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Lists of Species

Phytodiversity assessment in Sangla valley, Northwest Himalaya, India

Usha Devi [1], Pankaj Sharma [1]*, J. C. Rana [1] and Aman Sharma [2]

1 National Bureau of Plant Genetic Resources, Regional Station, Phagli, Shimla (HP) – 171 003, India.
2 G.B. Pant Institute of Himalayan Environment and Development, Himachal Unit, Mohal-Kullu – 175 126, Himachal Pradesh, India.
* Corresponding author: E-mail: *pankajsharmasnr@gmail.com*

Abstract: The present study was conducted to assess the phytodiversity of vascular plants in Sangla valley of Himachal Pradesh, India. We recorded 639 species of vascular plants belonging to 321 genera and 99 families, in which Angiosperms comprised 80 families, 296 genera and 584 species; Gymnosperms 5 families, 8 genera and 14 species, and Pteridophytes 14 families, 17 genera and 41 species. Angiosperms were mainly represented by families such as Compositae (91 spp.), Poaceae (38 spp.), Rosaceae (32 spp.), Lamiaceae (30 spp.), Apiaceae (24 spp.), Ranunculaceae (23 spp.), Brassicaceae (21 spp.), Polygonaceace (20 spp.) and Caryophylaceae (16 spp.). *Artemisia* and *Polygonum* were most species rich genera with 11 spp. each followed by *Nepeta* (9), *Pedicularis* (8), *Anaphalis, Impatiens, Poa* and *Potentilla,* (7 each), *Berberis, Erigeron* and *Gentiana* (6 each). The trees were 28, shrubs (62) herbs (488) and climbers (6). Among Gymnosperms, Pinaceae was dominant with 7 species followed by Cupressaceae (4 spp.) while major genera were *Juniperus* (4 spp.) and *Pinus* (3 spp.). These were represented by 10 trees and 4 shrubs. Dominant families of Pteridophytes were Dryopteridaceae (9 spp.) Aspleniaceae (6 spp.) and Athyriaceae (5 spp.). Major genera were *Asplenium* (6 spp.), *Polystichum* (5 spp.) and *Dryopteris* (4 spp.). A total of 316 species were native; 69 endemic and 170 were near endemic to the Indian Himalaya. 5 species were found to be critically endangered, 12 endangered and 16 were vulnerable in the valley.

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Introduction

Mountain regions of the world exhibit rich assemblages of species (Fu *et al*. 2006; Nowak *et al*. 2011; Rana *et al.* 2010; Khan *et al*. 2013) and endemic plants (Myers *et al*. 2000; Halloy and Mark 2003; Kazakis *et al*. 2007; Khan 2012). This is mainly attributed to their unique topography, diverse habitats, aspects and altitudinal ranges. The Himalayan region is a rich repository of extremely varied, native and endemic biodiversity and is recognized as one of the globally important biodiversity hotspots (Singh 2006; Rana *et al.* 2012; Khan *et al*. 2013; Sharma and Samant, 2014). The Himalayan range transecting India is popularly known as the Indian Himalayan Region (IHR) and represents 15% of India's geographical area, and 25-30% endemic species (Singh and Hajra 1996; Mittermeier *et al*. 2004; Sharma and Rana 2005; Phani Kumar *et al*. 2011). The study area falls in the state of Himachal Pradesh, which is a western segment of IHR and possesses ~3500 species of plants (Chowdhery and Wadhwa 1984; Aswal and Mehrotra 1994; Kaur and Sharma 2004; Singh and Sharma 2006; Sharma and Rana 2013). Literature review reveals a few extensive studies on floristic diversity of Kinnaur district of Himacha Himalaya (Chawla *et al*. 2012; Negi and Chauhan, 2009). The Sangla valley of Kinnaur has highly varied climatic conditions and is rich in plant diversity (Dutt and Negi 2007; Negi *et al*. 2007; Singh, 2004), however a comprehensive study of the floristic diversity in this valley has not been made so far. We undertook complete survey of the valley for two years and made a detailed account of the floristic diversity, and provide here a description of the proportion of native, endemic and threatened species.

Materials and Methods

Study area

Sangla valley is located at Latitudes 31°10′01.00″–31°30′17.16″ N and Longitudes 78°10′26.52″–78°52′ 41.75″ E and altitudes varying from 1800 to 4600 m (Figure 1). The mountains of the valley are composed of carbonaceous slates, quartz schists, phyllite, garnetiferous schists, quartzite and lenticular limestone (Srikantia and Bhargava 1998). The valley is highly glacierized and the winter run-off of the valley is mostly contributed by dry precipitation than wet precipitation, which is on an average <150 mm per annum. The climatic conditions vary from dry temperate to alpine, and vegetation is mainly of temperate, sub-alpine and alpine types. The flora is represented by alpine pastures, dwarf Juniper scrub, sub-alpine forests/scrubs and temperate forests (Champion and Seth 1968). The socio-economic livelihood of people (dominated by the tribal community *Kinnauri*) is largely based on agriculture and animal husbandry, along with seasonal collection of medicinal and other economic plants from natural habitats.

Surveys, sampling, data collection

Field work was done for two years, *i.e.,* 2011 and 2012 between April to October, the most active period for floristic studies in the high mountains. The species were identified on site and herbarium specimens were brought to the working office of the National Bureau of Plant Genetic Resources, Regional Station, Phagli, Shimla, Himachal Pradesh, India. For collecting, preserving and identifying the plants standard procedures were adopted (Jain and Rao, 1977). Five herbarium mounts of each plant

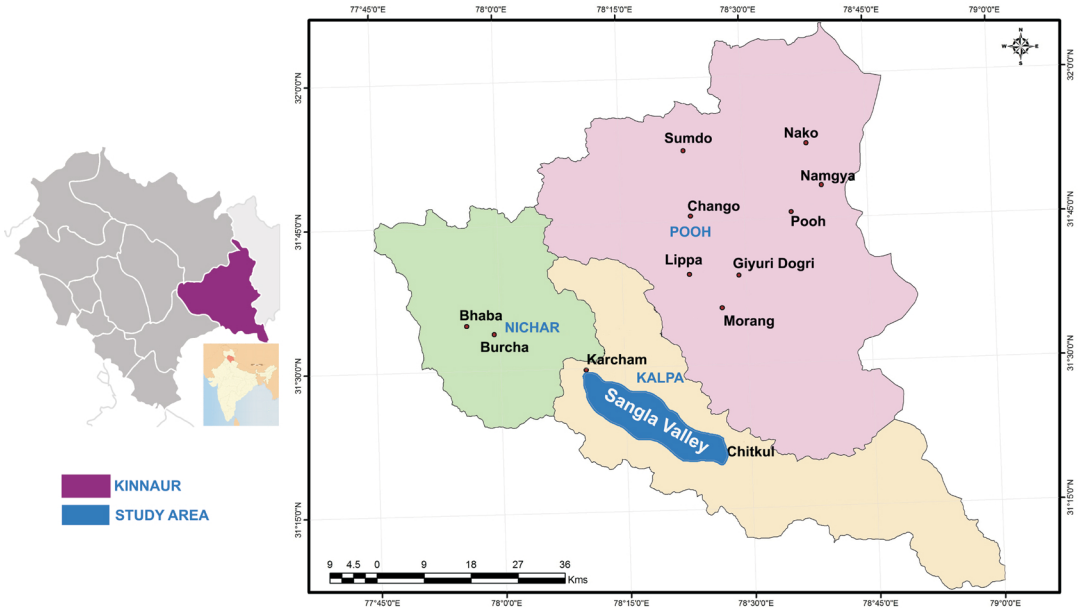

Figure 1. Map of the study area showing Sangla Valley in Himachal Pradesh, India.

were prepared for record and identification and assigned voucher numbers. The APG III classification system was followed and the nomenclature was updated from the website 'www.theplantlist.org'. The identified families were described alphabetically. The species were identified with help of various regional floras (Collett 1902; Kachroo *et al*. 1977; Nair 1977; Chowdhery and Wadhwa 1984; Polunin and Stainton 1984; Aswal and Mehrotra 1994; Dhaliwal and Sharma 1999; Singh and Rawat 2000; Murti 2001) and also from the herbarium of Botanical Survey of India (BSI) herbarium, Dehradun (BSD). The species restricted to the IHR were considered as endemic while those with an extended distribution to neighboring Himalayan countries (Nepal, Afghanistan, Pakistan, Bhutan, China-Tibet Province) were near-endemic (Nayar 1996; Samant and Dhar 1997; IPNI 2009). The endemicity of plant species to the IHR was assessed following Nayar (1996). The threatened status of the species was assessed following IUCN (Ved *et al*. 2003). The plant names and authorities were authenticated from IPNI (2009). The information on local names was collected from the local people.

Results

Species diversity and distribution

We recorded 639 species of vascular plants belonging to 321 genera and 99 families including 39 monotypic. There were three major plant groups i.e. Angiosperms comprising 80 families, 296 genera and 584 species; Gymnosperms 5 families, 8 genera and 14 species; Pteridophytes with 14 families, 17 genera and 41 species. Among these, a total of 38 trees (28 angiosperms, 10 gymnosperms) 66 shrubs (62 angiosperms, 4 gymnosperms) 529 herbs (488 angiosperms, 41 pteridophytes) and 6 climbers were identified (Table 1).

The angiosperms were represented by major families such as Compositeae (91 spp.; 14.2%), Poaceae (38 spp.; 5.9%), Rosaceae (32 spp.; 5%), Lamiaceae (30 spp.; 4.7%), Apiaceae (24 spp.; 3.8%), Ranunculaceae (23 spp.; 3.6%), Leguminosae (22 spp.; 3.4%); Brassicaceae (21 spp.; 3.2%); Polygonaceace (20 spp.; 3.1%) and Caryophylaceae (16 spp.; 2.5%) (Figure 2). The most predominant genera were *Artemisia* and *Polygonum* (11 spp. each) followed by *Nepeta* (9 spp.), *Pedicularis* (8 spp.), *Anaphalis, Impatiens, Poa* and *Potentilla,* (7 spp. each), *Berberis, Erigeron* and *Gentiana*, (6 spp. each). The diversity of trees, shrubs, herbs and climbers was represented by 28 spp., 62 spp., 488 spp. and 6 spp., respectively. Among Gymnosperms, Pinaceae (7 spp.) and Cupressaceae (4 spp.) were major families while genera were *Juniperus* (4 spp.) and *Pinus* (3 spp.) resperented by 10 trees and 4 shrubs. Pteridophytes were mainly consisted of Dryopteridaceae (9 spp.) and Aspleniaceae (6 spp.) and Athyriaceae (5 spp.) and dominant genera were *Asplenium* (6 spp.), *Polystichum* (5 spp.) and *Dryopteris* (4 spp.).

Species diversity also varied alongside altitude. On a zone-wise basis (*i.e.,* Temperate, Sub-alpine and Alpine – 1800–2800 m; 2800–3800 m and >3800 m respectively), floristic diversity in the temperate zone was 391 species, sub-alpine zone 554 species, while only 76 species occurred in alpine zone with number of species overlapping in all regimes. The distributional range of species revealed that only 7 species were widely distributed, *i.e.*, >2000 m (*Abelia triflora, Cardamine impatiens, Myosotis sylvatica, Prunus domestica, Sagina saginoides, Senecio graciliflorus* and *Thlaspi arvense*) followed by 13 species (1601–2000 m); 38 species (1201–1600 m); 139 species (801–1200 m); 269 species

Table 1. Different taxonomic groups and number of species.

RANK	FAMILIES	GENERA	SPECIES	TREE	SHRUBS	HERBS	CLIMBERS
Angiosperms	80	296	584	28	62	488	6
Gymnosperms	5	8	14	10	4	–	–
Pteridophytes	14	17	41	–	–	41	–
Total	99	321	639	38	66	529	6

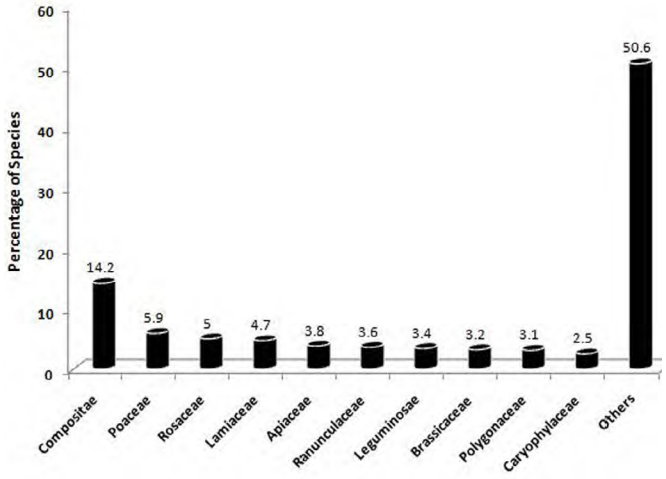

FIGURE 2. Family wise percentage of species.

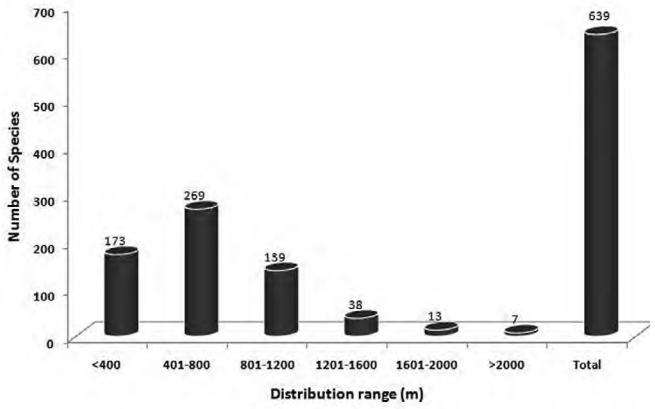

FIGURE 3. Altitudinal distribution range of species.

