

Full Length Research Paper

Wild edibles of Murari Devi and surrounding areas in Mandi district of Himachal Pradesh, India

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The wild edibles served as a dietary supplement and medicine for thousands of years, particularly in the tribal and rural areas of the Himalayas. A total of 43 wild edibles, representing 33 genera and 25 families were reported. Maximum number of species were reported in the altitudinal zone, 700 to 1800 m followed by >1800 m altitudinal zone. Forty species were found in dry habitat followed by shady moist degraded bouldary, etc. Fourteen species were native to Himalayan region and the rest were non-native to Himalayan region. Various parts of these wild edibles, that is, fruits, leaves, roots, bark, flowers, seeds, tubers, aerial parts, etc., were consumed by the inhabitants for various purposes. Mass scale cultivation of such wild edibles in the villages may reduce the human pressure on the wild habitats. Therefore, conservation measures have to be taken to maintain the current status of these habitats and species. The information generated in the present communication represents a valuable database that provides baseline information and contributes to filling the knowledge gaps for the compilation of a local biodiversity register of the study area, a key instrument for achieving the regional and global biodiversity conservation and sustainable development goals.

Key words: Wild edibles, Murari Devi, nativity, endemism, indigenous uses, Himachal Pradesh.

INTRODUCTION

At global level in many developing countries, large number of population do not have sufficient food for their daily need and many people are lacking one or more micro-nutrients (Bailem and Fassil, 2006). The wild edibles of many plant species have served as nutritional supplement and medicine for thousands of years, particularly in the tribal and rural areas of the Himalayas. Although they are not consumed in large quantities, their role at regional level cannot be ignored (Maikhuri et al., 2004). In rural areas, inhabitants rely on wild resources including wild edibles to meet their food needs in periods of food crisis and contribute to family food security. In India, the

Himalayan region covers approximately 5,91,000 km², which is only 11% of the country's geographical area and is one of the 12 mega-biodiversity countries of the World and it accounts for more than 50% of the country's forest cover with 40% of the endemic species (Ignacimuthu et al., 2006; Anonymous, 2010). The diverse natural habitats all over the Indian Himalayan Region (IHR) represent rich repositories of plant diversity (Pant et al., 2009). The inhabitants utilizes this rich biodiversity in various forms as fodder, fuel wood, wild edibles, medicine, house building, agricultural tools, religious and other various purposes (Sharma et al.2013).

