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, Phagari, 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.), Polygonaceae (20 spp.) and Caryophyllaceae (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.) and Polypodiaceae (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.

DOI: 10.15560/10.4.740

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, aspers and altitudinal ranges. The Himalayan region is a rich repository of species 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 Mehratra 1994; Kaur and Sharma 2004; Singh and Sharma 2006; Sharma and Rana 2013). Literature review reveals a few extensive studies on floristic diversity of Kinnair district of Himachal Himalaya (Chawla et al. 2012; Negi and Chauhan, 2009). The Sangla valley of Kinnair 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, Phagali, 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
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; Chowdery 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 Compositae (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%); Polygonaceae (20 spp.; 3.1%) and Caryophyllaceae (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.) represented 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).
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 serecordata, Pedicularis bicornuta, Pleusospermum brunonii, Potentilla atrosanguinea, Rhododendron anthropogon, Rhododendron lepidotum, Saussurea costus, Saussurea albescens, Stellaria media, Trillium govanianum, Vicia bakeri and Wikstroemia canescens etc. Some notable near-endemics were Acer cappadocicum, Bupleurum candolei, Cortia depressa, Selinum tenuifolium, Ligularis amplexicaulis, Impatiens glandulifera, Berberis jaeschkeana, Arnebia benthami, Gentiana argentea, Iris hookeriana, Phlomis bracteosa, Fritillaria roylei, Morina coulteriana, Meconopsis aculeata, 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 benthami, 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.
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; Dhalwal and Sharma, 1999; Chandraekar 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, Doctylorhiza hatagirea, Jurinella macrocephala and Picrorrhiza 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 (Cluche 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.

**Literature Cited**

Aswal, B.S. and B.N. Mehrotra. 1994. *Flora of Lahul-Spiti (A Cold Desert in North-West Himalaya)*. Dehradun: Bishen Singh Mahinder Pal Singh. 761 pp.

Chandraekar, K. and S.K. Srivastava. 2009. *Flora of Pin Valley National Park, Himachal Pradesh*. Kolkata, India: Botanical Survey of India. 296 pp.

Champion, H.G. and S.K. Seth. 1968. *A Revised Survey of the Forest Types of India*. Delhi: Manager of Publications, Govt. of India Press. 404 pp.

Chawla, A., O. Parkash, V. Sharma, S. Rajkumar, Brij Lal Gopichand, R.D. Singh and A.K. Thukral. 2012. Vascular plants, Kinnaur, Himachal Pradesh, India. *Check List* 9(3): 321–348 (http://www.checklist.org.in/getpdf/SL016-11).

Chowdhery, H.J. and B. M. Wadhwa. 1984. *Flora of Himachal Pradesh*. Vol. 1–3. Calcutta: Botanical Survey of India. 860 pp.

Clube, C., M. Hamilton and M. Corcoran. 2010. Using the global strategy for plant conservation to guide conservation implementation in the UK Overseas Territories. *Kew Bulletin* 65: 509–517 (doi: 10.1007/s12225-011-9247-2).

Collett, H. 1902. *Flora Similensis*. Dehradun: Bishen Singh Mahender Pal Singh. 652 pp. (Reprinted 1971; Calcutta and Simla: Thacker Spink & Co.)

Dhalwal, D.S. and M. Sharma. 1999. *Flora of Kullu District, Himachal Pradesh*. Dehradun: Bishen Singh Mahender Pal Singh. 744 pp.

Dutt, B. and V. M. Negi. 2007. Species composition, diversity and distribution pattern of medicinal and aromatic plants of Sangla Valley in Kinnaur. *Journal of Himalayan Ecology* 34(1): 19.

Fu, C.X. Hua, J. Li, Z. Pu and J. Chen. 2006. Elevational patterns of frog species richness and endemic richness in the Hengduan Mountains, China: Geometric constraints, area and climate effects. *Ecography* 29(6): 919–927 (doi: 10.1111/j.2006.0906-7590.04802.x).

Halloy, S.R.P. and A.F. Mark. 2003. Climate-change effects on alpine plant biodiversity: A New Zealand perspective on quantifying the threat. *Arctic, Antarctic and Alpine Research* 35(2): 248–254.

IPNI. 2009. *International Plant Name Index*. Electronic database accessible at http://www.ipni.org/ipni/plantnamesearchpage.do. Captured on 16 July 2009.

Jain S.K. and R.R. Rao. 1977. *Handbook of Field and Herbarium Methods*. New Delhi: Today and Tomorrow's Printers and Publishers.

Kachroo, P.B.L. Sapru and U. Dhar. 1977. *Flora of Ladakh*. Dehradun: Bishen Singh Mahender Pal Singh. 172 pp.

Kaur, H. and M. Sharma. 2004. *Flora of Sirmour, Himachal Pradesh*. Dehradun: Bishen Singh Mahender PalSingh. xiii + 770 pp.

Kazakis, G., D. Ghosn, I.N. Vogiatzakis and V.P. Papanastasis. 2007. *Vascular plant diversity and climate change in the alpine zone of the Lefka Ori*. Biodiversity and Conservation 16: 1603–1615.

Khan, S.M. 2012. *Plant communities and vegetation ecosystem services in the Naran Valley, Western Himalaya*. PhD Thesis, University of Leicester.

Khan, S.M., S.E. Page, H. Ahmad and D.M. Harper. 2013. Sustainable utilization and conservation of plant biodiversity in montane ecosystems: The western Himalayas as a case study. *Annals of Botany* 112(3): 479–501 (doi: 10.1093/aob/mct125).

Levine, M.J., M. Vila, C.M.D. Antonio, J.S. Dukes, K. Grigulis and S. Lavord. 2003. Mechanisms underlying the impacts of exotic plant invasions. *The Royal Society* 270(1517): 775–781 (doi: 10.1098/ rspb.2003.2327).

Mittermeier, R.A., P.L. Gil, M. Hoffmann, J. Pilgrim, T. Brooks, C.G. Mittermeier, J. Lamoreux and G.A.B.D. Fonseca. 2004. *Hotspots Revisited: Earth’s Biologically Richest and Most Endangered Terrestrial Ecoregions*. Washington: Conservation International. 392 pp.

Murti, S.K. 2001. *Flora of Cold Deserts of Western Himalaya*. Vol. 1. Monocotyledons. Calcutta: Botanical Survey of India. 452 pp.

Myers, N., R.A. Mittermeier, C.G. Mittermeier, J. Lamoreux and G.A.B.D. Fonseca. 2000. *Biodiversity hotspots for conservation priorities*. *Nature* 403: 853–858 (doi: 10.1038/35002501).

Nair, N.C. 1977. *Flora of Bashahr Himalaya*. Hissar: International Bioscience Publisher. 360 pp.

Nayar, M.P. 1996. “Hot spots” of Endemic Plants of India, Nepal and Bhutan. *Thiruvanthapuram: Tropical Botanic Garden and Research Institute*. 252 pp.

Negi, V.M., B. Dutt and N.S. Chauhan. 2007. Threatened medicinal and aromatic plants wealth of Sangla Valley in Himachal Himalaya — causes and remedies. *International Journal of Ecology and Environmental Sciences* 33(2–3): 219–223.

Negi, V. M. and N.S. Chauhan. 2009. Medicinal and aromatic plants wealth of a tribal district Kinnaur in Himachal Himalayas.
Table 2. Table showing species inventory in Sangla valley. Abbreviations used: Afr=Africa; Alp=Alpine; Am=America; Amph=Amphigaea; Amur=N Amur; Asia=Asia; Austr=Australia; bor=Boreal; bor=Boreal; Bor=Boreal; Boreal; Cau=Caucasus; Cent=Central; Cosm=Cosmopolitan; Europe=Europe; et=And; Geront=Gerontia (Greece); Himal=Himalayan; Hisp=Hispanic (Latin America); Ind=India; Med=Mediterranean; Min=Minor; Mongolia=Mongolia; N.Zel=New Zealand; Occ=Occidental (Western hemisphere); or=origin; Ori=Oriental; Reg=Region; Sib=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 | ALTITUDE RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|-------------------|----------------|------------------|-------------------|-----------|---------------------------|
| **ANGIOSPERMS**   |                |                  |                   |           |                           |
| Acanthaceae       |                |                  |                   |           |                           |
| Dicliptera chinesis fuscata | NBPG-RSS-1421 | –                | 2200–3200 m | H         | Asia Trop                 |
| Peperomia alata (Wall. ex Nees) | NBPG-RSS-1572 | Kunda            | 3122–3451 m | H         | Java                      |
| Adoxaceae         |                |                  |                   |           |                           |
| Viburnum cinifolium D. Don* | NBPG-RSS-1313 | Bhatni, Kimota   | 2680–3445 m | S         | Reg Himal                 |
| V. foetum Decne.*  | NBPG-RSS-1634 | –                | 2000–3500 m | S         | Reg Himal                 |
| V. grandiflorum Wall. ex DC.* | NBPG-RSS-1635 | –                | 2000–3500 m | S         | China; Reg Himal           |
| Amaryllidaceae    |                |                  |                   |           |                           |
| Amaryllidaceae    |                |                  |                   |           |                           |
| Allium humile Kunth* | NBPG-RSS-1329 | Pharna           | 3000–3600 m | H         | Reg Himal                 |
| A. jacquemontii Kunth* | NBPG-RSS-1330 | –                | 3500–4000 m | H         | Europ; Orins; Sibir        |
| A. stracheyi Baker* | NBPG-RSS-1032 | –                | 3000–3150 m | H         | Reg Himal                 |

*Forrest 135 (6): 838–852.

Noak, A. S. Nowak and M. Nobis. 2011. Distribution patterns, ecological characteristic and conservation status of endemic plants of Tadzalistan — a global hotspot of diversity. Journal for Nature Conservation 19(5): 296–305 (doi: 10.1016/j.jnc.2011.05.003).

Phani Kumar, G., R. Kumar, OP Chaurasia and SB. Singh. 2011. Current status and potential prospects of medicinal plant sector in trans-Himalayan Ladakh. Journal of Medicinal Plants Research 5(14): 2929–2940 (http://www.academicjournals.org/journal/JMPR/article-full-text-pdf/9CEED9186665).

Polulin, O. and A. Stainton. 1984. Flowers of the Himalaya. Delhi: Oxford University Press. 580 pp.

Rana, J.C., A. Singh, Y. Sharma, K. Pradheep and N. Mendiratta. 2010. Biodiversity (Plants/Animals/Microbes/Bees) of the Indian Himalayan region — an overview. Indian Journal of Genetics 72(2): 115–129.

Samant, S.S. and U. Dhar. 1997. Diversity, endemism and economic potential of wild edible plants of Indian Himalaya. International Journal of Sustainable Development and World Ecology 4: 179–191.

Sharma, B.D. and J.C. Rana. 2005. Plant Genetic Resources of Western Himalaya: Status and Prospects. Dehradun: Bishan Singh Mahaendra Singh. 457 pp.

Sharma, P. and Samant, S.S. 2014. Assessment of resource diversity and utilization pattern in Nargu Wildlife Sanctuary in Himachal Pradesh, NW Himalaya. International Journal of Biodiversity and Conservation 6(1): 17–27.

