

## A Checklist of Trans-Himalayan Dicot Flora of Dolpo and Its Surrounding Region in Northwest Nepal

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### ABSTRACT

Dolpo and Mustang lie in *trans*-Himalayan parts of Nepal. Present research revealed the phytogeographic uniqueness and floristic richness. Climatic barrier is the main cause of high endemism, richness of flora, high aridity and rain shadow effect in the study area. A list of 1 forma, 14 varieties, 7 subspecies, and 312 species under 149 genera and 44 families of flowering plants of Dicotyledones were recorded from the *trans*-Himalayan area of northwest Nepal. Among the total species documented in the present study, 155 species were Himalayan endemic, and 18 Nepal endemic. Similarly 71, 36, 23, and 13 showed affinities with Southeast Chinese, Holarctic, Central Asiatic, and Eastern Asiatic regions.

**Key words:** checklist, dicotyledonae, flora, phytogeography, *trans*-Himalaya.

### INTRODUCTION

Since the botanical exploration in Nepal done by F. Buchanan-Hamilton in 1802-03 the major floristic enumerations have been focusing in central and eastern part of Nepal. Little attention has been given to the floristic study of western Nepal; particularly high altitudinal region. Thus, the present paper aims to list the dicot flora of angiosperms in North-West part (Dolpo and its surrounding Mustang region) of Nepal with special attention given to the *trans*-Himalayan arid areas.

### STUDY AREA

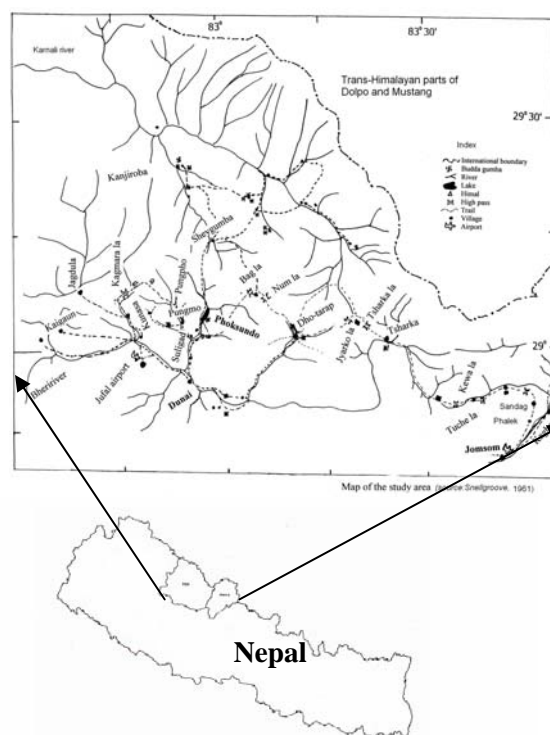
The study area lies in between 28°45'-29°45'N latitude and 82°20'-83°45'E longitude covering part of upper Dolpo and upper Mustang in *trans*-Himalayan zone (Map 1). The area is arid as it is located at the rain shadow zone beyond the high mountain ridges formed by Mt. Dhaulagiri, Annapurna and Kanjiroba massive. The area is represented by its richness in alpine and arid flora with its phytogeographic uniqueness. The altitude ranges from 3600 to 6400 m above sea level. The study area represents sub-alpine, alpine to upper-alpine type of vegetation with an altitudinal gradient of 3600-5600m. The *trans*-himalayan area is almost treeless and unexplored with arid ecosystem. Furthermore, it is considered as the most important sanctuaries of flowering as well as medicinal plants in western Nepal, and its ecological condition along with cultural virginity show it as the hidden paradise (Shakya, 1991; Ghimire *et al.*, 2001 and Shrestha, 2004).

The climate is similar to Tibetan Plateau with higher solar radiation and extremely low precipitation and it ranges from cool and humid to arctic and cold desertic types. Annual rainfall drops 250-500mm along the Tibetan borderland in western Nepal because of rain shadow and distance from the Bay of Bengal (Shrestha, 2004, Shrestha *et al.* 2005).

### MATERIALS AND METHOD

The plant specimens of *trans*-Himalayan region include the collections done during two-field expeditions during different seasons in 2001-2003 and also some of the specimens collected by K. K. Shrestha and S. K. Ghimire during 1996-1997 and S. K. Ghimire 1997-2001. The collected specimens were thoroughly examined and identified by using relevant references as Hooker (1883-1887), Duthie (1903-1929),

Collect (1921), DPR (1976, 1994), Grierson and Long (1983-2001), Ohba and Malla (1988, 1991), Yamazi (1988); Noltie (1994-2003), Polunin and Stainton (1984); Maheshwari (1997b); Ohba & Ikeada (1999) and Zhengyi & Raveen (1994-2001). They were crosschecked with the herbarium specimens deposited at KATH and TUCH. For collection of data related to origin of flora different literatures were consulted (Mani, 1978; Dobremez *et al.*, 1967-2003). The nomenclature given in latest taxonomic literatures (Press *et al.*, 2000; DPR, 2001) were adopted. The herbarium specimens are deposited at Tribhuvan University Central Herbarium (TUCH), Kirtipur, Kathmandu, Nepal.