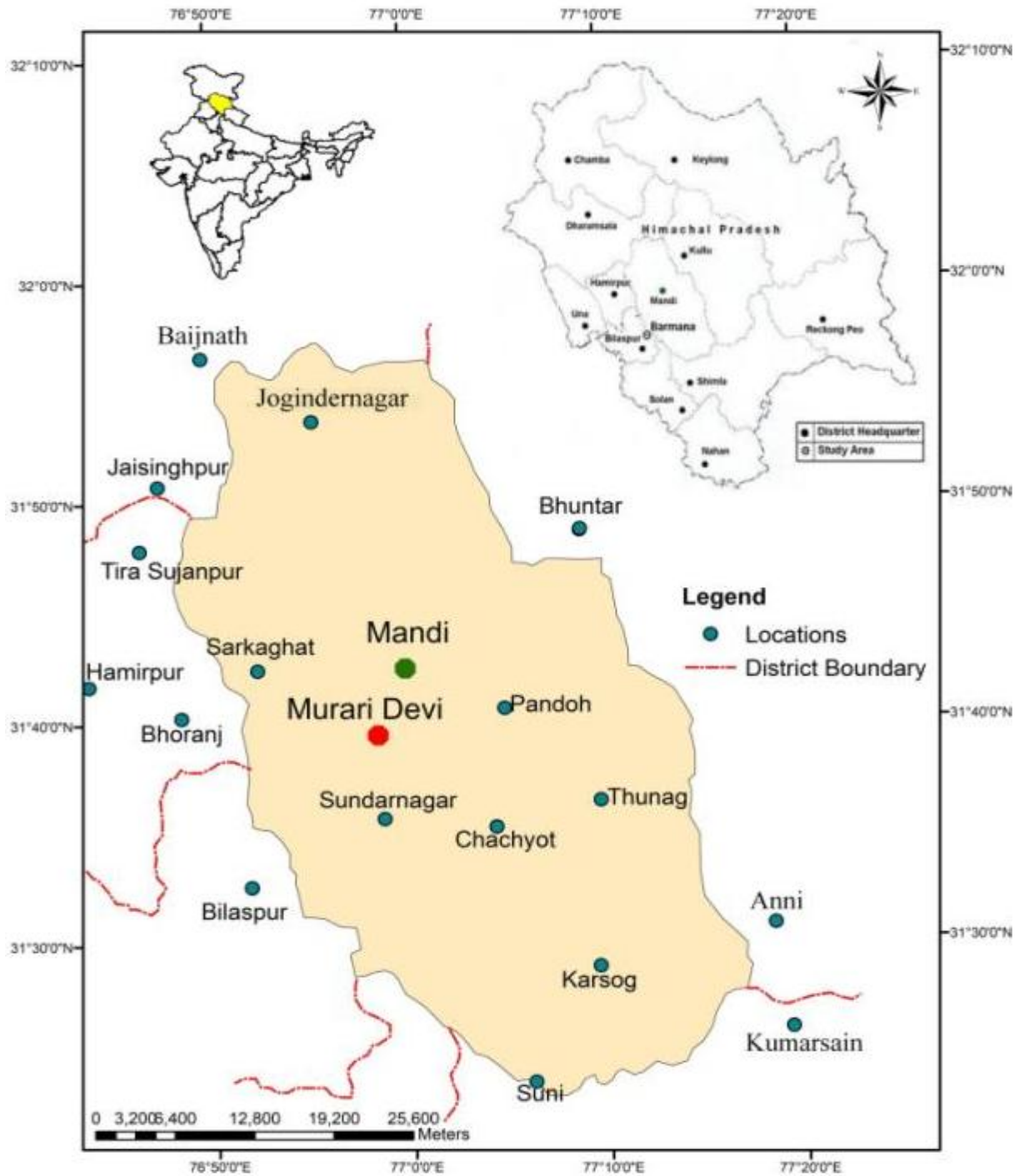


Figure 1. Map of the study area.

The State Himachal Pradesh is among one of the states of IHR which is also endowed with rich biodiversity which is unique and representative of the area. Various studies have been carried out on ethnobotanical and ethno-medicinal uses of floristic diversity in Himachal Pradesh (Uniyal and Chauhan, 1971; Chauhan, 1999; Uniyal et al., 2006; Samant et al., 2007; Sood and Thakur, 2004;

Rana and Samant, 2011; Sharma et al., 2013). In particular, there were no studies focusing on wild edibles in the study area. Therefore, the study was conducted in Murari Devi and surrounding areas ($31^{\circ} 37' 30''$ N latitudes and $76^{\circ} 49' 50''$ E longitudes) of Mandi district in Himachal Pradesh (Figure 1) to document the information on indigenous uses of wild edibles by the local inhabitants

Table 1. Profile of the informants of Murari Devi and surrounding areas in Mandi district of Himachal Pradesh.

S/N	Name	Sex	Age	Education	Profession	Village
1	Amin Chand	M	58	Graduation	Farmer	Alsogi
2	Ashwani Sharma	M	48	Graduation	Teacher	Bhated
3	Jugar Dass	M	65	5 th	Farmer	Baldwara
4	Tulsi Dass	M	49	6 th	Farmer	Baldwara
5	Baldev Sharma	M	34	12 th	Farmer	Bachawan
6	Dev Raj	M	48	12 th	Pharmacist	Ukhla
7	Lekh Raj	M	60	10 th	Farmer	Ukhla
8	Mangat Ram	M	48	10 th	Farmer	Plassi
9	Prem Lata	F	38	10 th	Farmer	Ukhla
10	Sunita Devi	F	51	8 th	Farmer	Ukhla
11	Koshlaya Devi	F	63	-	Farmer	Smaila
12	Bhola Ram	M	30	12 th	Farmer	Smaila
13	Rirdku Ram	M	52	5 th	Farmer	Smaila
14	Suman Lata	F	43	5 th	Farmer	Math
15	Pritam Dass	M	43	8 th	Farmer	Math
16	Sushma Devi	F	32	12 th	Farmer	Badoun
17	Nirmla Devi	F	57	12 th	Pharmacist	Badoun
18	Damodar dass	M	48	Graduation	Farmer	Kasmela
19	Krishna Devi	F	44	12 th	Farmer	Kot
20	Roshan Lal	M	37	Graduation	Farmer	Balra
21	Prem lal	M	51	10 th	Farmer	Bhambla
22	Kanta Devi	F	36	10 th	Farmer	Katoh
23	Shyam Sunder	M	42	8 th	Farmer	Kalkhar
24	Ram Dass	M	45	12 th	Farmer	Ambra galu
25	Kamlesh Kumari	F	38	5 th	Farmer	Nadgi
26	Bhola Ram	M	50	5 th	Farmer	Sikandra
27	Sohan Lal	M	40	8 th	Farmer	Sikandra
28	Nanak Dass	M	52	5 th	Farmer	Kot
29	Lal chand	M	59	5 th	Farmer	Katoh
30	Prakash Chand	M	59	5 th	Farmer	Katoh

of the area.

METHODOLOGY

Mandi district is one of the 12 districts of state Himachal Pradesh with a total geographical area of 3,950 km² which covers 7.10% area and ranks 7th in the state. The district is one of the treasure houses of biodiversity in the state and supports 03 Wildlife Sanctuaries (viz., Bandli, Nargu and Shikari Devi). Murari Devi and surrounding areas are situated at a distance of 40 km in the south-west direction of Mandi district. The study area falls in Suket, Bhambla and Nagrota Forest Divisions with an altitude that varies from 700 to 2000 m amsl. Murari Devi temple is a beautiful place in the west of Sundernagar on the top of a sacred hill named Murari Dhar. The area is mostly hilly and weather is subtropical monsoon (Puri, 1960).