Sharma, S.K. and J.C. Rana. 2013. Biodiversity (Plants/Animals/Microbes/Bees) of the Indian Himalayan region — an overview. Indian Journal of Genetics 72(2): 115–129.
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------|----------------|------------------|----------------------|----------|---------------------------|
| **Anacardiaceae** |                |                  |                      |          |                           |
| Cotinus coggyria Scop | NBPRG/RSS–1399 | –                | 1800–2000 m H        |          | Reg Medit; Oriens         |
| **Apiaceae**      |                |                  |                      |          |                           |
| Angelica glauca Edgew.** | NBPRG/RSS–1037 | Sapal, Chaura    | 2800–3510 m H        |          | Reg Himal                 |
| Bunium persicum (Bois.) Redtsch** | NBPRG/RSS–1061 | Kalagira          | 2900–3200 m H        |          | Persia                     |
| Bupleurum candollei Wall.ex DC.** | NBPRG/RSS–1062 | Kalgewar          | 3500–4150 m H        |          | Reg Himal                 |
| B. falcatum L.** | NBPRG/RSS–1049 | Kalgewar, Jangli jira | 2670–3455 m H |          | Reg Himal                 |
| B. hamiltonii Balakr | NBPRG/RSS–1050 | –                | 3117–3445 m H        |          | Persia                     |
| B. jucundum Kurz** | NBPRG/RSS–1381 | –                | 2800–3399 m H        |          | Reg Himal bor; Occ; Amur  |
| B. lanceolatum Wall. ex DC. | NBPRG/RSS–1417 | –                | 2800–3400 m H        |          | Nepal; Ind; Reg Himal     |
| B. longicaule Wall. ex DC. | NBPRG/RSS–1052 | –                | 2750–3448 m H        |          | Reg Himal                 |
| Carum carvi L. | NBPRG/RSS–1074 | Zira, Shingu Jeera | 3000–3550 m H |          | Europ Oriens; Asia        |
| Chaerophyllum aromaticum L. | NBPRG/RSS–1078 | –                | 3100–3200 m H        |          | Europ                      |
| C. reflexum Lindl. (Pri) | NBPRG/RSS–1067 | Ampang, Shakrag  | 3100–3670 m H        |          | Reg Himal                 |
| C. villosum Wall.ex DC.** | NBPRG/RSS–1068 | –                | 2770–3400 m H        |          | Reg Himal                 |
| Cortia depressa (Don) Norm.** | NBPRG/RSS–1087 | –                | 3900–4310 m H        |          | Reg Himal                 |
| Ferula jaeschkeana (L.)VatkeVU | NBPRG/RSS–1121 | Khaidmo          | 3400–3950 m H        |          | Himalaya Border Occ Turk  |
| Heracleum candicans Wall. ex DC. | NBPRG/RSS–1319 | Patrala          | 2690–3501 m H        |          | Reg Himal                 |
| H. lanatum Michx.** | NBPRG/RSS–1145 | Patrala          | 2780–3516 m H        |          | Reg Himal                 |
| H. thomsonii Cl** | NBPRG/RSS–1141 | Aschak, Karpo, Agu | 2700–3520 m H |          | Reg Himal                 |
| Pimpinella tomentosa Dalzell ex C.B. Clarke** | NBPRG/RSS–1223 | –                | 2000–3000 m H        |          | Reg Himal                 |
| Pleuroserpermum bronniou DC. CB Clarke** | NBPRG/RSS–1226 | Nesar, Losar     | 3400–3800 m H        |          | Reg Himal                 |
| P. candollii DC. Cl** | NBPRG/RSS–1198 | Nesar            | 3460–3800 m H        |          | Reg Himal                 |
| Selinum tenuiwallum Wall. | NBPRG/RSS–1279 | Mathosal         | 3100–3400 m H        |          | Reg Himal                 |
| S. vaginatum (Edgew.) C.B. Clarke | NBPRG/RSS–1270 | Butkeshi, Mathosla | 2710–3500 m H |          | Reg Himal                 |
| S. wallichianum DC. Raizada & H.O. Saxena | NBPRG/RSS–1271 | Bhurtkesi        | 3100–3400 m H        |          | Reg Himal                 |
| Torilis japonica (Houtt.) DC. | NBPRG/RSS–1623 | –                | 1900–3000 m H        |          | Japon                      |
| **Apopseaeae**    |                |                  |                      |          |                           |
| Vincetoxicum hirundinaria Medik | NBPRG/RSS–1314 | –                | 3117–3400 m H        |          | Europ; Reg Cauc; Asia     |
| **Aqifoliiaceae** |                |                  |                      |          |                           |
| Ilex diphyrae Wall.** | NBPRG/RSS–1152 | Tarkuch           | 1900–2800 m T        |          | Reg Himal                 |
| **Araceae**       |                |                  |                      |          |                           |
| Arisaema flavum (Forss.) Scott | NBPRG/RSS–1042 | Jemul            | 2708–3154 m H        |          | Arab                       |
| A. jacquemontii Bl** | NBPRG/RSS–1001 | Kiraaloo         | 2575–3523 m H        |          | Reg Himal                 |
| A. tortuosum Wall. Schott | NBPRG/RSS–1347 | –                | 1800–2300 m H        |          | Reg Himal                 |
| Typhonium diversifolium Wall. ex Schott | NBPRG/RSS–1629 | –                | 3100–3450 m H        |          | Ind Sub                    |
| **Araliaceae**    |                |                  |                      |          |                           |
| Hedera nepalensis K. Koch | NBPRG/RSS–1460 | –                | 1800–2550 m C        |          | Europ; Afr Bor; Asia Temp |
| **Asparagaceae**  |                |                  |                      |          |                           |
| Asparagus filicinus Buch.-Ham. ex D. Don(Sec) | NBPRG/RSS–1045 | Sansbai, Elipali  | 2600–3263 m S        |          | Reg Himal; Burma           |
| Polygonatum cirrhifolium Wall. Ex Royle** | NBPRG/RSS–1229 | Meda, Salam–misri | 2800–3520 m H |          | Reg Himal Asia bor         |
| P. multiflorum L.** | NBPRG/RSS–1206 | –                | 2590–3610 m H        |          | Europ Asia bor Afghan      |
| P. verticillatum L.** | NBPRG/RSS–1214 | Salam–misri      | 2808–3400 m H        |          | Europ Asia bor Rhm         |
| **Balsaminaceae** |                |                  |                      |          |                           |
| Impatiens amplexicaulis Edgew. * | NBPRG/RSS–1471 | –                | 1800–3200 m H        |          | Reg Himal                 |
| l. brachycentra Kar. and Kir | NBPRG/RSS–1472 | –                | 2100–3440 m H        |          | Afr Trop Austr (Malawi)    |
| l. edgeworthii Hook.f. | NBPRG/RSS–1475 | –                | 2580–3270 m H        |          | Reg Himal                 |
| l. glandulifera Royle* | NBPRG/RSS–1153 | –                | 3189–3523 m H        |          | Reg Himal                 |
| l. scabrida DC.* | NBPRG/RSS–1150 | Tilpara           | 2575–3560 m H        |          | Reg Himal                 |
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|-------------------|---------------|------------------|-----------------------|-----------|---------------------------|
| *I. sulcata* Wall. | NBPG/RSS–1151 | –                | 2840–3423 m           | H         | Reg Himal                 |
| *I. thomsonii* Hook. f. | NBPG/RSS–1474 | –                | 3000–3800 m           | H         | Reg Himal                 |
| Berberidaceae     |               |                  |                       |           |                           |
| *Berberis aristata* L. | NBPG/RSS–1056 | Kashmal          | 2292–3359 m           | S         | Ind or                     |
| *B. chitria* Edwards | NBPG/RSS–1368 | –                | 2800–3400 m           | S         | Reg Himal                 |
| *B. coriaria* Royle ex Lindl. | NBPG/RSS–1048 | 2300–2700 m | S                       | Reg Himal |
| *B. jaeschkeana* Schneid. | NBPG/RSS–1051 | Kya'mali         | 2400–3416 m           | S         | Reg Himal                 |
| *B. lycium* Royle | NBPG/RSS–1053 | Khapchho, Khashmal | 2692–3260 m          | S         | Reg Himal                 |
| *B. vulgaris* R. Br. | NBPG/RSS–1055 | –                | 2900–3122 m           | H         | Europ Asia Temp           |
| *Sinopodophyllum hexandrum* (Royle) T.S. Ying | NBPG/RSS–1228 | Papra, Bankakri | 3189–4000 m          | H         | Reg Himal                 |
| Betulaceae        |               |                  |                       |           |                           |
| *Betula utilis* D.Don | NBPG/RSS–1058 | Bhuj, BhojShakpang | 2800–3500 m          | T         | Reg Himal Japon           |
| Boraginaceae      |               |                  |                       |           |                           |