Map 1: Map's showing the trans-Himalayan parts of Dolpo and Mustang region of Northwest Nepal (Source: Snellgroove, 1961)

## RESULTS AND DISCUSSION

The flora of the study area is comprised of a total 1 forma, 14 varieties, 7 subspecies, and 312 species under 149 genera and 44 families of flowering plants of Dicotyledons (see Checklist).

**a. Family composition:** In the present research Compositae was found to be the first largest family (37 species and 18 genera) and Ranunculaceae was the second largest family (30 / 9); then followed by other families Leguminosae (21/ 10), Cruciferae (18 / 13 ), Scrophulariaceae (18 / 8), Labaitae (16 / 14 ), and Primulaceae (16 / 2 genera). The largest genus recorded was *Saxifraga* with 14 species, followed by *Primula* (11), *Pedicularis* (10), *Corydalis* (7), *Potentilla* (7), *Androsace* (6), *Saussurea* (6), *Anemone* (6), *Delphinium* (6) and *Aster* (5). The families followed by Genus and Species names are arranged alphabetically in checklist given below.

**b. Phytogeography and origin of flora:** The evolutionary development and presence of mountains on all the continental landmasses, and their climatic variations accordance with elevation affect the distribution of plants through its time of origin. In the present paper, origins of flora have been documented and are grouped under different categories. Out of 334 plant species, 155 species were Himalayan endemic and 18 were Nepal endemic. Similarly, 71 species showed affinity with South East Chinese region, 36 with Holarctic, 23 with Central Asiatic, 14 with Sino-Japanese or Eastern Asiatic, 5 with Tibetan, and Indian, Sino-Japanese-Indo-Malaysian East Asiatic-Malaysian, Tropical, Western Asiatic region each belongs to two species respectively. Two species were introduced or cultivated. The result showed that the study area is highly influenced by South East Chinese region. Tibetan elements are also profoundly found in the northern side of *trans*-Himalayan flora.

**c. New addition to the Flora of Nepal:** In the present study 2 genera, 3 varieties, 3 subspecies and 12 species were recorded as new addition to the flora of Nepal. Besides, 70 species were recorded as new addition to the Flora of Northwest Nepal and 84 species were recorded as new within and beyond their range of vertical distribution. These species are marked by asterik (\*) and bold number in altitude and single letter in distribution in the checklist given below.

### Checklist of Trans-Himalayan Dicot flora of Northwestern Nepal

#### Family 1. BERBERIDACEAE

##### 1. *Berberis* L.

1. *B. angulosa* Wall. ex Hook. f. & Thomson, Shrubland. Pugmo, 4300 m, *PPI97-95* (Dolpa).

**Origin & Distribution:** Himalaya endemic. CE Nepal (3400-4500m). Himalaya (Nepal, Sikkim), NE India, China (SE Tibet, Xizang).

##### 2. *B. lycium* Royle

Moist shrub land. Ruktang, 3000m (fl), *PPI97-65* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1800-2900m). NE Afghanistan Himalaya (Kashmir to Nepal).

##### 3. *B. mucrifolia* Ahrendt,

Dry place. Dho, 4200m, *Maan-115* (Dolpa).

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**Origin & Distribution:** Nepal Endemic. WCE Nepal (2100-4500m), Nepal.

#### 2. *Podophyllum* L.

##### 1. *P. hexandrum* Royle

Moist meadows. Kunasa, 4100m, *SM-457a* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-4500m), Afghanistan, Himalaya (Kashmir to Arunachal Pradesh), W. China.

#### Family 2. BIGNONIACEAE

##### 1. *Incarvillea* Juss.

##### 1. *I. mairei* (H. Lev.) Grierson

Open dry place. Siptyo, Dho, 4200m, *SMDMN-197*; Bag la to Chunar (Malebagar), 4200m, *SMDNL-366* (Dolpa).

**Origin & distribution:** South east Chinese. WC Nepal (3000-4700m), Himalaya (Nepal, Bhutan), W China.

#### Family 3. BORAGINACEAE

##### 1. *Arnebia* Forssk.

##### 1. *A. benthami* (Wall. ex G. Don) I. M. Johnston

Grows on open slopes, shrubberies. Kunasa, 3900m, July 1998 (fl), *PPI97-206*; Ribumba, Dho, 4200m, *Maan-137* (Dolpa).

**Origin & Distribution:** Himalayan endemic. W Nepal (2800-4000m), Himalaya (Kashmir to Nepal).

##### 2. *Cyanoglossum* L.

##### 1. *C. zeylanicum* (Vahl. ex Hornem.) Thunb. ex Lehm.,

Cultivated areas, grazing grounds, wasteland. Jomesome, 3000m, *SMDMN-11* (Mustang).

**Origin & Distribution:** Sino-Japanese-Indo-Malaysian. WCE Nepal (1200-4100m), Afghanistan, Himalaya (Kashmir to Bhutan), India, Sri Lanka, east to China and Japan, Malaysia.

##### 3. *Eritrichium* Schrad.

##### 1. *E. cannum* (Benth.) Kitam.

Rocky dry meadows. Dho to Num la Phedi, 4300m, *SMDMN-250* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WC Nepal (3800-4600m), Afghanistan, Himalaya (Kashmir to Nepal), China (S Tibet-Xizang)

##### 4. *Hackelia* Opiz.

##### 1. *H. uncinata* (Benth.) Fisch.

Shrub land. Way to Punikha, 3800m, *SM-529* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (2700-4200m), Himalaya (Kashmir to Bhutan), NE India (Assam), China (Xizang, Yunnan).