Numerous surveys were conducted in all seasons during 2010-2012 and rapid sampling was done. The inhabitants of 23 representative villages namely, Alsogi, Ambra galu, Bhated, Baldwara, Bhambla, Balra, Bachawan, Chowk, Dabhoi, Smaila, Plassi, Kot, Sikandra, Kasmela, Kalkhar, Katoh, Badoun, Nadgi, Math, Trifalghat, Ropadi, Leda and Ukhla located at different elevations were selected to generate information on indigenous uses of wild

edibles present in the study area. For this, knowledgeable persons from each village were interviewed. Individual interviews were followed in most cases, except in some cases, where several people participated at the same time. The language used by the informants was the local dialect of the study area viz., Mandyali and Hindi. The informants included men, women, youths and elders between the ages of 30 and 65 years. Most of them were farmers and depends on agriculture and horticulture for their livelihood. Prior consent for the documentation of information provided by them was obtained verbally from each of them before the interview was done (Table 1). Those older than 50 years had a rich knowledge base. Information on botanical binomial, local name, plant part/s used, altitudinal range, habit and habitat/s and use values were gathered. Fresh samples of the useful species were collected and identified with the help of local and regional floras (Chowdhery and Wadhwa, 1984; Dhaliwal and Sharma, 1999; Singh and Rawat; 2000). Anonymous (1883-1970) and Samant et al. (1998) were followed for finding the nomenclature and nativity. Endemism of the species was identified based on bio-geographical distribution; species restricted to the IHR were identified as endemic, while those species also found in adjacent Himalayan countries (Himalayan region of Afghanistan, Pakistan, Tibet, Nepal, Bhutan and adjacent states of the IHR) were identified as near-endemic (Dhar and Samant, 1993). Information on mode of

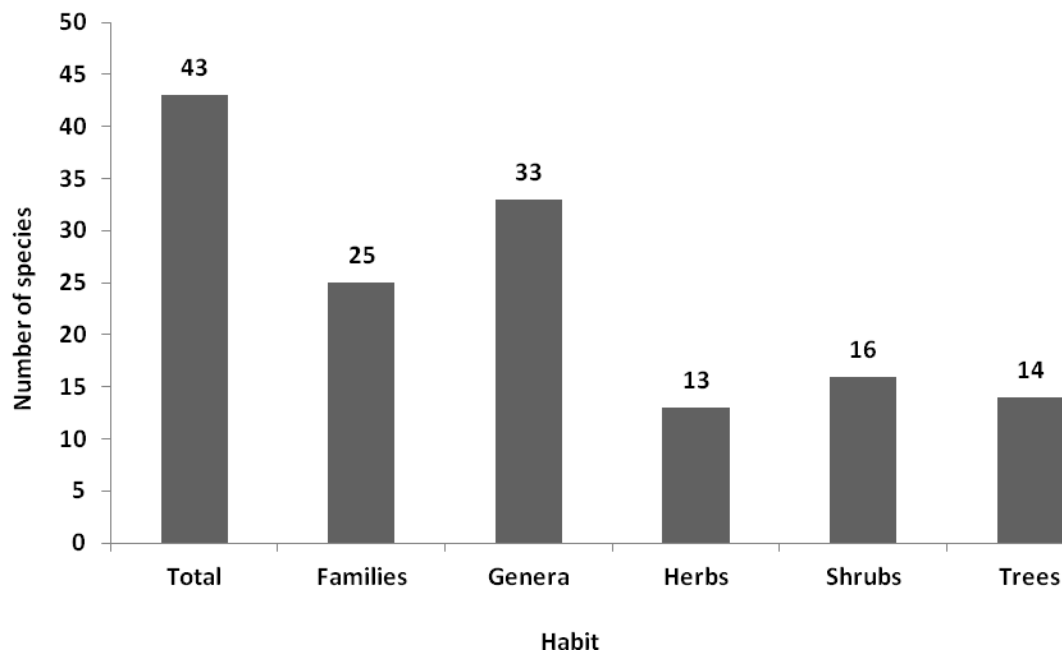


Figure 2. Taxonomic description of wild edible plants in Murari Devi and surrounding areas.

utilization of wild edibles was collected and they are either eaten fresh, boiled, cooked or in the form of dried or liquid products (Samant and Dhar, 1997).

RESULTS

Diversity and distribution patterns

A total of 43 species of wild edible plants belonging to 25 families and 33 genera were recorded. From the total species, 14 species were trees, 16 shrubs and 13 herbs (Figure 2). Rosaceae (7 spp.); Moraceae and Polygonaceae (3 spp. each); Berberidiaceae, Caesalpiniaceae, Combretaceae, Elaeagnaceae, Lamiaceae and Oxalidaceae, Rhamnaceae and Rutaceae (2 spp., each) were the dominant families; 13 families were monotypic. Among the genera, *Rubus* (4 spp.); *Bauhinia*, *Berberis*, *Chenopodium*, *Elaeagnus*, *Ficus*, *Oxalis*, *Terminalia* and *Zizyphus* (2 spp., each) were dominant genera (Appendix 1).

Maximum number of species 43 spp. (trees: 14; shrubs: 16 and herbs: 13) were reported in the altitudinal zone, 700 to 1800m followed by 30 species (trees: 7; shrubs: 11 and herbs: 12) in the altitudinal zone, >1800 m (Figure 3). The representative species of altitudinal zone, 700 to 1800 m were *Carissa opaca*, *Bauhinia variegata*, *Chenopodium album*, *C. botrys*, *Terminalia bellirica*, *T. chebula*, *Flacourtia indica*, *Origanum vulgare*, *Tinospora cordifolia*, *Murraya koenigii*, *Morus alba*, *Syzygium cumini*, *Zizyphus mauritiana*, *Z. Oxyphylla*, *Zanthoxylum armatum*, etc; in the altitudinal zone >1800 m were *Asparagus racemosus*, *Elaeagnus conferta*, *Elaeagnus Parviflora*, *Rhododendron arboreum*, *Juglans*

