>Viburnum mullah,</i> <i>Viburnum erubescens,</i> <i>Thalictrum javanicum,</i> <i>Taxus wallichiana, Taxus</i> <i>contorta, Taraxacum</i> <i>eriopodum, Scutellaria</i> <i>scandens, Schima wallichii,</i> <i>Rumex nepalensis, Roscoea</i> <i>purpurea, Rosa</i> <i>macrophylla, Rauwolfia</i> <i>serpentina, Prunus</i> <i>cerasoides, Pogonatherum</i> <i>panicum, Cathetus</i> <i>parvifolius ,Persicaria</i> <i>posumbu, Paspalum</i> <i>distichum, Oxytropis</i> <i>duthieana, Oplismenus</i> <i>undulatifolius, Myrsine</i> <i>semiserrata, Lysimachai</i> <i>laxa, L. alternifolia , Leucas</i> <i>lanata, Isodon coesta,</i> <i>Impatiens insignis</i> <i>,Indigofera exilis, Ilex</i> <i>dipyrena, Hypericum</i> <i>uralam, Hypericum</i> <i>elodeoides, Hydrocotyle</i> <i>nepalensis, Globba</i> <i>marantina, Globba clarkei,</i> <i>Geranium wallichianum,</i> <i>Galium acutum, Eurya</i> <i>cerasifolia, Elatostema</i> <i>monandrum, Cyperus</i> <i>sanguinolentus,</i> <i>Cynoglossum furcatum,</i> <i>Cyanthillium cinereum,</i> <i>Cuscuta reflexa, Corydalis</i> <i>chaerophylla, Conyza</i> <i>strica, Codonopsis viridis,</i> <i>Codonopsis affinis,</i>
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						<i>Cerastium fontanum,</i> <i>Catunaregam spinosa,</i> <i>Carex filicina, Carex</i> <i>cruciata,</i> <i>Boenninghausenia</i> <i>albiflora, Bidens pilosa,</i> <i>Begonia picta, Asparagus</i> <i>racemosus, Asparagus</i> <i>lycopodineus, Anaphalis</i> <i>contorta, Anapalis</i> <i>cinnamomea.</i>
6	Toxic	Poison	12	52	0.78	<i>Anapalis cinnamomea,</i> <i>Anthriscus nemorosa,</i> <i>Bauhinia purpurea, Eurya</i> <i>acuminata, Hypericum</i> <i>choisianum, Lysimachai</i> <i>evalis, Persicaria</i> <i>nepalensis, P. wallichii, P.</i> <i>wallichii, Smilax ovalifolia,</i> <i>Symplocos ramosissima,</i> <i>Zanthoxylum oxyphyllum.</i>
7	Tonic	Strength to body	8	26	0.72	<i>Barleria cristata,</i> <i>Chlorophytum</i> <i>arudinaceum, Conyza</i> <i>strica, Corydalis flaccida,</i> <i>Melastoma malanathricum,</i> <i>Premna bracteata, Prunus</i> <i>cerasoides, Smilax</i> <i>lanceifolia.</i>
8	Skeleton- Muscular	Fracture, joint pain and body pain	13	49	0.75	<i>Cotoneaster acuminatus,</i> <i>Dendrophthoe falcata,</i> <i>Gentiana pedicellata, Iris</i> <i>decora, Leucas</i> <i>decendentata, Persicaria</i> <i>wallichii, Quercus</i> <i>semecarpifolia, Sacciolepis</i> <i>indica, Skimmia</i> <i>arborescens, Smilax aspera,</i> <i>Synotis acuminata,</i>

						<i>Tetrastigma serrulatum,</i> <i>Triumfetta rhomboidea.</i>
9	Gynecological disorder	Menstrual problems, abortion, gyno-related	3	26	0.92	<i>Schizotechium paniculatum,</i> <i>Didymocarpus aromaticus,</i> <i>Persicaria wallichii</i>
10	Respiratory problems	Asthma	13	48	0.74	<i>Achyranthes bidentata,</i> <i>Anaphalis margaritacea,</i> <i>Berberis aristata,</i> <i>Cotoneaster integrifolius,</i> <i>Didymocarpus aromaticus,</i> <i>Duhaldea cappa,</i> <i>Hypericum uralam,</i> <i>Koenigia campanulata,</i> <i>Leucas decedentata,</i> <i>Persicaria nepalensis,</i> <i>Roscoea purpurea, Taxus wallichiana, Vicia angustifolia.</i>
11	Hepato-circulatory disorder	Jaundice, typhoid, High blood pressure	13	43	0.71	<i>Bidens pilosa, Cannabis sativa, Chrysopogon serrulatus, Elaeagnus tricholepis, Eurya cerasifolia, Flemingia strobilifera, Gentiana pedicellata, Lindera pulcherrima, Rhododendron arboreum, Rumex nepalensis, Symplocos lucida, Thalictrum javanicum, Tsuga dumosa.</i>
12	ENT	Cough and cold, throat pain and ear ache	25	56	0.56	<i>Achyranthes bidentata,</i> <i>Anthriscus nemorosa,</i> <i>Asparagus filicinus,</i> <i>Cyanthillium cinereum,</i> <i>Elsholtzia strobilifera,</i> <i>Euphorbia hirta, Eurya cerasifolia, Gentiana</i>

						<p><i>pedicellata, Globba marantina, Hypericum choisianum, Hypericum japonicum, Justicia simplex, Koenigia campanulata, Oplismenus undulatifolius, Osbeckia stellata, Pyracantha crenulata, Rubia wallichiana, Sarcococca hookeriana, Symplocos lucida, Taxus wallichiana, Tetrastigma serrulatum, Viburnum erubescens, Viburnum mullah, Wikstroemia canescens.</i></p>
13	Ophthalmological	Eye related	3	24	0.91	<p><i>Globba racemosa, Parochetus communis, Symplocos ramosissima</i></p>
14	Genito-urinary	Urinary problems	5	21	0.8	<p><i>Aeschynomene indica, Gonostegia hirta, Hydrangea febrifuga, Persicaria hydropiper, Tsuga dumosa.</i></p>

3.5 Use frequency (UF)

In this study area, the most commonly used species were *Daphne bholua* (0.70), *Rhododendron arboreum* (0.66), *Artemisia indica* (0.52), *Zanthoxylum armatum* (0.50), *Schima wallichii* (0.47), *Cannabis sativa* (0.45), *Zanthoxylum oxyphyllum* (0.45), *Asparagus racemosus* (0.43), *Viburnum mullaha* (0.43) and *Osbeckia nepalensis* (0.42) as shown in (Table 2) and (Figure 6).

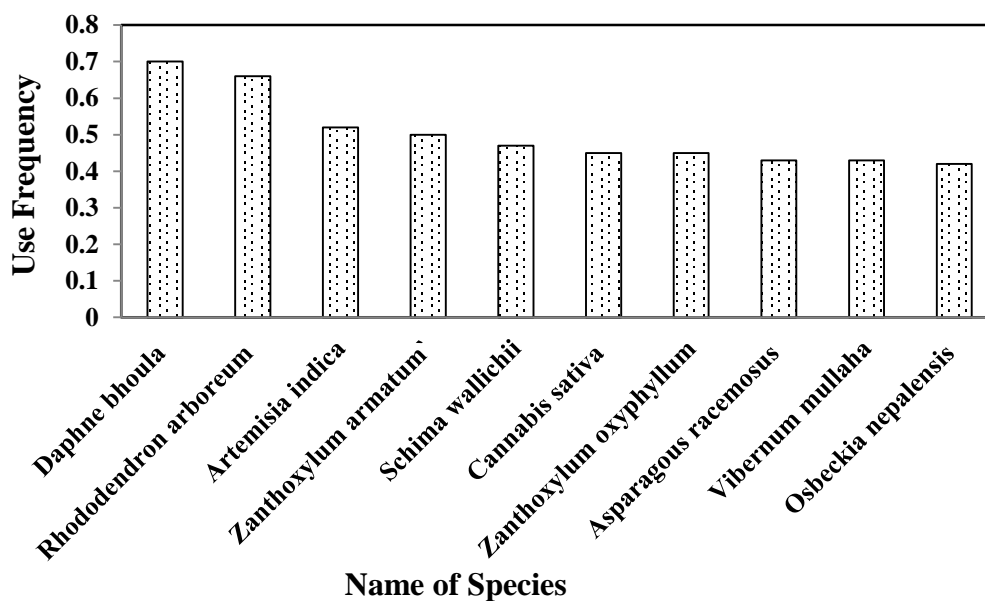


Figure 6: Use frequency of the medicinal plants.

3.6 Use Value

Use value is one of the quantitative parameters which provide significance to specific species in the area based on information and traditional practices used by people. In this study 6% of the species were defined as having high use (≥ 2.0) 21% as having moderate (>1 but < 2) use and 73% as having low use (≤ 1 value one or less than one). The highest use values were found for *Zanthoxylum armatum* (2.66) followed by *Daphne bholua* (2.44), *Rumex nepalensis* (2.3), *Rosa macrophylla* (2.26) and *Taxus wallichiana* (2). While 131 species had the lowest known use value (1) (Table 2) ten species with highest use value are shown in (Figure 7).

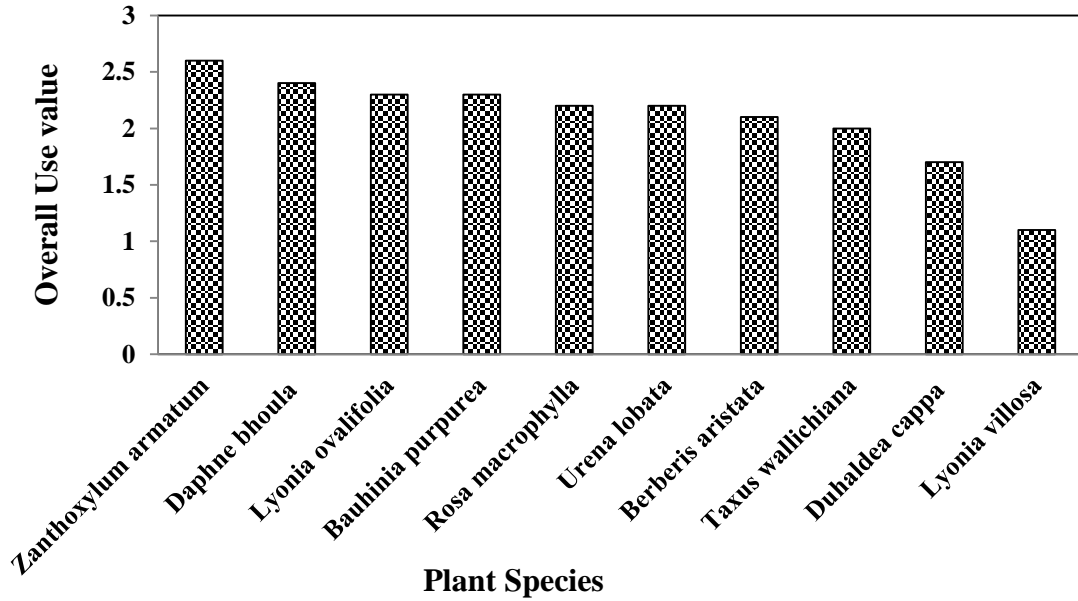


Figure 7: Total use value of medicinal plants.