##### 5. *Lindelofia* Lehm.

##### \*1. *L. anchusoides* (Lindl.) Lehm.

Open dry place. Thujekarma to Juniperus forest base camp (Sandak valley), 4000m, *SMDMN-82* (Mustang).

**Origin & Distribution:** Centrasiatic. W Nepal (4000m) NE Afghanistan, Himalaya (Kashmir to Himanchal Pradesh).

##### \*2. *L. stylosa* (Kar. & Kir.) Brand in Engler

Rocky slopes. Dho to Num la Phedi, 4200m, *SMDN-247* (Dolpa).

**Origin & Distribution:** Centrasiatic. W Nepal (4200m), Afghanistan, Kyrgyzstan, Himalaya (Kashmir, Himanchal Pradesh to Nepal), Mongolia, China (C & W Gansu, NW Xizang).

##### 6. *Microula* Benth.

##### 1. *M. sikkimensis* (C.B. Clarke) Hemsl.

Moist and dry shrub land. Juniperus forest base camp (Sandak Valley), 3800m, *SMDMAN-96* (Mustang); Num la to Pelung, 4100m, *SMDN-330* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3500-4600m), Himalaya (Nepal to Bhutan), China (Xizang).

## 7. *Onosma* L.

\*1. *O. hispidum* Wall. ex G. Don.

Open meadows. Pungmo valley, 4000m, July 2001 (fl), *SG-425* (Dolpa).

**Origin & Distribution:** W Himalayan endemic. W Nepal (4000m). Afghanistan, Hiamlaya (Kashmir to Himachal Pradesh).

## 2. *O. bracteatum* Wall.

Open rocky meadows. Kagmara, 3900m, July 1997 (fl), *PPI97* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3300-5000m), Himalaya (Uttar Pradesh to Nepal)

## 8. *Pseudomertensia* Riedl.

1. *P. racemosa* (Benth.) Kazmi

Moist meadows. Punikha, 3700m, *SM-501* (Dolpa).

**Origin & Distribution:** West Himalayan endemic. W Nepal (2900m), Himalaya (Uttar Pradesh to Nepal)

## 9. *Trigonotis* Stev.

1. *T. rotundifolia* (Wall. ex Benth.) Benth. ex C. B. Clarke, Stream side. Pelung Bag la to Chunar, 4700m, *SMDN-358* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3600-5600m), Himalaya (Punjab to Bhutan), China (Xizang).

## Family 4. CAMPANULACEAE

### 1. *Campanula* L.

1. *C. pallida* Wall

Open grassland. Gunasa, Punikha, 3900m, *SML-812* (Dolpa).

**Origin & Distribution:** Sino-Japanese or eastern Asiatic. WCE Nepal (1000-4500m), Afghanistan, Himalaya, India, Myanmar, Indo-China, W China.

### 2. *Codonopsis* Wall.

1. *C. convolvulacea* Kurz

Shrub land. toizam, Chuje, 3350m, August 2000 (fl), *SP-402* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (2200-4200m), Himalaya (Nepal to Bhutan), NE India, Myanmar, W. China.

2. *C. rotundifolia* Benth

Shrub land. Pungmo, 3200m, August 2000 (fl) (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2400-3800m), Himalaya (Kashmir to Nepal).

3. *C. viridis* Wall.

Shrubby land. Chunche, 3200m, August 2000 (fl), *SP-295* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1200-3000m), Himalaya (Uttar Pradesh to Bhutan), NE India.

### 3. *Cyanthus* Wall.

1. *C. himalaicus* K. K. Shrestha

Shrub land. Chucho, 3250m, August 1998, *SP-300* (Dolpa)

**Origin & Distribution:** Nepal endemic. WC Nepal (3250m-3400-3600m), Nepal.

2. *C. incanus* Hook. F. & Thomson

Open meadows. Kagmara, 3600m, August 1998, *SP-331* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2100-4500m), Himalaya (Nepal to Bhutan), China (Tibet).

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3. *C. lobatus* Wall. ex Benth.

Open meadows. Kagmara, 3800, August 1998, *Sp -344* (Dolpa).

**Origin & Distribution:** South east Chinese WCE Nepal (3300-4700m), Himalaya (Punjab to Bhutan, NE India (Assam), China (Tibet).

4. *C. microphyllus* Edgew.

Open meadows. Kagmara, 3800m, August 1998, *SP-408* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2900-4800m), Himalaya (Garhwal to Sikkim), China (S Tibet).

## Family 5. CANNABACEAE

### 1. *Cannabis* L.

1. *Cannabis sativa* L.

Open dry land. Way to Tsharka, 4300m, *SMDMN-135a*; Dho, 3600m, *Maan-223*; Daja, 3400m, *SML-859* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (200-2700m-3600m). Probably native of C. Asia widely cultivated and naturalized in most temperate and tropical areas of the world.

## Family 6. CAPRIFOLIACEAE

### 1. *Lonicera* L.

1. *L. hispida* Pall. ex Willd.

Moist place. Siptyo, Dho, 4200m, , *Maan-233* (Dolpa).

**Origin & Distribution:** Sino-Japanese or Eastern Asiatic. WC Nepal (2900-4500m), Himalaya (Kashmir to Bhutan), Myanmar, China.

2. *L. myrtillos* Hook. f. & Thomson

Rocky dry slopes. Phalek, 3500m, *SMDMN-17* (Mustang).