regia, *Ocimum basilicum*, *Polygonatum verticillatum*, *Myrica esculenta*, *Fragaria nubicola*, *Rubus biflorus*, *R. Ellipticus*, *R. Foliolosus*, *R. paniculatus*, *Urtica dioica*, etc. Maximum species (40 spp.) were found in dry habitat followed by shady moist (36 spp.), degraded (30 spp.), boundary (27 spp.), riverine (26 spp.), shrubbery (15 spp.), near crop field (14 spp.), waste places (12 spp.), rocky and water courses (9 spp. each) were reported (Figure 4). Of the total wild edibles, 14 spp. were native to Himalayan region remaining 39 spp. were non-native to Himalayan region. Five species were near-endemic to the Indian Himalayan Region.

Utilization pattern

Among the parts of plants used, fruits of maximum species (25 spp.), followed by leaves (22 spp.), roots (13 spp.), bark and whole plant (8 spp., each), flower, seed and wood (4 spp. each), tuber (2 spp.) and aerial part (1 sp.) were consumed by the inhabitants of the area (Figure 5). These wild edibles were also used in the treatment of various diseases/ailments of different body organs such as skin, sex organs, stomach, teeth, throat, ear, eyes, liver, heart, nervous system, muscles, joints, bones, etc. For example, *Carissa. opaca* was used for appetite, in constipation and indigestion; *Asparagus racemosus* was used in rheumatism, bleeding from nose, cough, dysentery, gastric complaints, headache, menstrual complaints, snake bite, tonic and urine complaints; *Bauhinia variegata* in diarrhoea, dysentery, fatness, flatulence, piles, skin complaints, leprosy, snakebite, tumors and ulcers; *Terminalia bellirica* in cough and cold, asthma, conjunctivitis, appetite, piles, constipation, acidity, blood

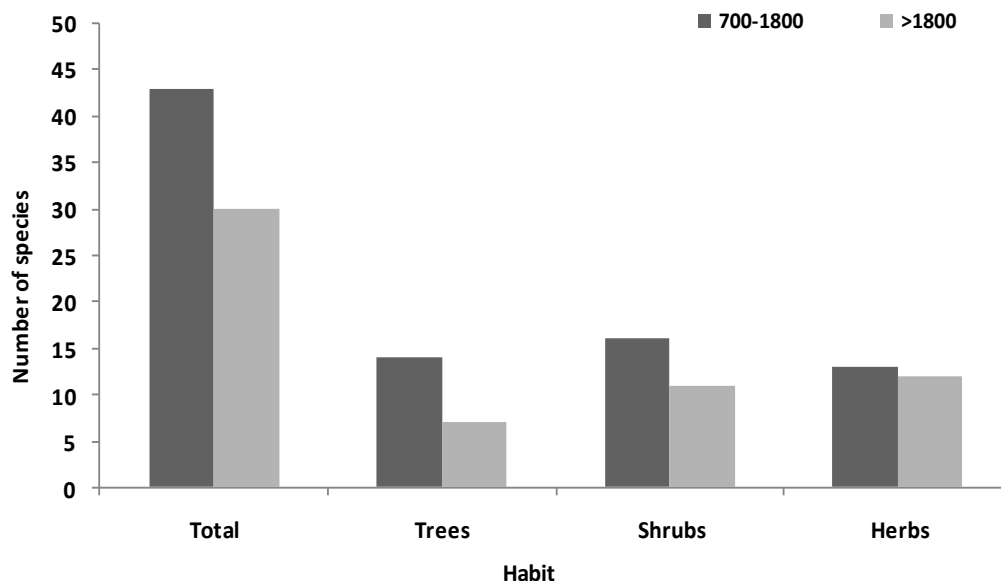


Figure 3. Altitudinal distribution of wild edible plants in Murari Devi and surrounding areas.

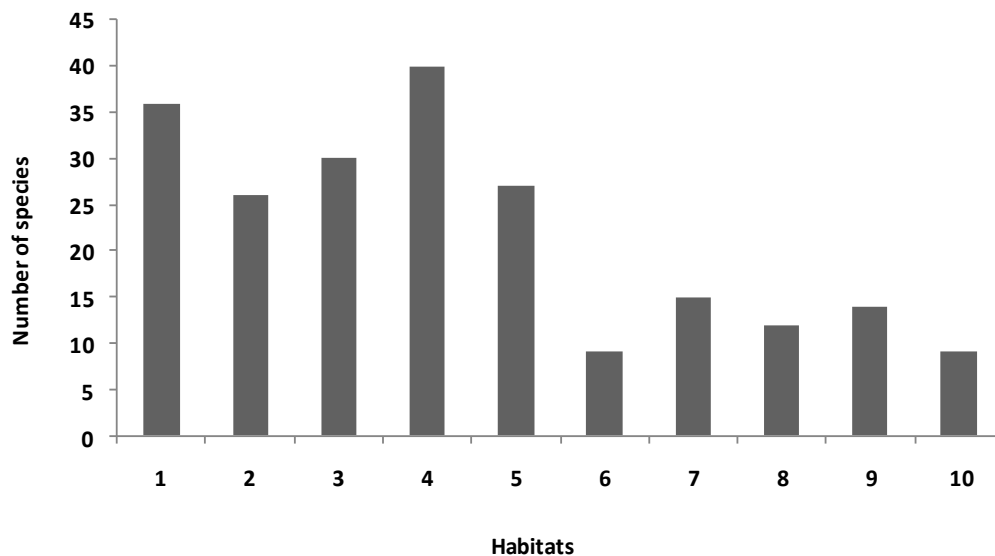


Figure 4. Habitat distribution of wild edibles in Murari Devi and surrounding areas. 1 = Shady moist; 2 = riverine; 3 = degraded; 4 = dry; 5 = bouldary; 6 = rocky; 7 = shrubby; 8 = waste places/road side; 9 = near crop field/cultivated field; 10 = water courses/marshy places.