(401–800 m) and 173 species were narrowly (<400 m) distributed (Figure 3).

Phytogeographic affinities and determination of taxa status

Out of 639 recorded species, 316 were native to the Himalayan region, while the remaining were non-natives originated from different biogeographic domains worldwide. The trend in the native affinity of species was European/Africa/Asia (58) > Europe (51) > Indian origin (50) > Temperate/Arctic/Alaska/Borealis (47) > China/Tibet (31) > American (22) > Indian/ Oriental/ Asia (21) > European/Australia/New Zealand (18) > Cosmopolitan (8) (Table 2 and Figure 4). A total of 69 species were found as endemic, and 170 species were near-endemic (Table 2). The major endemic species were *Acer caesium, Allium humile, Angelica glauca, Astragalus himalayanus, Bistorta affinis, Cortia depressa, Corydalis cashmeriana, Corydalis govaniana, Dipsacus inermis, Heracleum thomsonii, Iris hookeriana, Meconopsis aculeata, Morina coulteriana, Parthenocissus semicordata, Pedicularis bicornuta, Pleurospermum brunonii, Potentilla atrosanguinea, Rhododendron anthopogon, Rhododendron lepidotum, Saussurea costus, Saussurea albescens, Stellaria media, Trillium govanianum*, *Vicia bakeri* and *Wikstroemia canescens* etc. Some notable near-endemics were *Acer cappadocicum, Bupleurum candollei, Cortia depressa, Selinum tenuifolium, Ligularis amplexicaulis, Impatiens glandulifera, Berberis jaeschkeana, Arnebia benthamii, Gentiana argéntea, Iris hookeriana, Phlomis bracteosa, Fritillaria roylei, Morina coulteriana, Meconopsis aculeata,*

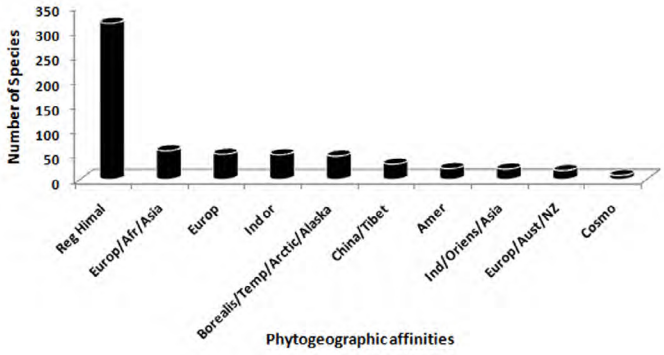

FIGURE 4. Number of species in different phytogeographic realms. *Abbreviations used*: Afr=Africa; Amer=America; Austr=Australia; Bor=Boreal (North Temperate Zone); Centr=Central; Cosmo= Cosmopolitan; Europ=Europe; Himal=Himalayan; Ind=India; Min=Minor; Mongol=Mongolia; NZ= New Zealand; Oriens=Oriental, Reg=Region; Temp=Temperate

Parnassia nubicola, Rheum australe, Aconitum violaceum, Bergenia ligulata and *Viola canescens* etc.

The threat status of the species showed that five species (*Aconitum heterophyllum, Arnebia benthamii, Dactylorhiza hatagirea, Saussurea gossypiphora* and *S. obvallata*) were critically endangered and 12 species (*Angelica glauca, Betula utilis, Dioscorea deltoidea, Fritillaria roylei, Juniperus polycarpos*, *Meconopsis aculeata, Picrorhiza kurrooa, Sinopodophyllum hexandrum, Polygonatum cirrhifolium, Rheum australe, Taxus baccata* and *Ulmus wallichiana*) were endangered. Sixteen species fall in the category of vulnerable, some of which were *Acer caesium, Aconitum violaceum, Allium stracheyi, Bergenia stracheyi, Bunium persicum, Ferula jaeschkeana, Heracleum lanatum, Hippophae rhamnoides, Polygonatum multiflorum,* and *Rhodiola heterodonta* etc. (Figure 5).

DISCUSSION

The present study carried out in Sangla valley elucidated a high floristic diversity of the area, which was found to possess a total of 639 species, 321 genera and 99 families of vascular plants. This floristic diversity has a large contribution to the Kinnaur (Chawla *et al*. 2012), where 881 plant species, 433 genera and 102 families and 30 species of ferns and fern allies were recorded. The Himalaya houses 25% of original habitat diversity to support native and endemic plants (Mittermeier *et al*. 2004), validating the present study in which 316 native, 69 endemic and 170 near endemic plants were recorded. We believe that native and endemic species have high conservation priority in a particular area

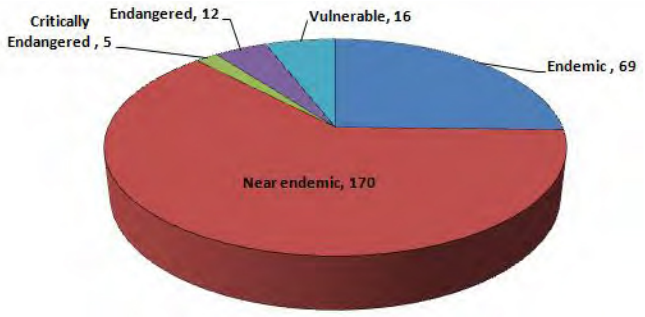

FIGURE 5. Pie diagram showing endemic, near endemic and threatened species in Sangla valley.

as compared to non-native species, which adversely impact the local biodiversity and ecosystem functions (Levine *et al*. 2003).

The predominance of 10 families that we observed in the valley conforms with Chawla *et al*. (2012) in Kinnaur (Table 3). Compositae, Poaceae and Rosaceae are dominant families in both Kinnaur and Sangla valley, whereas Brassicaceae and Caryophyllaceae were ranked comparatively lower. Polygonaceae and Apiaceae in Kinnaur have seventh and ninth rank respectively, whereas in Sangla valley they are ranked ninth and fifth respectively, due to different environmental variables. Altogether, these top ten families contribute a significant number of species, *i.e*., 49.6% of the total number of species in Sangla valley.

We compared our study with earlier works done in Kinnaur (Chawla *et al.* 2012) and other areas of Himachal Himalaya *viz*., Lahul-Spiti, PVNP (Pin valley National Park), Kullu and GHNP (Great Himalayan National Park) (Aswal and Mehrotra, 1994; Dhaliwal and Sharma, 1999; Chandrasekar and Srivastava, 2009; Singh and Rawat, 2000). Our study shows agreement with Lahaul and Spiti and GHNP, with eight of the ten families being dominant in both of these regions, whereas nine of ten being dominant in Kullu and PVNP (Table 3). Asteraceae is dominant in all the studies except in PVNP, where Poaceae is dominant. Moreover Scrophulariaceae, Cyperaceae and Liliaceae, are among the ten dominant families of Lahaul-Spiti, GHNP, Kullu and PVNP but not in Sangla valley.

The present study showed maximum diversity in the sub-alpine zone (*i.e.,* 2800–3800 m), which highlights the importance of its diverse habitats, aspects, soil types and moisture regimes, as compared to other zones. Low distribution and diversity of the species in the alpine zone (*i.e.,* >3800 m) of the valley owes to its harsh climate and precipitous mountains, little rainfall, poor moisture retention by substratum, and low humidity of the region. A varied distributional range of species in the valley may be due to micro-topographic features such as habitat, moisture availability, canopy cover and slope inclination etc., which can play a significant role in governing distribution (Uniyal *et al*. 2002).

The species categorized as critically endangered, endangered and vulnerable require high conservation priority in the valley. Our general findings were also endorsed by the local peoples, who feel that populations of some species like *Aconitum heterophyllum*, *Aconitum violaceum*, *Arnebia benthamii*, *Dactylorhiza hatagirea*, *Jurinella macrocephala* and *Picrorhiza kurrooa* have decreased significantly over a short period. Indiscriminate collection of plants for local and commercial use, over grazing by migratory livestock and changing climate (declining snow and rising temperature) were witnessed as the major reason for declining plant populations. It is therefore assumed that consistent qualitative and quantitative records of botanical data are required on regular basis (Clubbe *et al*. 2010), so that adequate strategies could be formulated for the conservation and management of habitats, species, and communities. The present list could play an important role for the local and regional authorities interested in future to conserve and promote sustainable use of the floristic diversity of this area, as part of sustainable development.

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Table 2. Table showing species inventory in Sangla valley. Abbreviations used: Afr=Africa; Alp=Alpine; Am=America; Amphig=Amphigaea; Amur=N Mongolia Russia and China; Arab=Arabia; Arct=Arctic; As=Asia; Austr=Australia; Baluchist=Baluchistan; Bor=Boreal (North Temperate Zone); Caucas=Caucasus; Centr=Central; Cosmop=Cosmopolitan; Europ=Europe; et=And; Geront=Gerontia (Greece); Himal=Himalayan; Hisp=Hispanic (Latin america); Ind=India; Mediterr=Mediterranean; Min=Minor; Mongol=Mongolia; N.Zel=New Zealand; Occ=Occidental (Western hemisphere); or=origin; Oriens=Oriental, Reg=Region; Sibir=Siberia; Soongar=Soongarica; SubTrop=SubTropical; Temp=Temperate; Trop=Tropical and Turkist=Turkistan; CR=Critically Endangered; EN=Endangered VU= Vulnerable; @@=Endemic; @=Near Endemic; F=Fern; H=Herb; S=Shrub, T=Tree.