Table 2: Medicinal Plant species that are used based on their frequency and use value

S.N	Botanical Name	Informant for each Species (of the total 57)	Use categories	Use Frequency of overall Use	Use value
1	<i>Achyranthes bidentata</i> Blume	8	3	0.14	1.64
2	<i>Aconitum ferox</i> Wall. Ex Ser.	3	1	0.05	0.8
3	<i>Adenostemma lavenia</i> (L.) Kuntze	3	1	0.05	1
4	<i>Aeschynomene aspera</i> L.	6	2	0.10	1.62
5	<i>Aeschynomene indica</i> L.	3	1	0.05	1
6	<i>Agrimonia pilosa</i> Ledeb.	5	1	0.08	1
7	<i>Anapalis cinnamomea</i> (DC.) C.B.Clarke	8	1	0.14	1
8	<i>Anaphalis busua</i> (Buch.-Ham. Ex D.Don) DC.	5	2	0.08	1.44
9	<i>Anaphalis contorta</i> (D.Don) Hook.f.	5	3	0.08	1.56
10	<i>Anaphalis margaritacea</i> (L.) Benth. And Hook.f.	6	2	0.10	1.34
11	<i>Anaphalis triplinervis</i> (Sims) C.B.Clarke	9	3	0.15	2
12	<i>Anthriscus nemorosa</i> (M.Bieb.) Spreng.	4	2	0.07	1.33

13	<i>Arisaema tortuosum</i> (Wall.) Schott	8	2	0.14	1
14	<i>Artemisia indica</i> Willd.	30	4	0.52	2.66
15	<i>Asparagus filicinus</i> Buch.-Ham.ex D.Don	1	2	0.01	1.66
16	<i>Asparagus lycopodineus</i> (Baker) F.T.Wang and Tang	12	1	0.21	1
17	<i>Asparagus racemosus</i> Willd.	25	2	0.43	1
18	<i>Barleria cristata</i> L.	15	1	0.26	1
19	<i>Bauhinia purpurea</i> L.	19	4	0.33	2.33
20	<i>Begonia picta</i> Sm.	8	3	0.14	1
21	<i>Begonia rubella</i> Buch. Ham. ex D. Don	6	2	0.10	1
22	<i>Berberis aristata</i> DC.	16	4	0.28	2.11
23	<i>Bidens pilosa</i> L.	20	2	0.35	1
24	<i>Bistorta amplexicaulis</i> (D.Don) Greene	11	1	0.19	1
25	<i>Boeninghausenia</i> <i>albiflora</i> (Hook.) Rchb.ex Meisn.	8	2	0.14	1
26	<i>Breynia retusa</i> (Dennst.) Alston	7	1	0.12	1
27	<i>Campanula pallida</i> Wall.	4	1	0.07	1
28	<i>Cannabis sativa</i> L.	26	3	0.45	1.88
29	<i>Carex cruciata</i> Wahlenb	5	1	0.08	1
30	<i>Carex filicina</i> Nees	5	1	0.08	1
31	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	7	2	0.12	1
32	<i>Cerastium fontanum</i> Baumg.	6	1	0.10	1
33	<i>Chlorophytum</i> <i>arudinaceum</i> Baker	2	1	0.03	1
34	<i>Chrysopogon serrulatus</i> Trin.	5	1	0.08	1
35	<i>Codonopsis affinis</i> Hook.f. and Thomson.	3	1	0.05	1
36	<i>Codonopsis viridis</i> Wall.	4	1	0.07	1
37	<i>Conyza strica</i> Willd.	7	1	0.12	1
38	<i>Corydalis chaerophylla</i> DC.	5	1	0.08	1
39	<i>Corydalis flaccida</i> Hook.f.and Thomson	4	1	0.07	1
40	<i>Cotoneaster acuminatus</i> Lindl.	3	1	0.05	1
41	<i>Cotoneaster integrifolius</i> (Roxb.) G.Klotz	6	1	0.10	1

42	<i>Cuscuta reflexa</i> Roxb.	6	1	0.10	1
43	<i>Cyanthillium cinereum</i> (L.)H.Rob.	15	2	0.26	1.22
44	<i>Cynoglossum furcatum</i> Wall.	11	1	0.19	1
45	<i>Cyperus difformis</i> L.	13	1	0.22	1
46	<i>Cyperus sanguinolentus</i> Vahl	9	1	0.15	1
47	<i>Daphne bholua</i> Ham.ex D.Don	40	2	0.70	2.44
48	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	16	2	0.28	1.66
49	<i>Didymocarpus aromaticus</i> Wall.ex D.Don	17	2	0.29	1
50	<i>Duhaldea cappa</i> (Buch Ham. ex. D.Don) Pruski and Anderb	5	2	0.08	1.77
51	<i>Elaeagnus tricholepis</i> Momiy.	4	1	0.07	1
52	<i>Elastostema monandrum</i> (Buch. Ham.ex. D.Don) H.Hara	5	1	0.08	1
53	<i>Elsholtzia strobilifera</i> (Benth.) Benth,	5	2	0.08	1
54	<i>Eriocapitella rivularis</i> (Buch.-Ham.ex DC.) Christenh. And Byng	3	1	0.05	1
55	<i>Euphorbia hirta</i> L.	8	2	0.14	1
56	<i>Eurya acuminata</i> DC.	1	1	0.01	1
57	<i>Eurya cerasifolia</i> (D.Don)Kobuski	1	1	0.01	1
58	<i>Fagopyrum dibotrys</i> (D.Don) H.Hara	6	1	0.10	1
59	<i>Fagopyrum tataricum</i> (L.) Gaertn.	17	2	0.29	1.5
60	<i>Flemingia strobilifera</i> (L.) W.T.Aition	4	2	0.07	1
61	<i>Galium acutum</i> Edgew.	1	1	0.01	1
62	<i>Galium asperifolium</i> Wall.	2	1	0.03	1
63	<i>Galium elegans</i> Wall.ex Roxb.	16	2	0.28	1
64	<i>Gaultheria fragrantissima</i> Wall.	6	2	0.10	1
65	<i>Gentiana pedicellata</i> (Wall.ex D.Don) Griseb.	16	2	0.28	1
66	<i>Geranium wallichianum</i> D.Don ex Sweet	1	1	0.01	1

67	<i>Globba clarkei</i> Baker	1	1	0.01	1.26
68	<i>Globba marantina</i> L.	1	1	0.01	1.26
69	<i>Globba racemosa</i> Sm.	1	1	0.01	1.26
70	<i>Gonostegia hirta</i> (Blume) Miq.	12	2	0.21	1.56
71	<i>Hedera nepalensis</i> K.Koch	2	2	0.03	1.33
72	<i>Henckelia urticifolia</i> (Buch. Ham. ex D. Don) A. Dietr.	2	2	0.03	1
73	<i>Himalrandia tetrasperma</i> (Wall.ex Roxb.) T.Yamaz.	1	1	0.01	1
74	<i>Houttuynia cordata</i> Thunb.	1	1	0.01	1
75	<i>Hydrangea febrifuga</i> (Lour.) Y.De Smet and Granados	2	2	0.03	1
76	<i>Hydrocotyle himalaica</i> P.K.Mukh.	2	2	0.03	1
77	<i>Hydrocotyle nepalensis</i> Hook.	1	1	0.01	1
78	<i>Hypericum choisianum</i> Wall.ex Griff.	5	1	0.08	1
79	<i>Hypericum elodeoides</i> choisy	5	1	0.08	1
80	<i>Hypericum japonicum</i> Thunb.	3	2	0.05	1
81	<i>Hypericum uralam</i> Buch.-Ham.ex D.Don	1	1	0.01	1
82	<i>Ilex dipyrena</i> Wall.	1	2	0.01	1.33
83	<i>Impatiens bicornuta</i> Wall.	20	1	0.35	1.52
84	<i>Impatiens discolor</i> DC.	8	1	0.14	1
85	<i>Impatiens insignis</i> DC.	4	1	0.07	1
86	<i>Indigofera exilis</i> Grierson and D.G.Long	5	1	0.08	1
87	<i>Ipomoea coccinea</i> L.	8	1	0.14	1
88	<i>Iris decora</i> Wall.	15	1	0.26	1.64
89	<i>Isodon coesta</i> (Buch.- Ham.ex D.Don) Kudo	1	1	0.01	1
90	<i>Justica simplex</i> D.Don	1	1	0.01	1.23
91	<i>Koenigia campanulata</i> (Hook.f.) T.M. Schust And Reveal	1	1	0.01	1
92	<i>Koenigia polystachya</i> (Wall. Ex Meisen.)T.M.Schust.	1	2	0.01	1.55

	And Reveal				
93	<i>Lecanthus peduncularis</i> (Wall.ex Royle) Wedd.	1	2	0.01	1
94	<i>Leucas decemdentata</i> (Willd.) Sm.	1	1	0.01	1
95	<i>Leucas lanata</i> Benth.	2	1	0.03	1
96	<i>Lindera pulcherrima</i> (Nees)Benth.ex Hook.f.	6	2	0.10	1
97	<i>Lyonia ovalifolia</i> (Wall.) Drude	13	2	0.22	2.33
98	<i>Lyonia villosa</i> (Hook.f. and C.B.Clarke)	6	2	0.10	1.1
99	<i>Lysimachiai evalis</i> Wall.	2	1	0.03	1
100	<i>Lysimachia Laxa</i> Baudo	4	1	0.07	1
101	<i>Lysimachia alternifolia</i> Wall.	3	1	0.05	1
102	<i>Maharanga bicolor</i> (Wall.ex G.Don) A.DC.	2	2	0.03	1
103	<i>Melastoma malabathricum</i> L.	2	1	0.03	1
104	<i>Myrsine semiserrata</i> Wall.	2	2	0.03	1
105	<i>Neillia thyrsoiflora</i> D.Don	2	1	0.03	1
106	<i>Ophiopogon intermedius</i> D.Don	2	1	0.03	1
107	<i>Oplismenus undulatifolius</i> (Ard.) P.Beauv.	2	1	0.03	1
108	<i>Osbeckia nepalensis</i> Hook.	24	1	0.42	1
109	<i>Osbeckia stellata</i> Buch.-Ham.ex D.Don	2	2	0.03	1
110	<i>Oxytropis duthieana</i> Ali	2	1	0.03	
111	<i>Pankycodon purpureus</i> (Wall) D.Y.Hong and X.T . Ma	2	1	0.03	1.3
112	<i>Paris polyphylla</i> Sm.	2	1	0.03	1
113	<i>Parochetus communis</i> Buch. Ham. ex D. Don	2	1		1
114	<i>Paspalum distichum</i> L.	2	1	0.03	1
115	<i>Persicaria barbata</i> (L.) H,Hara	3	2	0.05	1
116	<i>Persicaria capitata</i> (Buch. Ham. ex D.Don) H.Gross	3	2	0.05	1.2
117	<i>Persicaria hydropiper</i> (L.) Delarbre	3	2	0.05	1

118	<i>Persicaria nepalensis</i> (Meisn.) H.Gross	5	1	0.08	1
119	<i>Persicaria posumbu</i> (Buch. Ham. ex D.Don) H.Gross	5	1	0.08	1
120	<i>Persicaria pubescens</i> (Blume) H.Hara	4	1	0.07	1
121	<i>Persicaria wallichii</i> (Meisn.) H.Hara	8	1	0.14	1
122	<i>Phyllanthus clarkei</i> Hook.f.	4	1	0.07	1.77
123	<i>Phyllanthus parvifolius</i> Buch.-Ham.ex Mull.Arg.	4	1	0.07	1
124	<i>Pieris formosa</i> (Wall.) D.Don	4	1	0.07	1
125	<i>Pilea symmeria</i> Wedd.	9	1	0.15	1
126	<i>Plantago depressa</i> Willd.	5	1	0.08	1.5
127	<i>Pogonatherum paniceum</i> (Lam.) Hack.	7	1	0.12	1
128	<i>Polygonatum</i> <i>verticillatum</i> (L.) All.	8	2	0.14	
129	<i>Premna bracteata</i> Wall.ex C.B.Clarke	12	2	0.21	1.9
130	<i>Prunus cerasoides</i> Buch.- Ham ex D.Don	3	3	0.05	1
131	<i>Pseudognaphalium</i> <i>adnatum</i> (DC.) Y.S. Chen	5	1	0.08	1
132	<i>Pyracantha</i> <i>crenulata</i> (D.Don)	4	1	0.07	1
133	<i>Quercus glauca</i> Thunb.	11	3	0.19	1
134	<i>Quercus lanata</i> Sm.	12	2	0.21	1
135	<i>Quercus semecarpifolia</i> Sm.	9	2	0.15	1
136	<i>Ranunculus diffusus</i> DC.	11	2	0.19	1
137	<i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz	13	1	0.22	1
138	<i>Rhododendron arboreum</i> Sm.	38	4	0.66	1
139	<i>Rosa macrophylla</i> Lindl.	6	3	0.10	2.26
140	<i>Roscoea purpurea</i> Sm.	5	2	0.08	1
141	<i>Rubia manjith</i> Roxb.	16	2	0.28	1
142	<i>Rubia wallichiana</i> Decne.	11	2	0.19	1
143	<i>Rubus paniculatus</i> Sm.	10	2	0.17	1
144	<i>Rumex nepalensis</i> Spreng.	9	3	0.15	2.33
145	<i>Sacciolepis indica</i> (L.)	8	2	0.14	1