**Origin & Distribution:** South east Chinese. WCE Nepal (2200-4200m), Himalaya (Kashmir to Bhutan), Myanmar, China (Tibet).

3. *L. obovata* Royle ex Hook. f. & Thomson

Dry shrub land. Sangda, 3800m, *SMDMN-94* (Mustang); Num la to Pelung, 4200m, *SMDNL-329* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3500-4400m), Afghanistan, Himalaya (Kashmir to Bhutan), China (Xizang).

4. *L. spinosa* (Jacquem. ex Decne.) Walp

Open dry rocky meadows. Dho to Num la Phedi, 4500m, *SMDMN-286* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3600-4600m), Afghanistan, Himalaya (Kashmir to Sikkim), China (Xizang).

## Family 7. CARYOPHYLLACEAE

### 1. *Arenaria* L.

1. *A. bryophylla* Fernald

Open rocky dry place. Tucho la to yak kharka (Boarder of mustang), 5000m, *SMDMN-117*; Ribumba, Dho, 4200m, *Maan-4* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (4000-5900m). Himalaya (Kashmir to Bhutan), China (Xizang).

\*2. *A. festuoides* Benth. ex Royle

Open rocky place. Near lunga, Kagmara, 4600m, *SM-941* (Dolpa).

**Origin & Distribution:** Tibetan. W Nepal (4600m). China (Qinghai, SW Xinjiang, Xizang), India, Pakistan.

3. *A. glanduligera* Edgew. ex Edgew. & Hook.

Open rocky dry place. Malewachaur to Lunga, 4400m, *SML-902a*. (Dolpa)

**Origin & Distribution:** Himalayan endemic. WCE Nepal (4100-5100m), Himalaya (Uttar Pradesh to Bhutan), China (S.Tibet-Xizang), NW India

## 2. *Silene* L

### 1. *S. gonosperma* (Rupr.) Bocquet

Open meadows, open rocky land. Way to Kagmara, 4600m, *SML-904*; Chunlebar, 4000m, *SML-917A*. Dokpa, 4200 m, *PPI99-115* (Dolpa)

**Origin & Distribution:** Centrasiatic. WCE Nepal (3000-5000m), C Asia, NE Afghanistan, Himalaya (Kashmir to Bhutan), NE India (Assam), W China (Gansu, Qinghai, Xinjiang, Xizang).

### 2. *S. moorcroftiana* Wall. ex Benth

Moist grassland. Dokpa, 4200m, June 1998, *SG-489* (Dolpa)

**Origin & Distribution:** Centrasiatic. WC Nepal (2500-4500m). Afganistan, Himalaya (Kashmir to Nepal), NE India (Assam), China (Tibet-Xizang).

### 3. *S. nigrescens* (Edgew.) Majumdar

Open dry rocky Place. Kunasa, 4300m, *SM-792*; Malewachaur to Lunga, 4500m, *SML-890*; Lunga, Kagmara south, 4600m, *SML-895* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WCE Nepal (4000-5000m), Himalaya (Nepal to Bhutan), Myanmar, India (Assam), China (S Tibet, SW Schuan, S. Xizang, SW Yunnan).

### 4. *S. setisperma* Majumdar

Open dry rocky grassland. Malewachaur to Lunga, 4400m, *SML-892* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3400-4700m), Himalaya (Kashmir to Nepal).

## 3. *Stellaria* L.

### 1. *S. congestiflora* H. Hara

Moist grassland. Mucroman pasture, 3600m, *SML-931* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WC Nepal (3600m-4200-4700m). Himalaya (Nepal to Bhutan), China (Xizang).

### 2. *S. decumbens* Edgew.

var *decumbens*

Rocky meadows. Pelung to Bag la, 4700m, *SMDNL-356* (Dolpa);

Thujekarmo to Juniperus forest base camp (Sangdak), 4200m, *SMDMN-68* (Mustang).

**Origin & Distribution:** South east Chinese. WCE Nepal (3200-4000m-4700m). NE Afghanistan, Himalaya (Kashmir to Bhutan), W. China (Tibet).

### 3. *S. media* (L.) Vill.

var *media*

Rocky meadows. Pelung-Bag la to Chunar, 4700m, *SMDMN-355* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (1800-2700m-4700m), Cosmopolitan, Himalaya (Kashmir to Bhutan), Pakistan, India, China (Sichuan, Tibet-Xizang, Yunnan).

## Family 8. CHENOPODIACEAE

### 1. *Chenopodium* L.

#### *C. album* L

Near farmland. Dho, 4200m, *Maan-68* (Dolpa).

**Origin & Distribution:** Introduced or cultivated. WC Nepal (2000-4000m-4200m), Cosmopolitan.

## Family 9. COMPOSITAE (ASTERACEAE)

### 1. *Anaphalis* DC.

#### 1. *A. triplinervis* var. *monocephala* (DC.) Airy Shaw

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Open rocky meadows and River bank. Jyarko la, 4400m, *SMDMN-199* (Mustang); Num la to Pelung, 4400m, *SMDMN-314*; 4700m, Way to Malewachaur, Kagmara, *SML-898*; Siptyo/Dho, 4300m, *Maan-146* (Dolpa)

**Origin & Distribution:** Sino-Japanese or Eastern Asiatic. WCE Nepal (3400-5500m), Himalaya. S. China, Taiwan.

### 2. *A. margaritacea* (L.) Benth.

Open meadows. Kagmara, 3700m, June 2000 (fl), *SG-421* (Dolpa).