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
ANGIOSPERMS					
Acanthaceae					
Dicliptera chinensis Juss.	NBPGR/RSS–1421	–	2200–3200 m	H	Asia Trop
Pteracanthus alatus (Wall. ex. Nees) Bremek.	NBPGR/RSS–1572	Kunda	3122–3451 m	H	Java
Adoxaceae					
Viburnum cotinifolium D. Don@	NBPGR/RSS–1313	Bhutni, Kimota	2680–3445 m	S	Reg Himal
V. foetens Decne.@	NBPGR/RSS–1634	–	2000–3500 m	S	Reg Himal
V. grandiflorum Wall. ex DC.@	NBPGR/RSS–1635	–	2000–3500 m	S	China; Reg Himal
V. opulus L.	NBPGR/RSS–1625	–	1800–2000 m	S	Europ
Amaranthaceae					
Achyranthes aspera L.	NBPGR/RSS–1026	Puthkanda	2500–2800 m	H	Asia Trop
Amaranthus caudatus L.	NBPGR/RSS–1332	–	2200–2700 m	H	S Amerer
A. cruentus L.	NBPGR/RSS–1333	–	2200–2500 m	H	S Mexico
A. retroflexus L.	NBPGR/RSS–1033	Kanta–Chaulai	2500–3200 m	H	N Amerer
A. spinosus L.	NBPGR/RSS–1006	Cholai	2000–3000 m	H	Amer bor
Chenopodium album L.	NBPGR/RSS–1079	Bathua sag	2200–3900 m	H	Reg Temp et Trop
C. murale L.	NBPGR/RSS–1386	Bathu	2500–3200 m	H	Europ; Asia; N Afr
C. botrys L.	NBPGR/RSS–1063	Sokana	2300–3400 m	H	Reg Bor
C. foliolosum (Moench) Aschers.	NBPGR/RSS–1064	Parangh	2700–3550 m	H	Iran
Cyathula capitata Moq.	NBPGR/RSS–1411	–	1800–2000 m	H	Reg Himal
Amaryllidaceae					
Allium humile Kunth@@	NBPGR/RSS–1329	Pharna	3000–3600 m	H	Reg Himal
A. jacquemontii Kunth	NBPGR/RSS–1330	–	3500–4000 m	H	Europ Oriens; Sibir
A. stracheyi Baker@@VU	NBPGR/RSS–1032	–	3000–3150 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Anacardiaceae					
Cotinus coggygria Scop	NBPGR/RSS–1399	–	1800–2000 m	H	Reg Medit; Oriens
Apiaceae					
Angelica glauca Edgew.[@@EN]	NBPGR/RSS–1037	Sapal, Chaura	2800–3510 m	H	Reg Himal
Bunium persicum (Boiss.) Fedtsch[VU]	NBPGR/RSS–1061	Kalagira	2900–3200 m	H	Persia
Bupleurum candollei Wall.ex DC.[@]	NBPGR/RSS–1062	Kaligewar	3500–4150 m	H	Reg Himal
B. falcatum L.[@@]	NBPGR/RSS–1049	Kaligewa, Jangli jira	2670–3455 m	H	Reg Himal
B. hamiltonii Balakr	NBPGR/RSS–1050	–	3117–3445 m	H	China
B. jucundum Kurz[@@]	NBPGR/RSS–1381	–	2800–3399 m	H	Reg Himal bor; Occ; Amur
B. lanceolatum Wall. ex DC.	NBPGR/RSS–1417	–	2800–3400 m	H	Nepal; Ind; Reg Himal
B. longicaule Wall. & DC.	NBPGR/RSS–1052	–	2750–3448 m	H	Reg Himal
Carum carvi L.	NBPGR/RSS–1074	Zira, Shingu Jeera	3000–3550 m	H	Europ Oriens; Asia
Chaerophyllum aromaticum L.	NBPGR/RSS–1078	–	3100–3200 m	H	Europ
C. reflexum Lindl. (Pri)	NBPGR/RSS–1067	Ampang, Shakrag	3100–3670 m	H	Reg Himal
C. villosum Wall.ex DC.[@]	NBPGR/RSS–1068	–	2770–3400 m	H	Reg Himal
Cortia depressa (Don) Norm.[@]	NBPGR/RSS–1087	–	3900–4310 m	H	Reg Himal
Ferula jaeschkeana (L.)Vatke[VU]	NBPGR/RSS–1121	Khaidmo	3400–3950 m	H	Himalaya Border Occ Turk
Heracleum candicans Wall. ex DC.	NBPGR/RSS–1319	Patrala	2690–3501 m	H	Reg Himal
H. lanatum Michx.[@VU]	NBPGR/RSS–1145	Patrala	2780–3516 m	H	Reg Himal
H. thomsonii Cl[@@]	NBPGR/RSS–1141	Aschak, Karpo, Agu	2700–3520 m	H	Reg Himal
Pimpinella tomentosa Dalzell ex C.B. Clarke[@]	NBPGR/RSS–1223	–	2000–3000 m	H	Reg Himal
Pleurospermum brunonii DC. CB Clarke[@@]	NBPGR/RSS–1226	Nesar, Losar	3400–3800 m	H	Reg Himal
P. candollii DC. Cl.[@@]	NBPGR/RSS–1198	Nesar	3460–3800 m	H	Reg Himal
Selinum tenuifolium Wall.[@]	NBPGR/RSS–1279	Mathosal	3100–3400 m	H	Reg Himal
S. vaginatum (Edgew.) C.B. Clarke	NBPGR/RSS–1270	Butkeshi, Mathosla	2710–3500 m	H	Reg Himal
S. wallichianum DC. Raizada & H.O. Saxena	NBPGR/RSS–1271	Bhutkesi	3100–3400 m	H	Reg Himal
Torilis japonica (Houtt.) DC.	NBPGR/RSS–1623		1900–3000 m	H	Japon
Apocynaceae					
Vincetoxicum hirundinaria Medik	NBPGR/RSS–1314	–	3117–3400 m	H	Europ; Reg Cauc; Asia
Aquifoliaceae					
Ilex dipyraea Wall.[@@]	NBPGR/RSS–1152	Tarkuch	1900–2800 m	T	Reg Himal
Araceae					
Arisaema flavum (Forss.) Scott	NBPGR/RSS–1042	Jemul	2708–3154 m	H	Arab
A. jacquemontii Bl.[@]	NBPGR/RSS–1001	Kira aloo	2575–3523 m	H	Reg Himal
A. tortuosum Wall. Schott	NBPGR/RSS–1347	–	1800–2300 m	H	Reg Himal
Typhonium diversifolium Wall. ex Schott	NBPGR/RSS–1629	–	3100–3450 m	H	Ind Sub
Araliaceae					
Hedera nepalensis K. Koch	NBPGR/RSS–1460	–	1800–2550 m	C	Europ; Afr Bor; Asia Temp
Asparagaceae					
Asparagus filicinus Buch.-Ham. ex D. Don(Sec)	NBPGR/RSS–1045	Sansbai, Elipali	2600–3263 m	S	Reg Himal; Burma
Polygonatum cirrhifolium Wall. Ex Royle[@EN]	NBPGR/RSS–1229	Meda, Salam–misri	2800–3520 m	H	Reg Himal Asia bor
P. multiflorum L.[VU]	NBPGR/RSS–1206	–	2590–3610 m	H	Europ Asia bor Afghan
P. verticillatum L.[VU]	NBPGR/RSS–1214	Salam–misri	2808–3400 m	H	Europ Asia bor Rhm
Balsaminaceae					
Impatiens amplexicaulis Edgew[@]	NBPGR/RSS–1471	–	1800–3200 m	H	Reg Himal
I. brachycentra Kar. and Kir	NBPGR/RSS–1472	–	2100–3440 m	H	Afr Trop Austr (Malawi)
I. edgeworthii Hook.f.	NBPGR/RSS–1475	–	2580–3270 m	H	Reg Himal
I. glandulifera Royle[@]	NBPGR/RSS–1153	–	3189–3523 m	H	Reg Himal
I. scabrida DC.[@@]	NBPGR/RSS–1150	Tilpara	2575–3560 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
I. sulcata Wall.[@@]	NBPGR/RSS–1151	–	2840–3423 m	H	Reg Himal
I. thomsonii Hook. f.[@]	NBPGR/RSS–1474	–	3000–3800 m	H	Reg Himal
Berberidaceae					
Berberis aristata L.[@]	NBPGR/RSS–1056	Kashmal	2292–3359 m	S	Ind or
B. chitria Edwards[@@]	NBPGR/RSS–1368	–	2800–3400 m	S	Reg Himal
B. coriaria Royle ex Lindl.[@@]	NBPGR/RSS–1048	Kashmal	2300–2700 m	S	Reg Himal
B. jaeschkeana Schneid.[@]	NBPGR/RSS–1051	Kyamali	2400–3416 m	S	Reg Himal
B. lycium Royle[@@]	NBPGR/RSS–1053	Khapchho, Khashmal	2692–3260 m	S	Reg Himal
B. vulgaris R. Br.	NBPGR/RSS–1055	–	2900–3122 m	S	Europ Asia Temp
Sinopodophyllum hexandrum (Royle) T.S. Ying[@EN]	NBPGR/RSS–1228	Papra, Bankakri	3189–4000 m	H	Reg himal
Betulaceae					
Betula utilis D.Don[@EN]	NBPGR/RSS–1058	Bhuj, Bhoj Shakpang	2800–3500 m	T	Reg Himal Japon
Boraginaceae					
Arnebia benthamii Wall. ex G.. Do) Johbst[@CR]	NBPGR/RSS–1043	Masari, Ratanjot	3400–4150 m	H	Reg Himal
Cynoglossum glochidiatum Wall. ex Benth.	NBPGR/RSS–1408		2000–3500 m	H	Ind Or Burma
C. lanceolatum Forsk.	NBPGR/RSS–1409	–	2200–3000 m	H	Arabia
C. microglochin Benth.	NBPGR/RSS–1410	–	2876–3345 m	H	Reg Himal
C. wallichii G. Don.	NBPGR/RSS–1093	Kochi–Shuver	2000–3450 m	H	Ind or Burma
Eritrichium canum (Benth.) Kitamura[@]	NBPGR/RSS–1116	–	2700–3445 m	H	Reg Himal
E. fruticosum Phil.	NBPGR/RSS–1439	–	3250–3399 m	H	Amerer
E. nanum (Vill.) Schrad[@@]	NBPGR/RSS–1438	–	3185–3501 m	H	Reg bor; Reg Himal
Hackelia uncinata (Royle Ex Benth.) Fischer	NBPGR/RSS–1143	–	3260–3500 m	H	Reg Himal
Microula sikkimensis Hemsl.	NBPGR/RSS–1506	–	2900–3550 m	H	Reg Himal
Myosotis alpestris F.W.Schmidt	NBPGR/RSS–1509	–	3185–3250 m	H	Europ
M. sylvatica Ehrh. ex Hoffm.	NBPGR/RSS–1508	–	1800–4000 m	H	Europ
Brassicaceae					
Alliaria petiolata (M.Bieb.) Cavara & Grande	NBPGR/RSS–1328	–	2200–3100 m	H	Europ; Asia; Afr
Arabidopsis himalaica (Edgew.) Schutz[@]	NBPGR/RSS–1339	–	2600–3448 m	H	Reg Himal
A. thaliana (L.) Heynh	NBPGR/RSS–1040	Thales cress	3000–3800 m	H	Reg Bor Temp
Arabis amplexicaulis Edgew.[@]	NBPGR/RSS–1340	–	2692–3450 m	H	Reg Himal
Brassica nigra (L.) K. Koch.	NBPGR/RSS–1374	–	1800–2400 m	H	Mediterr; Asia
B. oleracea L.	NBPGR/RSS–1375	–	1800–2600 m	H	Europ occ; Cosmop
Capsella bursa–pastoris (L.) Medik.	NBPGR/RSS–1072	Girahkat	2000–3400 m	H	Reg Temp
Cardamine hirsuta L.	NBPGR/RSS–1382	–	1800–2100 m	H	Reg temp et subtrop
C. impatiens L.	NBPGR/RSS–1383	–	1900–4100 m	H	Europ; Asia bor; Reg Himal
Descurainia sophia (L.) Webb. & Berth.	NBPGR/RSS–1100	–	2850–3300 m	H	
Erysimum melicentae Dunn	NBPGR/RSS–1441	–	1900–3000 m	H	Ind or (Kashmir)
Lepidium apetalum Willd.	NBPGR/RSS–1167	–	2876–3345 m	H	Russia Sibir
L. capitatum Hook.f. & Thomson	NBPGR/RSS–1489	–	2650–3200 m	H	Reg Himal
L. pinnatifidum Ledeb.	NBPGR/RSS–1490	–	3200 –3400m	H	Reg Cauc
L. virginicum L.	NBPGR/RSS–1488	–	1900–2400 m	H	USA
Nasturtium officinale R.Br.	NBPGR/RSS–1185	–	2800–3300 m	H	Reg bor Temp
Rorippa indica (L.) Hiern	NBPGR/RSS–1577	–	1800–2100 m	H	Europ; Asia; Af; Amer
Sisymbrium irio L.	NBPGR/RSS–1283	Khubkalan	2750–3146 m	H	Europ; Asia et Afr bor
S. orientale L.	NBPGR/RSS–1604	–	2575–2850 m	H	Europ; Oriens; Reg Himal
Thlaspi arvense L.	NBPGR/RSS–1622	–	2100–4200 m	H	Europ; Asia bor
Turritis glabra L.	NBPGR/RSS–1628	–	1900–2500 m	H	Europ; Asia; N Afr
Campanulaceae					
Campanula pallida Wall.	NBPGR/RSS–1070	Nepali bikh	2550–3090 m	H	Ind or Afghan
Codonopsis viridis Wall.[@]	NBPGR/RSS–1085	Sardandi, Khiri	2800–3300 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Cyananthus lobatus Wall. ex Benth.@@	NBPGR/RSS–1405	–	3300–4200 m	H	Ind or
Compositae					
Achillea millefolium L.	NBPGR/RSS–1025	Saijum	2800–3600 m	H	Europ
Ainsliaea aptera DC.@	NBPGR/RSS–1031	Karu- buti	2700–3300 m	H	Reg Himal
A. latifolia (D. Don) Sch.-Bip.	NBPGR/RSS–1326	–	2200–3100 m	H	Reg Himal
Anaphalis busua (Buch.-Ham. ex Don) DC	NBPGR/RSS–1034	Dhareu	2000–2790 m	H	Reg Himal
A. contorta (D.Don) Hk	NBPGR/RSS–1014	–	2700–3200 m	H	Reg Himal
A. margaritacea (L.) Benth. & Hook.f.	NBPGR/RSS–1335	–	2700–3200 m	H	Asia; Amer
A. nepalensis (Spreng) Hand-Mazz.	NBPGR/RSS–1016	Monpig	2700–3850 m	H	Reg Himal
A. royleana DC.	NBPGR/RSS–1005	Kirchee	2750–3900 m	H	Reg Himal
A. triplinervis (Sims.) C.B. Clarke	NBPGR/RSS–1018	Yaktso	2900–3800 m	H	Reg Himal
A. virgata Thomson	NBPGR/RSS–1334	–	2400–3100 m	H	Reg Himal
Anthemis cotula L.	NBPGR/RSS–1038	–	2400–2950 m	H	Europ; Afr
Arctium lappa L.	NBPGR/RSS–1041	Jangli Kuth	2750–3350 m	H	Europ
Artemisia annua L.	NBPGR/RSS–1044	–	2876–3448 m	H	Asia
A. biennia Willd.	NBPGR/RSS–1009	Kampa	3000–3400 m	H	Amer Bor; Sibir; Reg Himal
A. capillaris Thunb.	NBPGR/RSS–1011	Khamtso, Nurcha	2600–3516 m	H	China
A. indica Willd	NBPGR/RSS–1348	Titepati	1800–2450 m	H	Reg Himal
A. japonica Thunb.@@	NBPGR/RSS–1015	Nireha, Seski, Jonkhar	2575–3200 m	H	Ind Or Burma
A. maritima L.	NBPGR/RSS–1002	Seski, Neorcha	2500–3400 m	S	Europ Reg Cauc; Asia Sibir
A. moorcroftiana Wall. ex DC.	NBPGR/RSS–1352	–	3154–3523 m	H	Reg Himal
A. persica Boiss.	NBPGR/RSS–1349	–	1900–2900 m	H	Persia; Afgan
A. roxburghiana Wall. ex Besser	NBPGR/RSS–1004	–	2200–3167 m	H	Europ
A. tournefortiana Rchb.	NBPGR/RSS–1350	–	1800–2100 m	H	Reg Himal
A. vestita Wall.ex DC.	NBPGR/RSS–1008	Jhyang	2700–3445 m	H	Reg Himal
Aster peduncularis Wall. ex Nees @	NBPGR/RSS–1360	–	2000–3100 m	H	Reg Himal
A. albescens (DC.) Wall. ex. Hand.-Mazz.	NBPGR/RSS–1316	–	2600–2800 m	H	Reg Himal
A. alpinus Gueldenst. ex Ledeb	NBPGR/RSS–1362	–	2690–3345 m	H	Canada; USA
A. falconeri (C.B. Clarke) Hutch.@@	NBPGR/RSS–1361	–	3300–3850 m	H	Ind Or
Bidens bipinnata L.	NBPGR/RSS–1369	–	2100–2600 m	H	Reg Trop
B. pilosa L.	NBPGR/RSS–1370	–	2000–2600 m	H	Reg Trop
Blumea membranacea DC.	NBPGR/RSS–1372	–	1800–2000 m	H	Ind Or; Malaya
Carduus edelbergii Reich.f.@	NBPGR/RSS–1073	Tisu	2500–3200 m	H	Afghan
Cirsium arvense (L.) Scop.	NBPGR/RSS–1388	Kandai	2450–2900 m	H	Europ; Asia
C. wallichii DC.@@	NBPGR/RSS–1082	Bursa	2700–2900 m	H	Reg Himal
C. falconeri (Hook. f.) Petrak.	NBPGR/RSS–1387	–	2575–3527 m	H	Reg Himal
Conyza stricta Willd.	NBPGR/RSS–1393	–	2000–2600 m	H	Ind or; Afr Trop
Cotula aurea L.	NBPGR/RSS–1399	–	2550–2850 m	H	Reg Mediterr; Oriens
Cousinia thomsonii Clarke	NBPGR/RSS–1090	Batasatsuak	3250–3450 m	H	Reg Himal
Cremanthodium arnicoides DC. ex Royle	NBPGR/RSS–1400	–	3250–3450 m	H	Reg Himal
Crepis multicaulis Ledeb.	NBPGR/RSS–1401	–	2900–3500 m	H	Sibir Altaic
C. sancta (L.) Bornm.	NBPGR/RSS–1402	–	2690–2770 m	H	Europ
Echinops cornigerus DC	NBPGR/RSS–1107	–	2700–3500 m	H	Ind or
Erigeron acer L. var. *multicaulis* (Wall. ex DC.) Cl.@	NBPGR/RSS–1435	–	2741–3250 m	H	Europ
E. alpiniformis Cronquist	NBPGR/RSS–1436	–	3500–4200m	H	Greenland
E. alpinus L.@@	NBPGR/RSS–1114	Bashakar	3150–3500 m	H	Reg Bor et Arct
E. annuus (L.) Pers.	NBPGR/RSS–1437	–	2876–3345 m	H	Canada; Europ