| *Arnebia benthamii* Wall. ex G. Do Johnsteca | NBPG/RSS–1043 | Masari, Ratanjot | 3400–4150 m           | H         | Reg Himal                 |
| *Cynoglossum glauciadium* Wall. ex Benth. | NBPG/RSS–1408 | –                | 2000–3500 m           | H         | Ind Or Burma              |
| *C. lanceolatum* Forsk. | NBPG/RSS–1409 | –                | 2200–3000 m           | H         | Arabia                     |
| *C. microglochin* Benth. | NBPG/RSS–1410 | –                | 2876–3345 m           | H         | Reg Himal                 |
| *C. wallichii* G. Don. | NBPG/RSS–1093 | Kocci-Shuver     | 2000–3450 m           | H         | Ind or Burma              |
| *Eritrichium canum* (Benth.) Kitamura | NBPG/RSS–1116 | –                | 2700–3445 m           | H         | Reg Himal                 |
| *E. fruticosum* Phil. | NBPG/RSS–1439 | –                | 3250–3399 m           | H         | Ameref                     |
| *E. nanum* (Vill.) Schrad** | NBPG/RSS–1438 | –                | 3185–3501 m           | H         | Reg bor; Reg Himal        |
| *Hackelia uncinata* (Royle Ex Benth.) Fischer | NBPG/RSS–1143 | –                | 3260–3500 m           | H         | Reg Himal                 |
| *Microula sikkimensis* Hemsl. | NBPG/RSS–1506 | –                | 2900–3550 m           | H         | Reg Himal                 |
| *Myosotis alpestris* F.W.Schmidt | NBPG/RSS–1509 | –                | 3185–3250 m           | H         | Europ                      |
| *M. sylvatica* Ehrh. ex Hoffm. | NBPG/RSS–1508 | –                | 1800–4000 m           | H         | Europ                      |
| Brassicaceae      |               |                  |                       |           |                           |
| *Alliaria petiolata* (M.Bieb.) Cavara & Grande | NBPG/RSS–1328 | –                | 2200–3100 m           | H         | Europ; Asia Afr           |
| *Arabis amplexicaulis* Edgew. | NBPG/RSS–1339 | –                | 2600–3448 m           | H         | Reg Himal                 |
| *A. thaliana* (L.) Heynh | NBPG/RSS–1040 | Thales cress     | 3000–3800 m           | H         | Reg Bor Temp              |
| *Arabis amplexicaulis* Edgew. | NBPG/RSS–1340 | –                | 2692–3450 m           | H         | Reg Himal                 |
| *Brassica nigra* (L.) K. Koch. | NBPG/RSS–1374 | –                | 1800–2400 m           | H         | Mediterr; Asia            |
| *B. olereace L.* | NBPG/RSS–1375 | –                | 1800–2600 m           | H         | Europ pcc; Cosmop         |
| *Capsella bursa-pastoris* (L.) Medik. | NBPG/RSS–1072 | Girahkat         | 2000–3400 m           | H         | Reg Temp                   |
| *Cardamine hirsuta* L. | NBPG/RSS–1382 | –                | 1800–2100 m           | H         | Reg temp et subtrop       |
| *C. impatiens* L. | NBPG/RSS–1383 | –                | 1900–4100 m           | H         | Europ; Asia bor; Reg Himal |
| *Descaria junia* sophia (L.) Webb. & Berth. | NBPG/RSS–1100 | –                | 2850–3330 m           | H         |                           |
| *Erysimum melicientae* Dunn | NBPG/RSS–1441 | –                | 1900–3000 m           | H         | Ind or (Kashmir)          |
| *Lepidium apetalum* Wild. | NBPG/RSS–1167 | –                | 2876–3345 m           | H         | Russia Sibir              |
| *L. capitatum* Hook.f. & Thomson | NBPG/RSS–1489 | –                | 2650–3200 m           | H         | Reg Himal                 |
| *L. pinnatifidum* Lede. | NBPG/RSS–1490 | –                | 3200–3400 m           | H         | Reg Cau                    |
| *L. virginicum* L. | NBPG/RSS–1488 | –                | 1900–2400 m           | H         | USA                       |
| *Nasturtium officinale* R.Br. | NBPG/RSS–1185 | –                | 2800–3300 m           | H         | Reg bor Temp              |
| *Rorippa indica* (L.) Hiern | NBPG/RSS–1577 | –                | 1800–2100 m           | H         | Europ; Asia; Af; Amer     |
| *Sisymbrium irio* L. | NBPG/RSS–1283 | Khurbkalan       | 2750–3146 m           | H         | Europ; Asia et Afr bor    |
| *S. orientale* L. | NBPG/RSS–1604 | –                | 2575–2850 m           | H         | Europ; Oriens; Reg Himal  |
| *Thlaspi arvense* L. | NBPG/RSS–1622 | –                | 2100–4200 m           | H         | Europ; Asia bor           |
| *Turritis glabra* L. | NBPG/RSS–1628 | –                | 1900–2500 m           | H         | Europ; Asia; N Afr        |
| Campanulaceae     |               |                  |                       |           |                           |
| *Campanula pallida* Wall. | NBPG/RSS–1070 | Nepali bikh     | 2550–3090 m           | H         | Ind or Afghan             |
| *Codonopsis viridis* Wall.* | NBPG/RSS–1085 | Sardandi, Khiri | 2800–3300 m           | H         | Reg Himal                 |
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------|----------------|-------------------|----------------------|-----------|---------------------------|
| Cyananthus lobatus Wall. ex Benth. | NBPG/RSS–1405 | – | 3300–4200 m | H | Ind or |
| Compositae | | | | | |
| Achillea millefolium L. | NBPG/RSS–1025 | Sajium | 2800–3600 m | H | Europ |
| Ainsliaea acuta DC. | NBPG/RSS–1031 | Kuru-buti | 2700–3300 m | H | Reg Himal |
| A. latifolia (D. Don) Sch.-Bip. | NBPG/RSS–1326 | – | 2200–3100 m | H | Reg Himal |
| Anaphalis busua (Buch.-Ham. ex Don) | NBPG/RSS–1034 | Dhareu | 2700–3850 m | H | Reg Himal |
| A. contorta (D.Don) Hk | NBPG/RSS–1014 | – | 2700–3200 m | H | Reg Himal |
| A. m. (Spreng) Hand-Mazz. | NBPG/RSS–1016 | Monpig | 2700–3850 m | H | Reg Himal |
| A. royleana DC. | NBPG/RSS–1005 | Kirchee | 2750–3900 m | H | Reg Himal |
| A. triplinervis (Sims.) C.B. Clarke | NBPG/RSS–1018 | Yaktso | 2900–3800 m | H | Reg Himal |
| Arctium lappa L. | NBPG/RSS–1335 | – | 2700–3200 m | H | Asia; Amer |
| Artemisia annua L. | NBPG/RSS–1044 | – | 2876–3448 m | H | Reg Himal |
| A. biennia Willd. | NBPG/RSS–1334 | – | 2400–3100 m | H | Reg Himal |
| A. capillaris Thunb. | NBPG/RSS–1011 | – | 2400–2950 m | H | Reg Himal |
| A. indica Willd. | NBPG/RSS–1348 | Titepati | 1800–2450 m | H | Reg Himal |
| A. japonica Thunb. | NBPG/RSS–1015 | – | 2575–3200 m | H | Ind Or Burma |
| A. moorcroftiana Wall. ex DC. | NBPG/RSS–1002 | – | 2500–3400 m | S | Europ Reg Cau; Asia Sibir |
| A. persica Boiss. | NBPG/RSS–1352 | – | 3154–3523 m | H | Reg Himal |
| A. roxburghiana Wall. ex Besser | NBPG/RSS–1349 | – | 1900–2900 m | H | Persia; Afgan |
| A. tournefortiana Rchb. | NBPG/RSS–1350 | – | 2200–3167 m | H | Europ |
| A. vestita Wall.ex DC. | NBPG/RSS–1008 | Jhyang | 2700–3445 m | H | Reg Himal |
| Aster peduncularis Wall. ex Nees | NBPG/RSS–1360 | – | 2000–3100 m | H | Reg Himal |
| A. alpina DC. Willd. | NBPG/RSS–1316 | – | 2600–2800 m | H | Reg Himal |
| A. falconeri (C.B. Clarke) Hutch. | NBPG/RSS–1362 | – | 2690–3345 m | H | Reg Himal |
| Bidens bipinnata L. | NBPG/RSS–1361 | – | 1800–2100 m | H | Reg Himal |
| B. pilosa L. | NBPG/RSS–1369 | – | 2300–2600 m | H | Reg Himal |
| Blumea membranacea DC. | NBPG/RSS–1350 | – | 2400–2950 m | H | Reg Himal |
| Carduus edelbergii Reich.f. | NBPG/RSS–1073 | Tis | 2500–3200 m | H | Reg Himal |
| Cirsium arvense (L.) Scop. | NBPG/RSS–1388 | Kandai | 2450–2900 m | H | Europ; Asia |
| C. wallchii DC. | NBPG/RSS–1082 | – | 2700–3000 m | H | Reg Himal |
| C. falconeri (Hook. f.) Petrak. | NBPG/RSS–1387 | – | 2575–3527 m | H | Reg Himal |
| Conyza stricta Willd. | NBPG/RSS–1393 | – | 2000–2600 m | H | Reg Himal |
| Cotula aurea L. | NBPG/RSS–1399 | – | 2550–2850 m | H | Reg Mediterr; Oriens |
| Cousinia thomsonii Clarke | NBPG/RSS–1090 | – | 3250–3450 m | H | Reg Himal |
| Cremationum arnicoides DC. ex Royle | NBPG/RSS–1340 | – | 3250–3450 m | H | Reg Himal |
| Crepis multicaulis Ledeb. | NBPG/RSS–1401 | – | 2900–3500 m | H | Sibir Altaic |
| C. sancta (L.) Bornm. | NBPG/RSS–1402 | – | 2690–2770 m | H | Europ |
| Echinops cornigerus DC. | NBPG/RSS–1107 | – | 2700–3500 m | H | Reg Himal |
| Erigeron acer L. var. multicaulis (Wall. ex DC.) CL. | NBPG/RSS–1435 | – | 2741–3250 m | H | Europ |
| E. alpiniformis Cronquist | NBPG/RSS–1436 | – | 3500–4200 m | H | Greenland |
| E. alpinus L. | NBPG/RSS–1114 | Bashakar | 3150–3500 m | H | Reg Bor et Arct |
| E. annua (L.) Pers. | NBPG/RSS–1437 | – | 2876–3345 m | H | Canada; Europ |