pressure, dysentery, headache and eye diseases; *Polygonatum verticillatum* in sexual complaints, appetite and nervine tonic; *Tinospora cordifolia* in asthma, immunity disorder, stomach ulcer, urinary disorder, mental disorder, weakness, dyspepsia, swine flu, antispasmodic, jaundice, hepatic fibrosis, skin diseases, diabetes, arthritis and tuberculosis; *Syzygium cumini* in cancer, piles, pimples and diabetes; *Zanthoxylum armatum* in cough, cholera, fever, eczema, itching, leucoderma, piles, rheumatism, tonic and tooth complaints. *Rhododendron*

arboreum in dysentery, fever, bronchitis, headache, rheumatism, wounds and nose bleeding, etc., (Plate 1 and Appendix 1).

Indigenous uses

The wild edibles are either eaten fresh, boiled, cooked or in the form of dried or liquid products. For example, fruits of *C. opaca* are eaten by the inhabitants and latex/milk

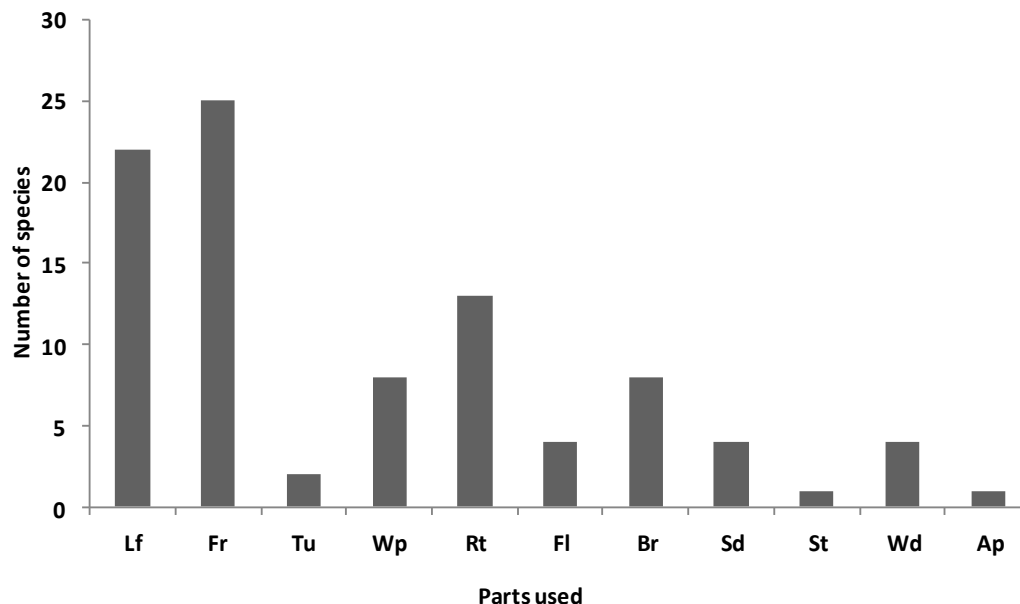


Figure 5. Plant parts used in different ailments/diseases. Lf = Leaf; Fr = fruit; Tu = tuber; Wp = whole plant; Rt = root; Fl = flower; Br = bark; Sd = seed; St = stem; Wd = wood; Ap = aerial part.

obtained from the fruits is used to prepare bubblegum by the children; tender shoots of *A. racemosus* is used as vegetables; flowers of *B. variegata* are used to prepare *rayata*/vegetables by mixing curd; dry fruits of *P. emblica*, *T. bellirica* and *T. chebula* are crushed and used to prepare the *Triphla Churan* used in constipation/acidity; juice or squash is prepared from the flowers of *R. arboretum*; fruits of *M. koenigii* were eaten, leaves used as flavouring agent in *Kari* and stems used as toothbrush; fruits of *Z. armatum* were eaten and stems are used as toothbrush; fruits of *J. regia*, *M. esculenta* and *S. cumini* are sold in the market and have high market value by the inhabitants of the area (Appendix 1).

DISCUSSION

The biological resources upon which people depend have the critical characteristics of being renewable, at least when they are managed well, but biological resources that are abused can also become extinct (Heywood and Watson; 1995). People living in the Himalaya have developed an age old tradition of selectively using a wide variety of forest resources based on their quality and availability (Rai et al., 2002). They depend on wild edible, medicine, fuel, fodder, timber, making agricultural tools, etc., in the forests based on their socio-economic structure (Samant et al., 2007). In the Indian Himalayan Region, medicinal plants (1748), wild edibles (675), fodder (279), essential oil yielding medicinal and aromatic plants (118) and sacred (155) plants were reported (Samant et al., 1998; Samant and Pant, 2003), while in India about 2,500 species of ethnobotanical importance

are known (Jain, 1991). There are plenty of scopes to strengthen the database, if biodiversity rich areas are thoroughly explored. Promotion for cultivation of such wild edibles in the villages may reduce the human pressure on the wild habitats. Occurrence of maximum wild edibles in shady moist, riverine, degraded and bouldary habitats identifies these habitats as potential habitats, and merit priority attention for conservation.