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
E. candensis L.	NBPGR/RSS–1104	Palit	2700–2900 m	H	Amerphig
E. multiradiatus (DC). Benth.ex Clarke	NBPGR/RSS–1105	–	3112–3305 m	H	Reg Himal
Galinsoga parviflora Ruiz & Pav.	NBPGR/RSS–1132	Pipulu ghas	2575–3400 m	H	Mexico
Gnaphalium affine D.Don	NBPGR/RSS–1137	Dhoop	2780–3160 m	H	Reg Himal
Hieracium vulgatum Fr.	NBPGR/RSS–1466	–	3100–3900 m	H	N Europ
Inula cappa (Buch.-Ham. ex D.Don) DC.	NBPGR/RSS–1477	–	1850–2550 m	H	Reg Himal; Java China
Jurinella macrocephala (Royle) Aswal et Goel[@]	NBPGR/RSS–1162	Dhoop	3050–3900 m	H	Reg Himal
Lactuca dissecta D. Don	NBPGR/RSS–1485	–	2100–2600 m	H	Reg Himal
L. dolichophylla Kitam.[@@]	NBPGR/RSS–1165	Gringoli	2750–3100 m	H	Reg Himal
L. lessertiana DC.[@]	NBPGR/RSS–1163	–	2740–3510 m	H	Reg Himal
L. macrorhiza (Royle) Hook. f.	NBPGR/RSS–1164	Umbu	2876–3509 m	H	Reg Himal
Leucanthemum vulgare Lam.	NBPGR/RSS–1495	–	3000–4000 m	H	West Asia; Europ
Ligularia amplexicaulis DC.[@]	NBPGR/RSS–1168	–	3200–3400 m	H	Reg Himal
Myriactis nepalensis Less.	NBPGR/RSS–1510	–	2000–2650 m	H	Reg Himal; Asia Centrf
M. wallichii less.[@@]	NBPGR/RSS–1511	–	2600–3600 m	H	Reg Himal
Picris angustifolia DC.	NBPGR/RSS–1539	–	2200–2800 m	H	Reg Himal; Asia Centr; Austr
P. hieracioides L.	NBPGR/RSS–1540	–	3300–3850 m	H	Europ; Asia temp; Austr et N Zel
Prenanthes brunoniana Wall. Ex. DC.	NBPGR/RSS–1233	Dudhali	3100–3600 m	H	Reg Himal
Saussurea albescens DC.[@@]	NBPGR/RSS–1274	Drapada	2810–3320 m	H	Reg Himal
S. costus (Falc.) Lipsch.[@@]	NBPGR/RSS–1275	Kot, Kuth	3550–4000 m	H	Reg Himal
S. gossypiphora D. Don[@CR]	NBPGR/RSS–1264	Gugghi–badshah	3800–4000 m	H	Reg Himal
S.nepalensis Spreng.[@]	NBPGR/RSS–1588	–	3400–3900 m	H	Reg Himal
S. obvallata (DC.) Edgew.[@CR]	NBPGR/RSS–1266	Dongar, Barhm kamal, Dodaphoo	3600–4000 m	H	Reg Himl
S. piptathera Edgew.[@]	NBPGR/RSS–1589	–	3100–3509 m	H	Reg Himal
S. roylei Cl.[@]	NBPGR/RSS–1268	–	3400–3900 m	H	Reg Himal
S. taraxacifolia Wall.ex DC.	NBPGR/RSS–1269	–	3400–3900 m	H	Reg Himal
Scorzonera virgata DC.	NBPGR/RSS–1277		3100–3600 m	H	China Mongol
Senecio chrysanthemoides DC.	NBPGR/RSS–1280	Parpal	2692–3200 m	H	Reg Himal
S. desfontainei Druce	NBPGR/RSS–1262	–	2880–3240 m	H	Reg Himal
S. graciliflorus DC.[@@]	NBPGR/RSS–1597	–	2400–4600 m	H	Reg Himal
S. kunthianus Wall.	NBPGR/RSS–1598	–	2600–3900 m	H	Reg Himal
S. nudicaulis Buch.-Ham.	NBPGR/RSS–1596	–	2981–3502 m	H	Reg Himal
Siegesbeckia orientalis L.	NBPGR/RSS–1601	–	2000–2500 m	H	Cosmos Trop
Solidago virga–aurea L.	NBPGR/RSS–1285	–	3150–3480 m	H	Reg Bor Temp
Sonchus asper (L.) Hill	NBPGR/RSS–1286	–	2600–3000 m	H	Cosmop
S. oleraceous L.	NBPGR/RSS–1267	Dodak	2700–3000 m	H	Cosmop
Tagetes minuta L.	NBPGR/RSS–1197	–	2200–2600 m	H	Amer trop
Tanacetum dolichophyllum Kitamura[@]	NBPGR/RSS–1618	–	3000–3800 m	H	Mexico
Taraxacum eriopodum (D. Don) DC.	NBPGR/RSS–1619	–	2815–3445 m	H	Reg Himal
T. leucanthum Ledeb.	NBPGR/RSS–1620	–	3150–3950 m	H	China
T. officinale Weber	NBPGR/RSS–1297	Dudhli, Dulal, Aachak	2550–3523 m	H	Reg Temp Bor et Austr
Tragopogon gracilis D. Don	NBPGR/RSS–1624	–	1850–3200 m	H	Reg Himal
Waldheimia glabra (Decne.) Regel.	NBPGR/RSS–1007	Phillu	4050–4550 m	H	Tibet Occ
W. tomentosa (Decne.) Regel.	NBPGR/RSS–1003	Phillu	3600–4400 m	H	Tibet Occ
Youngia glauca Edgew	NBPGR/RSS–1113	–	3345–3600 m	H	Reg Temp Asia Bor
Y. japonica (L.) DC.	NBPGR/RSS–1046	–	2708–3050 m	H	Asia Austr