	Chase				
146	<i>Sanicula elata</i> Buch. Ham.ex D.Don	6	1	0.10	1
147	<i>Sarcococca hookeriana</i> Baill.	3	1	0.05	1
148	<i>Saxifraga parnassifolia</i> D.Don	5	1	0.08	1
149	<i>Schima wallichii</i> (DC.) Korth.	27	4	0.47	1
150	<i>Schizotechium</i> <i>paniculatam</i> (Edgew) Pusalkar and S.K.Srivast.	3	2	0.05	
151	<i>Scutellaria Scandens</i> Buch.-Ham.ex D.Don	16	1	0.28	1
152	<i>Skimmia arborescens</i> T.Anderson ex Gamble	11	1	0.19	1
153	<i>Smilax aspera</i> L.	7	2	0.12	
154	<i>Smilax lanceifolia</i> Roxb.	5	2	0.08	1
155	<i>Smilax menispermoidea</i> A.DC.	8	1	0.14	1
156	<i>Smilax ovalifolia</i> Roxb.ex D.Don	12	2	0.21	1.63
157	<i>Stellaria himalayensis</i> Majumdar	14	2	0.24	1
158	<i>Stellaria nepalensis</i> Majumdar and Vartak	9	2	0.15	1
159	<i>Swertia paniculata</i> Wall.	18	1	0.31	1
160	<i>Symplocos lucida</i> (Thunb.) Siebold and Zucc.	13	1	0.22	1
161	<i>Symplocos ramosissima</i> Wall.ex G.Don	12	2	0.21	1
162	<i>Synotis acuminata</i> (Wall.ex DC.) C.Jeffrey and Y.L.Chen	8	1	0.14	1
163	<i>Taraxacum eriopodum</i> (D.Don) DC.	3	1	0.05	1
164	<i>Taxus contorta</i> Griff.	5	2	0.08	1.88
165	<i>Taxus mairei</i> (Iemee and H.Lev.)S.Y.Hu	6	2	0.10	1.33
166	<i>Taxus wallichiana</i> Zucc.	9	3	0.15	2
167	<i>Tetrastigma serrulatum</i> (Roxb.) Planch.	19	3	0.33	1.4
168	<i>Thalictrum foliolosum</i> DC.	7	1	0.12	1
169	<i>Thalictrum javanicum</i> Blume	7	1	0.12	1
170	<i>Triumfetta rhomboidea</i>	8	1	0.14	1

	Jacq.				
171	<i>Tsuga dumusa</i> (D.Don) Eicher	21	2	0.36	1
172	<i>Urena lobata</i> L.	19	3	0.33	2.22
173	<i>Viburnum erubescens</i> Wall.	16	2	0.28	1.55
174	<i>Viburnum mullaha</i> Buch.-Ham.ex D.Don	25	3	0.43	1.43
175	<i>Vicia angustifolia</i> (Schumach. And Thonn.) Baker	19	1	0.33	1.33
176	<i>Vicia hirsuta</i> (L.) Gray	8	2	0.14	1.66
177	<i>Vitex negundo</i> L.	16	1	0.28	1
178	<i>Wikstroemia canescens</i> Wall.ex Meisn.	13	2	0.22	1.55
179	<i>Zanthoxylum armatum</i> DC.	29	3	0.50	2.66
180	<i>Zanthoxylum oxyphyllum</i> Edgew.	26	2	0.45	1.88

3.7 Conservation status of medicinal plants

Conservation practices like protected area, community groups and local groups supports for the protection of high value useful plants. Community people play a vital role for the conservation of the Flora. According to the IUCN Red list category, 30 of the 180 plants are listed as least concern, two as threatened, and two as vulnerable. 2 are categorized in Appendices II of CITES. The population trend of 21 species was stable and 5 were found to be decreasing (Annex 4).

3.8 Socioeconomic status

The major occupation of the informants was agriculture. The survey surveyed 45% of the respondents, with 12% engaged in social work, 12% using traditional medicine, 10% teaching, 8% students, 9% running their own business, and 4% engaged in other activities. Almost half had no academic education, while 26% had primary and 29% had higher secondary education. The majority were male and 35% female, with 30% aged 40-49, followed by 50-59, and 15% aged 30-39 and above 70. The survey revealed the highest number of informants aged 40-49.

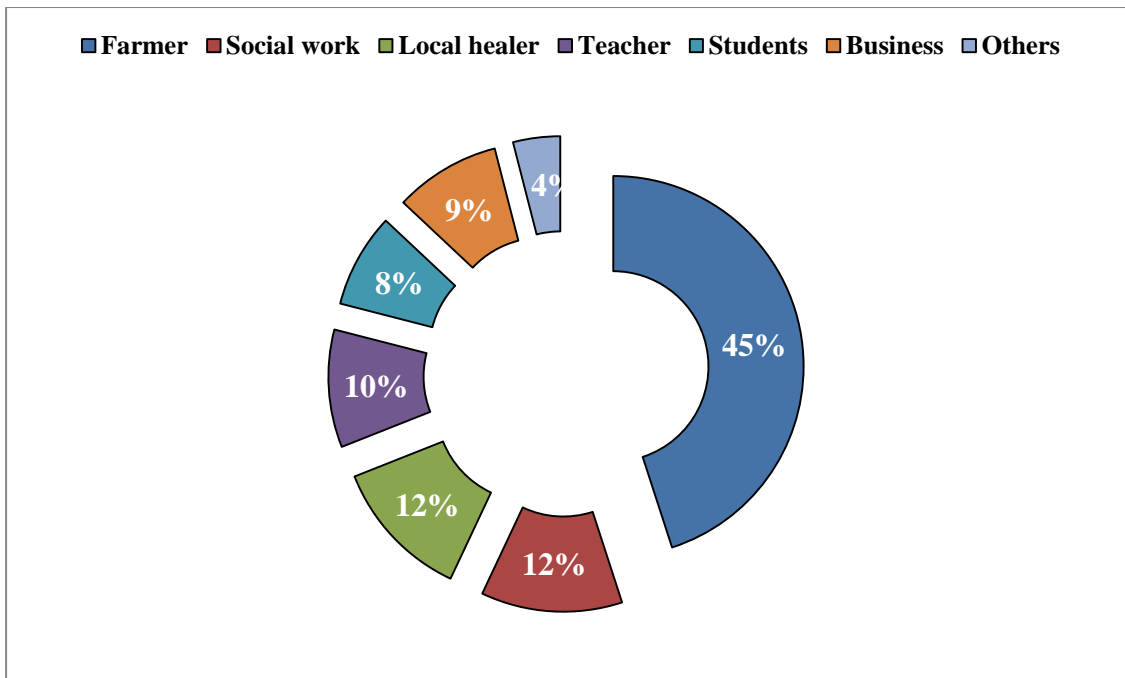


Figure 8: Informants professional backgrounds in ethnobotanical research.

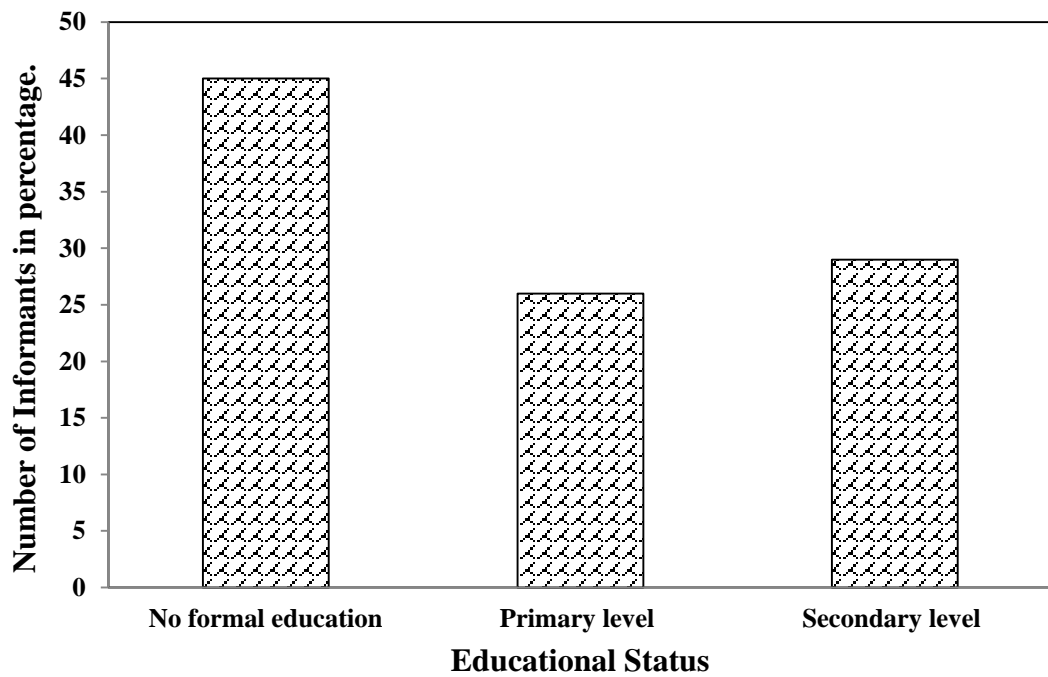


Figure 9: Educational Status of the Informants.

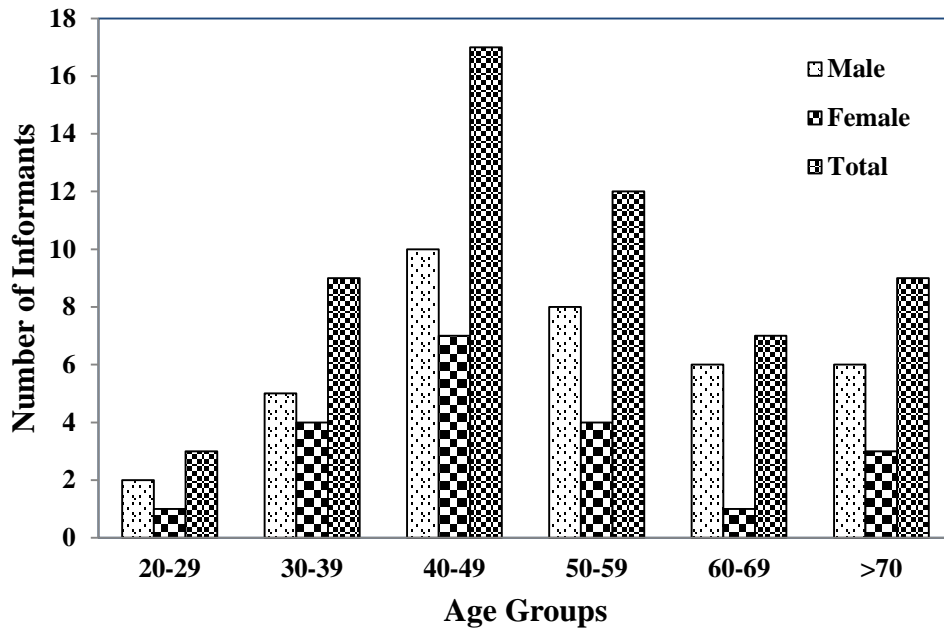


Figure 10: Number of informants of various age groups.