Therefore, conservation measures have to be taken to maintain the current status of these habitats and species. Awareness among the villagers and mass multiplication through conventional and *in-vitro* methods of wild edibles facing high anthropogenic pressures and their establishment and maintenance in the *in situ* and *ex situ* conditions may help in the conservation and management of these species. The information generated in the present communication represents for the first time an immensely valuable database that provides baseline information and contributes in filling the knowledge gaps for the compilation of a local biodiversity registers of the study area, a key instrument for achieving the regional and global biodiversity conservation and sustainable development goals.

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Plate 1. 1) Flower of *Rhododendron arboreum* Sm.; 2) fruits of *Elaeagnus conferta* Roxb.; 3) fruits of *Murraya koenigii* Spr. 4) fruits of *Myrica esculenta* Buch.-Ham. ex Don; 5) flowers of *Bauhinia variegata* L.; and 6) fruits of *Berberis lycium* Royle.

Appendix 1. Wild edibles of Murari Devi and surrounding areas of Mandi district in Himachal Pradesh, India.

Taxa	Vernacular name /local name	AR (m)	Habitats	LF	Nativity	Parts used	Medicinal uses	Indigenous uses
Apocynaceae								
<i>Carissa opaca</i> Stapf ex Haines	Garnu	700-1500	2, 3, 4, 5, 6, 7, 8	Sh	Reg Himal	Lf, Fr	Appetizer, constipation, indigestion	Fruits are eaten and latex/milk obtained from the fruits is used to prepare bubblegum by the children
Asparagaceae								
<i>Asparagus racemosus</i> Willd.	Sansarpali	700-2000	1, 2, 3, 4, 9	Sh	Ind Or Afr Trop Austr	Tu	Anthelmintic, aphrodisiac, rheumatism, bleeding from nose, cough, dysentery, febrifuge, gastric complaints, gonorrhoea, headache, menstrual complaints, snake bite, tonic, urine complaints	Tender shoots are used as vegetables
Berberidaceae								
<i>Berberis aristata</i> DC.*	Kshamal	1000-2000	1, 2, 3, 4	Sh	Ind Or	Wp	Antidote to snake bite, malaria, piles, diabetes	Fruits are eaten and roots are used in diabetes
<i>B. lycium</i> Royle*	Kshamal	700-2000	1, 3, 4, 5, 6, 7, 8, 9	Sh	Reg Himal	Rt, Fr	Jaundice, eye diseases	Fruits are eaten and roots are used in diabetes
Caesalpiniaceae								
<i>Bauhinia variegata</i> L.	Karyalae	700-1500	1, 2, 7	T	Ind Or Burma China	Lf, Fr, Fl	Diarrohea, dysentery, fatness, flatulence, piles, scrofula, skin disease, Leprosy, snakebite, tumors, ulcers, worms	Flowers are used to prepare <i>rayata</i> /vegetables
Chenopodiaceae								
<i>Chenopodium album</i> L.	Bathu	700-2000	1, 2, 3, 4, 5, 8, 9, 10	H	Reg Temp et Trop	Sd, Lf	Skin diseases, urine complaints	Traditional dish <i>Saag</i> is prepared from the leaves
<i>C. botrys</i> L.	Sokana	1000-2000	1, 2, 3, 4, 5, 8, 9, 10	H	Reg Bor	Wp	Anthelmintic, diuretic, headache, laxative, liver complaints, stomachache	Traditional dish <i>Saag</i> is prepared from the leaves
Combretaceae								
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Baheda	700-1300	1, 2, 3, 4, 5	T	Ind Or Malaya	Br, Fr	Cough, cold, asthma, conjunctivitis, appetizer, flatulence, thirst, piles, worms, astringent, constipation, acidity, blood pressure, dysentery, headache, eye diseases	Fruits are used to prepare the <i>Churan</i> used in constipation/acidity

Appendix 1. Contd.