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Cannabaceae					
Cannabis sativa L.	NBPGR/RSS–1071	Bhang	2000–3170 m	H	Asia Centr Himal Bor Occ
Caprifoliaceae					
Abelia grandifolia Villarreal	NBPGR/RSS–1317	–	1900–2300 m	S	Mediterr
A. triflora R. Br. ex Wall.	NBPGR/RSS–1318	–	1850–4200 m	S	Reg Himal
Lonicera hispida Pall. ex Roem. and Schult.	NBPGR/RSS–1498	–	1900–2500 m	S	Asia
L. hypoleuca Decne.	NBPGR/RSS–1170	Kharmu	2708–3502 m	S	Reg Himal
L. japonica Thunb.	NBPGR/RSS–1499	–	1950–2300 m	S	E Asia
L. myrtillus Hook. f. and Thomson	NBPGR/RSS–1500	–	2200–3500 m	S	Europ; Temp
Morina coulteriana Royle[@@]	NBPGR/RSS–1181	–	3300–3625 m	H	Reg Himal
M. longifolia Wall.[@]	NBPGR/RSS–1172	Bishkandara	3200–3527 m	H	Reg Himal
Valeriana hardwickii Wall.	NBPGR/RSS–1309	Nakhniani	2750–3210 m	H	Reg Himal Malaya
Caryophylaceae					
Arenaria griffithii Boiss.	NBPGR/RSS–1346	–	2266–3120 m	H	Tibet occ; Afghan
A. festucoides Benth.[@@]	NBPGR/RSS–1343	–	2800–3550 m	H	Reg Himal
A. kansuensis Maxim	NBPGR/RSS–1344	–	3800–4200 m	H	China
A. serpyllifolia L.	NBPGR/RSS–1345	–	2200–4000 m	H	China
Cerastium cerastoides (L.) Britton.	NBPGR/RSS–1077		2800–3150 m	H	Reg Himal
C. glomeratum Thuill.	NBPGR/RSS–1384	–	2700–3400 m	H	Europ; Asia
Dianthus angulatus Royle	NBPGR/RSS–1416	–	2596–3527 m	H	Reg Himal
Gypsophilla cerastioides D. Don[@]	NBPGR/RSS–1139		2794–3150 m	H	Reg Himal
Minuartia kashmirica Mattf.[@]	NBPGR/RSS–1507	–	2500–3300 m	H	Reg Himal
Sagina saginoides (L.) H. Karst.	NBPGR/RSS–1584	–	1850–4000 m	H	Mexico; Europ; Asia
Silene gangotriana Pusalkar, D.K.Singh & Lakshmin[@]	NBPGR/RSS–1602	–	3200–3527 m	H	Reg Himal
S. indica (Roxb.) Roxb. ex Otth[@@]	NBPGR/RSS–1603	–	2100–2950 m	H	Reg Himal
S. vulgaris (Moench) Garcke	NBPGR/RSS–1282	Gandoli	3080–3185 m	H	Reg Himal
Stellaria media (L.)Vill.[@@]	NBPGR/RSS–1289	Khokhua–bhaji	2750–3345 m	H	Reg Himal
S. monosperma Buch.-Ham. ex D.Don	NBPGR/RSS–1612	–	2500–3100 m	H	Nepal
S. palustris Retz.	NBPGR/RSS–1613	–	2876–3450 m	H	Europ
Commelinaceae					
Cyanotis vaga (Lour.) Schult.f.	NBPGR/RSS–1406	–	1800–2850 m	H	Java
Convolvulaceae					
Convolvulus arvensis L.	NBPGR/RSS–1086	Haranpadi	2730–3220 m	H	Geront Temp
Cuscuta europaea L.	NBPGR/RSS–1580	–	2500–3700 m	C	Europ; Oriens
C. reflexa Roxb.	NBPGR/RSS–1404	Amarbel	2814–3400 m	C	Ind or
Crassulaceae					
Rhodiola bupleuroides (Wall. ex Hook.f. & Thomson) Fu	NBPGR/RSS–1574	–	2708–3100 m	H	N Amer; Reg Himal
R. cretinii (Raym.-Hamet) H.Ohba	NBPGR/RSS–1575	–	3000–3970 m	H	Sibir; Europ; Himal
R. heterodonta (Hook. f. & Thoms.) A. Boriss.[@VU]	NBPGR/RSS–1251	–	3030–4000 m	H	Reg Himal
R. wallichiana (Hook.) Fu	NBPGR/RSS–1576	–	2850–3509 m	H	China; Reg Himal
Rosularia adenotricha (Wall. ex Edgew.) C.A. Jansson	NBPGR/RSS–1578	–	3600–4200 m	H	Reg Himal
R. rosulata (Edgew.) H.Ohba[@@]	NBPGR/RSS–1579	–	2708–3263 m	H	Reg Himal
Sedum ewersii Ledeb.	NBPGR/RSS–1278	Teandi	2708–3800 m	H	Reg Himal Sibir Altaic
S. multicaule Wall. ex Lindl.[@]	NBPGR/RSS–1265		2600–3263 m	H	Reg Himal China
S. quadrifidum Pall.	NBPGR/RSS–1594	–	3600–5500 m	H	Reg Himal; Asia; arct
Cyperaceae					
Blysmus compressus **(L.)** Panz. **ex Link**	NBPGR/RSS–1418	–	2800–4100 m	H	Europ
Carex cruenta Nees[@]	NBPGR/RSS–1463	–	3300–3850 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
C. infuscata Nees[@]	NBPGR/RSS–1464	–	3000–3800 m	H	Reg Himal
C. melanantha C.A.Mey.	NBPGR/RSS–1473	–	3100–4000 m	H	Asia Centr
C. orbicularis Boott	NBPGR/RSS–1483	–	3400–4200 m	H	Ind; Asia Trop
C. setosa Boott	NBPGR/RSS–1487	–	2800–3800 m	H	Reg Himal
Cyperus niveus Retz.	NBPGR/RSS–1476	–	2000–2900 m	H	Ind or
C. squarrosus L.	NBPGR/RSS–1536	–	1800–2250 m	H	Reg Trop
Eriophorum comosum (Wall.) Nees	NBPGR/RSS–1115	Munji	2100–2400 m	H	Ind or
Dioscoreaceae					
Dioscorea deltoidea Wall. ex Kunth.[EN]	NBPGR/RSS–1103	Shingli mingli	2775–3350 m	H	Ind or
Dipsacaceae					
Dipsacus inermis Wall.[@@]	NBPGR/RSS–1419	–	2670–2990 m	H	Reg Himal
Elaeagnaceae					
Elaeagnus parviflolia Wall. ex Royle	NBPGR/RSS–1108	Ghiayeen	2400–2700 m	S	Japon
Hippophae rhamnoides L.[VU]	NBPGR/RSS–1147	Chharma, Gartsak	3300–3500 m	S	Europ; Asia Temp
H. salicifolia D. Don[@]	NBPGR/RSS–1140	Surcham, Chharma	2780–3450 m	S	Reg Himal (Nepal)
H. tibetana Schltdl.[@]	NBPGR/RSS–1142	Chharma	3200–3590 m	S	Tibet
Ericaceae					
Cassiope fastigiata (Wall.) D. Don[@]	NBPGR/RSS–1075	Salu	2800–3750 m	S	Reg Himal
Gaultheria nummularioides D.Don	NBPGR/RSS–1449	Bhojishel	2800–3300 m	S	Reg Himal; Java
G. trichophylla Royle[@]	NBPGR/RSS–1450	–	3100–3445 m	S	Reg Himal
Lyonia ovalifolia (Wall.) Drude[@]	NBPGR/RSS–1501	–	2100–2800 m	S	Reg Himal
Rhododendron anthopogon D. Don[@@VU]	NBPGR/RSS–1252	Buransh	3300–4050 m	S	Reg Himal
R. campanulatum D.Don[@VU]	NBPGR/RSS–1240	Sairmanang	3200–3500 m	S	Reg Himal
R. lepidotum Wall[@@VU]	NBPGR/RSS–1242	–	3500–3800 m	S	Reg Himal
Euphorbiaceae					
Euphorbia helioscopia L.	NBPGR/RSS–1117	Dudawaj	2630–2800 m	H	Europ et Asia Bor
E. maddenii Boiss.[@]	NBPGR/RSS–1442	–	1850–2500 m	H	Reg Himal
E. pilosa L.	NBPGR/RSS–1443	–	2600–3000 m	H	Europ Asia Bor
Fagaceae					
Quercus leucotrichophora Cam[@@]	NBPGR/RSS–1569	Ban	2000–2500 m	T	Reg Himal
Q. floribunda Thunb. (Lindl.)[@@]	NBPGR/RSS–1239	Moru	2550–2900 m	T	Reg Himal
Q. semecarpifolia Sm.[@]	NBPGR/RSS–1238	Kharshu	2500–3050 m	T	Reg Himal
Gentianaceae					
Gentiana argentea (Royle ex D. Don) DC.[@]	NBPGR/RSS–1134	–	2780–3490 m	H	Reg Himal; China
G. capitata Buch.-Ham. ex D. Don.[@]	NBPGR/RSS–1451	–	2800–3400 m	H	Reg Himal
G. coronata (D. Don ex Royle) DC.[@]	NBPGR/RSS–1127	–	3400–3980 m	H	Reg Himal
G. leucomelaena Maxim	NBPGR/RSS–1452	Buksuk–Shipo	2900–3580 m	H	Tibet; Mongol
G. prostrata Haenke in Jacq.	NBPGR/RSS–1453	–	2950–3600 m	H	S Amer
G. tianschanica Rupr. ex Kusn.	NBPGR/RSS–1130	Titka	3250–3527 m	H	Asia centr
Gentianopsis detonsa (Rottb.) Ma	NBPGR/RSS–1135	Chateek	3100–3500 m	H	Temp bor
G. paludosa (Hook.f.) Ma	NBPGR/RSS–1454	–	3000–3550 m	H	Amerer; Asia
Halenia elliptica D.Don[@]	NBPGR/RSS–1144	Pitpapra	2980–3260 m	H	Reg Himal
Lomatogonium caeruleum H.Smithapud B. L. Burtt[@]	NBPGR/RSS–1497	–	3500–3900 m	H	Reg Himal
*L. carinthiacum (*Wulf.)A.Br	NBPGR/RSS–1169	Tikta	3000–4000 m	H	Cosmo
Swertia angustifolia Buch. – Ham. ex D.Don[@]	NBPGR/RSS–1615	–	1900–2650 m	H	Reg Himal
S. ciliata (D. Don) Burtt[@]	NBPGR/RSS–1290	Chirettah, Nepali Chirata	2981–3448m	H	Reg Himal
S. cuneata Wall. ex D. Don[@]	NBPGR/RSS–1616	–	2981–3700 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Geraniaceae					
Erodium cicutarium L.	NBPGR/RSS–1440	–	2000–2400 m	H	Mediterr; Asia
Geranium himalayense Klotz.	NBPGR/RSS–1136	Porlo	2700–3445 m	H	Europ; Asia Bor
G. lucidum L.	NBPGR/RSS–1455	–	2350–2550 m	H	Europ; Asia bor
G. nepalense Sweet.	NBPGR/RSS–1128	Laljari	2575–3385 m	H	Ind Or China
G. pratense L.	NBPGR/RSS–1129	Likatur	2690–3500 m	H	Europ; Asia Bor
G. robertianum L.	NBPGR/RSS–1456	–	2000–3350 m	H	N Europ
G. wallichianum D. Don ex Sweet[@]	NBPGR/RSS–1131	Polo, Laljari	2575–3527 m	H	Reg Himal
Grossulariaceae					
Ribes alpestre Wall. ex Decne.[@]	NBPGR/RSS–1253	Pilikcha	2800–3450 m	S	Reg Himal
Hydrangeaceae					
Deutzia staminea R. Br .ex Wall[@]	NBPGR/RSS–1102	–	2575–3400 m	S	Reg Himal
Hypericaceae					
Hypericum perforatum L.[VU]	NBPGR/RSS–1148	Basant	2300–3340 m	H	Europ
Hypoxidaceae					
Hypoxis aurea Lour.	NBPGR/RSS–1470	–	1900–2850 m	H	Cochinch
Iridaceae					
Iris hookeriana Foster.[@@]	NBPGR/RSS–1155	–	2770–3445 m	H	Reg Himal
I. kumaonensis D. Don ex Royle(Pri)[@]	NBPGR/RSS–1149	–	2900–3927 m	H	Reg Himal
Juglandaceae					
Juglans regia L.[@@]	NBPGR/RSS–1160	Akhrot	2200–3100 m	T	Asia Occ Reg Himal
Juncaceae					
Juncus articulatus L.	NBPGR/RSS–1479	–	2000–3500 m	H	Europ; Austr
J. himalensis Klotz.[@]	NBPGR/RSS–1480	–	2000–3500 m	H	Reg Himal
J. leucanthus Royle ex D.Don	NBPGR/RSS–1482	–	3750–4250 m	H	Reg Himal
J. thomsonii Buchen[@]	NBPGR/RSS–1481	–	3000–3600 m	H	Reg Himal
Lamiaceae					
Ajuga parviflora Benth.[@]	NBPGR/RSS–1327	Neel Kanthi	2000–2500 m	H	Reg Himal
Clinopodium umbrosum (M. Bieb.) Kuntze	NBPGR/RSS–1391	–	1900–2800 m	H	Oriens Ind Or
C. vulgare L.	NBPGR/RSS–1196	–	2630–3500 m	H	Europ; Canada
Elsholtzia eriostachya (Benth.) Benth.[@]	NBPGR/RSS–1084	Tsatsa, Betso	2800–3450 m	H	Reg Himal
E. fruticosa (D. Don) Rehder	NBPGR/RSS–1424	–	2000–2700 m	H	China
E. pilosa Benth.[@]	NBPGR/RSS–1425	–	2000–3300 m	H	Reg Himal
Lamium album L.	NBPGR/RSS–1486	–	1800–3750 m	H	Europ; Oriens
Leonurus cardiaca L.	NBPGR/RSS–1166	–	2750–3100 m	H	Reg Bor Temp
Mentha longifolia (L.) Huds.	NBPGR/RSS–1180	Podina, Jungli pudina	2800–3400 m	H	Reg bor Temp
Nepeta clarkei Hook.f.[@]	NBPGR/RSS–1517	–	2708–3500 m	H	Reg Himal
N. discolor Royle ex Benth.[@@]	NBPGR/RSS–1186	–	2680–3400 m	H	Reg Himal
N. erecta Royle ex Benth.[@@]	NBPGR/RSS–1513	–	2692–3399 m	H	Reg Himal
N. elliptica Royle ex Benth.	NBPGR/RSS–1184	–	2708–3523 m	H	E Afghan; Nepal
N. eriostachya Benth.[@]	NBPGR/RSS–1182	Brun	3185–3500 m	H	Reg Himal
N. laevigata (D.Don) Hand.-Mazz.[@]	NBPGR/RSS–1514	–	2200–4000 m	H	Reg Himal
N. linearis Royle ex Benth.[@]	NBPGR/RSS–1515	–	3000–4250 m	H	Reg Himal
N. nervosa Royle ex Benth.	NBPGR/RSS–1516	–	3000–3550 m	H	Reg Himal
N. podostachys Benth.	NBPGR/RSS–1054	Ribuksu, Ribhaksu	2780–3440 m	H	Afghan
Ocimum americanum L.	NBPGR/RSS–1518	–	1800–2000 m	H	Amer
Origanum vulgare L.	NBPGR/RSS–1188	Massow, Baslughas	2981–3527 m	H	Europ Asia et Afr bor
Phlomis bracteosa Royle ex Benth.[@]	NBPGR/RSS–1219	Peer panchal	2700–3509 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Plectranthus rugosus Wall. ex Benth.[@]	NBPGR/RSS–1541	–	2500–3050 m	H	Reg Himal
Prunella vulgaris L.	NBPGR/RSS–1236	–	2770–3150 m	H	Reg Himal Temp
Rabdosia rugosa (Wall. ex Benth.) Hara[@]	NBPGR/RSS–1570	–	2700–3200 m	S	Reg Himal
Salvia nubicola Wall. ex Sw	NBPGR/RSS–1273	–	2708–3399 m	H	Europ; Austr Reg Himal
Scutellaria linearis Benth.[@]	NBPGR/RSS–1593	–	2250–2950 m	H	Reg Himal; Afghan
S. prostrata Jacq. ex Benth.[@]	NBPGR/RSS–1592	–	3200–3650 m	H	Reg Himal
Stachys melissaefolia Benth.[@]	NBPGR/RSS–1610	–	2200–3300 m	H	Reg Himal
S. sericea Cav.	NBPGR/RSS–1611	–	2800–3200 m	H	Chilii
Thymus linearis Benth.	NBPGR/RSS–1300	Banajwain	2100–3700 m	H	Europ Asia et Afr bor
Leguminosae					
Astragalus candolleanum Royle ex Benth.[@]	NBPGR/RSS–1047	Yamcho, Cho	3300–4200 m	S	Reg Himal
A. chlorostachys Lindl.[@]	NBPGR/RSS–1013	–	3250–3527 m	H	Reg Himal
A. floridulus Podlech[@]	NBPGR/RSS–1364	–	3200–3550 m	H	Reg Himal
A. himalayanus Klotzsch[@@]	NBPGR/RSS–1363	–	3450–3800 m	H	Reg Himal
A. rhizanthus Benth.[@]	NBPGR/RSS–1020	–	2876–3448 m	H	Reg Himal
Cicer microphyllum Benth.[@]	NBPGR/RSS–1081	–	2708–3350 m	H	Reg Himal
Desmodium elegans DC.[@@]	NBPGR/RSS–1101	Sambar	2200–2681 m	S	Reg Himal China
Hedysarum microcalyx Baker [@@]	NBPGR/RSS–1462	–	2700–4500 m	H	Reg Himal
Indigofera heterantha Wall. ex Brandis[@]	NBPGR/RSS–1154	Kali Kathi	2200–2750 m	S	Reg Himal
Lespedeza juncea (L.f.) Pers.[@]	NBPGR/RSS–1494	–	1900–2420 m	H	Reg Himal; Asia bor
Lotus corniculatus L.	NBPGR/RSS–1171	Bird's–foot trefoil	2876–3400 m	H	Geront Temp Austr
Medicago falcata L.	NBPGR/RSS–1179	–	2900–3445 m	H	Geront Bor Temp
M. lupulina L.	NBPGR/RSS–1173	Hop clover	2981–3501 m	H	Geront Bor Temp
Oxytropis lapponica (Wahl.) Gay.	NBPGR/RSS–1192	–	2900–3400 m	H	Europ; Asia Bor
Parochetus communis D.Don	NBPGR/RSS–1524	–	2000–2500 m	H	Ind Or Malaya Afr Trop
Phaseolus coccineus Lam.	NBPGR/RSS–1535	–	2100–2950 m	H	South Amer
Robinia pseudoacacia L.	NBPGR/RSS–1183	Kikar, Honey–locust	2400–3000 m	T	Amerer Bor
Trifolium pratense L.	NBPGR/RSS–1301	Purple Clover	2575–3350 m	H	Europ; Asia Temp
T. repens L.	NBPGR/RSS–1295	Triptra	2575–3400 m	H	Geront Bor Temp
Trigonella corniculata L.	NBPGR/RSS–1626	Kasuri–methi	2710–3600 m	H	Reg Himal
T. emodi Benth.	NBPGR/RSS–1302	Tuljima	2708–3500 m	H	Reg Himal
Vicia bakeri Ali[@@]	NBPGR/RSS–1627	–	2300–3000 m	H	W Pakistan; Ind
Liliaceae					
Fritillaria roylei Hook.[@EN]	NBPGR/RSS–1125	–	3000–3250 m	H	Reg Himal
Gagea lutea L.	NBPGR/RSS–1447	–	3150–3400 m	H	Europ
Malvaceae					
Malva neglecta Wall.(Pri)	NBPGR/RSS–1177	Khubar, Sonchala	2800–3600 m	H	Europ
M. sylvestris L.	NBPGR/RSS–1174	Marsh–mallow	2800–3700 m	H	Hungary
M. verticillatta L.	NBPGR/RSS–1175	–	2575–3600 m	H	Europ Asia et Afr bor
Melanthiaceae					
Trillium govanianum Wall. ex D. Don[@@]	NBPGR/RSS–1303	Satwa	3400–3509 m	H	Reg Himal
Menispermaceae					
Cissampelos pareira L.	NBPGR/RSS–1389	–	1800–2100 m	H	Reg Trop
Oleaceae					
Fraxinus xanthoxyloides (G. Don) DC.[@@]	NBPGR/RSS–1124	Thum	2400–3300 m	S	Reg Himal
Jasminum humile L.	NBPGR/RSS–1478	–	2000–2850 m	S	Asia Trop
J. officinale L.	NBPGR/RSS–1159	White Jasmine	2700–3100 m	S	Ind bor; Occ; China
Olea ferruginea Royle	NBPGR/RSS–1187	Kohu, Wild olive	1900–2300 m	T	Reg Oriens
Syringa emodi Wall. ex Royle[@]	NBPGR/RSS–1617	–	2900–3500 m	S	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Onagraceae					
Epilobium angustifolium L.	NBPGR/RSS–1111	Dharshak	3000–4000 m	H	Europ Asia Bor Amer Bor
E. cylindricum D. Don	NBPGR/RSS–1427	–	2000–3300 m	H	Europ; Asia Occ
E. latifolium L.@@	NBPGR/RSS–1428	–	2990–3509 m	H	Reg Bor; Himal
E. laxum Royle	NBPGR/RSS–1429	–	2750–3500 m	H	Europ
E. royleanum Hausskn.@	NBPGR/RSS–1106	–	2600–3250 m	H	Reg Himal
Orchidaceae					
Dactylorhiza hatagirea (D.Don.) Soo@CR	NBPGR/RSS–1097	Panja Salampanja	3000–3400 m	H	Reg Himal
Epipactis giganteum Dougl. ex Hk	NBPGR/RSS–1430	–	2000–3500 m	H	Amer Bor; Asia Temp
E. helleborine (L.) Crantz	NBPGR/RSS–1112	–	2500–3600 m	H	Europ; Asia Bor
Goodyera fusca (Lind.) Hk. f.@	NBPGR/RSS–1138	–	3000–3709 m	H	Reg Himal
Herminium lanceum (Thunb. ex Sw.) Vuijkj	NBPGR/RSS–1465	–	3000–3600 m	H	Java
H. monorchis (L.) R. Br.(Sec)	NBPGR/RSS–1146	–	2400–2900 m	H	Europ; Asia Bor
Malaxis muscifera (Lindl.) Kuntze.	NBPGR/RSS–1502	–	3000–3200 m	H	Europ
Neottia listeroides Lindl.@	NBPGR/RSS–1512	–	3100–3509 m	H	Reg Himal
Spiranthes sinensis (Pers.) Ames.	NBPGR/RSS–1609	Bakersinghi	1800–2900 m	H	Asia Temp et Trop Austr
Orobanchaceae					
Euphrasia himalayica Wettst.@	NBPGR/RSS–1444	–	2750–3600 m	H	Reg Himal
E. simplex D. Don@	NBPGR/RSS–1118	Rambara	3150–3400 m	H	Nepal
Leptorhabdos parviflora (Benth.) Benth.@	NBPGR/RSS–1493	–	3100–3600 m	H	Reg Himal
Orobanche alba Steph.	NBPGR/RSS–1189	Luak	3000–3400 m	H	Europ; Oriens; Asia Bor
Pedicularis bicornuta Klotzsch@@	NBPGR/RSS–1217	–	2700–3500 m	H	Reg Himal
P. gracilis Wall. ex Benth.@	NBPGR/RSS–1527	–	3100–3448 m	H	Reg Himal
P. longiflora Rudolph@	NBPGR/RSS–1530	–	3159–3400 m	H	Reg Himal
P. mollis Wall. ex Benth.@	NBPGR/RSS–1526	–	2700–3350 m	H	Reg Himal
P. palustris L.	NBPGR/RSS–1528	–	3200–3600 m	H	Reg bor temp et arct
P. porrecta Wall. ex Benth.@	NBPGR/RSS–1529	–	3200–3600 m	H	Reg Himal
P. punctata Dcne.	NBPGR/RSS–1209	Mishran, Michren	3159–3527 m	H	Reg Himal; Persia
P. scullyana Prain ex Maxim.@	NBPGR/RSS–1531	–	3400–4000 m	H	Reg Himal
Oxalidaceae					
Oxalis acetosella L.	NBPGR/RSS–1522	–	2200–3200 m	H	Reg Bor Temp
O. corniculata L.	NBPGR/RSS–1057	–	2200–3263 m	H	Amerphig Temp Trop
Papaveraceae					
Corydalis cashmeriana Royle@@	NBPGR/RSS–1088	Bhutkesi	2500–4150 m	H	Reg Himal; Asia Trop
C. govaniana Wall.@@	NBPGR/RSS–1065	Bhutkesi	3117–3950 m	H	Reg Himal
C. meifolia Wall.@	NBPGR/RSS–1394	–	2600–3600 m	H	Reg Himal
C. ramosa Wall. ex Hook.f. & Thomson.	NBPGR/RSS–1395	–	2750–3500 m	H	Asia Trop
C. thyrsiflora Prain	NBPGR/RSS–1396	–	3154–3500 m	H	NW Himal
Papaver nudicaule L.	NBPGR/RSS–1523	–	1800–3150 m	H	Sibir; Himal
Meconopsis aculeata Royle@@EN	NBPGR/RSS–1178	–	3200–3500 m	H	Reg Himal
M. horridula Hook. f. & Thomson@	NBPGR/RSS–1176	–	3100–3300 m	H	Reg Himal
Parnassiaceae					
Parnassia nubicola Wall. ex Royle@	NBPGR/RSS–1216	–	2700–3300 m	H	Reg Himal
Phrymaceae					
Mazus dentatus Wall.@	NBPGR/RSS–1503	–	2550–2800 m	H	Reg Himal
M. surculosus D. Don	NBPGR/RSS–1504	–	1900–2850 m	H	Ind or
Phytolacaceae					
Phytolacca acinosa Roxb.@	NBPGR/RSS–1220	–	2600–2900 m	H	Reg Himal Asia Trop
Plantaginaceae					
Hippuris vulgaris L.	NBPGR/RSS–1467	–	3500–4600 m	H	Europ; Asia bor; Amer bor et austr