747
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|-------------------|----------------|------------------|-----------------------|-----------|-----------------------------|
| E. candensis L.   | NBPG/RSS–1104  | Palit            | 2700–2900 m           | H         | Amerphig                    |
| E. multiradiatus (DC.) Benth.ex Clarke | NBPG/RSS–1105  | –                | 3112–3305 m           | H         | Reg Himal                   |
| Galinsoga parviflora Ruiz & Pav. | NBPG/RSS–1132 | Pipul ghas       | 2575–3400 m           | H         | Mexico                      |
| Gnaphalium affine D.Don | NBPG/RSS–1137 | Dhoop            | 2780–3160 m           | H         | Reg Himal                   |
| Hieracium vulgatum Fr. | NBPG/RSS–1466 | –                | 3100–3900 m           | H         | N Europol                   |
| Inula cappa (Buch.-Ham. ex D.Don) DC. | NBPG/RSS–1477 | –                | 1850–2550 m           | H         | Reg Himal; Java China       |
| Jurinella macrocephala (Royle) Aswal et Goel | NBPG/RSS–1162 | Dhoop            | 3050–3900 m           | H         | Reg Himal                   |
| Lactuca dissecta D. Don | NBPG/RSS–1485 | –                | 2100–2600 m           | H         | Reg Himal                   |
| L. dolichophylla Kitam.**| NBPG/RSS–1165 | Gringoli         | 2750–3100 m           | H         | Reg Himal                   |
| L. lessertiana DC.**| NBPG/RSS–1163 | –                | 2740–3510 m           | H         | Reg Himal                   |
| L. macrorhiza (Royle) Hook. f. | NBPG/RSS–1164 | Umbu            | 2876–3505 m           | H         | Reg Himal                   |
| Leucanthemum vulgare Lam. | NBPG/RSS–1495 | –                | 3000–4000 m           | H         | West Asia; Europ            |
| Ligularia amplexicaulis DC.**| NBPG/RSS–1168 | –                | 3200–3400 m           | H         | Reg Himal                   |
| Myriactis nepalensis Less. | NBPG/RSS–1510 | –                | 2000–2650 m           | H         | Reg Himal; Asia Centrf      |
| M. wallichii Less.**| NBPG/RSS–1511 | –                | 2600–3600 m           | H         | Reg Himal                   |
| Picris angustifolia DC. | NBPG/RSS–1539 | –                | 2200–2800 m           | H         | Reg Himal; Asia Centr; Austr|
| P. hieracioides L. | NBPG/RSS–1540 | –                | 3300–3850 m           | H         | Europ; Asia temp; Austr et N Zel |
| Prenanthes brunoniana Wall. Ex. DC. | NBPG/RSS–1233 | Dudhali         | 3100–3600 m           | H         | Reg Himal                   |
| Saussurea albenscens DC.**| NBPG/RSS–1274 | Drapada          | 2810–3320 m           | H         | Reg Himal                   |
| S. costus (Falc.) Lipsch.**| NBPG/RSS–1275 | Kot, Kuth        | 3550–4000 m           | H         | Reg Himal                   |
| S. gossypiphora D. Don**| NBPG/RSS–1264 | Gugghi-badshah   | 3800–4000 m           | H         | Reg Himal                   |
| S. nepalensis Spreg.**| NBPG/RSS–1588 | –                | 3400–3900 m           | H         | Reg Himal                   |
| S. obvallata (DC.) Edgew.**| NBPG/RSS–1266 | Dongar, Barhm kamal, Dodaphoo | 3600–4000 m | H | Reg Himl |
| S. piptathera Edgew.**| NBPG/RSS–1589 | –                | 3100–3509 m           | H         | Reg Himal                   |
| S. roylei CL**| NBPG/RSS–1268 | –                | 3400–3900 m           | H         | Reg Himal                   |
| S. taraxacifolia Wall.ex DC. | NBPG/RSS–1269 | –                | 3400–3900 m           | H         | Reg Himal                   |
| Scorzonera virgata DC. | NBPG/RSS–1277 | –                | 3100–3600 m           | H         | China Mongol                |
| Senecio chrysanthemoides DC. | NBPG/RSS–1280 | Parpal           | 2692–3200 m           | H         | Reg Himal                   |
| S. desfontainel Druce | NBPG/RSS–1262 | –                | 2880–3240 m           | H         | Reg Himal                   |
| S. graciliforus DC.**| NBPG/RSS–1597 | –                | 2400–4600 m           | H         | Reg Himal                   |
| S. kunthianus Wall. | NBPG/RSS–1598 | –                | 2600–3900 m           | H         | Reg Himal                   |
| S. nudicaulis Buch.-Ham. | NBPG/RSS–1596 | –                | 2981–3502 m           | H         | Reg Himal                   |
| Siegesbeckia orientalis L. | NBPG/RSS–1601 | –                | 2000–2500 m           | H         | Cosmos Trop                 |
| Solidago virga–aurea L. | NBPG/RSS–1285 | –                | 3150–3480 m           | H         | Reg Bor Temp                |
| Sonchus asper (L.) Hill | NBPG/RSS–1286 | –                | 2600–3000 m           | H         | Cosmop                      |
| S. oleraceus L. | NBPG/RSS–1267 | Dodak            | 2700–3000 m           | H         | Cosmop                      |
| Tagetes minuta L. | NBPG/RSS–1197 | –                | 2200–2600 m           | H         | Amer trop                   |
| Tanacetum dolichophyllum Kitamura**| NBPG/RSS–1618 | –                | 3000–3800 m           | H         | Mexico                      |
| Taraxacum eriopodum (D. Don) DC. | NBPG/RSS–1619 | –                | 2815–3445 m           | H         | Reg Himal                   |
| T. leucenthum Ledeb. | NBPG/RSS–1620 | –                | 3150–3950 m           | H         | China                       |
| T. officinale Weber | NBPG/RSS–1297 | Dudhi, Dalal, Aachak | 2550–3523 m | H | Reg Temp Bor et Austr |
| Tragopogon gracilis D. Don | NBPG/RSS–1624 | –                | 1850–3200 m           | H         | Reg Himal                   |
| Waldheimia glabra (Decne.) Regel. | NBPG/RSS–1007 | Phillu          | 4050–4550 m           | H         | Tibet Occ                   |
| W. tomentosa (Decne.) Regel | NBPG/RSS–1003 | Phillu          | 3600–4400 m           | H         | Tibet Occ                   |
| Youngia glauca Edgew | NBPG/RSS–1113 | –                | 3345–3600 m           | H         | Reg Temp Asia Bor           |
| Y. japonica (L.) DC. | NBPG/RSS–1046 | –                | 2708–3050 m           | H         | Asia Austr                  |
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------|----------------|------------------|-----------------------|-----------|---------------------------|
| Cannabaceae      |                |                  |                       |           |                           |
| Cannabis sativa L. | NBPG/RSS–1071  | Bhang            | 2000–3170 m           | H         | Asia Centr Himal Bor Occ  |
| Caprifoliaceae    |                |                  |                       |           |                           |
| Abelia grandifolia Villarreal | NBPG/RSS–1317 | –                | 1900–2300 m           | S         | Mediterr                   |
| A. triflora R. Br. ex Wall. | NBPG/RSS–1318 | –                | 1850–4200 m           | S         | Reg Himal                  |
| Lonicera hispida Pall. ex Roem. and Schult. | NBPG/RSS–1498 | –                | 1900–2500 m           | S         | Asia                       |
| L. hypoleuca Decne. | NBPG/RSS–1170 | Kharmu           | 2708–3502 m           | S         | Reg Himal                  |
| L. japonica Thub. | NBPG/RSS–1499 | –                | 1950–2300 m           | S         | E Asia                     |
| L. myrtillus Hook. f. and Thomson | NBPG/RSS–1500 | –                | 2200–3500 m           | S         | Europ; Temp                |
| Morina coulteriana Royle** | NBPG/RSS–1181 | –                | 3300–3625 m           | H         | Reg Himal                  |
| M. longifolia Wall. | NBPG/RSS–1172 | Bishkandara      | 3200–3527 m           | H         | Reg Himal                  |
| Valeriana hardwickii Wall. | NBPG/RSS–1309 | Nakhniani        | 2750–3210 m           | H         | Reg Himal Malaya           |
| Caryophyllaceae   |                |                  |                       |           |                           |
| Arenaria griffithii Boiss. | NBPG/RSS–1346 | –                | 2266–3120 m           | H         | Tibet; Afghan              |
| A. festucaeides Benth.** | NBPG/RSS–1343 | –                | 2800–3550 m           | H         | Reg Himal                  |
| A. kansuensis Maxim | NBPG/RSS–1344 | –                | 3800–4200 m           | H         | China                      |
| C. cerastoides (L.) Britton. | NBPG/RSS–1077 | –                | 2800–3400 m           | H         | Euro; Asia                 |
| C. glomeratum Thuill. | NBPG/RSS–1346 | –                | 2596–3527 m           | H         | Reg Himal                  |
| Dianthus angulatus Royle | NBPG/RSS–1416 | –                | 2794–3150 m           | H         | Reg Himal                  |
| Gypsophila cerasoides D. Don° | NBPG/RSS–1139 | –                | 2500–3300 m           | H         | Reg Himal                  |
| Minuartia kashmirica Mattf.° | NBPG/RSS–1508 | –                | 1850–4000 m           | H         | Mexico; Euro; Asia         |
| Silene gangotriana Pursh., D.K.Singh & Lakshmin° | NBPG/RSS–1602 | –                | 3200–3527 m           | H         | Reg Himal                  |
| S. indica (Roxb.) Roxb. ex Oth°° | NBPG/RSS–1603 | –                | 2100–2950 m           | H         | Reg Himal                  |
| S. vulgaris (Moench) Garcke | NBPG/RSS–1282 | Gandoli         | 3080–3185 m           | H         | Reg Himal                  |
| Stellaria media (L.) Vill.** | NBPG/RSS–1289 | Khokhua-bhaji    | 2750–3345 m           | H         | Reg Himal                  |
| S. monosperma Buch.-Ham. ex D.Don | NBPG/RSS–1612 | –                | 2500–3100 m           | H         | Nepal                      |
| S. palustris Retz. | NBPG/RSS–1613 | –                | 2876–3450 m           | H         | Euro                       |
| Commelinaceae     |                |                  |                       |           |                           |
| Cyanotis vaga (Lour.) Schult.f. | NBPG/RSS–1406 | –                | 1800–2850 m           | H         | Java                       |
| Convolvulaceae    |                |                  |                       |           |                           |
| Convolvulus arvensis L. | NBPG/RSS–1580 | –                | 2370–3220 m           | H         | Geront Temp                |
| Cuscuta europaea L. | NBPG/RSS–1578 | –                | 2500–3700 m           | C         | Euro; Orients              |
| C. reflexa Roxb. | NBPG/RSS–1404 | –                | 2814–3400 m           | C         | Ind or                     |
| Crassulaceae      |                |                  |                       |           |                           |
| Rhodiola bupleuroides (Wall. ex Hook.f. & Thomson) Fu | NBPG/RSS–1574 | –                | 2708–3100 m           | H         | N Amer; Reg Himal          |
| R. crenata (Raym.-Hamet ) H.Obba | NBPG/RSS–1575 | –                | 3000–3970 m           | H         | Siber; Euro; Himal         |
| R. heterodonta (Hook. f. & Thom.) A. Boriss.°° | NBPG/RSS–1251 | –                | 3030–4000 m           | H         | Reg Himal                  |
| R. wallachiana (Hook.) Fu | NBPG/RSS–1576 | –                | 2850–3509 m           | H         | China; Reg Himal           |
| Rosularia adnotricha (Wall ex Edgew.) C.A. Jansson | NBPG/RSS–1578 | –                | 3600–4200 m           | H         | Reg Himal                  |
| R. rosulata (Edgew.) H.Obba** | NBPG/RSS–1579 | –                | 2708–3263 m           | H         | Reg Himal                  |
| Sedum ewersii Ledeb. | NBPG/RSS–1278 | Teandi           | 2708–3800 m           | H         | Reg Himal Sibir Altaiq     |
| S. multicaule Wall. ex Lindl.° | NBPG/RSS–1265 | –                | 2600–3263 m           | H         | Reg Himal China            |
| S. quadrifidum Pall. | NBPG/RSS–1594 | –                | 3600–5500 m           | H         | Reg Himal; Asia; arct      |
| Cyperaceae        |                |                  |                       |           |                           |
| Blysmus compressus (L.) Panz. ex Link | NBPG/RSS–1418 | –                | 2800–4100 m           | H         | Euro                       |
| Carex cruenta Nees° | NBPG/RSS–1463 | –                | 3300–3850 m           | H         | Reg Himal                  |
| TAXA AND FAMILIES                                      | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------------------------------------------|----------------|------------------|-----------------------|-----------|---------------------------|
| *C. infuscata* Nees       | NBPRG/RSS–1464 | –                | 3000–3800 m           | H         | Reg Himal                 |
| *C. melanantha* C.A.Mey. | NBPRG/RSS–1473 | –                | 3100–4000 m           | H         | Asia Centr                |
| *C. orbicularis* Boott    | NBPRG/RSS–1483 | –                | 3400–4200 m           | H         | Ind; Asia Trop             |
| *C. setosa* Boott         | NBPRG/RSS–1487 | –                | 2800–3800 m           | H         | Reg Himal                 |
| *Cyperus niveus* Retz.    | NBPRG/RSS–1476 | –                | 2000–2900 m           | H         | Ind or                    |
| *C. squarrosus* L.        | NBPRG/RSS–1536 | –                | 1800–2250 m           | H         | Reg Trop                  |
| *Eriophorum comosum* (Wall.) Nees | NBPRG/RSS–1115 | Munji         | 2100–2400 m           | H         | Ind or                    |
| **Dioscoreaceae**         |                |                  |                       |           |                           |
| *Dioscorea deltoidea* Wall. ex Kunth.            | NBPRG/RSS–1103 | Shingli mingli   | 2775–3350 m           | H         | Ind or                    |
| **Dipsacaceae**           |                |                  |                       |           |                           |
| *Dipsacus inermis* Wall.  | NBPRG/RSS–1419 | –                | 2670–2990 m           | H         | Reg Himal                 |
| **Elaeagnaceae**          |                |                  |                       |           |                           |
| *Elaeagnus parvifolia* Wall. ex Royle            | NBPRG/RSS–1108 | Ghiyeen         | 2400–2700 m           | S         | Japon                     |
| *Hippophae rhamnoides* L. | NBPRG/RSS–1147 | Chharma, Gartsak| 3300–3500 m           | S         | Europ; Asia Temp           |
| *H. salicifolia* D. Don   | NBPRG/RSS–1140 | Surcham, Chharma| 2780–3450 m           | S         | Reg Himal (Nepal)          |