<i>T. chebula</i> Retz.	Harad	700-1500	1, 2, 3, 4, 5	T	As Trop	Fr, Br	Laxative, anorexia, appetite, tonic, astringent, anthelmintic, expectorant, carminative, skin disorders, anemia, piles, constipation, acidity, stimulant, diarrhoea, leprosy, fever, heart disease, cough	Fruits area used to prepare the <i>Churan</i> used in constipation/acidity. Pickle is prepared from the fruits.
Cucurbitaceae								
<i>Melothria heterophylla</i> (Lour.) Cogn.	Fot	1100-1700	1, 3, 4	H	As Trop et Sub Trop	Rt, Lf, Fr	Antifertility, cuts, diabetes, fever, stomachache, dysuria, stimulant, purgative, gonorrhoea, spermatorrhoea	Fruits are eaten
Elaeagnaceae								
<i>Elaeagnus conferta</i> Roxb. *	Ghayai	1200-1900	3, 4, 7	Sh	Ind Or	Fl, Fr	Sores, ulcers, indigestion	Fruits are eaten
<i>E. parviflora</i> Wall. Ex Royle	Ghayai	1400-2000	1, 3, 4, 5	Sh	Ind Or Nepal	Fr, Lf	Astringent, diarrhoea, pulmonary infections	Fruits are eaten
Ericaceae								
<i>Rhododendron arboreum</i> Sm.	Braah	1600-2000	1, 2, 4, 5, 6	T	Ind Or Reg Himal Zeylan	Fl, Lf	Dysentery, fever, headache, rheumatism, wounds, nose bleeding	Juice or Squash is prepared from the flowers
Flacourtiaceae								
<i>Flacourtia indica</i> (Burm.f.) Merr.	Kangu	700-1000	1, 3, 4, 5	T	Ind Or Malaya Madag	Lf, Br, Fr, Rt	Mouth disease, bite of medicinal dog, facilitates child birth	Fruits are eaten
Juglandaceae								
<i>Juglans regia</i> L.*	Khod	700-2000	1, 2, 3, 4, 5, 8, 9	T	As Occ Reg Himal	Fr, Wd, Lf	Anodyne, cancer, anti-inflammatory, astringent, Blood purifier, depurative, diuretic, vermifuge	Leaves are used to colour lips by the womens, nuts are eaten and also used in stuffing of some traditional dishes
Lamiaceae								
<i>Ocimum basilicum</i> L.	Bhabri	700-2000	1, 3, 4, 7	H	As Occ et Trop	Lf, Rt, Wp	Anthelmintic, cholera, epilepsy, antipyretic, earache, carminative, diaphoretic, expectorant, fever, headache, sores, wounds, snakebite, ringworm	Leaves are used as flavouring agent in some traditional dishes
<i>Origanum vulgare</i> L.	Ban tulsi	1000-2000	1, 4, 5, 9, 10	H	Europe As et Afr Bor	Wp, Lf, Rt	Cold, fever, hysteria, influenza, menstrual complaints, stimulant, tonic	Leaves are used in tea
Liliaceae								
<i>Polygonatum verticillatum</i> (L.) All.	Salam mishri	1600-2000	1, 2, 10	H	Europe As Bor	Tu	Aphrodisiac, appetite, nervine tonic, tonic	Tubers are eaten

Appendix 1. Contd.

Menispermaceae

<i>Tinospora cordifolia</i> (L.) Merr.	Guljya	700-1300	1, 2, 3, 4, 5	Sh	Ind Or	Rt, St	Asthma, immunity disorder, stomach ulcer, urinary disorder, mental disorder, weakness, dyspepsia, swine flu, antispasmodic, jaundice, hepatic fibrosis, skin diseases, peritonitis, diabetes, metabolic disorders, arthritis, tuberculosis	Roots and young stems are eaten
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Moraceae

<i>Ficus palmata</i> Forsk.	Dagla	700-1700	1, 3, 4, 5	T	Afr Trop Arab Ind Or	Fr, Lf	Digestive disorders, cough, constipation, diabetes, dysentery, stomachache, boils	Fruits are eaten
<i>F. roxburghii</i> Wall.	Traymbalu	700-1900	1, 3, 4, 5	T	As Trop	Lf, Rt, Wd	Astringent, ulcers, erysipelas, vomiting, vaginal complaints, fever, inflammations, leprosy, aphrodisiac, tonic, syphilis	Fruits are eaten
<i>Morus alba</i> L.	Toot	700-1000	1, 3, 4, 5	T	China As Temp	Lf, Fr	Anthelmintic, dyspepsia, refrigerant, purgative, vermifuge, sore throat	Fruits are eaten

Myricaceae

<i>Myrica esculenta</i> Buch.-Ham. ex Don	Kaphal	1400-2000	1, 2, 4	T	As Trop et Sub Trop	Br, Fr, Wd	Asthma, cholera, cough, fever, indigestion, malaria, rheumatism	Fruits are eaten
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Myrtaceae

<i>Syzygium cumini</i> Skees	Jamun	700-1500	1, 3, 4, 5, 6, 7, 8, 9	T	As et Austr Trop	Br, Lf, Sd, Fr	Astringent, blister in mouth, cancer, piles, pimples, diabetes	Fruits are eaten and used in fermentation for rice beer
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Oxalidaceae

<i>Oxalis corniculata</i> L.	Malori	700-2000	1, 2, 4, 5, 6, 8, 10	H	Amphig Temp et Trop	Wp	Appetizer, cooling, cough, cuts, dysentery, epilepsy, eye complaints, fever, jaundice, scurvy, stomachache, swelling, skin diseases	Leaves are eaten by the children
<i>O. latifolia</i> Kunth.	Malori	1200-2000	1, 2, 3, 4, 9	H	Mexic	Wp	Cuts, dysentery, fever, insect bite, scurvy, skin disease, stomachache, warts	Leaves are eaten by the children

Phyllanthaceae

<i>Phyllanthus emblica</i> L.	Amala	700-2000	1, 3, 4, 5, 6, 8, 9	T	As Trop	Fr, Br	Constipation, antioxidant, asthma, bronchitis, dysentery, scurvy, diuretic, coolant, diabetes, cold, burns, hypoglycemic, skin problem, hypotensive, hair tonic	Fruits are eaten and stems are used toothbrush
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Appendix 1. Contd.