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Picrorhiza kurrooa Royle ex Benth.[@@EN]	NBPGR/RSS–1222	Karu, Kutki	3200–3900 m	H	Reg Himal
Plantago depressa Willd.	NBPGR/RSS–1225	Musalniani	2100–3000 m	H	Sibir
P. erosa L.	NBPGR/RSS–1202	Jangli Isabgol	3100–3263 m	H	Europ et Amer Bor
P. major L.	NBPGR/RSS–1205	Luhuriya, Isabgol	2675–3527 m	H	Europ
Veronica agrestis L.	NBPGR/RSS–1632	–	2400–2800 m	H	Europ
V. anagallis–aquatica L.	NBPGR/RSS–1312	–	3100–3400 m	H	Reg bor Temp
V. beccabunga L.	NBPGR/RSS–1307	–	2100–3400 m	H	Reg bor temp
V. himalensis D.Don	NBPGR/RSS–1633	–	3350–3527 m	H	Reg Himal
Poaceace					
Agrostis canina L.	NBPGR/RSS–1324	–	2150–3800 m	H	Amerphig
A. pilosula Trin.[@]	NBPGR/RSS–1325	–	2200–4000 m	H	Reg Himal
Alopecurus arundinaceus Poir	NBPGR/RSS–1331	–	2100–3150 m	H	Europ; Amer bor; Oriens
Bromus japonicus Thunb. ex Murr.[@]	NBPGR/RSS–1376	–	2000–3800 m	H	Reg Himal
B. pectinatus Thunb.	NBPGR/RSS–1377	–	3020–3650 m	H	Afr; Austr
B. tectorum L.	NBPGR/RSS–1378	–	3000–4150 m	H	Europ; Oriens; Asia bor
Calamagrostis pseudophragmites (Haller) Koeler	NBPGR/RSS–1381	–	1800–3000 m	H	Europ Oriens; Asia bor
Chrysopogon gryllus (L.) Trin.	NBPGR/RSS–1080	Binu Bajha	2200–3550 m	H	Reg Trop et Subtrop
Colpodium nutans (Stapf) Bor	NBPGR/RSS–1392	–	2000–3500 m	H	Asia trop; Ind
Cynodon dactylon (L.) Pers.	NBPGR/RSS–1092	Dhroov ghas	2000–3100 m	H	Cosmo
Dactylis glomerata L.	NBPGR/RSS–1096	–	2875–3527 m	H	Europ; Asia bor
Elymus nutans Griseb.[@]	NBPGR/RSS–1426	–	3300–3600 m	H	Reg Himal
Festuca pamirica Tzvelev[@]	NBPGR/RSS–1445	–	1800–2450 m	H	Pamir; Himal
F. rubra L.	NBPGR/RSS–1122	–	2800–3500 m	H	Reg Bor Temp
F. valesiaca Schleich. ex Gaudin	NBPGR/RSS–1446	–	3000–3400 m	H	Reg Himal
Hordeum murinum L.	NBPGR/RSS–1468	–	1800–2850 m	H	Europ; Afr bor; Oriens
H. turkestanicum Nevski	NBPGR/RSS–1469	–	3300–4100 m	H	Asia centr
Koeleria macrantha (Ledeb.) Schult.	NBPGR/RSS–1484	–	2000–3800 m	H	Reg Caucs; Asia Bor
Leymus secalinus (Georgi) Tzvelev	NBPGR/RSS–1496	–	3290–3800 m	H	Sibir Altaic
Melica persica kunth.	NBPGR/RSS–1505	–	2700–3500 m	H	Reg Mediterr; Oriens; Himal
Oryzopsis munroi Stapf	NBPGR/RSS–1520	–	2400–2900 m	H	Ind or
Pennisetum flaccidum Griseb.[@]	NBPGR/RSS–1532	–	3300–3600 m	H	Asia Centr et Austr
P. lanatum Koltzsch[@]	NBPGR/RSS–1533	–	2000–2800 m	H	Reg Himal
P. orientale Rich.	NBPGR/RSS–1534	–	2100–3100 m	H	Algeria; Oriens; Ind or
Phleum alpinum L.	NBPGR/RSS–1218	–	2900–3500 m	H	Reg Bor et Arct
P. himalaicum Mez	NBPGR/RSS–1537	–	2100–2800 m	H	Afghan; Himal bor occ; Kashmir
Poa alpina L.	NBPGR/RSS–1227	–	2900–4000 m	H	Reg Bor et Arct
P. annua L.	NBPGR/RSS–1194	Chirua	2700–3445 m	H	Reg Bor Temp
P. glauca Vahl	NBPGR/RSS–1543	–	2750–3850 m	H	N Europ
P. himalayana Nees ex Steud.[@]	NBPGR/RSS–1203	–	2700–3900 m	H	Reg Himal
P. koelzii Bor	NBPGR/RSS–1544	–	2950–4000 m	H	Kshmir; Himal
P. supina L.	NBPGR/RSS–1213	–	3800–4600 m	H	Cosmop
P. versicolor Besser	NBPGR/RSS–1545	–	3200–4000 m	H	N Cauc; China
Saccharum filifolium Steud	NBPGR/RSS–1583	Philoo	2000–2600 m	H	Ind or
Setaria glauca (auct. non. L.) P. Beauv. L	NBPGR/RSS–1281	Bandra	2750–3700 m	H	Europ; Asia Temp
S. pumila (Poir.) Roem. & Schult	NBPGR/RSS–1599	–	2000–2500 m	H	Europ; Asia Temp
Trisetum spicatum (L.) Richt.	NBPGR/RSS–1304	–	2700–3400 m	H	Austr
Stipa jacquemontii Jaub & Spach.	NBPGR/RSS–1614	–	3200–3600 m	H	Ind or