| *H. tibetana* Schltdl.   | NBPRG/RSS–1142 | Chharma          | 3200–3590 m           | S         | Tibet                     |
| **Eriaceae**              |                |                  |                       |           |                           |
| *Cassiope fastigiata* (Wa.B.) D. Don                | NBPRG/RSS–1075 | Salu            | 2800–3750 m           | S         | Reg Himal                 |
| *Gaultheria nummularioides* D. Don                  | NBPRG/RSS–1449 | Bhojishel       | 2800–3300 m           | S         | Reg Himal; Java           |
| *G. trichophylla* Royle | NBPRG/RSS–1450 | –                | 3100–3445 m           | S         | Reg Himal                 |
| *Lyonia ovalifolia* (Wall.) Drude                   | NBPRG/RSS–1501 | –                | 2100–2800 m           | S         | Reg Himal                 |
| *Rhododendron anthopogon* D. Don*                   | NBPRG/RSS–1252 | Buransh         | 3300–4050 m           | S         | Reg Himal                 |
| *R. campanulatum* D. Don*                           | NBPRG/RSS–1240 | Sairmanang      | 3200–3500 m           | S         | Reg Himal                 |
| *R. lepidotum* Wall*| NBPRG/RSS–1242 | –                | 3500–3800 m           | S         | Reg Himal                 |
| **Euphorbiaceae**         |                |                  |                       |           |                           |
| *Euphorbia helioscopa* L.                            | NBPRG/RSS–1117 | Dudawaj         | 2630–2800 m           | H         | Europet Asia Bor          |
| *E. maddeni* Boiss.       | NBPRG/RSS–1442 | –                | 1850–2500 m           | H         | Reg Himal                 |
| *E. pilosa* L.          | NBPRG/RSS–1443 | –                | 2600–3000 m           | H         | Europ Asia Bor            |
| **Fagaceae**             |                |                  |                       |           |                           |
| *Quercus leucotrichophora* Cam*                     | NBPRG/RSS–1569 | Ban              | 2000–2500 m           | T         | Reg Himal                 |
| *Q. floribunda* Thunb. (Lindl.)*                     | NBPRG/RSS–1239 | Moru            | 2550–2900 m           | T         | Reg Himal                 |
| *Q. semecarpifolia* Sm.*                         | NBPRG/RSS–1238 | Kharshu         | 2500–3050 m           | T         | Reg Himal                 |
| **Gentianaceae**         |                |                  |                       |           |                           |
| *Gentiana argentea* (Royle ex D. Don) DC.*           | NBPRG/RSS–1134 | –                | 2780–3490 m           | H         | Reg Himal; China          |
| *G. capitata* Buch.-Ham. ex D. Don.                  | NBPRG/RSS–1451 | –                | 2800–3400 m           | H         | Reg Himal                 |
| *G. coronata* (D. Don ex Royle) DC.*                | NBPRG/RSS–1127 | –                | 3400–3980 m           | H         | Reg Himal                 |
| *G. leucomeleana* Maxim                                         | NBPRG/RSS–1452 | Bkusuk-Shipo     | 2900–3580 m           | H         | Tibet; Mongol             |
| *G. prostrata* Haenke in Jacq.                     | NBPRG/RSS–1453 | –                | 2950–3650 m           | H         | S Amer                    |
| *G. tianschanica* Rupr. ex Kasn.                    | NBPRG/RSS–1130 | Titka           | 3250–3527 m           | H         | Asia centr                |
| *Gentianopsis detonsa* (Rottb.) Ma                    | NBPRG/RSS–1135 | Chatuek         | 3100–3500 m           | H         | Temp bor                  |
| *G. paludosa* (Hook.f.) Ma                           | NBPRG/RSS–1454 | –                | 3000–3550 m           | H         | Amerer; Asia              |
| *Halenia elliptica* D.Don*                            | NBPRG/RSS–1144 | Pitpapra        | 2980–3260 m           | H         | Reg Himal                 |
| *Lomatogonium caeruleum* H.Smithapud B. L.Burt*      | NBPRG/RSS–1147 | –                | 3500–3990 m           | H         | Reg Himal                 |
| *L. carinthiacum* (Wulf.)A.Br                        | NBPRG/RSS–1169 | Titka           | 3000–4000 m           | H         | Cosmo                     |
| *Swertia angustifolia* Buch. - Ham. ex D.Don*        | NBPRG/RSS–1615 | –                | 1900–2650 m           | H         | Reg Himal                 |
| *S. ciliata* (D. Don) Burtt*                          | NBPRG/RSS–1290 | Chirettah, Nepali| 2981–3448 m           | H         | Reg Himal                 |
| *S. cuneata* Wall ex D. Don*                         | NBPRG/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. | NBPG/RSS–1440 | –                | 2000–2400 m           | H         | Medit; Asia               |
| *Geranium himalayense* Klotz. | NBPG/RSS–1136  | Porlo            | 2700–3445 m           | H         | Europ; Asia Bor           |
| *G. lucidum* L. | NBPG/RSS–1455 | –                | 2350–2550 m           | H         | Europ; Asia bor           |
| *G. nepalense* Sweet. | NBPG/RSS–1128 | Laljari          | 2575–3385 m           | H         | Ind Or China              |
| *G. pratense* L. | NBPG/RSS–1129 | Likatur          | 2690–3500 m           | H         | Europ; Asia Bor           |
| *G. robertianum* L. | NBPG/RSS–1456 | –                | 2000–3350 m           | H         | N Europ                   |
| *G. wallichianum* D. Don ex Sweet* | NBPG/RSS–1131 | Polo, Laljari    | 2575–3527 m           | H         | Reg Himal                 |
| Grossulariaceae    |                |                  |                       |           |                           |
| *Ribes alpestre* Wall. ex Decne.* | NBPG/RSS–1253 | Pilâcha          | 2800–3450 m           | S         | Reg Himal                 |
| Hydrangeaceae      |                |                  |                       |           |                           |
| *Deutzia staminea* R. Br ex Wall* | NBPG/RSS–1102  | –                | 2575–3400 m           | S         | Reg Himal                 |
| Hypericaceae       |                |                  |                       |           |                           |
| *Hypericum perforatum* L.* | NBPG/RSS–1148  | Basant           | 2300–3340 m           | H         | Europ                     |
| Hypoxidaceae       |                |                  |                       |           |                           |
| *Hypoxis aurea* Lour. | NBPG/RSS–1470 | –                | 1900–2850 m           | H         | Cochinch                  |
| Iridaceae          |                |                  |                       |           |                           |
| *Iris hookeriana* Foster.* | NBPG/RSS–1155  | –                | 2770–3445 m           | H         | Reg Himal                 |
| *I. kumaonensis* D. Don ex Royke(Pri)* | NBPG/RSS–1149  | –                | 2900–3927 m           | H         | Reg Himal                 |
| Juglandaceae       |                |                  |                       |           |                           |
| *Juglans regia* L.* | NBPG/RSS–1160  | Akhrot           | 2200–3100 m           | T         | Asia Occ Reg Himal        |
| Juncaceae          |                |                  |                       |           |                           |
| *Juncus articulatus* L. | NBPG/RSS–1479  | –                | 2000–3500 m           | H         | Europ; Austr              |
| *J. himalensis* Klotz.* | NBPG/RSS–1480  | –                | 2000–3500 m           | H         | Reg Himal                 |
| *J. leucanthus* Royke ex D.Don | NBPG/RSS–1482  | –                | 3750–4250 m           | H         | Reg Himal                 |
| *J. thomsonii* Buchen* | NBPG/RSS–1481  | –                | 3000–3600 m           | H         | Reg Himal                 |
| Lamiaceae          |                |                  |                       |           |                           |
| *Ajuga parviflora* Benth.* | NBPG/RSS–1327  | Neel Kanthi      | 2000–2500 m           | H         | Reg Himal                 |
| *Clinopodium umbrosum* (M. Bieb.) Kuntze | NBPG/RSS–1391  | –                | 1900–2800 m           | H         | Orients Ind Or            |
| *C. vulgar* L. | NBPG/RSS–1196 | –                | 2630–3500 m           | H         | Europ; Canada             |
| *Elsbdtzia eriostachya* (Benth.) Benth.* | NBPG/RSS–1084  | Tsatsa, Betso    | 2800–3450 m           | H         | Reg Himal                 |
| *E. fruticosa* (D. Don) Rehder | NBPG/RSS–1424  | –                | 2000–2700 m           | H         | China                     |
| *E. pilosa* Benth.* | NBPG/RSS–1425 | –                | 2000–3300 m           | H         | Reg Himal                 |
| *Lamium album* L. | NBPG/RSS–1486 | –                | 1800–3750 m           | H         | Europ; Orients             |
| *Leonurus cardiaca* L. | NBPG/RSS–1166  | –                | 2750–3100 m           | H         | Reg Bor Temp               |
| *Mentha longifolia* (L.) Huds. | NBPG/RSS–1180  | Podina, Jungli pudina | 2800–3400 m | H         | Reg bor Temp               |
| *Nepeta clarkei* Hook.1* | NBPG/RSS–1517  | –                | 2708–3500 m           | H         | Reg Himal                 |
| *N. disolor* Royke ex Benth.* | NBPG/RSS–1186  | –                | 2680–3400 m           | H         | Reg Himal                 |
| *N. erecta* Royke ex Benth.* | NBPG/RSS–1513  | –                | 2692–3399 m           | H         | Reg Himal                 |
| *N. elliptica* Royke ex Benth. | NBPG/RSS–1184  | –                | 2708–3523 m           | H         | E Afghan; Nepal           |
| *N. eriostachya* Benth.* | NBPG/RSS–1182  | Brun             | 3185–3500 m           | H         | Reg Himal                 |
| *N. laevigato* (D.Don) Hand.-Mazz.* | NBPG/RSS–1514  | –                | 2200–4000 m           | H         | Reg Himal                 |
| *N. linearis* Royke ex Benth.* | NBPG/RSS–1515  | –                | 3000–4250 m           | H         | Reg Himal                 |
| *N. nervosa* Royke ex Benth. | NBPG/RSS–1516  | –                | 3000–3550 m           | H         | Reg Himal                 |
| *N. podostachys* Benth. | NBPG/RSS–1054  | Ribaksu, Ribhaksu | 2780–3440 m | H         | Afghanistan               |
| *Ocimum americanum* L. | NBPG/RSS–1518  | –                | 1800–2000 m           | H         | Amer                      |
| *Origanum vulgare* L. | NBPG/RSS–1188  | –                | 2981–3527 m           | H         | Europ Asia et Afr bor     |
| *Phlomis bracteosa* Royke ex Benth.* | NBPG/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. | NBPRG/RSS–1541 | – | 2500–3050 m | H | Reg Himal |
| Prunella vulgaris L. | NBPRG/RSS–1236 | – | 2770–3150 m | H | Reg Himal Temp |
| Rabdosia rugosa (Wall. ex Benth.) Hará | NBPRG/RSS–1570 | – | 2700–3200 m | S | Reg Himal |
| Salvia nubicola Wall. ex Sw | NBPRG/RSS–1273 | – | 2708–3399 m | H | Europ; Austr Reg Himal |
| Scutellaria linearis Benth. | NBPRG/RSS–1593 | – | 2250–2950 m | H | Reg Himal; Afghan |
| S. prostrata Jacq. ex Benth. | NBPRG/RSS–1592 | – | 3200–3650 m | H | Reg Himal |
| Stachys melissaefolia Benth. | NBPRG/RSS–1610 | – | 2200–3300 m | H | Reg Himal |
| S. sericea Cav. | NBPRG/RSS–1611 | – | 2800–3200 m | H | Chilii |
| Thymus linearis Benth. | NBPRG/RSS–1300 | Banajwain | 2100–3700 m | H | Europ Asia et Afr bor |
| **Leguminosae** | | | | | |
| Astragalus candolleanum Rohyle ex Benth. | NBPRG/RSS–1047 | Yam cho, Cho | 3300–4200 m | S | Reg Himal |
| A. chlorostachys Lindl. | NBPRG/RSS–1013 | – | 3250–3527 m | H | Reg Himal |
| A. floridulus Podlech | NBPRG/RSS–1364 | – | 3200–3550 m | H | Reg Himal |
| A. himalayanus Klotsch | NBPRG/RSS–1363 | – | 3450–3800 m | H | Reg Himal |
| A. rhizanthus Benth. | NBPRG/RSS–1020 | – | 2876–3448 m | H | Reg Himal |
| Cicer microphyllum Benth. | NBPRG/RSS–1363 | – | 3450–3800 m | H | Reg Himal |
| C. floridulus Podlech | NBPRG/RSS–1020 | – | 2876–3448 m | H | Reg Himal |
| Indigofera heterantha Wall. ex Brandis | NBPRG/RSS–1154 | Kali Kathi | 2200–2750 m | S | Reg Himal |
| Lespedeza juncea (L.f.) Pers. | NBPRG/RSS–1494 | – | 1900–2420 m | H | Reg Himal; Asia bor |
| Lotus corniculatus L. | NBPRG/RSS–1171 | Bird’s-foot trefoil | 2876–3400 m | H | Geront Temp Austr |
| Medicago falcata L. | NBPRG/RSS–1179 | – | 2900–3445 m | H | Geront Bor Temp |
| M. lupulina L. | NBPRG/RSS–1173 | Hop clover | 2981–3501 m | H | Geront Bor Temp |
| Oxytropis lapponica (Wahl.) Gay. | NBPRG/RSS–1192 | – | 2900–3400 m | H | Europ; Asia Bor |
| Parochetus communis D.Don | NBPRG/RSS–1524 | – | 2000–2500 m | H | Ind Or Malaya Afr Trop |
| Phaseolus coccineus Lam. | NBPRG/RSS–1535 | – | 2100–2950 m | H | South Amer |
| Robinia pseudoacacia L. | NBPRG/RSS–1183 | Kikar, Honey-locust | 2400–3000 m | T | Amerer Bor |
| Trifolium pratense L. | NBPRG/RSS–1301 | Purple Clover | 2575–3350 m | H | Europ; Asia Temp |
| T. repens L. | NBPRG/RSS–1295 | Trilptra | 2575–3400 m | H | Geront Bor Temp |
| Trigonella corniculata L. | NBPRG/RSS–1626 | Kasuri-methi | 2710–3600 m | H | Reg Himal |
| T. emodi Benth. | NBPRG/RSS–1302 | Tuljima | 2708–3500 m | H | Reg Himal |
| Vicia bakeri Ali | NBPRG/RSS–1627 | – | 2300–3000 m | H | W Pakistan; Ind |
| **Liliaceae** | | | | | |
| Fritillaria roylei Hook. | NBPRG/RSS–1125 | – | 3000–3250 m | H | Reg Himal |
| Gagea lutea L. | NBPRG/RSS–1447 | – | 3150–3400 m | H | Europ |
| **Malvaceae** | | | | | |
| Malva neglecta Wall.(Pri) | NBPRG/RSS–1177 | Khobar, Sonchala | 2800–3600 m | H | Europ |
| M. sylvestris L. | NBPRG/RSS–1174 | Marsh-mallow | 2800–3700 m | H | Hungary |
| M. verticillata L. | NBPRG/RSS–1175 | – | 2575–3600 m | H | Europ Asia et Afr bor |
| **Melanthiaceae** | | | | | |
| Trillium govanianum Wall. ex D. Don | NBPRG/RSS–1303 | Satwa | 3400–3509 m | H | Reg Himal |
| **Menispermaceae** | | | | | |
| Cissampelos pareira L. | NBPRG/RSS–1389 | – | 1800–2100 m | H | Reg Trop |
| **Oleaceae** | | | | | |
| Fraxinus xanthoxyloides (G. Don) DC. | NBPRG/RSS–1124 | Thum | 2400–3300 m | S | Reg Himal |
| Jasminum humile L. | NBPRG/RSS–1478 | – | 2000–2850 m | S | Asia Trop |
| J. officinale L. | NBPRG/RSS–1159 | White Jasmine | 2700–3100 m | S | Ind bor; Occ; China |
| Olea ferruginea Royle | NBPRG/RSS–1187 | Kohu, Wild olive | 1900–2300 m | T | Reg Oriens |
| Syringa emodi Wall ex Royle | NBPRG/RSS–1617 | – | 2900–3500 m | S | Reg Himal |
Table 2. Continued.

| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTIMUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|-------------------|----------------|------------------|-----------------------|-----------|---------------------------|
| Onagraceae        |                |                  |                       |           |                           |
| Epilobium angustifolium L. | NBPG/RSS–1111   | Dharshak         | 3000–4000 m           | H         | Europ; Asia Bor; Amer Bor  |
| E. cylindricum D. Don | NBPG/RSS–1427   | –                | 2000–3300 m           | H         | Europ; Asia Occ           |
| E. latifolium L. | NBPG/RSS–1428 | –                | 2990–3509 m           | H         | Beg Bor; Himal             |
| E. laxum Royle   | NBPG/RSS–1429 | –                | 2750–3500 m           | H         | Europ                    |
| E. royleanum Hausskn. | NBPG/RSS–1106   | –                | 2600–3250 m           | H         | Beg Himal                 |
| Orchidaceae       |                |                  |                       |           |                           |
| Dactylorhiza hatagirea (D.Don.) Soo | NBPG/RSS–1097 | Panja Salampanja | 3000–3400 m | H         | Beg Himal                 |
| Epiactis giganteum Dougl. ex Hk | NBPG/RSS–1430 | –                | 2000–3500 m           | H         | Amer Bor; Asia Temp       |
| E. helleborine (L.) Crantz | NBPG/RSS–1112 | –                | 2500–3600 m           | H         | Europ; Asia Bor           |
| Goodyera fusca (Lind.) Hk. f. | NBPG/RSS–1428 | –                | 3000–3709 m           | H         | Beg Himal                 |
| Herminium lanceum (Thunb. ex Sw.) Vuijkj | NBPG/RSS–1465 | –                | 2400–2900 m           | H         | Europ; Asia Bor           |
| Malaxis muscifera (Lindl.) Kuntze. | NBPG/RSS–1502 | –                | 3000–3200 m           | H         | Europ                    |
| Neottia listeroides Lindl. | NBPG/RSS–1512 | –                | 3100–3509 m           | H         | Beg Himal                 |
| Spiranthes sinensis (Pers.) Ames. | NBPG/RSS–1609 | –                | 1800–2900 m           | H         | Asia Temp et Trop Austr    |
| Orobanchaceae     |                |                  |                       |           |                           |
| Euphrasia himalayica Wettst. | NBPG/RSS–1444 | –                | 2750–3600 m           | H         | Beg Himal                 |
| E. simplex D. Don | NBPG/RSS–1118 | Rambara          | 3150–3400 m           | H         | Nepal                     |
| Leptorabdos parviflora (Benth.) Benth. | NBPG/RSS–1493 | –                | 3100–3600 m           | H         | Beg Himal                 |
| Orobancha alba Steph. | NBPG/RSS–1819 | Luak             | 3000–3400 m           | H         | Europ; Orien; Asia Bor    |
| Pedicularis bifurcata Klotzsch | NBPG/RSS–1217 | –                | 2700–3500 m           | H         | Beg Himal                 |
| P. gracilis Wall. ex Benth. | NBPG/RSS–1527 | –                | 3100–3448 m           | H         | Beg Himal                 |
| P. longiflora Rudolph | NBPG/RSS–1530 | –                | 3159–3400 m           | H         | Beg Himal                 |
| P. mollis Wall. ex Benth. | NBPG/RSS–1526 | –                | 2700–3250 m           | H         | Beg Himal                 |
| P. palustris L. | NBPG/RSS–1528 | –                | 3200–3600 m           | H         | Beg bor temp et arct      |
| P. porrecta Wall. ex Benth. | NBPG/RSS–1529 | –                | 3200–3600 m           | H         | Beg Himal                 |
| P. punctata Dene. | NBPG/RSS–1209 | Mishran, Michren| 3159–3527 m           | H         | Beg Himal; Persia         |
| P. scuillaya Prain ex Maxim. | NBPG/RSS–1531 | –                | 3400–4000 m           | H         | Beg Himal                 |
| Oxalidaceae       |                |                  |                       |           |                           |
| Oxalis acetosella L. | NBPG/RSS–1522 | –                | 2200–3200 m           | H         | Beg Bor Temp              |
| O. corniculata L. | NBPG/RSS–1057 | –                | 2200–3263 m           | H         | Amerphig Temp Trop        |
| Papaveraceae      |                |                  |                       |           |                           |
| Corydalis cashmeriana Royle | NBPG/RSS–1088 | Bhtukesi         | 2500–4150 m           | H         | Beg Himal; Asia Trop      |
| C. govaniana Wall | NBPG/RSS–1065 | Bhtukesi         | 3117–3950 m           | H         | Beg Himal                 |
| C. mefolia Wall. | NBPG/RSS–1394 | –                | 2600–3600 m           | H         | Beg Himal                 |
| C. ramosa Wall. ex Hook.f. & Thomson. | NBPG/RSS–1395 | –                | 2750–3500 m           | H         | Asia Trop                 |
| C. thyrsiflora Prain | NBPG/RSS–1396 | –                | 3154–3500 m           | H         | NW Himal                  |
| Papaver nudicaule L. | NBPG/RSS–1523 | –                | 1800–3150 m           | H         | Sibir; Himal              |
| Meconopsis aculeata Royle | NBPG/RSS–1178 | –                | 3200–3500 m           | H         | Beg Himal                 |
| M. horridula Hook. f & Thomson | NBPG/RSS–1176 | –                | 3100–3300 m           | H         | Beg Himal                 |
| Parnassiaceae     |                |                  |                       |           |                           |
| Parnassia nubicola Wall. ex Royle | NBPG/RSS–1216 | –                | 2700–3300 m           | H         | Beg Himal                 |
| Phrymaceae        |                |                  |                       |           |                           |
| Mazzus dentatus Wall. | NBPG/RSS–1503 | –                | 2550–2800 m           | H         | Beg Himal                 |
| M. succulosus D. Don | NBPG/RSS–1504 | –                | 1900–2850 m           | H         | Ind or                    |
| Phytolaccaceae    |                |                  |                       |           |                           |
| Phytolacca acinosa Roxb. | NBPG/RSS–1220 | –                | 2600–2900 m           | H         | Beg Himal; Asia Trop      |
| Plantaginaceae    |                |                  |                       |           |                           |
| Hippuris vulgaris L. | NBPG/RSS–1467 | –                | 3500–4600 m           | H         | Europ; Asia bor; Amer bor et austr |
| TAXA AND FAMILIES                                      | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------------------------------------------|----------------|------------------|-----------------------|-----------|---------------------------|
| Picrorhiza kurrooa Royle ex Benth.                   | NBPGR/RSS–1222 | Karu, Kutki      | 3200–3900 m           | H         | Reg Himal                 |
| Plantago depressa Wild.                              | NBPGR/RSS–1225 | Musalniani       | 2100–3000 m           | H         | Sibir                     |
| P. erosa L.                                          | NBPGR/RSS–1202 | Jangli Isabgol   | 3100–3263 m           | H         | Europol et Amer Bor       |
| P. major L.                                          | NBPGR/RSS–1205 | Luhuriya, Isabgol| 2675–3527 m           | H         | Europol                   |
| Veronica agrestis L.                                 | NBPGR/RSS–1632 | –                | 2400–2800 m           | H         | Europol                   |
| 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         | Europol; Amer bor; Orien   |
| 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         | Europol; Orien; Asia bor   |
| Calamagrostis pseudophragmites (Haller) Koeler       | NBPGR/RSS–1381 | –                | 1800–3000 m           | H         | Euro Orien; Asia bor       |
| Chrysoptgon gryllus (L.) Trin.                       | NBPGR/RSS–1080 | Binu Bajha       | 2200–3550 m           | H         | Reg trop et Subtrop        |
| Cynodon nutans (Stapf) Bor                           | NBPGR/RSS–1392 | –                | 2000–3500 m           | H         | Asia trop; Ind             |
| Cynosodon dactylon (L.) Pers.                        | NBPGR/RSS–1092 | Dhoov ghas       | 2000–3100 m           | H         | Cosmo                      |
| Dactylis glomerata L.                                | NBPGR/RSS–1096 | –                | 2875–3527 m           | H         | Europol; 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         | Euro; Afr bor; Orien       |
| H. turkestanicum Nevski                              | NBPGR/RSS–1469 | –                | 3300–4100 m           | H         | Asia centr                 |
| Koeleria macrantha (Ledebr.) Schult.                 | NBPGR/RSS–1484 | –                | 2000–3800 m           | H         | Reg Cauca; 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; Orien; Himal  |
| Oryzopsis munroi Stapf                               | NBPGR/RSS–1520 | –                | 2400–2900 m           | H         | Ind or                     |
| Pennisetum flaccidum Grisebo.                       | 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; Orien; 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 Europl                   |
| P. himalaiana 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 | –                | 3200–4400 m           | H         | NCauc; 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         | Euro; Asia Temp            |
| S. pumila (Poir.) Roem. & Schult.                    | NBPGR/RSS–1599 | –                | 2000–2500 m           | H         | Euro; 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                     |