Phytolaccaceae

<i>Phytolacca acinosa</i> Roxb.	Jharka	1300-2000	1, 2, 4, 5	H	Reg Himal China	Lf	Body pain, sore lips, impaired respiration, sore throat, asthma, antibacterial, antidote, antifungal, antitussive, diuretic, expectorant, laxative	Leaves are cooked
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Polygonaceae

<i>Fagopyrum dibotrys</i> (D. Don) Hara	Phaphra	1300-2000	2, 3, 7, 8, 9, 10	H	Reg Himal China	Lf, Wp	Anodyne, anthelmintic, antiphlogistic, carminative, depurative, febrifuge, stimulates blood circulation, dysmenorrhoea, lumbago, inflammation, hypotensive, anti-inflammatory, antispasmodic	Leaves are used to prepare Saag
<i>Polygonum nepalense</i> Meissn.	Trod	1000-2000	1, 2, 4, 9, 10	H	Reg Himal	Lf	Swellings, colds, influenza, haemorrhoids, diarrhoea, Rheumatism, abortion, diuretic	Leaves are used to prepare Saag
<i>Rumex hastatus</i> D. Don	Aambi/Khati -Mithi	700-2000	1, 2, 3, 4, 6, 8	H	Reg Himal	Lf	Astringent, stomachic, carminative, dysentery, purgative	Leaves are used for their sour taste and <i>Chatni</i> is also prepared from the leaves

Rhamnaceae

<i>Zizyphus mauritiana</i> Lam.	Baer	700-1200	3, 4, 5, 7, 9	Sh	Ind Or Malaya	Ap, Fr, Rt, Br	Antiemetic, astringent, blood purifier, purgative, sedative, cholera, dysentery, diarrhoea	Fruits are eaten
<i>Z. oxyphylla</i> Edgrew.	Baer	700-1100	3, 4, 5, 7	Sh	Reg Himal		Appetizer, blood purifier, purgative, sedative, cholera, dysentery, diarrhoea	Fruits are eaten

Rosaceae

<i>Fragaria nubicola</i> Lindl. ex Lacaita	Bumbra	1200-2000	1, 2, 4, 7, 10	H	Reg Temp	Fr	Menstrual problems, laxative, purgative	Fruits are eaten
<i>Prunus persica</i> Benth. & Hk.	Aadu	1300-2000	1, 4	T	Cosmop Trop	Fr, Fl, Lf, Rt, Sd	Antiemetic, diuretic, eczema, antiscorbutic, purgative, scabies, whooping cough	Fruits are eaten
<i>Pyrus pashia</i> Buch.-Ham. ex D. Don	Kainth	700-2000	1, 2, 3, 4, 7	T	Reg Himal	Lf, Fr, Wd	Cuts, wounds, fungal infections	Fruits are eaten, leaves are crushed
<i>Rubus biflorus</i> Buch.-Ham. ex Sm.	Aakhae	1200-2000	1, 4, 5, 6	Sh	Reg Himal	Fr, Rt	Diarrhoea, dysentery, astringent	Fruits are eaten
<i>R. ellipticus</i> Sm.	Aakhae	700-2000	1, 2, 3, 4, 5, 6	Sh	Ind Or	Fr, Rt	Dysentery, malaria, stomachache, worms	Fruits are eaten
<i>R. foliolosus</i> D. Don	Aakhae	1500-2000	2, 4, 7	Sh	Reg Himal	Fr, Rt	Dysentery, stomach disorder	Fruits are eaten
<i>R. paniculatus</i> Sm.*	Lal Aakhae	1600-2000	2, 4, 5	Sh	Reg Himal	Lf, Fr	Diarrhoea, stomach disorder	Fruits are eaten

Appendix 1. Contd.

Rutaceae

<i>Murraya koenigii</i> Spr.	Gandaela	700-1400	1, 3, 4,5, 7, 8	Sh	Ind Or	Rt, Lf, Fr, Br	Anthelmentic, diarrhoea, dysentery, tonic, lactation, malaria fever	Fruits are eaten, leaves are used as flavouring agent in <i>Kari</i> and stems used as toothbrush
<i>Zanthoxylum armatum</i> DC.	Tirmir	900-1900	1, 2, 3, 4, 5, 7, 9	Sh	Reg Himal China	Fr, Sd	Cough, cholera, fever, eczema, itching, leucoderma, piles, rheumatism, tonic, tooth complaints	Fruits are eaten and stems used as toothbrush

Urticaceae

<i>Urtica dioica</i> L.	Bichubuti	900-2000	1, 2, 3, 4, 5, 7, 8, 9, 10	Sh	Reg Bor Temp	Wp	Anthelmitic, antiseptic, boils, wounds, dandruff, diarrhoea, gout, rheumatism, sciatica, jaundice, nephritis, sprain, throat diseases	Leaves are used to prepare <i>Chatni/Saag</i>
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Abbreviations used: AR = Altitudinal range LF = life form; H = herb; Sh = shrub; T = tree; Ap = aerial part; Br = bark; Fl = flower; Fr = fruit; Lf = leaf; Rt = root; Sd = seed; St = stem; Tu = tuber; Wp = whole plant; Wd = wood; Oc = occasional; Co = common; R = rare; Or = Oriental; Reg = region; Subtrop = subtropical; Temp = temperate; Trop = tropical; 1 = shady moist; 2 = riverine; 3 = degraded; 4 = Dry; 5 = boundary; 6 = rocky; 7 = shrubbery; 8 = waste places/road side; 9 = Near crop field/cultivated field; 10 = water courses/marshy places.