**Origin & Distribution:** Holarctic. CE Nepal (1800-3100m), N America, N Pakistan (Chitral), Himalaya (Kashmir to Bhutan), Indo-China, China, Japan, E Russia.

## 2. *Arctium* L.

### 1. *A. lappa* L

Moist place. Lawan-Khani, Dho, 3300m, *Maan-248* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2100-3700m), Eurasia.

## 3. *Artemisia* L.

### 1. *A. gmelinii* Web. ex Stechm.

Near farmland. Dho, 4200m, *Maan-18* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2800-4300m), Siberia, C. Asia, Himalaya, Mongolia, N. and W. China.

### 2. *A. sieversiana* Willd.

Near farmland. Dho, 4200m, *M-70* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2100-4300m), S. Russia to Korea.

## 4. *Aster* L.

### 1. *A. albescens* (DC.) Hand.-Mazz.

Shrubby land. Dho, 3900m, *Maan-236*; Way to Pungfu, 3400m, *SM-514* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE (1500-4200m), Himalaya (Kashmir to Bhutan), NE India (Assam), Myanmar, W China (Tibet).

### 2. *A. flaccidus* Bunge

Rocky dry place. Yakkharka (Way to Tsharka), 5000m, *SMDMN-124* (Dolpa).

**Origin & Distribution:** Centrasiatic. WCE Nepal (4200-4900m), Pamir, Karakoram, Himalaya, C Asia, Mongolia, China, Siberia.

### 3. *A. falconeri* (C. B. Clarke) Hutch.

Moist meadows. Gunasa, 4200m, June 2000 (fl), *SG-736* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3700-4300m), Himalaya (Uttar Pradesh to Nepal).

### 4. *A. himalaicus* C. B. Clarke

Dry meadows. Num la to Pelung, 4500m, *SMDN-298*; Lunga, Kagmara base camp, 4600m, *SML-899* (Dolpa).

**Origin & Distribution:** South east Chinese. CE Nepal (3500-5200m), Himalaya (Nepal to Bhutan), NE India (Assam), Myanmar, China.

### 5. *A. indamellus* Grierson

Moist grassland meadows. Kunasa, 3900m, June 2000 (fl), *SG-6* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2200-4100m), Himalaya (Kashmir to Nepal), China (Xizang).

## 5. *Cremanthodium* Benth.

### 1. *C. arnicoides* (DC. ex Royle) R. D. Good

Moist grassland. Perisopa, Pungmo Valley, 3900m, *SM-559* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3100-4900m), Pakistan, Himalaya (Kashmir to Nepal), China (Xizang, Yunnan).