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE | PHYTOGEOGRAPHIC AFFINITIES |
|-------------------|----------------|------------------|-----------------------|------|---------------------------|
| Polemoniaceae     |                |                  |                       |      |                           |
| Polemonium caeruleum L. subsp. himalayana (Baker) Hara* | NBPG/RSS–1546 | –                | 2700–3700 m            | H    | Reg bor Temp               |
| Polygalaceae      |                |                  |                       |      |                           |
| Polygala tatarinowii Regel | NBPG/RSS–1547 | –                | 2500–3100 m            | H    | China; Pakistan          |
| Polygonaceae      |                |                  |                       |      |                           |
| Bistorta affinis (D.Don)Gree** | NBPG/RSS–1059 | Khuliya          | 2560–4000 m            | H    | Reg Himal                 |
| B. vaccinifolia (Wall. ex Meissn.)Greene® | NBPG/RSS–1371 | –                | 3000–4100 m            | H    | Reg Himal                 |
| Fagopyrum esculentum Moench. | NBPG/RSS–1120 | Ogal             | 2100–3400 m            | H    | Europ; Asia Bor           |
| Oxyclea digyna (L.) Hill | NBPG/RSS–1191 | Shupchi          | 2789–3500 m            | H    | Reg Bor Alp et Arct       |
| Polygonum alpinum All. | NBPG/RSS–1109 | –                | 2700–3500 m            | H    | Europ; Austr; Asia bor     |
| P. amplexicaule D. Don* | NBPG/RSS–1193 | Sarbguni         | 2400–3200 m            | H    | Reg Himal                 |
| P. aviculare L. | NBPG/RSS–1548 | Anjubar, Machoti | 2575–3250 m            | H    | Reg bor temp              |
| P. capitatum Buch.-Ham. ex Don® | NBPG/RSS–1199 | –                | 2650–3100 m            | H    | Reg Himal                 |
| P. hydropiper L. | NBPG/RSS–1204 | –                | 2750–3100 m            | H    | Reg Temp bor et Austr      |
| P. paronychioides C.A.Mey. | NBPG/RSS–1551 | –                | 3300–4100 m            | H    | Reg Cau et Himal          |
| P. plebeium R.Br. | NBPG/RSS–1207 | –                | 3100–3400 m            | H    | Reg Himal                 |
| P. polyacanthum Wall.ex Meissn. | NBPG/RSS–1208 | –                | 2700–3520 m            | H    | Ind or Asia Trop          |
| P. pubescens Blume | NBPG/RSS–1549 | –                | 1800–1900 m            | H    | Java                      |
| P. recumbens Royle ex Babin® | NBPG/RSS–1210 | Vishalyakarni Vishalaya | 3100–3500 m | H    | Reg Himal                 |
| P. viviparum L. | NBPG/RSS–1550 | Maskun, Par-richemti | 2700–3509 m          | H    | Europ                    |
| Rheum australe D. Don.® | NBPG/RSS–1250 | Chukri           | 2876–3527 m            | H    | Reg Himal                 |
| Rumex acetosa L. | NBPG/RSS–1581 | Jungli-palak     | 2500–3200 m            | H    | Europ; Asia bor           |
| R. hastatus D. Don® | NBPG/RSS–1259 | –                | 2145–3350 m            | H    | Reg Himal                 |
| R. nepalensis Spreng. | NBPG/RSS–1245 | Jangli palak     | 2150–3527 m            | H    | Europ Asia bor            |
| R. patienta L. | NBPG/RSS–1582 | Shoma            | 2550–3050 m            | H    | Europ; austr; Oriens      |
| Primulaceae       |                |                  |                       |      |                           |
| Androsace rotundifolia Hardw.* | NBPG/RSS–1035 | Zigsoolo marpo   | 2950–3300 m            | H    | Reg Himal; China          |
| A. sarmentosa Wall. | NBPG/RSS–1336 | –                | 2500–3509 m            | H    | Nepal                     |
| A. sempervivoides Jacquem. ex Duby | NBPG/RSS–1337 | –                | 3109–3450 m            | H    | Reg Himal; Mongol         |
| Primula denticulata Sm.* | NBPG/RSS–1234 | Keecha           | 3200–3400 m            | H    | Reg Himal                 |
| P. macrophylla D. Don | NBPG/RSS–1560 | –                | 3500–4500 m            | H    | Asia et Amer bor          |
| P. rosea Royle® | NBPG/RSS–1211 | –                | 3510–4000 m            | H    | Reg Himal                 |
| P. sessilis Royle ex Craib® | NBPG/RSS–1561 | –                | 2100–3650 m            | H    | Ind or                    |
| Ranunculaceae     |                |                  |                       |      |                           |
| Aconitum heterophyllum Wall. Ex Royle.* | NBPG/RSS–1027 | Atis, Patish     | 2900–3950 m            | H    | Reg Himal                 |
| A. violaceum Jacq. Ex Stapf.** | NBPG/RSS–1019 | Onayalkas, Mitha Patish | 3000–4200 m | H    | Reg Himal                 |
| Actaea spicata L. | NBPG/RSS–1028 | Mamira           | 3000–3600 m            | H    | Reg Bor Temp              |
| Anemone obtusiloba D. Don® | NBPG/RSS–1036 | Rattanjog        | 3000–3525 m            | H    | Reg Himal                 |
| A. rivularis Buch.-Ham.® | NBPG/RSS–1021 | Jakri            | 2700–3700 m            | H    | Reg Himal                 |
| Aquilegia fragrans Benth.** | NBPG/RSS–1039 | Lamo             | 2700–3600 m            | H    | Reg Himal                 |
| A. parviflora Ledeb. | NBPG/RSS–1338 | –                | 2800–3527 m            | H    | Sibir                     |
| Caltha palustris L. | NBPG/RSS–1069 | Munire, Pipling-tasha | 2500–3550 m          | H    | Reg Bor Temp et Arct      |
| Clematis grata Wall. | NBPG/RSS–1083 | –                | 2770–3340 m            | C    | Reg Himal China; Afr      |
| C. connata DC.* | NBPG/RSS–1390 | –                | 2000–2700 m            | C    | Reg Himal                 |
| Delphinium brunonianum Royle® | NBPG/RSS–1099 | Kasturilata      | 3200–3850 m            | H    | Reg Himal                 |
| D. cashmerianum Royle** | NBPG/RSS–1094 | Raskakh, 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–1573 | – | 2890–3564 m | H | Sibir; Reg Himal |
| *R. pulchellus* C.A.Mey. | NBPGR/RSS–1573 | – | 2708–3527 m | H | Sibir; Reg Himal |
| *Thalictrum alpinum* L. | NBPGR/RSS–1299 | – | 2575–3500 m | H | Reg Himal |
| *T. minus* L. | NBPGR/RSS–1299 | – | 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, Reghali | 2700–3800 m | S | Reg Himal |
| *Fragaria indica* Andr. | NBPGR/RSS–1089 | – | 1800–2800 m | S | China |
| *F. nubicola* Lindley ex Lacaita. | NBPGR/RSS–1241 | Jaldhar, Jaldra | 2770–3350 m | H | Reg Himal |
| *Photinia nussia* (D.Don) Kalkman | NBPGR/RSS–1538 | – | 2600–3150 m | H | Reg Himal |
| *Potentilla anserina* L. | NBPGR/RSS–1232 | Cincufoil, silverweed | 2130–3700 m | H | Europ |
| *P. argyrophylla* Wall. ex Lehm.* | NBPGR/RSS–1195 | – | 3200–4200 m | S | Reg Himal |
| *P. bifurca* L. | NBPGR/RSS–1256 | – | 3200–4000 m | H | Reg Himal |
| *P. cuneata* Wall. ex Lehm.* | NBPGR/RSS–1558 | – | 3200–3448 m | H | Reg Himal |
| *P. curviseta* Hook. f* | NBPGR/RSS–1256 | – | 3200–4000 m | H | Reg Himal |
| *P. argyrophylla* Wall. ex Lehm.* | NBPGR/RSS–1557 | – | 3200–4200 m | S | Reg Bor Asia Asia |
| *P. cerasoides* Buch.-Ham. ex D. Don | NBPGR/RSS–1064 | – | 1800–3600 m | S | Reg Himal |
| *P. cornuta* (Wall. ex Royle) Suard | NBPGR/RSS–1201 | Krun, Khimor | 2800–3250 m | T | Europ Asia |
| *R. domestica* L. | NBPGR/RSS–1563 | – | 1800–3900 m | T | Europ; austr |
| *R. persica* (L.) Stokes | NBPGR/RSS–1564 | – | 1800–3000 m | T | Asia temp |
| *Rosa broonii* Lindl.(Sec) | NBPGR/RSS–1255 | Kuja | 3200–3500 m | S | Orients |
| *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 | Orients |
| *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 |
| *Sibiria 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 & Schmal. | NBPGR/RSS–1353 | – | 1800–1970 m | H | Asia Centr |
| *Gallium 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. | NBPG/RSS–1126 | – | 2708–3527 m | H | Europ; Asia Temp |
| G. asperuloides Edgew. | NBPG/RSS–1448 | – | 2692–3502 m | H | Reg bor Temp |
| **Rutaceae** | | | | | |
| Boeninghausienia albiloba (Hook.) Rchb. ex Mein. | NBPG/RSS–1060 | Pismar buti | 2650–3502 m | H | Reg HIMAL; Japon |
| *Skimmia laureola* (DC.) Zucc. | NBPG/RSS–1605 | Ner | 2400–3000 m | S | Reg HIMAL |
| **Salicaceae** | | | | | |
| *Populus alba* L. | NBPG/RSS–1231 | Safeda, Jangifrast | 2700–2900 m | T | Europ; Asia bor |
| *P. ciliata* Wall. ex Royle | NBPG/RSS–1200 | Poplar | 2670–3163 m | T | Reg HIMAL |
| *Salix acmophylla* Boiss. | NBPG/RSS–1272 | Bada, Bed, Jangli Beli | 2700–3100 m | T | Oriens Ind or |
| *S. alba* L. | NBPG/RSS–1260 | Bis, Bhushan | 2900–3509 m | T | Europ; Asia et Afr bor |
| *S. calyculata* Hook.f. ex Andersson | NBPG/RSS–1587 | – | 3300–4400 m | S | Reg HIMAL |
| *S. daphnoides* Vill. | NBPG/RSS–1261 | Chanker, Richang Jangli Beli | 2700–3600 m | S | Europ; Asia bor |
| *S. denticulata* (Anders.) Svensk | NBPG/RSS–1585 | – | 2000–3000 m | T | Reg HIMAL |
| *S. fragilis* L. | NBPG/RSS–1263 | – | 3300–3900 m | T | Europ; Asia bor |
| *S. tetrasperma* Roxb. | NBPG/RSS–1586 | – | 3100–3600 m | T | Ind Malaya |
| **Santalaceae** | | | | | |
| *Theesia multiscaule* Ledeb. | NBPG/RSS–1621 | – | 3150–3445 m | H | Sibir altaic |
| **Sapindaceae** | | | | | |
| *Acer acuminatum* Wall.ex D. Don | NBPG/RSS–1024 | Mandru | 2689–3189 m | T | Reg HIMAL |
| *A. caesium* Wall. ex Brandis | NBPG/RSS–1010 | Mandru | 3189–3300 m | T | Reg HIMAL |
| *A. cappadocicum* Gled. | NBPG/RSS–1012 | Mandru | 2600–3289 m | T | Asia Min |
| *Aesculus indica* (Wall. ex Camb.) Hook. | NBPG/RSS–1230 | Khanor/Bankhor | 2800–3100 m | T | Reg HIMAL |
| **Saxifragaceae** | | | | | |
| *Bergenia ligulata* Haw.Sternb. | NBPG/RSS–1190 | Lao, Pashanbhed | 2689–3850 m | H | Reg HIMAL |
| *B. stracheyi* (Hook. f. & Thom.s.) Engle. | NBPG/RSS–1254 | Lao, Pashanbhed | 2700–4000 m | T | Reg HIMAL |
| *Saxifraga diversifolia* Wall. ex Ser. | NBPG/RSS–1590 | – | 2700–3600 m | T | Reg HIMAL |