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Polemoniaceae					
Polemonium caeruleum L. subsp. *himalayanum* (Baker) Hara[@]	NBPGR/RSS–1546	–	2700–3700 m	H	Reg bor Temp
Polygalaceae					
Polygala tatarinowii Regel	NBPGR/RSS–1547	–	2500–3100 m	H	China; Pakistan
Polygonaceace					
Bistorta affinis (D.Don.)Gree[@@]	NBPGR/RSS–1059	Khuliya	2560–4000 m	H	Reg Himal
B. vaccinifolia (Wall. ex Meissn.) Greene[@]	NBPGR/RSS–1371	–	3000–4100 m	H	Reg Himal
Fagopyrum esculentum Moench.	NBPGR/RSS–1120	Ogal	2100–3400 m	H	Europ; Asia Bor
Oxyria digyna (L.) Hill	NBPGR/RSS–1191	Shupchi	2789–3500 m	H	Reg Bor Alp et Arct
Polygonum alpinum All.	NBPGR/RSS–1109	–	2700–3500 m	H	Europ; Austr; Asia bor
P. amplexicaule D. Don[@]	NBPGR/RSS–1193	Sarbguni	2400–3200 m	H	Reg Himal
P. aviculare L.	NBPGR/RSS–1548	Anjubar, Machoti	2575–3250 m	H	Reg bor temp
P. capitatum Buch.-Ham. ex Don[@]	NBPGR/RSS–1199	–	2650–3100 m	H	Reg Himal
P. hydropiper L.	NBPGR/RSS–1204	–	2750–3100 m	H	Reg Temp bor et Austr
P. paronychioides C.A.Mey.	NBPGR/RSS–1551	–	3300–4100 m	H	Reg Cauc et Himal
P. plebeium R.Br.	NBPGR/RSS–1207	–	3100–3400 m	H	Reg Himal
P. polystachyum Wall.ex Meissn.	NBPGR/RSS–1208	–	2700–3520 m	H	Ind or Asia Trop
P. pubescens Blume	NBPGR/RSS–1549	–	1800–1900 m	H	Java
P. recumbens Royle ex Babin[@]	NBPGR/RSS–1210	Vishalyakarni Vishalaya	3100–3500 m	H	Reg Himal
P. viviparum L.	NBPGR/RSS–1550	Maslun, Pararichemti	2700–3509 m	H	Europ
Rheum australe D. Don.[@EN]	NBPGR/RSS–1250	Chukri	2876–3527 m	H	Reg Himal
Rumex acetosa L.	NBPGR/RSS–1581	Jungli–palak	2500–3200 m	H	Europ; Asia bor
R. hastatus D.Don[@]	NBPGR/RSS–1259	–	2145–3350 m	H	Reg Himal
R. nepalensis Spreng.	NBPGR/RSS–1245	Jangli palak	2150–3527 m	H	Europ Asia bor
R. patienta L.	NBPGR/RSS–1582	Shoma	2550–3050 m	H	Europ; austr; Oriens
Primulaceae					
Androsace rotundifolia Hardw.[@]	NBPGR/RSS–1035	Zigsolo marpo	2950–3300 m	H	Reg Himal; China
A. sarmentosa Wall.	NBPGR/RSS–1336	–	2500–3509 m	H	Nepal
A. sempervivoides Jacquem. ex Duby	NBPGR/RSS–1337	–	3109–3450 m	H	Reg Himal; Mongol
Primula denticulata Sm.[@]	NBPGR/RSS–1234	Keecha	3200–3400 m	H	Reg Himal
P. macrophylla D. Don	NBPGR/RSS–1560	–	3500–4500 m	H	Asia et Amer bor
P. rosea Royle[@]	NBPGR/RSS–1211	–	3510–4000 m	H	Reg Himal
P. sessilis Royle ex Craib[@@]	NBPGR/RSS–1561	–	2100–3650 m	H	Ind or
Ranunculaceae					
Aconitum heterophyllum Wall. Ex Royle.[@@CR]	NBPGR/RSS–1027	Atis, Patish	2900–3950 m	H	Reg Himal
A. violaceum Jacq. Ex Stapf [@@VU]	NBPGR/RSS–1019	Onayalkas, Mitha Patish	3000–4200 m	H	Reg Himal
Actaea spicata L.	NBPGR/RSS–1028	Mamira	3000–3600 m	H	Reg Bor Temp
Anemone obtusiloba D. Don[@@]	NBPGR/RSS–1036	Rattanjog	3000–3525 m	H	Reg Himal
A. rivularis Buch.-Ham[@]	NBPGR/RSS–1021	Jakri	2700–3700 m	H	Reg Himal
Aquilegia fragrans Benth.[@@]	NBPGR/RSS–1039	Lamo	2700–3600 m	H	Reg Himal
A. parviflora Ledeb.	NBPGR/RSS–1338	–	2800–3527 m	H	Sibir
Caltha palustris L.	NBPGR/RSS–1069	Munire, Pipling–tasha	2500–3550 m	H	Reg Bor Temp et Arct
Clematis grata Wall.	NBPGR/RSS–1083	–	2770–3340 m	C	Reg Himal China; Afr
C. connata DC.[@]	NBPGR/RSS–1390	–	2000–2700 m	C	Reg Himal
Delphinium brunonianum Royle[@]	NBPGR/RSS–1099	Kasturilata	3200–3850 m	H	Reg Himal
D. cashmerianum Royle[@@]	NBPGR/RSS–1094	Raskalch, Losar	2700–4000 m	H	Reg Himal

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
D. denudatum Wall. Ex Hk f & Th[@@]	NBPGR/RSS–1095	Losker	2890–3450 m	H	Reg Himal
Ranunculus diffusus DC.	NBPGR/RSS–1249	–	3000–3600 m	H	Ind or; Malaya
R. falcatus L.	NBPGR/RSS–1571	–	1800–2650 m	H	Europ austr
R. hirtellus D. Don[@]	NBPGR/RSS–1572	–	2750–3500 m	H	Reg Himal
R. laetus Wall ex D.Don[@]	NBPGR/RSS–1241	Jaldhar, Jaldra	2770–3350 m	H	Reg Himal
R. pulchellus C.A.Mey.	NBPGR/RSS–1573	–	2890–3564 m	H	Sibir; Reg Himal
Thalictrum alpinum L.	NBPGR/RSS–1299	–	2708–3527 m	H	Reg Bor et Arct
*T. cultratum*Wall.[@]	NBPGR/RSS–1291	–	2575–3500 m	H	Reg Himal
T. foetidum L.	NBPGR/RSS–1292	–	3150–3400 m	H	Europ Sibir
T. foliolosum DC.[@]	NBPGR/RSS–1293	Chi Mamira, Pilijari	3080–3300 m	H	Reg Himal
T.minus L.[@@]	NBPGR/RSS–1294	–	2700–3450 m	H	Reg Himal; Asia
Rosaceae					
Agrimonia pilosa Ledeb.	NBPGR/RSS–1323	–	1800–2850 m	H	Reg Bor Temp
Amygdalus mira (Koehne) Ricker	NBPGR/RSS–1029	Behmi, Aori	2100–3100 m	T	China
Cotoneaster bacillaris Wall. ex Lindl.[@]	NBPGR/RSS–1089	Reuns	2700–3516 m	S	Reg Himal
C. gilgitensis Klotz[@]	NBPGR/RSS–1398	–	2600–3100 m	S	Reg Himal (NW Himal)
C. microphylla Wall.ex Lindl.[@]	NBPGR/RSS–1066	Res, Rogthali	2700–3800 m	S	Reg Himal
Fragaria indica Andr.	NBPGR/RSS–1123	Bhumra	2150–3150 m	H	Ind; Malaya China
F. nubicola Lindley ex Lacaita.	NBPGR/RSS–1119	Bhumla	2280–3980 m	H	Reg Temp
Photinia nussia (D.Don) Kalkman	NBPGR/RSS–1538	–	1800–2800 m	S	China
Potentilla anserina L.	NBPGR/RSS–1232	Cinguefoil, silverweed	2130–3700 m	H	Europ
Potentilla arbuscula D. Don	NBPGR/RSS–1557	–	3200–4200 m	S	Reg Bor Temp
P. argyrophylla Wall. ex Lehm.[@]	NBPGR/RSS–1195	–	3100–3800 m	H	Reg Himal
P. atrosanguinea Lodd.[@@]	NBPGR/RSS–1296	Lamasu	3000–3900 m	H	Reg Himal
P. bifurca L.	NBPGR/RSS–1256	–	3200–4000 m	H	Reg Cauc;Asia Asia
P. cuneata Wall. ex Lehm.[@]	NBPGR/RSS–1558	–	3200–3448 m	H	Reg Himal
P. curviseta Hook. f[@]	NBPGR/RSS–1559	–	3122–3550 m	H	Reg Himal
Prinsepia utilis Royle[@]	NBPGR/RSS–1235	Bhenkul	1800–2200 m	S	Reg Himal
Prunus armeniaca L.	NBPGR/RSS–1237	Chuli	2000–3250 m	T	Reg Cauc
P. cerasoides Buch.-Ham. ex D. Don	NBPGR/RSS–1562	–	1800–2300 m	T	Reg Himal
P. cornuta (Wall. ex Royle) Stued	NBPGR/RSS–1201	Krun, Khimor	2800–3250 m	T	Europ Asia Bor Ind or
P. domestica L.	NBPGR/RSS–1563	–	1800–3900 m	T	Europ; austr
P. persica (L.) Stokes	NBPGR/RSS–1564	–	1800–3000 m	T	Asia temp
Rosa brunonii Lindl.(Sec)	NBPGR/RSS–1255	Kuja	3200–3500 m	S	Oriens
R. macrophylla Lindl.[@@]	NBPGR/RSS–1243	Jungli–gulab	3050–3520 m	S	Reg Himal China
R. moschata L.	NBPGR/RSS–1244	Kuja	2680–2900 m	S	Oriens
R. webbiana Wall. ex Royle[@]	NBPGR/RSS–1248	Sea, Shyabala	2980–3527 m	S	Reg Himal
Rubus ellipticus Don	NBPGR/RSS–1258	–	2200–2676 m	S	Ind or
R. niveus Thunb.[@]	NBPGR/RSS–1246	–	2600–3000 m	S	Reg Himal
R. paniculatus Sm[@]	NBPGR/RSS–1247	–	2700–2900 m	S	Reg Himal
Sibbaldia cuneata Hornem. ex Kuntze	NBPGR/RSS–1600	–	2876–3345 m	H	Reg bor et Austr
Sorbaria tomentosa (Lindl.) Rehder (Pri)[@]	NBPGR/RSS–1287	Kamyat	2675–3200 m	S	Reg Himal Asia bor
Sorbus lanata (Don) Schauer[@]	NBPGR/RSS–1607	–	1900–2800 m	T	Reg Himal
Spiraea canescens D.Don[@@]	NBPGR/RSS–1288	–	3200–3700 m	S	Reg Himal
Rubiaceae					
Asperula oppositifolia Regel & Schmalh.	NBPGR/RSS–1353	–	1800–1970 m	H	Asia Centr
Galium aparine L.	NBPGR/RSS–1133	Kathir, Nilakari	2680–3516 m	H	Reg bor Temp et Magell