CHAPTER 4: DISCUSSION

4.1 Ethnomedicinal Plants

In the present work, the occurrence with ethnobotanical uses of medicinal plants of Malika forest area of Baglung was explored. One hundred and eighty species of medicinal plants were used to treat various illnesses. This study addresses the utilization of medicinal plants to treat multiple illnesses in the community. Medicinal plants have a long history in Nepalese culture, especially among the rural population. In one way or the other, they play a vital role in raising the status of socio-economically weak and backward classes especially of tribal living in remote areas of the country as they are dependent on the forest for their livelihood. The people living in the Baglung district utilize the benefits of a variety of plants and their parts in their daily activities. For generations, people have used plants and their products for a variety of reasons, including food, fodder, timber, medicine, oil, fiber, perfume, and cosmetic value. Although plants have long been used for a variety of local subsistence purposes, neither the potential of these resources nor their documentation have been done. Almost all the people know about the use of some notable plants that are medicinal for both humans and domestic livestock. Due to varying microclimates, geographical variety, and a diversity of knowledge about ethnic communities, their culture, customs, habits, and beliefs it is possible to document a large number of ethnobotanical species from various families and genera.

Bhattarai *et al.* (2011) reported 45 plant species more beneficial for treating 34 distinct illnesses in the Panchase region of the midhills. Kunwar *et al.* (2006) reported 107 ethnomedicinal plants from Dolpa, Similarly Pradhan *et al.* (2020) recorded 139 plant out of which 136 species were medicinal important from Khandadevi and Gokulganga Rural Municipality of Ramechhap District of Nepal. Pageni *et al.* (2020) reported 40 medicinal important plants from Palpa. Thapa (2012) recorded 75 species of medicinal plants belong to 46 families and 72 genera from Salija village development committee of Prapat district. Silwal *et al.* (2023) documented 176 plant species under 82 families and 158 genera as medicinal to treat different ailments. Khakurel *et al.* (2022) recorded 115 medicinal plant species belonging to 106 genera and 71 families in Kaski district in which Asteraceae and Rosaceae were the most dominant families. The findings of the present study are similar to that of Khakurel *et*

al. (2022). Malla *et al.* (2015) reported 132 ethnomedicinal Plant species belonging to 99 genera and 67 families from prabat district.

4.2 Life forms and Parts used

In comparison to trees and shrubs, a greater number of herbaceous species may be easily available and easier to harvest, which might account for the higher use of herbs. However, a lower quantity of climbers may also contribute to the fewer uses of herbs. Other research (Joshi *et al.*, 2020; Rokaya *et al.*, 2010; Uprety *et al.*, 2010) reached a similar finding. Pradhan *et al.* (2020) reported 136 species were medicinal important among which herbs accounted for 41% followed by trees (29%), shrubs(14%) and climbers(9%) and others from Khandadevi and Gokulganga Rural Municipality of Ramechhap District of Nepal. Similarly, the result is the same as in this study area where herbs (58%) were recorded but followed by shrub, climber and trees.

According to this study, herbs were the most widely used species. Whole plant, leaves and young shoots were mostly used, similar with earlier research (Shrestha and Dhillon, 2003; Gautam, 2012; Thapa, 2015). According to another study, leaves are the most used part (Kandel, 2012; Joshi, 2014). The main ingredient in the medication is leaves, which are widely harvested at any time of year (Bhattarai *et al.*, 2006). Rokaya *et al.* (2012) found that, with 733 different medications, leaves are the most often utilized parts, followed by roots (721 medications). However, Root was mostly utilized in earlier research (Rokaya *et al.*, 2010; Uprety *et al.*, 2010). Thus, it was standard practice to use leaves and roots for Medicine. The use of some species like *Asparagus racemosus* is used for milking cattle (Kunwar *et al.*, 2009), but in this study its shoot is used as vegetables and juice is used as an antidote. It is also used as tonic and galatogogue for human similar with Rajbhandari (2001) and Baral and Kurmi (2006). *Rhododendron arboreum* and *Zanthoxylum armatum* was found to be used for treating similar ailments as in study by Baral and Kurmi (2006). Similarly, *Aconitum ferox* is used as poisoning in this study which is similar to Luintel *et al.* (2014) and Gaire *et al.* (2011). *Didymocarpus aromaticus* is used during respiratory problem which is similar with the study of Kunwar *et al.* (2015) where he reported leaf infusion for the treatment of chronic asthma. *Cuscuta reflexa*, whole plant is gride to make juice to cure jaundice and diarrhea which is similar with the study of Dangol and Gurung (1991), Kunwar *et al.* (2006); Thapa (2020), and Pradhan *et al.*

(2020) but this plant is also reported to be used in scabies, dandruff by Kurmi and Baral (2004) and for Cough and stomach disorder by Acharaya and Acharaya (2009). *Asparagus lycopodineus* is used in stomachache (Pandey 2013; Thapa 2020; Pradhan *et al.*, 2020), in constipation Sigdel and Rokaya (2011), urinary and liver problems Subedi (2017).

4.3 Informant Consensus Factor, Use Frequency and Use value

ICF values were used to find out the levels of agreement among informants on how to use plants for treating specific disease categories. ICF value high indicating a high level of informant agreement compared to similar studies conducted in central Nepal (Uprety *et al.*, 2010), *Berberis asiatica*, *Swertia multicaulis*, and *Juniperus recurva* all had high ICF values (1) for kidney, toothache, and ophthalmological issues, respectively. However, for the Gynecological disorder reported in this study, *Schizotechium paniculatam*, *Didymocarpus aromaticus*, *Persicaria wallichii* were shown to have high ICF values (0.92). A high usage value count could suggest that the locals are better communicators and possess greater understanding about certain plants. Although plants with low usage values don't always mean they are unimportant, (Chaudhary *et al.*, 2006) found that they are associated with very little traditional knowledge. Because young people are less interested in traditional medicines it is possible that traditional medicinal knowledge will vanish from the field of study.

4.4 Conservation and Management of Medicinal plants.

Traditional knowledge and treatment techniques are dependent on the medicinal plants found in that area medicinal plants have been collected in the wild, resulting in threat to their existence. Commercial cultivation makes it feasible to produce and conserve medicinal plants which also provide a good source of money for the community. The sustainable collection and use of medicinal plants is an integrated process that has the ability to promote development and conservation. Nepal government formulates its policy and law to promote the cultivation of many useful plants. Among the 181 countries, Nepal is the 16th signatory country implementing the CITES regulation since 1975.

A conservation practice like management through protected areas, community user groups promotes conservation of highly valued and beneficial flora. According to the IUCN red list threat categories, threatened species belong to the following categories: Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CE), and Extinct in the wild (EW) and when information is either lacking or incomplete, namely Data Deficient (DD). Species that are neither threatened Nor Data Deficient are classified as least concern (LC) (IUCN, 2023). In-situ or ex-situ techniques combined with carefully planned, closely watched and locally managed systems focusing on the needs of the people should be sufficient to safeguard every species of land plant during the next several decades of intense worldwide change one new idea in the preservation of biodiversity is the community- based conservation method.

4.5 Socioeconomic status

A local community's knowledge of plant uses could differ depending on a number of factors such as lifestyle, occupation, and socioeconomic status. Since farmers represent a majority of the participants, they often interact with the plants. They grow a wide variety of plant species, and search plants from forest for medicinal and different purposes. Their elder generation has taught them about farming and cultivation (Sharma and Bastakoti, 2009).

Traditional ethnomedical knowledge is also shared through informal methods of learning like schooling and confined oral processes. Regarding medicinal plants, their application, and their accessibility in Nepal's lower Kailash sacred region people over 60 have greater knowledge of plants than other age groups (Kunwar *et al.*, 2019) the people's socioeconomic situation has also some impact on traditional medicinal practices. According to this study, older people are more knowledgeable about using medicinal plants than younger people.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The Baglung Municipality, Malika forest area is home to numerous high-value beneficial plants, such as timber, fodder, medicinal, wild food and scared plants.. It is also one of the area's most significant cultural sites. Biological richness, traditional wisdom, and cultural diversity abound in the scenic Municipality of Baglung district. In this work, Useful plants are examined regarding practical plants and traditional knowledge that is still used as an emergency source and initial mode treatment for various common disorders. There were helpful species in all life forms, including plants, shrubs, trees and climbers. Altogether 180 useful plants representing 59 families and 128 genera are found in the study area. Among them 36.1 % whole plant, 35% leaves, 31.6% root, 20% fruits, 10.5% flowers and bark, 12.7 % shoot and 8% seed are used as medicine. The area is occupied by the ethnic groups comprising the Brahmans, Chhetties, Magars, Kami, Damai and Sarki.

It is observed that medicinal plants are being depleted from the area continuously due to the collection before the maturation of seeds and lack of scientific knowledge about the management and harvesting techniques. There is a knowledge gap across generations as seen by the differences in medicinal plant knowledge between younger and older generations. There is very little risk associated with the usage and collection of beneficial plants species for the treatment of illnesses and problems. On the other hand, the main elements that threaten to destroy indigenous knowledge include change in profession, oral information transfer, lack of species availability, unwillingness on the part of younger generations to learn, and the influence of modern education.

5.2 Recommendations

- To conserve traditional knowledge and skills within ethnic communities, they must be documented, used, and passed down to future generations. The communities should be educated on the significance of conservation for endangered and rare species.
- To ensure the authenticity of traditional methods, additional phytochemical screening and pharmacological investigation of the medicinal plant portion are required. A database of ethnobotanical and traditional knowledge should be created, incorporating all ethnic groups and regions of Nepal.

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Annex 1: Ethnomedicinal use of collected plants.

SN.	Scientific Name	Family	Local Name	Life form	Parts Used	Use Category	Parts Used	Voucher Specimens
1	<i>Achyranthes bidentata</i> Blume	Amaranthaceae	Datiwan	H	Wp, Tw	Md ,Re ,Toothbrush	Leaves are boiled and stem is inhaled for cough and asthma, used as brushing teeth.	KS87
2	<i>Aconitum ferox</i> Wall. Ex Ser.	Ranunculaceae	Seto bikh (Nilo Bikh)	H	Rt	Md ,Re	To kill mice, fried wheat flour is combined with tuber powder. Religion values roots and seeds.	KS84
3	<i>Adenostemma lavenia</i> (L.) Kuntze	Asteraceae	Rato danthe Ghans	H	Lf	Md	Leaves paste is used to relieve cramp of involuntary muscle.	KS88
4	<i>Aeschynomene aspera</i> L.	Fabaceae	Dhondhya/sakla	S	St	Or, Po(fish)	Used in ornamental purpose , Stem powder is used for kidney stones and urinary disorders	KS76
5	<i>Aeschynomene indica</i> L.	Fabaceae	Tal Khukuri	S	Wp	Md	Whole plant is used in fever and headache. Paste is used in headache and fever.	KS54
6	<i>Agrimonia pilosa</i> Ledeb.	Rosaceae	Kathlange/Shilajhar	H	Wp	Md	Whole plant is used in fever and headache. Paste is used in headache and fever.	KS67
7	<i>Anapalis cinnamomea</i> (DC.) C.B.Clarke	Asteraceae	Buki phul	H	Rt, Lf	Md	leaves are cooked and use as food, use in toxic and stomach pain	KS63
8	<i>Anaphalis busua</i> (Buch.-Ham. Ex D.Don) DC.	Asteraceae	Buki Phul	H	Lf ,Fl	Md , Re	Use in dysentery and also applied in cut and wounds	KS55
9	<i>Anaphalis</i>	Asteraceae	Buki phul	H	Wp	Md,	Plant parts is crushed and make paste	KS98