2. *C. decaisnei* C. B. Clarke  
Open moist meadows. Kagmara, 4700m, *SML-920* (Dolpa)  
**Origin & Distribution:** South east Chinese. WCE Nepal (3900-5000m), Himalaya (Kashmir to Bhutan), China (Tibet).
3. *C. ellisii* (Hook. f.) Kitam. ex Kitam. & Gould  
Open meadows & Dry place. Kagmara, 3800m, *SG-729*, Ribumba, Dho, 4300m, *Maan-217* (Dolpa).  
**Origin & Distribution:** South east Chinese. WE Nepal (3600-5500m), Himalaya, China.
4. *C. purpureifolium* Kitam.  
Rocky dry meadows. Pungfu, Pungfu valley, 4000m, *SM-523a* (Dolpa).  
**Origin & Distribution:** Nepal endemic. WC Nepal (3800-4900m), Nepal.
6. *Erigeron* L.  
1. *E. multiradiatus* (Lindl. ex DC.) C. B. Clarke  
Shady place. Khangar, Dho, 4400m, *Maan-195* (Dolpa).  
**Origin & Distribution:** South east Chinese. WCE Nepal (2600-4400m), Himalaya (Kashmir to Bhutan), China.
7. *Gerbera* L.  
1. *G. nivea* (DC.) Sch. Bip.  
Moist meadows. Talghera, 4100m, July 2000 (fl), *SG-619* (Dolpa).  
**Origin & Distribution:** South east Chinese. WC Nepal (2800-4500m), Himalaya (Nepal to Bhutan), NE India, China (Tibet).
8. *Inula* L.  
1. *I. racemosa* Hook. f.  
Open place. Dho, 4200m, July 1997 (fl), *PPI97* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (2500-3700m-4200m), Afghanistan, Pakistan (Chitral), Himalaya (Kashmir to Nepal).
9. *Jurinea* Cass.  
1. *J. dolomiaea* Boiss Dho, 4100m, *SMDMN-251*, Dokpa Pasture, 3600m, July 2000 (fl), *SG-488* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3200-4300m), Himalaya (Kashmir to Nepal).
10. *Leontopodium* R.Br.  
1. *L. himalaynum* DC  
Open meadows. Malewachaur, Kagmara, 4300m, *SML-888* (Dolpa).  
**Origin & Distribution:** South east Chinese. WCE Nepal (3000-5500m), Himalaya (Kashmir to Bhutan), China (Xizang).
2. *L. jacotianum* Beauverd var. *jacotianum*  
Dry place. Mirbik Pasture, Dho, 4400m, *Maan-185* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (2700-4900m), Himalaya (Kashmir to Bhutan), Myanmar, China (Yunnan).
3. *L. monocephalum* Edgew.  
Open dry rocky meadows. Tsharka to Dho, 4500m, *SMDMN-145*; Dho to Num la, 4200m, *SMD-278* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. CE Nepal (4600-5600m), Karakoram, Himalaya (Kashmir to Sikkim).
4. *L. cf. nanum* (Hook. f. and Thomson ex C.B. Clarke) Hand.-Mazz.  
Open rocky and dry meadows. Tsharka to Dho, 4700m, *SMDMN-202*; Num la to Pelung, 4500m, *SMDN-302* (Dolpa).  
**Origin & Distribution:** South east Chinese. WC Nepal (2300-4900m), Afghanistan, Pamir, Himalaya, China (Tibet).
5. *L. stracheyi* (Hook. f.) C.B. Clarke ex Hemsl.,  
Moist meadows. Kagmara, 3800m, July 2000 (fl), *SG-602* (Dolpa).
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- Origin & Distribution:** South east Chinese. WC Nepal (2200-4500m), Himalaya (Uttar Pradesh to Bhutan), China (Tibet).
11. *Nannoglottis* Maxim.  
1. *N. hookeri* (C. B. Clarke ex Hook. f.) Kitam.,  
Open moist rocky place. Talghera, Kunasa, 4300m, *SMDN-475*, (Dolpa).  
**Origin & Distribution:** Himalaya endemic. WCE Nepal (3400-4100m-4300m), Himalaya (Nepal to Bhutan), China (Xizang).
12. *Saussurea* DC.  
1. *S. auriculata* (DC.) Sch. Bip  
Moist grassland. Punikha, Kunasa, 3900m, *SM-820* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3100-3800m-3900m), Himalaya (Kashmir to Bhutan).
2. *S. gossypiphora* D. Don  
Rocky places. Kagmara, 4800m, *SM-905*; Jyarko la, 5000m, *Maan-1* (Dolpa)  
**Origin & Distribution:** South east Chinese. WCE Nepal (3500-5700m), Himalaya (Uttar Pradesh to Bhutan), China (Xizang).
3. *S. graminifolia* Wall. ex DC.  
Open rocky dry place. Jyarko la, 4500m, *SMDMN-231*; Kagmara, 4800m, July 2000, *SG-682* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE (3600-5600m); Himalaya (Uttar Pradesh to Bhutan), China (Xizang).
4. *S. roylei* (DC.) Sch. Bip  
Rocky moist meadows. Punikha, 3800m, *SM-552*; Way to Swebutang, 4100m, *SM-810*; Punikha, 3700m, *SM-828* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WC Nepal (3000-4900m), Himalaya (Kashmir to Nepal).
5. *S. simpsoniana* (Field. & Gardn.) Lipsch.  
Dry rocky Place. Jyarko La, 4800m, *SMDMN-230a* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3800-5600m), Himalaya (Kashmir to Sikkim).
7. *S. taraxacifolia* Wall ex DC.  
Near agriculture field. Dho, 4500m, *SMDN-287* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3400-5600m), Himalaya (Kashmir to Bhutan), S. China.
13. *Senecio* L.  
1. *S. chrysanthemoides* DC.  
Moist meadows. Kunasa, 3900m, July 2000, *SG-654* (Dolpa).  
**Origin & Distribution:** South east Chinese. WCE Nepal (1400-4000m), Pakistan (Chitral), Himalaya (Kashmir to Arunnachal Pradesh), NE India (Meghalaya), China (Tibet).
2. *S. graciliflorus* DC.  
Shrubby land. Way to Phoksundo, 3700m, July 2000 (fl), *SG-505* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (2500-4600m), Himalaya (Kashmir to Bhutan), China (Tibet-Xizang).
14. *Soroseris* Stebb.  
1. *S. hokeriana* (C. B. Clarke) Stebb.  
Open rocky meadows. Kagmara, July 2000 (fl), *SG-634* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (4100-5300m), Himalaya (Nepal to Bhutan), China (Xizang).
15. *Tanacetum* L.  
1. *T. dolichophyllum* (Kitam) Kitam. ex Kitam. & Gould.  
Open moist meadows. Jagdula, 3800m, July 1998 (fl), *SG-510* (Dolpa).

**Origin & Distribution:** South east Chinese WC Nepal (3000-4400m), Himalaya (Kashmir to Nepal), China (Sichuan).

**16. Taraxacum** Webber.

1. *T. sikkimense* Hand.-Mazz.

Near cultivate land. Phalek, 3300m, *SMDN-27* (Mustang)

**Origin & Distribution:** South east Chinese WCE Nepal (3300m-4500-4700m), Himalaya (Nepal, Sikkim), China (Sichuan).

2. *T. tibetanum* Hand.-Mazz.

Shrubby land. Thujekarmo to Juniperus forest base camp (Sandak valley), 4000m, *SMDMN-80* (Mustang).

**Origin & Distribution:** South east Chinese. C Nepal (4000-4300m), Himalaya (Nepal to Bhutan), China (Tibet).

**17. Waldheimia** Kar. & Kir.

1. *W. glabara* (Decne.) Regel

Open rocky meadows. Kagmara, 4700m, July 2000 (fl), *SG-723* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (4100-5400m), Pamir-Altai, Pakistan (Chitral), Karakoram, Himalaya (Kashmir to Bhutan).