| *S. flagellaris* Willd. | NBPG/RSS–1276 | – | 3510–4000 m | T | Reg HIMAL |
| *S. sibrica* L. | NBPG/RSS–1591 | – | 3100–3550 m | H | Asia bor et Arct |
| **Scrophulariaceae** | | | | | |
| *Buddleja crispa* Benth.* | NBPG/RSS–1379 | – | 2000–2850 m | S | Reg HIMAL; Burma |
| *Verbascum thapsus* L. | NBPG/RSS–1310 | Jangli tambaku | 2000–3523 m | H | Europ; Reg HIMAL |
| **Smilacaceae** | | | | | |
| *Smilax vaginata* Decne.* | NBPG/RSS–1606 | – | 2700–3000 m | C | Reg HIMAL |
| **Solonaceae** | | | | | |
| *Datura stramonium* L. | NBPG/RSS–1098 | Dhatura | 2350–2650m | H | Cosmo Trop et Temp |
| *Nicandra physalodes* (L.) Gaertn. | NBPG/RSS–1639 | crucial | 1800–2100 m | H | S Amer |
| *Nicotiana tabacum* L. | | | | | |
| *Physcochaena proealta* (Walp.) Miers.@VU | NBPG/RSS–1091 | Jangli Tambaku | 1800–2600 m | H | Amer; Austr |
| *Solanum nigrum* L. | NBPG/RSS–1284 | Makoi | 3700–4000 m | H | Reg HIMAL |
| *Solanum nigrum* L. | NBPG/RSS–1284 | Makoi | 2700–3200 m | H | Amerphig |
| **Thymelaeaceae** | | | | | |
| *Daphne oleoides* Schreb. | NBPG/RSS–1412 | – | 2000–2600 m | S | Europ; Asia Min |
| *Daphne papyracea* Wall. ex Steud.* | NBPG/RSS–1413 | – | 2000–2500 m | S | Reg HIMAL |
| *Wikstroemia canescens* Meissn.* | NBPG/RSS–1638 | – | 2000–3000 m | S | Reg HIMAL |
| **Ulmaceae** | | | | | |
| *Ulmus villosa* Brandis ex Gamble* | NBPG/RSS–1630 | – | 2200–2800 m | T | Ind or Asia Temp |
| *U. wallichiana* Planch.* | NBPG/RSS–1305 | Mahun | 2490–2790 m | T | Ind or |
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------|----------------|------------------|----------------------|-----------|---------------------------|
| Urticaceae       |                |                  |                      |           |                           |
| Girardinia diversifolia (Link) Friis | NBPG/RSS–1458 | Zarahan 2000–2800 m | H | Ind or Malaya |
| Pilea scripta (Buch-Ham. ex D.) Wedd | NBPG/RSS–1636 | – 1800–2000 m | H | Reg Himal |
| P. umbrosa Wedd | NBPG/RSS–1637 | – 1850–2650 m | H | Reg Himal |
| Urtica dioica L. | NBPG/RSS–1306 | Bicchu buti 2275–3154 m | H | Reg bor Temp |
| U. parviflora Rosb. | NBPG/RSS–1631 | – 2000–3000 m | H | Reg Himal |
| Verbenaceae      |                |                  |                      |           |                           |
| Verbena officinalis L. | NBPG/RSS–1311 | – 2550–3115 m | H | China Asia Temp |
| Violaceae        |                |                  |                      |           |                           |
| Viola biflora L. | NBPG/RSS–1608 | Banfsha 2800–3800 m | H | Reg bor Temp |
| V. canescens Wall. ex Rosb. | NBPG/RSS–1315 | Banshka 2700–3250 m | H | Reg Himal; Ind or Malaya China |
| V. pilosa Blume | NBPG/RSS–1351 | – 2500–3500 m | H | Ind or Malaya China |
| V. serpens Wall. ex Rosb. | NBPG/RSS–1030 | Banshka 2800–3600 m | H | Ind or Malaya China |
| Vitaceae         |                |                  |                      |           |                           |
| Parthenocissus semicordata (Royle) Planch. | NBPG/RSS–1525 | Kramru 2000–2700 m | S | Ind or |
| Xanthorrhoeaceae |                |                  |                      |           |                           |
| Eremurus himalaicus Baker | NBPG/RSS–1434 | – 2600–3600 m | H | Reg Himal |
| Zingiberaceae    |                |                  |                      |           |                           |
| Hedychium spicatum Sm. | NBPG/RSS–1461 | – 2200–3000 m | H | Reg Himal |
| Roscoea alpina | NBPG/RSS–1542 | – 2500–3500 m | H | Reg Himal |
| Gymnosperms      |                |                  |                      |           |                           |
| Cupressaceae     |                |                  |                      |           |                           |
| Juniperus communis L. | NBPG/RSS–1161 | Pama, Langshur 3254–3448 m | S | Reg Himal |
| J. indica       | NBPG/RSS–1156 | Dhooop 3300–4000 m | S | Soongar; Reg Himal |
| J. polycarpos C. Koch ex | NBPG/RSS–1157 | Lewar 3465–3800 m | T | Persia; Reg Himal |
| J. recurva D.Don | NBPG/RSS–1158 | Mant Thelu 3263–3500 m | S | Reg Himal |
| Ephedraceae      |                |                  |                      |           |                           |
| Ephedra intermedia Schrenk et C.A. Meyer | NBPG/RSS–1110 | Khanna, Chhe 2800–3200 m | S | Centr Asia Himalaya |
| Ginkgoaceae      |                |                  |                      |           |                           |
| Ginkgo biloba L. | NBPG/RSS–1457 | – 2200–2500 m | T | Japon |
| Pinaceae         |                |                  |                      |           |                           |
| Abies pindrow | NBPG/RSS–1023 | Krok Rai 2800–3250 m | T | Reg Himal |
| A. spectabilis (D.Don) Spach | NBPG/RSS–1017 | – 2800–3000 m | T | Reg Himal |
| Cedrus deodara (Rosb. ex D.Don) G. Don | NBPG/RSS–1076 | Kelmang, Devdar 2026–3285 m | T | Reg Himal |
| Pinus gerardiana Wall ex D.Don | NBPG/RSS–1221 | Rou, Royang Tosh, Rai 2981–3350 m | T | Reg Himal |
| Pinus roxburghi Sarg. | NBPG/RSS–1224 | Ree, Chiri, Neoza 2250–2890 m | T | Afghan |
| P. wallichiana A.B. Jackson | NBPG/RSS–1215 | Chil 2000–2600 m | T | Reg Himal |
| Taxaceae         |                |                  |                      |           |                           |
| Taxus baccata | NBPG/RSS–1298 | Yamdal, Rakhal 2400–3550 m | T | Reg Bor Temp |
| Pteridophytes    |                |                  |                      |           |                           |
| Adiantaceae      |                |                  |                      |           |                           |
| Adiantum capillus–veneiris L. | NBPG/RSS–1321 | Hansraj, Pursha 2640–2930 m | F | S Europ |
| A. pedatum L. | NBPG/RSS–1322 | – 2610–3550 m | F | Afghan India Border |
| A. venustum Don | NBPG/RSS–1320 | Hansraj, Sunraj 2680–2850 m | F | Afgan Ind |
| Aspleniaceae     |                |                  |                      |           |                           |
| Asplenium dalhoasi Hk. | NBPG/RSS–1354 | – 2200–2800 m | F | – |
| A. fontanum (L.) Bernh. | NBPG/RSS–1358 | – 2100–2400 m | F | Asia centr |
| A. laciniatum D. Don | NBPG/RSS–1355 | – 1800–2300 m | F | India bor; Ceylon; Japon |
| A. septentrionale (L.) Hoffm. | NBPG/RSS–1359 | – 2100–3000 m | F | W North Amer; Europ; Asia |
| TAXA AND FAMILIES | VOUCHER NUMBER | VERNACULAR NAMES | ALTITUDINAL RANGE (M) | LIFE FORM | PHYTOGEOGRAPHIC AFFINITIES |
|------------------|----------------|------------------|----------------------|----------|--------------------------|
| A. tenuicaule Hayata | NBPG/RSS–1356 | – | 2200–2800 m | F | – |
| A. trichomanes L. | NBPG/RSS–1357 | – | 3151–3410 m | F | – |
| Athyriaceae | | | | | |
| Athyrium attenuatum (Wall. ex Clarke) Tagama | NBPG/RSS–1365 | – | 2000–2680 m | F | Kashmir; China (Sikang) |
| A. mackinnonii (C.Hope) C.Chr. | NBPG/RSS–1366 | – | 2000–2500 m | F | Ind bor |
| A. rupicola (C.Hope) C.Chr. | NBPG/RSS–1367 | – | 2380–3950 m | F | Ind bor |
| Deparia altantoides Kato. | NBPG/RSS–1414 | – | 1850–3050 m | F | – |
| D. japonica (Thunb.) M.Kato | NBPG/RSS–1415 | – | 2400–2800 m | F | – |
| Cryptogrammaceae | | | | | |
| Cryptogramma brunoniana Wall. ex Hook. & Grev. | NBPG/RSS–1403 | – | 3100–3400 m | F | Reg Himal; China austr; Japon |
| Onychium contiguum Wall. ex Hope | NBPG/RSS–1519 | – | 2300–2700 m | F | – |
| Cystopteridaceae | | | | | |
| Cystopteris fragilis (L.) Bernh. | NBPG/RSS–1411 | – | 2400–3200 m | F | – |
| Gymnocalcium fedtschenkoanum Pojark | NBPG/RSS–1459 | – | 2000–3000 m | F | Tazakistan |
| Davalliaaceae | | | | | |
| Arostegia delavayi (Bedd. ex Clarke & Baker) Ching | NBPG/RSS–1341 | – | 2100–3750 m | F | Ind bor; China austr |
| A. pseudocystopteris (Kunze) Copel. | NBPG/RSS–1342 | – | 2100–3650 m | F | Europ |
| Dennstaedtiaceae | | | | | |
| Pteridium revolutum (Blume) Nakai | NBPG/RSS–1566 | – | 2500–2900 m | F | – |
| Dryopteridaceae | | | | | |
| Dryopteris barbigera (Moore) Kuntze | NBPG/RSS–1420 | – | 2800–3500 m | F | Afgan; India bor; Yunnan |
| D. ramosum (C.Hope) C.Chr. | NBPG/RSS–1308 | – | 2200–3080 m | F | Ind bor |
| D. redactopinnata Soumen K.Basu & Panigrahi | NBPG/RSS–1422 | – | 2700–3000 m | F | Sikkim (India) |
| D. rosthornii (Diels) C.Chr. | NBPG/RSS–1423 | – | 2700–2900 m | F | Ind bor |
| Polystichum bakerianum (Atkin. ex Cl) Diels | NBPG/RSS–1552 | – | 2600–2900 m | F | – |
| P. piceopaleaceum Tagawa | NBPG/RSS–1553 | – | 2500–2700 m | F | Formosa (Taiwan) |
| P. squarrosum (D.Don) Fee | NBPG/RSS–1554 | – | 2600–2900 m | F | – |
| P. thomsonii (Hook.f.) Bedd. | NBPG/RSS–1555 | – | 2500–2900 m | F | Ind bor |
| P. yunnanense Christ | NBPG/RSS–1556 | – | 2700–3100 m | F | Reg Himal |
| Equisetaceae | | | | | |
| Equisetum arvense L. | NBPG/RSS–1431 | – | 2690–2900 m | F | Alaska |
| E. diffusum (D.Don) Fee | NBPG/RSS–1432 | – | 2470–2900 m | F | – |
| E. giganteum L. | NBPG/RSS–1433 | – | 3100–3500 m | F | – |
| Ophioglossaceae | | | | | |
| Botrychium ternatum (Thunb.) Sw | NBPG/RSS–1373 | – | 2000–2900 m | F | Japon Himal; Argent |
| Osmundaceae | | | | | |
| Osmunda claytoniana L. | NBPG/RSS–1521 | – | 2500–2800 m | F | – |
| Polypodiaceae | | | | | |
| Lepisorus morrisonensis (Hayata ) H.Ito | NBPG/RSS–1491 | – | 2800–3000 m | F | – |
| L. nudus Ching | NBPG/RSS–1492 | – | 3100–3350 m | F | – |
| Pteridaceae | | | | | |
| Cheilanthes dalhouisiae Hk. | NBPG/RSS–1385 | – | 2200–2950 m | F | Reg Himal |
| P. cretica L. | NBPG/RSS–1567 | – | 2200–2500 m | F | – |
| P. pseudoquadriaurita Khullar | NBPG/RSS–1568 | – | 2400–2800 m | F | Reg Himal |
| Selaginellaceae | | | | | |
| Selaginella jacquemontii Spring | NBPG/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 |