	<i>contorta</i> (D.Don) Hook.f.					Incense, repellent	to use in wound and cuts, juice is made up of leaves and used for stomach pain and gastric	
10	<i>Anaphalis margaritacea</i> (L.) Benth. And Hook.f.	Asteraceae	Buku	H	Rt, Lf	Md	Root is crushed and makes powder and takes a vapour and sometimes swallowed directly for asthma and lungs.	KS96
11	<i>Anaphalis triplinervis</i> (Sims) C.B.Clarke	Asteraceae	Buki phul	H	Wp	Md , Incense, Re	Flower is used in cut and wounds , plant is used in cough and cold	KS23
12	<i>Anthriscus nemorosa</i> (M.Bieb.) Spreng.	Apiaceae	-	H	Fl,Lf	Md , oil	Flower oil is used in anxiety and depression also in toxic. Paste of leaves is used in cut and wounds.	KS24
13	<i>Arisaema tortuosum</i> (Wall.) Schott	Araceae	Bir Banko	H	Wp, Rt	Md , Fd	Young buds and leaves are used as vegetables	KS48
14	<i>Artemisia indica</i> Willd.	Asteraceae	Titepati	H	Wp,Lf	Md, Essential oil , Incense, Insecticidal	Leaf are applied for skin allergy, juice from leaves is applied on cut wounds and also for tonsillitis	KS12
15	<i>Asparagus filicinus</i> Buch.- Ham.ex D.Don	Asparagaceae	Ban Kurilo / Satawari	H	Rt, Ys, St	Md , Fd	Young shoot is applied to skin allergies, cut and wounds. Root juice is used to reduce fever.	KS78
16	<i>Asparagus lycopodiineus</i> (Baker) F.T.Wang and	Asparagaceae	Kurilo	H	Rt	Md	Root is crushed and mixed with water and used for stomachache and diarrhoea, constipation.	KS14

	Tang							
17	<i>Asparagus racemosus</i> Willd	Asparagaceae	Kuro/ Satawari	H	Rt, Lf, Ys, Fr	Md, Fd	Young shoot are cooked as vegetables. Root and fruit is use in gastic and fever also.	KS09
18	<i>Barleria cristata</i> L.	Acanthaceae	Bhende Kuro	S	Rt, ;Lf	Md	Root and leaf are used as tonic.	KS04
19	<i>Bauhinia purpurea</i> L.	Fabaceae	Tanki	T	Rt, Br, Lf , St , Ys	Md , Fd, Fdr, Fy , De	Leaf is applied in cut and wounds root and bark juice is use as tonic.	KS51
20	<i>Begonia picta</i> Sm.	Begoniaceae	Makar Kanchi	H	Rt, St,Pt,Fr	Md, Fd, Po	Parts are used to control roundworm	KS26
21	<i>Begonia rubella</i> Buch.-Ham.ex D.Don	Begoniaceae	Makar Kanchi /Bhir amilo	H	Pt	Md , Fd	Crushed petiole combined with water and filtered is used as nourishment for chest pain.	KS94
22	<i>Berberis aristata</i> DC.	Berberidaceae	barhamse chutro	S	Wp,,Fr, Rt,St	Md, Fd, Fw, De,	Fruit is a food and coloring agent. In treatment of diarrhea and jaundice, use bark and root.	KS74
23	<i>Bidens pilosa</i> L.	Asteraceae	Tikhe Kuro	H	Wp, St, Lf,Fdr	Md, Fd , Fdr	Leaves are crushed and make paste applied in cut and wounds also in skin allergies.	KS44
24	<i>Bistorta amplexicaulis</i> (D.Don) Greene	Polygonaceae	Nyakuree /Ratnyaulo	H	Wp	Md	Whole plant is used in allergies and skin disease. Paste is used in cut and wounds	KS68
25	<i>Boenninghauseni a albiflora</i> (Hook.) Rchb.ex	Rutaceae	Makhe mauro/Uduse jhar	H	Lf,Wp	Md, Oil,	Leaf is applied in cut and wounds. Oil is used for skin. Powder is taken with water to treat gasto-intestinal diseases.	KS28

	Meisn.							
26	<i>Breynia retusa</i> (Dennst.) Alston	Phyllanthaceae	Sano nundhiki	S	St, Br, Lf	Md	Leaf juice is used to cure cut and wounds. It helps to slow down inflammation.	KS81
27	<i>Campanula pallida</i> Wall.	Campanulaceae	Manjari	H	Rt	Md	Root juice is used to cure typhoid.	KS11
28	<i>Cannabis sativa</i> L.	Cannabaceae	Bhang	H	Wp, seed, St, Lf	Md, Fd, Fy, Oil, Narcotic	Plant is used as Narcotic. Fiber is made. Helps in blood circulation and heart diseases.	KS59
29	<i>Carex cruciata</i> Wahlenb	Cyperaceae	Tinsika ghans	H	Wp	Fr	Leafs are used for diarrhoea and paste is applied in cut.	KS61
30	<i>Carex filicina</i> Nees	Cyperaceae	-	H	Rt	Md	Root is used for dysentery.	KS69
31	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Rubiaceae	Maidal/Main Phal	T	St, Br, Fr, Fr, Br	Md, Fd, Fy, Fish Poison	Fruits are edible. Stem and bark are used to treat gastro intestinal diseases.	KS21
32	<i>Cerastium fontanum</i> Baumg.	Caryophyllaceae	Musa kane	H	Wp	Md	Plant is use in gasto -intestinal disorder	KS41
33	<i>Chlorophytum arudinaceum</i> Baker	Asparagaceae	Danti Sag	H	Rt	Md	Roots are used as tonic for strength to body.	KS45
34	<i>Chrysopogon serrulatus</i> Trin.	poaceae	Golden grass	H	Rt	Md	Root juice is used to purify blood.	KS42
35	<i>Codonopsis affinis</i> Hook.f. and Thomson.	Campanulaceae	-	H	Wp	Md	Whole plant is used in stomach and gasto-intestinal diseases.	KS43

36	<i>Codonopsis viridis</i> Wall.	Campanulaceae	-	H/C	Wp	Md	Whole plant is use in stomachache.	KS89
37	<i>Conyza strica</i> Willd.	Asteraceae	Thangsing	H	Rt	Md	Root is used in diseases like dysentery and diarrhoea. It is used as good tonic for weakness.	KS91
38	<i>Corydalis chaerophylla</i> DC.	Papaveraceae	karme Ghans	H	Rt	Md	Root juice is used in digestion problems.	KS93
39	<i>Corydalis flaccida</i> Hook.f.and Thomson	Papaveraceae	Okhare ghans	H	Wp	Md	Whole plant is used for tonic and helps with pain relief.	KS72
40	<i>Cotoneaster acuminatus</i> Lindl.	Rosaceae	Dhalke phul	S	Fr	Md	Fruits are edible. Decoction is used for fracture and joint pain.	KS52
41	<i>Cotoneaster integrifolius</i> (Roxb.) G.Klotz	Rosaceae	Tsar	S	Fr	Fd	used to treat asthma	KS46
42	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Akash beli	C	Wp	Md	Leaves and stem is crushed and make juice to cure jaundice and diarrhoea.	KS25
43	<i>Cyanthillium cinereum</i> (L.)H.Rob.	Asteraceae	Malcha jhar/jhur jhure	S	Wp,Fl	Md ,Re, Fermenter	Flower oil is used in ear problems. Whole plant is used in gasto-intestinal, skin diseases.	KS57
44	<i>Cynoglossum furcatum</i> Wall.	Boraginaceae	Kanike Kuro	H	Wp	Md	Whole plant parts are use in indigestion.	KS71
45	<i>Cyperus difformis</i> L.	Cyperaceae	Mothe/	H	Wp	Fr	Paste is use in cut and wounds.	KS86
46	<i>Cyperus sanguinolentus</i> Vahl	Cyperaceae	Jhuse Mothe	H	Wp	Fr	Root juice is used to treat gasto-intestinal problems.	KS82

47	<i>Daphne bholua</i> Buch.-Ham.ex D.Don	Thymelaeaceae	Kagat pate	S	Rt St, Sd,Br	Md, Fy	Fruits are edible and bark is used to make paper.	KS73
48	<i>Dendrophthoe falcata</i> (L.f.) Ettingsh.	Loranthaceae	Liso	S	Rt,Br,Lf ,Fr,Fr	Md , Fd	Paste is applied for setting dislocated bones.	KS62
49	<i>Didymocarpus aromaticus</i> Wall.ex D.Don	Gesneriaceae	Pakhanbetta	H	Wp	Md ,Livestock	Leaf is used in skin allergies and decoction is used for menstrual problems.	KS92
50	<i>Duhaldea cappa</i> (Buch.-Ham.ex D.Don) Pruski and Anderb.	Asteraceae	Gai tihare	S	Wp	Md, Fermenter	Root juice is used to care jaundice and its powder is used to treat bronchitis and asthma.	KS79
51	<i>Elaeagnus tricholepis</i> Momi.	Elagagnaceae	Madilo	S	Wp	Md	Whole plant is used to care jaundice and used in typhoid.	KS75
52	<i>Elatostema monandrum</i> (Buch.-Ham.ex D.Don) H.Hara	Utricaceae	Lipe Jhar	H	Lf,Lf	Md ,Fdr	Leafs juice is used to care gastric.	KS53
53	<i>Elsholtzia strobilifera</i> (Benth.) Benth,	Lamiaceae	Ban Babari	H	Wp,Sd	Md ,Fd	Seed is edible. Whole plant is used for cough and cold.	KS15
54	<i>Eriocapitella rivularis</i> (Buch.- Ham.ex DC.) Christenh. And Byng	Ranunculaceae	Hatti paile	H	Wp , Sd, Wp	Md, Fd, Insecticidal	Plant is used for Dermatological disorders. Milk latex is used for fish poisoning.	KSU90

55	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Ankhle Jhar	H	Wp, Ys, Lf	Md , Fd	Used to treat fever, cold and headache.	KSU57
56	<i>Eurya acuminata</i> DC.	Pentaphylacaceae	Jhigane /Tinger	T/S	Lf, Fr,	Md , Fw, Fdr	It is used as a tonic	KSU76
57	<i>Eurya cerasifolia</i> (D.Don)Kobuski	Pentaphylacaceae	Thulo Jhigane	T	St,Lf	Fw, Fdr	Leaves are cooked with meat and fish.	KSU67
58	<i>Fagopyrum dibotrys</i> (D.Don) H.Hara	Polygonaceae	Ban Fapar	H	Rt, Lf, Lf	Md , Fd	Young shoot and leaves are eaten as vegetable and also used as fodder.	KSU43
59	<i>Fagopyrum tataricum</i> (L.) Gaertn.	Polygonaceae	Tite fapar	H	Br, Sd, Lf, Fr , Ys	Md,Fd	Improve blood sugar level and heart health.	KSU65
60	<i>Flemingia strobilifera</i> (L.) W.T.Aitton	Fabaceae	Bhatmase/gahate	S	Rt, Br, Lf,Fr	Md , Fd , Fy	Plant parts are used in jaundice and high blood pressure.	KSU86
61	<i>Galium acutum</i> Edgew.	Rubiaceae	Chyanguya	H	Wp	Md	Used in cut and wounds. It is used in abdominal pain and vomiting.	KSU68
62	<i>Galium asperifolium</i> Wall.	Rubiaceae	Kurkure ghans	C	Wp	Md	Leaves are used in cuts and wounds.	KSU53
63	<i>Galium elegans</i> Wall.ex Roxb.	Rubiaceae	lahare kuro	H	Wp	Md ,Fdr	Whole plant is used in cuts and wounds.	KSU51