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
G. asperifolium Wall.ex Roxb.	NBPGR/RSS–1126	–	2708–3527 m	H	Europ; Asia Temp
G. asperuloides Edgew.[@]	NBPGR/RSS–1448	–	2692–3502 m	H	Reg bor Temp
Rubia cordifolia L.[@]	NBPGR/RSS–1257		2680–3000 m	H	Asia Trop et Temp
Rutaceae					
Boenninghausenia albiflora (Hook.) Rchb. ex Meisn.	NBPGR/RSS–1060	Pisumar buti	2650–3502 m	H	Reg Himal; Japon
Skimmia laureola (DC.) Zucc.[@]	NBPGR/RSS–1605	Ner	2400–3000 m	S	Reg Himal
Salicaceae					
Populus alba L.	NBPGR/RSS–1231	Safeda, Jangifrast	2700–2900 m	T	Europ; Asia bor
P. ciliata Wall. ex Royle[@]	NBPGR/RSS–1200	Poplar	2670–3163 m	T	Reg Himal
Salix acmophylla Boiss.	NBPGR/RSS–1272	Bada, Bed, Jangli Beli	2700–3100 m	T	Oriens Ind or
S. alba L.	NBPGR/RSS–1260	Bis, Bhushan	2900–3509 m	T	Europ; Asia et Afr bor
S. calyculata Hook.f. ex Andersson[@]	NBPGR/RSS–1587	–	3300–4400 m	S	Reg Himal
S. daphnoides Vill.	NBPGR/RSS–1261	Chanker, Richang Jangli Beli	2700–3600 m	S	Europ; Asia bor
S. denticulata (Anders.) Svensk[@@]	NBPGR/RSS–1585	–	2000–3000 m	T	Reg Himal
S. fragilis L.	NBPGR/RSS–1263	–	3300–3900 m	T	Europ; Asia bor
S.tetrasperma Roxb.	NBPGR/RSS–1586	–	3100–3600 m	T	Ind Malaya
Santalanceae					
Thesium multicaule Ledeb.	NBPGR/RSS–1621	–	3150–3445 m	H	Sibir altaic
Sapindaceae					
Acer acuminatum Wall.ex D. Don[@]	NBPGR/RSS–1024	Mandru	2689–3189 m	T	Reg Himal
A. caesium Wall. ex Brandis[@@VU]	NBPGR/RSS–1010	Mandru	3189–3300 m	T	Reg Himal
A. cappadocicum Gled.[@]	NBPGR/RSS–1012	Mandru	2600–3289 m	T	Asia Min
Aesculus indica (Wall. ex Camb.) Hook.[@]	NBPGR/RSS–1230	Khanor/Bankhor	2800–3100 m	T	Reg Himal
Saxifragaceae					
Bergenia ligulata Haw.Sternb.[@]	NBPGR/RSS–1190	Lao, Pashanbhed	2689–3850 m	H	Reg Himal
B. stracheyi (Hook. f. & Thoms.) Engle.[@VU]	NBPGR/RSS–1254	Lao, Pashanbed	2700–4000 m	H	Reg Himal
Saxifraga diversifolia Wall. ex Ser.[@]	NBPGR/RSS–1590	–	2700–3600 m	H	Reg Himal
S. flagellaris Willd.[@]	NBPGR/RSS–1276	–	3510–4000 m	H	Reg Himal
S. sibrica L.	NBPGR/RSS–1591	–	3100–3550 m	H	Asia bor et Arct
Scrophulariaceae					
Buddleja crispa Benth.[@]	NBPGR/RSS–1379	–	2000–2850 m	S	Reg Himal; Burma
Verbascum thapsus L.	NBPGR/RSS–1310	Jangli tambaku	2000–3523 m	H	Europ; Reg Himal
Smilacaceae					
Smilax vaginata Decne.[@]	NBPGR/RSS–1606	–	2700–3000 m	C	Reg Himal
Solanaceae					
Datura stramanium L.	NBPGR/RSS–1098	Dhatura	2350– 2650m	H	Cosmo Trop et Temp
Nicandra physalodes (L.) Gaertn.	NBPGR/RSS–1639 crucial	–	1800–2100 m	H	S Amer
Nicotiana tabacum L.	NBPGR/RSS–1091	Jangli Tambaku	1800–2600 m	H	Amer; Austr
Physochlaena praealta (Walp.) Miers.@VU	NBPGR/RSS–1022		3700–4000 m	H	Reg Himal
Solanum nigrum L.	NBPGR/RSS–1284	Makoi	2700–3200 m	H	Amerphig
Thymelaeaceae					
Daphne oleoides Schreb.	NBPGR/RSS–1412	–	2000–2600 m	S	Europ; Asia Min
Daphne papyracea Wall. ex Steud.[@]	NBPGR/RSS–1413	–	2000–2500 m	S	Reg Himal
Wikstroemia canescens Meissn.[@@]	NBPGR/RSS–1638	––	2000–3000 m	S	Reg Himal
Ulmaceae					
Ulmus villosa Brandis ex Gamble[@]	NBPGR/RSS–1630	–	2200–2800 m	T	Ind or Asia Temp
U. wallichiana Planch[@@EN]	NBPGR/RSS–1305	Mahun	2490–2790 m	T	Ind or

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
Urticaceae					
Girardinia diversifolia (Link) Friis	NBPGR/RSS–1458	Zarahan	2000–2800 m	H	Ind or Malaya
Pilea scripta (Buch.-Ham. ex Don) Wedd[@]	NBPGR/RSS–1636	–	1800–2000 m	H	Reg Himal
P. umbrosa Wedd.[@]	NBPGR/RSS–1637	–	1850–2650 m	H	Reg Himal
Urtica dioica L.	NBPGR/RSS–1306	Bicchu buti	2275–3154 m	H	Reg bor Temp
U. parviflora Roxb.[@]	NBPGR/RSS–1631	–	2000–3000 m	H	Reg Himal
Verbenaceae					
Verbena officinalis L.	NBPGR/RSS–1311	–	2550–3115 m	H	China AsiaTemp
Violaceae					
Viola biflora L.	NBPGR/RSS–1608	Banfsha	2800–3800 m	H	Reg bor Temp
V. canescens Wall. ex Roxb.[@]	NBPGR/RSS–1315	Banshka	2700–3250 m	H	Reg Himal; Ind or Malaya China
V. pilosa Blume	NBPGR/RSS–1351	–	2500–3500 m	H	Ind or Malaya China
V. serpens Wall. ex Roxb.	NBPGR/RSS–1030	Banshka	2800–3600 m	H	Ind or Malaya China
Vitaceae					
Parthenocissus semicordata (Royle) Planch.[@@]	NBPGR/RSS–1525	Kramru	2000–2700 m	S	Ind or
Xanthorrhoeaceae					
Eremurus himalaicus Baker[@@]	NBPGR/RSS–1434	–	2600–3600 m	H	Reg Himal
Zingiberaceae					
Hedychium spicatum Sm.[@]	NBPGR/RSS–1461	–	2200–3000 m	H	Reg Himal
Roscoea alpina Royle[@]	NBPGR/RSS–1542	–	2500–3500 m	H	Reg Himal
GYMNOSPERMS					
Cupressaceae					
Juniperus communis L.[@]	NBPGR/RSS–1161	Pama, Langshur	3254–3448 m	S	Reg Himal
J. indica Bertol.	NBPGR/RSS–1156	Dhoop	3300–4000 m	S	Soongar; Reg Himal
J. polycarpos C. Koch[@EN]	NBPGR/RSS–1157	Lewar	3465–3800 m	T	Persia; Reg Himal
J. recurva D.Don	NBPGR/RSS–1158	Mant Thelu	3263–3500 m	S	Reg Himal
Ephedraceae					
Ephedra intermedia Schrenk et C.A. Meyer	NBPGR/RSS–1110	Khanna, Chhe	2800–3200 m	S	Centr Asia Himalaya
Ginkgoaceae					
Ginkgo biloba L.	NBPGR/RSS–1457	–	2200–2500 m	T	Japon
Pinaceae					
Abies pindrow Royle[@]	NBPGR/RSS–1023	Krok Rai	2800–3250 m	T	Reg Himal
A. spectabilis (D.Don) Spach[@]	NBPGR/RSS–1017	–	2800–3000 m	T	Reg Himal
Cedrus deodara (Roxb. ex D.Don) G. Don[@]	NBPGR/RSS–1076	Kelmang, Devdar	2026–3285 m	T	Reg Himal
Picia smithiana (Wall.)Bioss.[@]	NBPGR/RSS–1221	Rou, Royang Tosh, Rai	2981–3350 m	T	Reg Himal
Pinus gerardiana Wall ex D.Don[@]	NBPGR/RSS–1224	Ree, Chiri, Neoza	2250–2890 m	T	Afghan
P. roxburghii Sarg.[@]	NBPGR/RSS–1212	Chil	2000–2600 m	T	Reg Himal
P. wallichiana A.B. Jackson[@]	NBPGR/RSS–1215	Lim, Kail	2250–3527 m	T	Reg Himal
Taxaceae					
Taxus baccata L.[EN]	NBPGR/RSS–1298	Yamdal, Rakhal	2400–3550 m	T	Reg Bor Temp
PTERIDOPHYTES					
Adiantaceae					
Adiantum capillus–veneris L.	NBPGR/RSS–1321	Hansraj, Pursha	2640–2930 m	F	S Europ
A. pedatum L.	NBPGR/RSS–1322	–	2610–3550 m	F	Afghan India Border
A. venustum Don	NBPGR/RSS–1320	Hansraj, Sunraj	2680–2850 m	F	Afgan Ind
Aspleniaceae					
Asplenium dalhousiae Hk.	NBPGR/RSS–1354	–	2200–2800 m	F	–
A. fontanum (L.) Bernh.	NBPGR/RSS–1358	–	2100–2400 m	F	Asia centr
A. laciniatum D. Don	NBPGR/RSS–1355	–	1800–2300 m	F	India bor; Ceylon; Japon
A. septentrionale (L.) Hoffm.	NBPGR/RSS–1359	–	2100–3000 m	F	W North Amer; Europ; Asia

Table 2. *Continued.*

TAXA AND FAMILIES	VOUCHER NUMBER	VERNACULAR NAMES	ALTITUDINAL RANGE (M)	LIFE FORM	PHYTOGEOGRAPHIC AFFINITIES
A. tenuicaule Hayata	NBPGR/RSS–1356	–	2200–2800 m	F	–
A. trichomanes L.	NBPGR/RSS–1357	–	3151–3410 m	F	–
Athyriaceae					
Athyrium attennuatum (Wall. ex Clarke) Tagama	NBPGR/RSS–1365	–	2000–2680 m	F	Kashmir;China (Sikang)
A.mackinnonii (C.Hope) C.Chr.	NBPGR/RSS–1366	–	2000–2500 m	F	Ind bor
A. rupicola (C.Hope) C.Chr.	NBPGR/RSS–1367	–	2380–3950 m	F	India bor
Deparia allantodioides Kato.	NBPGR/RSS–1414	–	1850–3050 m	F	–
D. japonica (Thunb.) M.Kato	NBPGR/RSS–1415	–	2400–2800 m	F	–
Cryptogammiaceae					
Cryptogramma brunoniana Wall. ex Hook. & Grev.	NBPGR/RSS–1403	–	3100–3400 m	F	Reg Himal; China austr; Japon
Onychium contiguum Wall. ex Hope	NBPGR/RSS–1519	–	2300–2700 m	F	–
Cystopteridaceae					
Cystopteris fragilis (L.) Bernh.	NBPGR/RSS–1411	–	2400–3200 m	F	–
Gymnocarpium fedtschenkoanum Pojark	NBPGR/RSS–1459	–	2000–3000 m	F	Tazakistan
Davalliaceae					
Araiostegia delavayi (Bedd. ex Clarke & Baker) Ching	NBPGR/RSS–1341	–	2100–3750 m	F	India bor; China austr
A. pseudocystopteris (Kunze) Copel.	NBPGR/RSS–1342	–	2100–3650 m	F	Europ
Dennstaedtiaceae					
Pteridium revolutum (Blume) Nakai	NBPGR/RSS–1566	–	2500–2900 m	F	–
Dryopteridaceae					
Dryopteris barbigera (Moore) Kuntze	NBPGR/RSS–1420	–	2800–3500 m	F	Afgan; India bor; Yunnan
D. ramosum ***(C.Hope) C.Chr.***	NBPGR/RSS–1308	–	2200–3080 m	F	Ind bor
D. redactopinnata Soumen K.Basu & Panigrahi	NBPGR/RSS–1422	–	2700–3000 m	F	Sikkim (India)
D. rosthornii (Diels) C.Chr.	NBPGR/RSS–1423	–	2700–2900 m	F	Ind bor
Polystichum bakerianum (Atkin. ex Cl.) Diels	NBPGR/RSS–1552	–	2600–2900 m	F	–
P. piceopaleaceum Tagawa	NBPGR/RSS–1553	–	2500–2700 m	F	Formosa (Taiwan)
P. squarrosum (D.Don) Fee	NBPGR/RSS–1554	–	2600–2900 m	F	–
P. thomsonii (Hook.f.) Bedd.	NBPGR/RSS–1555	–	2500–2900 m	F	Ind bor
P. yunnanense Christ	NBPGR/RSS–1556		2700–3100 m	F	Reg Himal
Equisetaceae					
Equisetum arvense L.	NBPGR/RSS–1431	–	2690–2900 m	F	Alaska
E. diffusum D. Don	NBPGR/RSS–1432	–	2470–2900 m	F	–
E. giganteum L.	NBPGR/RSS–1433	–	3100–3500 m	F	–
Ophioglossaceae					
Botrychium ternatum (Thunb.) Sw.	NBPGR/RSS–1373	–	2000–2900 m	F	Japon Himal; Argent
Osmundaceae					
Osmunda claytoniana L.	NBPGR/RSS–1521	–	2500–2800 m	F	–
Polypodiaceae					
Lepisorus morrisonensis (Hayata) H.Ito	NBPGR/RSS–1491	–	2800–3000 m	F	–
L. nudus Ching	NBPGR/RSS–1492	–	3100–3350 m	F	–
Pteridaceae					
Cheilanthes dalhousiae Hk.[@]	NBPGR/RSS–1385	–	2200–2950 m	F	Reg Himal
Pteris cretica L.	NBPGR/RSS–1567	Baran	2200–2500 m	F	–
P. pseudoquadriaurita Khullar [@]	NBPGR/RSS–1568	–	2400–2800 m	F	Reg Himal
Selaginellaceae					
Selaginella jacquemontii Spring	NBPGR/RSS–1595	–	2000–2750 m	F	–

Table 3. Comparative studies of dominant families in NW Himalaya.

S. NO.	PRESENT STUDY	KINNAUR	L/S	GHNP	KULLU	PIN VALLEY
1.	Compositae	Compositae	Compositae	Compositae	Compositae	Poaceae
2.	Poaceae	Poaceae	Poaceae	Poaceae	Poaceae	Compositae
3.	Rosaceae	Rosaceae	Brassicaceae	Ranunculaceae	Leguminosae	Leguminosae
4.	Lamiaceae	Leguminosae	Leguminosae	Rosaceae	Lamiaceae	Brassicaceae
5.	Apiaceae	Lamiaceae	Rosaceae	Liliaceae	Rosaceae	Polygonaceae
6.	Ranunculaceae	Ranunculaceae	Scrophulariaceae	Lamiaceae	Ranunculaceae	Scrophulariaceae
7.	Leguminosae	Polygonaceae	Ranunculaceae	Leguminosae	Polygonaceae	Caryophyllaceae
8.	Brassicaceae	Brassicaceae	Apiaceae	Brassicaceae	Brassicaceae	Ranunculaceae
9.	Polygonaceae	Apiaceae	Polygonaceae	Apiaceae	Apiaceae	Lamiaceae
10.	Caryophyllaceae	Caryophyllaceae	Cyperaceae	Cyperaceae	Cyperaceae	Boraginaceae