Family 10. CONVULVACEAE

**1. Convolvulus** L.

1. *C. arvensis* L.

Near cultivated land. Phalek, 3200m, *SMDMN-32* (Mustang).

**Origin & Distribution:** Nepal endemic. WC Nepal (2600-4100m), Temperate regions.

Family 11. CRASSULACEAE

**1. Rhodiola** L.

1. *R. bupleroides* (Wall. ex Hook. f. & Thomson) S.H. Fu

Dry grassland. Mirn pasture, Dho, 4300m, *Maan-45* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (2000-5100m). Himalaya (Uttar Pradesh to Bhutan), NW Myanmar, China (Tibet-Xizang, Yunnan).

2. *R. heterodonta* (Hook. f. & Thomson) Borris.

Ribum ba gambado, Dho, 4300m, *Maan-82* (Dolpa).

**Origin & Distribution:** Centrasiatic. W Nepal (3900-5000m). NE Afghanistan, Pakistan (Chitral), Himalaya (Kashmir, Uttar Pradesh, Nepal), China (Tibet-Xizang).

3. *R. himalensis* (D. Don) S.H. Fu

Open dry meadows. Tsharka pasture to Dho (Jyarko la), 4500m, *SMDMN-169*; Siptyo, Dho, 4300m, *Maan-179* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3700-4600m). Himalaya (Nepal to Bhutan), China (Tibet-Xizang, Yunan).

4. *R. wallichiana* (Hook.) S. H. Fu \*var *wallichiana*

Rocky dry meadows. Num la pass to Pelung, 4500m, *SMDN-343* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3300-4200m). N Pakistan (Chitral), Himalaya (Kashmir to Bhutan), China (Tibet-Xizang).

**2. Sedum** L.

1. *S. multicaule* Wall. Ex Lindl

Rocky moist meadows. Kunasa, 3800m, *SMDN-420* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1500-3200m-3800m). Himalaya (Kashmir, Uttar Pradesh to Bhutan), NE India, Myanmar, China (Tibet-Xizang).

2. *S. oreades* (Decne.) Raym.-Hamet

Moist rocky meadows. Malewachaur, Kagmara, 4500m, *SM-885*, (Dolpa).

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**Origin & Distribution:** South east Chinese. WCE Nepal (3200-5200m). Himalaya (Kashmir, Himachal Pradesh to Bhutan), NE India (Assam), Myanmar, China (Xizang, Yunana).

Family 12. CRUCIFERAE (BRASSICACEAE)

**1. Arabidopsis** Heynh.

1. *A. himalaica* (Edgew.) O. E. Schulz,

Open meadows. Thujokarma to Juniperus forest base camp (Sandak), 4200m, *SMDMN-66* (Mustang); Ribumba, Dho, 4200m, *Maan-245* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-3800m-4200m). Afghanistan, Himalaya (Kashmir to Bhutan), China (Tibet, Xizang).

2. *A. lasiocarpa* (Hook. f. & Thomson) O.E. Schulz

Dry grass land. Dho; 4100m, *Maan-304*.

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2300-3300m-4100m). Himalaya (Pakistan, Nepal to Bhutan).

**2. Arabis** L.

1. *A. amplexicaulis* Edgew.

Open grassland. Punikha, 3700m, *SML-821* (Dolpa).

**Origin & Distribution:** Himalayan endemic. W Nepal (1800-3200m-3700m), Afghanistan, Pakistan, Himalaya (Kashmir to Nepal, Bhutan), China (Xizang).

2. *A. pterospermum* Edgew.

Punikha, 3400m, *SML-406*; Ribumba, Dho, 4200m, *Maan-33* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2300-4400m), Himalaya (Kashmir to Bhutan).

**3. Brassica** L.

1. *B. rapa* L.

Cultivated field. Siptyo, Dho, 4200m, *Maan-67* (Dolpa).

**Origin & Distribution:** Cultivated in Nepal, India, and China.

**4. Capsella** Medik.

1. *C. bursa-pastoris* (L.) Medik.

Dry place. Thujokarma to Juniferous forest base camp (Sandak), 3800m, *SMDMN-92* (Mustang); Ribumba, Dho, 4200m, *Maan-51* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (1400-4500m). Widely spread in temperate region

**5. Cardamine** L.

1. *C. loxostemonoides* O. E. Schulz

Dry grass land. Num la pass, 4500m, *SMDN-312*; Dho, 4100m, *Maan-301* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2900-5000m). Himalaya (Kashmir, Uttar Pradesh to Bhutan), China (S. Tibet, Xizang).

**6. Descurainia** Webb & Berth.

1. *D. sophia* (L.) Webb ex Prantl

Open place. Ribum ba gomba, Dho, 4200m, *Maan-4* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2200-4100m-4200m). Afghanistan, Pakistan, Himalaya (Kashmir to Bhutan), Mongolia, Russia, China. Europe, N. Africa, WC Asia, Wide spread.

**7. Draba** L.

1. *D. oreades* Schrenk

Dry meadows. Num la to Pelung, 4800m, *SMDN-319* (Dolpa). Dho 4100m, *Maan-1*.

**Origin & Distribution:** Holarctic. WCE Nepal (4100-6000m), C Asia, Altai, Himalaya, (Kashmir to Bhutan), Mongolia, China (Tibet).