64	<i>Gaultheria fragrantissima</i> Wall.	Ericaceae	Dhasingare /Kali gedi	S	St, Br, Ys,Lf, Fr,Fr	Md ,Fd , oil	Used in cut and wounds. Used to cure jaundice	KSU49
65	<i>Gentiana pedicellata</i> (Wall.ex D.Don) Griseb.	Gentianaceae	Tauke phul	H	Wp , Ys	Md ,Fd	Young shoot juice is used for body pain. Whole plant is used for high blood pressure and typhoid.	KSU38
66	<i>Geranium wallichianum</i> D.Don ex Sweet	Geraniaceae	Raktamul	H	Wp	Md	Root juice is used to care dysentery.	KSU31
67	<i>Globba clarkei</i> Baker	Zingiberaceae	Devi saro	H	Rt	Md	Use in cough and stomach pain.	KSU61
68	<i>Globba marantina</i> L.	Zingiberaceae	Devi Saro	H	Ys	Fd	Young shoot is used for gastric. Eye injuries	KSU47
69	<i>Globba racemosa</i> Sm.	Zingiberaceae	Pani Saro/ Devi saro	H	Rt	Md	Used in eye injuries.	KSU07
70	<i>Gonostegia hirta</i> (Blume) Miq.	Urticaceae	Chiple lahari	H	Lf,Wp	Md ,Fd	Whole plant is used in genito-urinary problems. Paste is used in forehead during fever.	KSU17
71	<i>Hedera nepalensis</i> K.Koch	Araliaceae	kathe Laharo /Dudhilo	CS	Lf,Fr	Md ,Fdr	It is used in skin diseases and scabies.	KSU27
72	<i>Henckelia urticifolia</i> (Buch.-Ham.ex D.Don) A.Dietr.	Gesneriaceae	Ankhe ghans/Bhende	H	Wp	Md , Fr	Use as ornamental and skin diseases.	KSU23
73	<i>Himalrandia tetrasperma</i> (Wall.ex Roxb.) T.Yamaz.	Rubiaceae	Hade/Hakugeda	S	Wp	Md	Use in fever, inflammation and skin diseases.	KSU93

74	<i>Houttuynia cordata</i> Thunb.	Saururaceae	gane / fish mint	H	Wp, Ys, Lf	Md ,Fd	Leafs are applied externally to treat swelling and skin diseases.	KSU98
75	<i>Hydrangea febrifuga</i> (Lour.) Y.De Smet and Granados	Hydrangeaceae	Aseru/Bansuli /Bhasak	S	Rt, Lf	Md ,Fw	Root is used to treat fever	KSU99
76	<i>Hydrocotyle himalaica</i> P.K.Mukh.	Araliaceae	Tapre /Seto tapre	H	Wp	Md, Po (Fish)	Used in fever.	K179
77	<i>Hydrocotyle nepalensis</i> Hook.	Araliaceae	Sano ghodtapre	H	Wp	Md	Ear pain, fever, cold and wounds.	K157
78	<i>Hypericum choisianum</i> Wall.ex Griff.	Hypericaceae	Doli phul	S	Rt	Md ,Fdr	Used in cut and wounds. Root is used for fever and headache.	K154
79	<i>Hypericum elodeoides</i> choisy	Hypericaceae	Jibre ghans	H	Rt	Md ,Fdr	Used in Gastric, constipation and diarrhoea.	K178
80	<i>Hypericum japonicum</i> Thunb.	Hypericaceae	Boksi Jhar/kanike ghans	H	Wp	Md ,Re	Used in fever, cough and cold.	K188
81	<i>Hypericum uralam</i> Buch.-Ham.ex D.Don	Hypericaceae	Khareto/urilo	S	Lf, Sd	Md ,Fdr	Flowers paste is used to cure dysentery. Seed are used in respiratory problems.	K004
82	<i>Ilex dipyrrena</i> Wall.	Aquifoliaceae	Seto Khasru/Lek chutro	T	Fr,	Fd,Fw,Fdr	Leafs are used as fodder. Wood is used to make agricultural equipment.	K009
83	<i>Impatiens bicornuta</i> Wall.	Balsaminaceae	Raja Tiuree	H	Wp, Ys, Lf	Md, Fd	It is used as dye/henna. Young shoot paste is used in cut and wounds.	K129
84	<i>Impatiens discolor</i> DC.	Balsaminaceae	Tiuree	H	Fr	De	Use in cut and wounds.	K127

85	<i>Impatiens insignis</i> DC.	Balsaminaceae	Tiuree	H	Fr	De	Flower is used in dye. Leafs is used in stomachache.	K148
86	<i>Indigofera exilis</i> Grierson and D.G.Long	Fabaceae	Slender Indigo	S	Fr,Lf	Fd,Fdr	Root powder is used to control stomachache. Leafs is use for fever.	K190
87	<i>Ipomoea coccinea</i> L.	Convolvulaceae	-	H	Wp	Md	Young shoot are used to treat wounds and inflammation.	KSU87
88	<i>Iris decora</i> Wall.	Iridaceae	Padma Puskar	H	Rt, Sd	Md	Roots are used to treat joint pain and facture. Flower and leafs are used in wounds.	KSU83
89	<i>Isodon coesta</i> (Buch.-Ham.ex D.Don) Kudo	Lamiaceae	Pirre	H	Wp	Md	Whole plant is used in fever and sore throat.	KSU81
90	<i>Justica simplex</i> D.Don	Acanthaceae	Fuli Jhar/Khursani jhar	H	Wp	Md	Plant parts are used for fever. Root powder is used to control cough and cold.	KS29
91	<i>Koenigia campanulata</i> (Hook.f.) T.M.Schust. And Reveal	Polygonaceae	Rapte ghans	H / S	Ys	Fd	Tender shoot is used as food. Parts are used to treat whooping cough.	KSU59
92	<i>Koenigia polystachya</i> (Wall. Ex Meisen.) T.M.Schust. And Reveal	Polygonaceae	Chaunle	H	Rt St Lf	Md , Fd	Used as vegetables and also used to make condiments.	KSU09

93	<i>Lecanthus peduncularis</i> (Wall.ex Royle) Wedd.	Urticaceae	Khole Jhar	H	Rt,Ys	Md ,Fd	Root is used to treat asthma, fever and sprains.	KSU89
94	<i>Leucas decemdentata</i> (Willd.) Sm.	Lamiaceae	Dhasure Khar	H	Fr	Md	Flower is used in loss of appetite, asthma, body pain and fever.	KSU85
95	<i>Leucas lanata</i> Benth.	Lamiaceae	-	H	Ys, Fl	Md	Young shoot is used in diarrhoea.	KSU63
96	<i>Lindera pulcherrima</i> (Nees) Benth.ex Hook.f.	Lauraceae	Fusure/Kharane	T	Fr,	Fd,Fw,Fdr	Used in fuelwood, fodder, cut and wounds, control high blood pressure.	KSU44
97	<i>Lyonia ovalifolia</i> (Wall.) Drude	Ericaceae	Angeri	T	Rt, Ys,Lf, Lf	Md ,Fw, Po	Use as fuelwood, leafs are used to control scabies.	KSU55
98	<i>Lyonia villosa</i> (Hook.f. and C.B.Clarke)	Ericaceae	-	T	Rt, Ys	Md ,Fw, Po	Used externally as an infusion to treat skin diseases.	KSU41
99	<i>Lysimachai evalis</i> Wall.	Primulaceae	Armale	H	Wp	Md	Used in prevention of skin diseases and diarrhoea.	KSU81
100	<i>Lysimachai Laxa</i> Baudo	Primulaceae	-	H	Wp	Md	Used to prevent kidney stone, fever and diarrhoea.	KSU001
101	<i>Lysimachia alternifolia</i> Wall.	Primulaceae	Pinasw Jhar /Butte ghans	H	Wp	Md	used in fever, diarrhoea and prevent kidney stone.	KSU060
102	<i>Maharanga bicolor</i> (Wall.ex G.Don)A.DC.	Boraginaceae	Jhuske	H	Rt,Rt	Md ,Re	Root oil is used to massage head during headache, juice as tonic.	KSU054
103	<i>Melastoma malanathricum</i> L.	Melastomataceae	Angeri	S	Fr	Fd	Used to treat diarrhoea, fruit juice as a tonic.	KSU067

104	<i>Myrsine semiserrata</i> Wall.	Primulaceae	Kali Kath/Falame	T	Fr,	Fd,Fdr	Fruits are edible, wood is used as fuel wood. Used for cut and dental purpose.	KSU039
105	<i>Neillia thyrsoflora</i> D.Don	Rosaceae	Hatti laharo	S	Fr	Fd	Fruits are eaten when fully ripe.	KSU032
106	<i>Ophiopogon intermedius</i> D.Don	Asparagaceae	Ban Kasur/gade mala	H	Tb	Md	Tuber is used to treat dry coughs and fever.	KSU122
107	<i>Oplismenus undulatifolius</i> (Ard.) P.Beauv.	Poaceae	Ote Ghans	H	Lf	Fr	Use to treat fever, cold and stomachache.	K1223
108	<i>Osbeckia nepalensis</i>	Melastomataceae	Angeri/Seto chulesi	S	Lf,Fr	Md,Fd	Used to treat fever, cold and headache.	KSU134
109	<i>Osbeckia stellata</i> Buch.-Ham.ex D.Don	Melastomataceae	Galphule/Rato chulesi	S	Rt,Lf,Fr	Md ,Fd	Fruits are eaten, leafs are used for diarrhoea and dysentery.	KSU140
110	<i>Oxytropis duthieana</i> Ali	Fabaceae	-	H	Ys	Md	Used as a food source, young shoot are used in stomach problem and fever.	KSU125
111	<i>Pankycodon purpureus</i> (Wall)D.Y.Hong and X.T.Ma	Campanulaceae	-	H	Fl,Lf	Md,Fdr	Flowers and leafs are used as ornamental and religious purpose.	KSU033
112	<i>Paris polyphylla</i> Sm.	Melanthiaceae	Satuwa	H	Wp	Md	Tuber paste is used on cut and wounds for healing.	KSU126

113	<i>Parochetus communis</i> Buch.-Ham.ex D.Don	Fabaceae	Chemgi phul	H	Rt,Lf,Rt	Md,Fd, Fr	Leafs paste are applied in wounds. Root is used in eye problems.	KSU139
114	<i>Paspalum distichum</i> L.	Poaceae	janai ghans	H	Lf	Fr	Leafs are useful for livestock, use in stomachache, paste for fever.	KSU135
115	<i>Persicaria barbata</i> (L.) H,Hara	Polygonaceae	Pirre	H	Rt,Lf,Sd , Ys, Lf	Md ,Fd,fish poison	It is used in cuts and wounds, food.	KSU036
116	<i>Persicaria capitata</i> (Buch.- Ham.ex D.Don) H.Gross	Polygonaceae	Ratnyaule jhar/pirre jhar	H	Wp ,	Md,Fdr	Used in cuts and wounds.	KSU136
117	<i>Persicaria hydropiper</i> (L.) Delarbre	Polygonaceae	Pirre	H	Wp ,	Md,Fdr	Used against snake bites, respiratory disorders.	KSU129
118	<i>Persicaria nepalensis</i> (Meisn.) H.Gross	Polygonaceae	-	H	Rt, Ys Lf	Md ,Fd	Used in gasto-intestinal problems	KS23
119	<i>Persicaria posumbu</i> (Buch.-Ham.ex D.Don) H.Gross	Polygonaceae	-	H	Lf	Md	It is used to relief indigestion and gastric.	KS45
120	<i>Persicaria pubescens</i> (Blume) H.Hara	Polygonaceae	-	H	Wp	Po	Used in fever and headache, against snake bites.	KSU043
121	<i>Persicaria wallichii</i> (Meisn.) H.Hara	Polygonaceae	Ban Pire	H	Wp	Fdr	Used to treat urinary track infection.	KU12

122	<i>Phyllanthus clarkei</i> Hook.f.	Phyllanthaceae	-	S	Lf.Sd	Md	Used in fever, stomachache and skin diseases.	KU22
123	<i>Phyllanthus parvifolius</i> Buch.-Ham.ex Mull.Arg.	Phyllanthaceae	Khareto	S	Lf.Sd	Md	It is used to treat burn skin, best used for headache.	KU24
124	<i>Pieris formosa</i> (Wall.) D.Don	Ericaceae	Lek angeri	T	Ys, Lf, Wp	Md,Po	Leafs are used to treat cut and wounds.	KSU044
125	<i>Pilea symmeria</i> Wedd.	Utricaceae	Kamle/ gagleto	H	Ys,Lf	Fd, Fdr	Young shoot are used to treat wounds and inflammation.	KU23
126	<i>Plantago depressa</i> Willd.	Plantaginaceae	Tharam	H	Wp	Md	Leafs are chewed to control piles. Paste is used in cut and skin allergies.	KK01
127	<i>Pogonatherum paniceum</i> (Lam.) Hack.	Poaceae	Miniature bamboo	H	Wp	Fr	Used for gasto-intestinal diseases.	KKO2
128	<i>Polygonatum verticillatum</i> (L.) All.	Asparagaceae	Khiraunla/Keruwa	H	Rt, Ys, Lf	Md,Fd	Rhizome juice used as tonic . Young shoot are eaten as vegetables.	KKO2
129	<i>Premna bracteata</i> Wall.ex C.B.Clarke	Lamiaceae	Kalo gineri	T	Br,Fr	Md,Fd	Bark, fruits, Roots are used as tonic.	KS056
130	<i>Prunus cerasoides</i> Buch.-Ham ex D.Don	Rosaceae	Painyu	T	Br, Lf, Ys, Fr	Md,Fd,Tm, Fder,Re	bark and leafs are used in stomachache. Young shoot and fruits as tonic.	KSU038
131	<i>Pseudognaphalium adnatum</i> (DC.) Y.S. Chen	Asteraceae	Buki phul	H	Lf ,Fr	Medicinal	leafs and flowers is used as cut and wounds.	K123
132	<i>Pyracantha crenulata</i>	Rosaceae	Ghangaru/Kathgedi	T	Lf,Fr	Md and Fd	leafs and fruits is used in cold and throat.	K123

	(D.Don) M.Roem.							
133	<i>Quercus glauca</i> Thunb.	Fagaceae	Falant	T	Wd,Wd, Lf	Tm ,Fw,Fdr	Used for timber, fodder.	KSU057
134	<i>Quercus Lanata</i> Sm.	Fagaceae	Banjh	T	Br,Sd,Fr	Md, Fd	Used as fuelwood and fodder.	KK134
135	<i>Quercus semecarpifolia</i> Sm.	Fagaceae	Kharsu/Ghesi	T	Br,Sd	Md and Fd	Bark exudations is applied for fracture and body pain.	KS135
136	<i>Ranunculus diffusus</i> DC.	Ranunculaceae	Brimor mhendo	H	Rt,Ys	Md ,Fd	use as anti-inflammation	KUS177
137	<i>Rauwolfia serpentina</i> (L.) Benth.ex Kurz	Apocynaceae	Chand maruwa/Sarpa gandha	S	Rt	Md	Root is used for high blood pressure, constipation and indigestion.	KUS176
138	<i>Rhododendron arboreum</i> Sm.	Ericaceae	Lali gurans	T	Br,Lf,Fl	Md ,Fd,Fw,Po	Flowers are dried and powder mixed with water to control diarrhoea, fish bone stuck and jaundice treatment.	KSU125
139	<i>Rosa macrophylla</i> Lindl.	Rosaceae	jangali gulab	S	Fl,Fr	Md,Fd,Fdr	Root is used to treat stomach pain. Fruits powder juice is used to control asthma.	KSU054
140	<i>Roscoea purpurea</i> Sm.	Zingiberaceae	Bhuin Saro	H	Rt	Md and Fd	Root is chewed to control respiratory problems.	K14
141	<i>Rubia manjith</i> Roxb.	Rubiaceae	Majitho	C	Wp,De	Md ,De	Stem juice is used to treat ear pain. Use in making dye.	KS41
142	<i>Rubia wallichiana</i> Decne.	Rubiaceae	-	C	Wp,De	Md ,De	Leaves are used to treat dental ache and ear pain.	KS42
143	<i>Rubus paniculatus</i> Sm.	Rosaceae	Rukh ainselu	S	Rt,Br,Fr	Md,Fd	Roots and leafs are use in cut and wounds.	KS43
144	<i>Rumex nepalensis</i>	Polygonaceae	Halhale	H	Rt,St,Lf, Ys	Md,Fd, De	Used in cut and wounds. Use for making dye. Used in fever.	KS44

	Spreng.							
145	<i>Sacciolepis indica</i> (L.) Chase	Poaceae	Kagune banso	H	Sd	Md and Fd,Re	It is use as food and forage. Used in rituals purpose.	KSU053
146	<i>Sanicula elata</i> Buch.-Ham.ex D.Don	Apiaceae	kanchurne	H	Rt	Md	Roots are used for healing wounds and cough.	KS600
147	<i>Sarcococca hookeriana</i> Baill.	Buxaceae	Chille Kath/Telparo	S	Rt	Md	Roots are used for healing wounds and cough.	K034
148	<i>Saxifraga parnassifolia</i> D.Don	Saxifragaceae	-	H	Wp	Md	Used to increase production of milk in cattles. Oil is used for skin diseases and indigestion.	KK48
149	<i>Schima wallichii</i> (DC.) Korth.	Theaceae	Chilaune	T	Rt,Br,Fr	Md ,Fdr,Fw,Fer menter	Used to treat fever, cut and wounds.	K14
150	<i>Schizotechium paniculatam</i> (Edgew) Pusalkar and S.K.Srivast.	Caryophyllaceae	Jangali Sag	H	Rt,Lf,Fr	Md,Fd	It is used in fever and Gynecological problems.	K150
151	<i>Scutellaria Scandens</i> Buch.-Ham.ex D.Don	Lamiaceae	Charpate	H	Wp	Md	It is used to treat diarrhoea and also use in indigestion.	KSU052
152	<i>Skimmia arborescens</i> T.Anderson ex Gamble	Rutaceae	Rauna Phul	T	Rt	Md	It is used in joint pain, cut and wounds.	K025
153	<i>Smilax aspera</i> L.	Smilacaceae	Kukurdainu	S	Rt, Lf, Ys,Fl,Fr	Md ,Fd, Re	Root is stimulant and used as tonic.	KSU190

154	<i>Smilax lanceifolia</i> Roxb.	Smilacaceae	sano kukurdainu	S	Rt, Ys	Md, Fd	Young shoot is used for vegetable , use in skin treatment.	KS008
155	<i>Smilax menispermoidea</i> A.DC.	Smilacaceae	Hade Kukurdaina	S	Ys, Fr	Fd	Young shoot are used for vegetable. Use in skin problems.	KS005
156	<i>Smilax ovalifolia</i> Roxb.ex D.Don	Smilacaceae	Nadar	S	Rt, Ys, Fr	Md ,Fd, Re	Stem are used in dental ache. Roots are used in skin diseases.	KS016
157	<i>Stellaria himalayensis</i> Majumdar	Caryophyllaceae	Lawangta	H	Lf, Ys	Md, Fd	Whole plant is used for dental, skin infections. Leaf paste is applied on wounds.	KS015
158	<i>Stellaria nepalensis</i> Majumdar and Vartak	Caryophyllaceae	-	H	Wp, Ys, Lf	Md, Fd	Use to care skin problems and paste is use for cut and wounds.	KS58
159	<i>Swertia paniculata</i> Wall.	Gentianaceae	Tite	H	Wp	Md	juice is used to treat high blood pressure, cough , headache and in skin rashes	KS59
160	<i>Symplocos lucida</i> (Thunb.) Siebold and Zucc.	Symplocaceae	Ghole	T	Br, Sd oil	Md	Use to treat cough, cold and throat pain.	KS60
161	<i>Symplocos ramosissima</i> Wall.ex G.Don	Symplocaceae	Dabdabe	T	Br, Sd oil	Md ,Fd	Use against the snake bite, use in eye problems.	KSU034
162	<i>Synotis acuminata</i> (Wall.ex DC.) C.Jeffrey and Y.L.Chen	Asteraceae	Bakhara khane /	H	Rt	Md	Root juice and paste is used to relief body pain and joint pains.	KSU33
163	<i>Taraxacum eriopodum</i> (D.Don)DC.	Asteraceae	Gobe sag	H	Wp	Md	Whole plants is used to treat skin diseases and also paste is used for cut and wounds	KS68

164	<i>Taxus contorta</i> Griff.	Taxaceae	Singi	T	Wd	Md,Fw	Bark juice is used to control abdominal pain, diarrhoea. Wood is used to make house.	KS044
165	<i>Taxus mairei</i> (lemee and H.Lev.) S.Y.Hu	Taxaceae	Singi	T	St,Lf,	Md,Re	Parts stem, leaf are used to control gastro-intestinal disorders.	KS061
166	<i>Taxus wallichiana</i> Zucc.	Taxaceae	lauth salla	T	St,,Lf,Fr	Md,Fd,Tm, Fw	Used to treat common cold, diarrhoea, asthma, cut and wounds.	KS088
167	<i>Tetrastigma serrulatum</i> (Roxb.) Planch.	Vitaceae	pani Lahara	C	Wp ,Fr	Md ,Fd,FY,Fdr	Leafs are used to relief body pain, cough and cold.	KS099
168	<i>Thalictrum foliolosum</i> DC.	Ranunculaceae	Dampate	H	Rt, Lf, Fl	Md	Roots, leafs, flower used to stop bleeding. Paste is used in fever and headache.	KSU013 4
169	<i>Thalictrum javanicum</i> Blume	Ranunculaceae	Guhya pati	H	Rt	Md	Root juice is used to treat jaundice, diarrhoea and gastric.	KSU178
170	<i>Triumfetta rhomboidea</i> Jacq.	Malvaceae	Dalle Kuro	H	Wp	Md	Whole plants is used to relief joint pain and factures	KSU155
171	<i>Tsuga dumosa</i> (D.Don) Eicher	Pinaceae	Thingre Salla	T	Wd	Tm	Wood is used to make furniture, Bark powders used in urinary problems. Leafs are used in skin and typhoid.	KS178
172	<i>Urena lobata</i> L.	Malvaceae	Nalu kuro/Bhende Jhar	H/S	Rt, Lf, Fl, Fr,Br,St	Md,FY	It is used in headache, stomachache and fever.	KS189
173	<i>Viburnum erubescens</i> Wall.	Viburnaceae	Asare	T	Rt, Lf, Sd oil ,Fr,Sd	Md ,Fd	Root juice is used to treat cough, stomachache and fever.	KS193

					oil			
174	<i>Viburnum mullaha</i> Buch.-Ham.ex D.Don	Viburnaceae	Malagiri/Mola	T	Fr	Md,Fd ,De	Fruit juice is used to treat dysentery and indigestion, cough and cold.	KSU111
175	<i>Vicia angustifolia</i> (Schumach. And Thonn.) Baker	Fabaceae	Mas Lahari	C	Fr	Fd	Fruits are used to cure asthma. Fruits are edible.	KSU149
176	<i>Vicia hirsuta</i> (L.) Gray	Fabaceae	Jhuse Kutulikosa	C	Ys,Fr	Fd,Fdr	Leafs are eaten as vegetables. Use to cure skin diseases.	KS123
177	<i>Vitex negundo</i> L.	Lamiaceae	Simali/Indrayani	T	Lf	Md	Leafs are used in headache, cough and sore throat.	KS167
178	<i>Wikstroemia canescens</i> Wall.ex Meisn.	Thymelaeaceae	Furke Pat	S	St,Br	Md,Fy	Bark is used to make paper, fever and cold throat.	KS172
179	<i>Zanthoxylum armatum</i> DC.	Rutaceae	Parpare timur / bhale timur	T	Wp, Fr	Md,Fd,Oil	Plant is religious, seed is used to treat dental problems, use in spices.	KSU45
180	<i>Zanthoxylum oxyphyllum</i> Edgew.	Rutaceae	Lahare timur	T	Rt, Lf, Fl, Fr,Sd,Fr	Md ,Fd	Whole plant parts is used as religious value, use in cut, dental ache, stomachache and also against venom and poison.	KS176

(* Life form : H: Herbs, S: Shrubs, T:Tree, C: Climber, ** Parts use: Fr: Fruit, Wp: Whole plant, St: Stem, Lf: Leaf, Rt: Root, Ys: Young shoot, Tb: Tuber, Br: Bark, Pt: Petiole, Fl: Flower, Sd: Seed, ***Use category: Md: Medicinal, Tm: Timber, Fd: Food, Fdr: Fodder, Vt: Vegetable, Fy: Fiber yielding, Po: Poison, Ft: Fermentation, Re: Religious, Or: Ornamental , Fw: Fuelwood, Fr: Forage, De: Dye)

Annex 2: Conservation Status

S.N	Name of Species	CITIES appendix	IUCN threat status	Population trend
1	<i>Adenostemma lavenia</i> (L.) Kuntze			Decreasing
2	<i>Aeschynomene aspera</i> L.		Least Concern	Decreasing
3	<i>Aeschynomene indica</i> L.		Least Concern	Decreasing
4	<i>Agrimonia pilosa</i> Ledeb.			Stable
5	<i>Anapalis cinnamomea</i> (DC.) C.B.Clarke			Decreasing
6	<i>Anaphalis busua</i> (Buch.-Ham. Ex D.Don) DC.			Stable
7	<i>Anaphalis contorta</i> (D.Don) Hook.f.			Stable
8	<i>Anaphalis margaritacea</i> (L.) Benth. And Hook.f.			stable
9	<i>Anaphalis triplinervis</i> (Sims) C.B.Clarke			Stable
10	<i>Anthriscus nemorosa</i> (M.Bieb.) Spreng.			stable
11	<i>Arisaema tortuosum</i> (Wall.) Schott			stable
12	<i>Artemisia indica</i> Willd.			stable
13	<i>Asparagus filicinus</i> Buch.-Ham.ex D.Don			stable
14	<i>Asparagus lycopodineus</i> (Baker) F.T.Wang and Tang			stable
15	<i>Asparagus racemosus</i> Willd.			stable
16	<i>Barleria cristata</i> L.			stable
17	<i>Bauhinia purpurea</i> L.		Least Concern	stable
18	<i>Begonia picta</i> Sm.			stable
19	<i>Begonia rubella</i> Buch.-Ham.ex D.Don			stable
20	<i>Berberis aristata</i> DC.		Least Concern	stable
21	<i>Bidens pilosa</i> L.			stable
22	<i>Bistorta amplexicaulis</i> (D.Don) Greene			stable
23	<i>Breynia retusa</i> (Dennst.) Alston		Least Concern	
24	<i>Carex filicina</i> Nees		Least Concern	
25	<i>Cyperus difformis</i> L.		Least Concern	
26	<i>Cyperus sanguinolentus</i> Vahl		Least	

			Concern	
27	<i>Eriocapitella rivularis</i> (Buch.-Ham.ex DC.) Christenh. And Byng			stable
28	<i>Globba marantina</i> L.		Least Concern	
29	<i>Globba racemosa</i> Sm.		Least Concern	
30	<i>Ilex dipyrena</i> Wall.		Least Concern	
31	<i>Indigofera exilis</i> Grierson and D.G.Long		Least Concern	
32	<i>Koenigia campanulata</i> (Hook.f.) T.M.Schust. And Reveal			Stable
33	<i>Koenigia polystachya</i> (Wall. Ex Meisen.)T.M.Schust. And Reveal			Decreasing
34	<i>Lyonia ovalifolia</i> (Wall.) Drude		Least Concern	
35	<i>Lyonia villosa</i> (Hook.f. and C.B.Clarke)		Least Concern	
36	<i>Neillia thyrsoflora</i> D.Don		Least Concern	
37	<i>Paris polyphylla</i> Sm.		Vulnerable	
38	<i>Parochetus communis</i> Buch.-Ham.ex D.Don		Least Concern	
39	<i>Persicaria barbata</i> (L.) H.Hara		Least Concern	
40	<i>Persicaria hydropiper</i> (L.) Delarbre		Least Concern	
41	<i>Pogonatherum paniceum</i> (Lam.) Hack.		Least Concern	
42	<i>Pseudognaphalium adnatum</i> (DC.) Y.S. Chen			Stable
43	<i>Quercus semecarpifolia</i> Sm.		Least Concern	
44	<i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz	II		
45	<i>Rhododendron arboreum</i> Sm.		Least Concern	
46	<i>Skimmia arborescens</i> T.Anderson ex Gamble		Least Concern	
47	<i>Smilax aspera</i> L.		Least Concern	
48	<i>Symplocos lucida</i> (Thunb.) Siebold and Zucc.		Least Concern	
49	<i>Symplocos ramosissima</i> Wall.ex G.Don		Least Concern	
50	<i>Taxus contorta</i> Griff.		Endangered	
51	<i>Taxus mairei</i> (le mee and H.Lev.) S.Y.Hu		Vulnerable	

52	<i>Taxus wallichiana</i> Zucc.	II	Endangered	
53	<i>Tsuga dumosa</i> (D.Don) Eicher		Least Concern	
54	<i>Urena lobata</i> L.		Least Concern	
55	<i>Viburnum mullaha</i> Buch.-Ham.ex D.Don		Least Concern	
56	<i>Vitex negundo</i> L.		Least Concern	
57	<i>Zanthoxylum armatum</i> DC.		Least Concern	

Annex 3: Questionnaires for interview.

Informants Details:

- 1) Interview No:
- 2) Name:
- 3) Gender: a) Male b) Female
- 4) Age:
- 5) Occupation:
- 6) Education:
- 7) Municipality/Gaunpalika:
- 8) Ward no:
- 9) Tole:

Ethnobotanical aspects of medicinal plant use:

- 1) Do you know about medicinal Plants? a) Yes b) No
- 2) Do you use medicinal plants to cure illness? a) Yes b) No
- 3) From where do you collect the useful plants? a) Forest b) Self Cultured
- 4) Do you cultivate plants in your private land? a) Yes b) No
- 5) Are you a member of that community forest? a) Yes b) No
- 6) Have you ever been to forest for any type of activities? What are they?
- 7) Have you noticed any changes on this forest resources/landscape through your life time? Please share some experiences.
- 8) What are the wild plants that you use in daily life/more often?
- 9) Which plant is used to treat which disease?
- 10) Which parts of the plants are mostly used?
- 11) What are the forms of medication?
- 12) What are the major diseases/disorders most common among the people?

- 13) What are the most important plants used for


Local medicine: which plants or plant products have you used for medicinal purposes, if any?

Name	Parts used	Mode	Detail use	Amount use

Conservation Status of Ethno medicinal plant:


- 1) Name of Plant (Local Name) :
- 2) Habitat/Location :
- 3) Harvesting Method :
- 4) Plants parts Harvest:
- 5) Market Area:
- 6) Cultivation Process if any:
- 7) Responsible for Conservation :
- 8) Causes of Extinction :

Annex 4: Permission Letter form Department of Plant Resources.




नेपाल सरकार
वन तथा वातावरण मन्त्रालय
वनस्पति विभाग
(.....जैविक विविधता तथा साइटिस शाखा)

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४२६११६७
४२५११६०
४२५११६१



फ्याक्स नं.: ४२५११४१

घत्र संख्या:- २०६८/०६९
चलानी नम्बर:- ९८९




ईमेल:- info@dpr.gov.np
वनस्पतिभार्ग, धापाखली
काठमाडौं
मिति: २०७८/०६/०७

विषय: अनुसन्धान अनुमति सम्बन्धमा ।

श्री कूल रोखर उपाध्याय
बागलुङ ।

प्रस्तुत विषयमा यस विभागको मिति २०७८/०६/०७ को निर्गयानुसार तपाईंलाई देहाय बमोजिमका शर्तहरूमा रही वनस्पति स्रोतको अनुसन्धान कार्यविधि, २०७०(पहिलो संशोधन, २०७३) बमोजिम अनुसन्धान गर्न निम्नानुसार अनुमति प्रदान गरिएको छ ।

अनुसन्धानकर्ताको नाम	पहिले	बीचको	पर
	कूल	रोखर	उपाध्याय
अनुसन्धानकर्ताको ठेगाना	स्थायी : बागलुङ। अस्थायी : काठमाडौं।	ईमेल :- kulshkhar@gmail.com	फोन नं. : ९८६७६३३३३
सम्बद्ध संस्था	संस्थाको नाम : वनस्पति शाख केन्द्रीय विभाग, वि.वि.। विद्यार्थी : अनुसन्धान सह		
	ठेगाना : जीतिपुर, काठमाडौं ।		
अनुसन्धान सह	संस्थागत : <input checked="" type="checkbox"/> राष्ट्रिय / <input type="checkbox"/> अन्तर्राष्ट्रिय व्यक्तिगत : स्वतन्त्र सह / स्वतन्त्रकोष सह / वि.ए.डी. अन्य :		
अनुसन्धानको शीर्षक	"Floristic Study and Conservation Priority Zonation in Malika Forest, Baglung, Western Nepal"		
अनुसन्धानको क्षेत्र	बागलुङ जिल्ला Malika Forests and other forests (संरक्षण क्षेत्र बाहेक) ।		
अनुसन्धानको विधि	Intensive taxonomy Survey ।	नमूना संकलन गर्ने <input checked="" type="checkbox"/>	नमूनाको परीक्षण नेपालमा - -
अनुसन्धानको समयावधि	वि.सं. २०७८ अक्टोबर देखि २०७९ सम्म ।		
अनुसन्धानको शर्तहरू	<ol style="list-style-type: none"> अनुसन्धानकर्ताले विभाग र सम्बन्धित कार्यालयसँग समन्वय गरी अनुसन्धान कार्य गर्नु पर्नेछ । अनुसन्धानकर्ताले आफ्नो अनुसन्धानको प्रस्ताव सम्बन्धित कार्यालयमा समेत बुझाउनु पर्नेछ । अनुसन्धानकर्ताले अनुसन्धान समाप्त भएपछि एक प्रति कागजी प्रतिवेदन र एक प्रती विद्युतीय प्रतिवेदन विभागमा बुझाउनु पर्नेछ । अनुसन्धानकर्ताले नतिजाहरू प्रकटित गर्दा अनुसन्धानमा संलग्न कर्मचारीको योगदानको आधारमा सह-लेखकको रूपमा समावेश गराउनु पर्नेछ । संकलित नमूना नेपाल सरकारको पूर्व स्वीकृति नलिई विदेश लैजान पाइने छैन । संकलित वनस्पतिको प्रत्येक प्रजातिका मूल नमूनाहरू एक/एक धान श्री राष्ट्रिय हर्बोरियम तथा वनस्पति प्रयोगशाला (ICARIG) गोदावरी, ललितपुरमा बुझाउनु पर्नेछ । नेपालको प्रतिबन्धित र साइटिस श्रेणीमा शूचीकृत वनस्पति बाहेकका वनस्पति नमूनाहरू मात्र संकलन गर्नु पर्नेछ । 		


कञ्चना शर्मा (दकाल)
सहायक वैज्ञानिक अधिकृत
(१९८४८२)

PHOTOPLATES

Photoplate 1.



Photographs of Plants from study area: **A.** *Taxus wallichiana* **B.** *Cotoneaster integrifolius* **C.** *Daphne bholua* **D.** *Berberis aristata* **E.** *Lysimachia alternifolia*
F. *Bauhinia purpurea*

Photoplate 2.



Photographs taken at the time of data collection: **G.** using altimeter for GPS point **H.** collecting plants **I.** Herbarium Preparation **J.** village near study premises **K.** Interview with local healer **L.** Focus group discussion