## 8. *Erysimum* L.

### 1. *E. dolpoense* H. Hara

Open dry land, moist meadows, and crevices of rock cushions. *Maan-40*, Kunasa, 4100m, July 1997 (fl), *PPI97*; Yakkharka to Tsharka, 5000m, *SMDMN-130* (Dolpa).

**Origin & Distribution:** Nepal endemic. WC Nepal (4100m-4900m-5000m). Nepal.

### \*2. *E. melicentae* Dunn

Open dry place. Ribumba, 4200m, *Maan-255* (Dolpa).

**Origin & Distribution:** Western Himalayan endemic. W Nepal (4200m) N Pakistan to Kashmir.

## 9. *Lepidium* L.

### 1. *L. apetalum* Willd.

Near Farm land. Mohodyo, Dho, 4200m, *Maan-25*; Kunasa, 4200 m, July 1998, *PPI98-54*.

**Origin & Distribution:** Sino-Japanese or Eastern Asiatic. WC Nepal (2600-4100m-4200m). C. Asia, Himalaya, E. Siberia, Mongolia, China (Tibet).

### \*\*10. *Neotorularia* Hedge & J. Leonard

#### \*1. *N. humilis* (C.A. Mayer) Hedge & J. Leonard

Moist meadows. Kunasa, 4000m, June 2001 (fl+fr), *SG-743* (Dolpa).

**Origin & Distribution:** West Himalayan. W Nepal (4000m). Afghanistan, Pakistan, India, Kashmir, Kazaskatan, Korea, Mongolia, Russia, N America.

## 11. *Pegaeophyton* Hayek & Hand.-Mazz.

### 1. *P. Scapiflorum* (J. D. Hooker & Thomson) C. Marquand & Airy Shaw \*subsp. *scapiflorum*

Open moist rocky meadows, Bank of river and melting snow water canal. Near Yakkharka (Way towards Tsharka), 5000m, *SMDMN-111*; Lunga, Kagmara, 4600m, *SML-903* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (4400-4700m), Himalaya (Kashmir to Arunnachal Pradesh, Bhutan), China (S Tibet, Xizang), NE India (Assam).

## 11. *Roripa* Scop.

### 1. *R. indica* (L.) Hiern

Open slopes. Kunasa, 4000m, July 1998 (fl), *PPI98*; Ribum ba gomba, 4200, *Maan-202* (Dolpa).

**Origin & Distribution:** Tropical. WC Nepal (100-(200) 4100m). Himalaya, India, east to China and Japan, Malaysia.

## 12. *Staintoniella* H. Hara.

### 1. *S. nepalensis* H. Hara

Open rocky dry slopes. Jyarko la (Way to Dho), 4800m, *SMDMN-185*, (Dolpa).

**Origin & Distribution:** Nepal endemic. W Nepal (4800m-5000-5800m), Nepal.

## 13. *Thlaspi* L.

### 1. *T. arvense* L.

Near the farmland. Mohodyo, Dho, 4300m *Maan-187*; Mukroman, 3600m, June 1998 (fl), *PPI-219*.

**Origin & Distribution:** Holarctic. WC Nepal (2100-4500m), NE Afghanistan, Himalaya (Kashmir to Bhutan), NE India (Assam), Myanmar.

## 14. *Thaprospermum*

### \*1. *T. verticellatum* (Jeffrey & W.W. Smith) Al-Shehbaz

Dry rocky slopes. Numa la Pass, 4400m, *SMDN-315* (Dolpa).

**Origin & Distribution:** South east Chinese. C Nepal China (Tibet, Xizang, Yunana). 3800-5200m

## Family 13. CUSCUTACEAE

### 1. *Cuscuta* L.

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### 1. *C. europaea* var *indica* Engelm.

Open grassland meadows. Nauchara, Dokpa, 4000m, *SMDMN-664a* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal, (2700-4000m), NE Afghanistan, Himalaya (Kashmir to Nepal), China (E Tibet).

## Family 14. DIPSACACEAE

### 1. *Dipsacus* L.

Open grassland. Pungmo, 3800 m, *SMDMN-999a* (Dolpa).

#### 1. *D. inermis* Wall

**Origin & Distribution:** Himalayan endemic. WC Nepal (1400-4100m), Afghanistan, Himalaya (Kashmir, Nepal).

### 3. *Morina* L.

#### 1. *M. nepalensis* D. Don

Open moist grassland. Perisopa, 3700m, *SM-560* (Dolpa).

**Origin & Distribution:** South east Chinese WCE Nepal (3000-4500m), Himalaya (Nepal to Bhutan), NE India, N. Myanmar, W. China (S & E Tibet).

#### 2. *M. polyphylla* Wall. ex DC.

Open dry place. Num la Phedi, 4200cm, *SMDN- 226*; Ribum ba gomba, Dho, 4100m, *Maan-94* (Dolpa);

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-4300m), Himalaya (Uttar Pradesh to Bhutan).

### 2. *Pteroccephalus* Adans

#### 1. *P. hookeri* (C. B. Clarke) fthf.

Open moist grassland. Punikha, 3700m, *SML-829* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3000-4500m), Himalaya (Uttar Pradesh to Bhutan). China (S & E Tibet).

## Family 15. DROSERACEAE

### 1. *Drosera* L.

#### 1. *D. peltata* Sm. ex Willd

Open Rocky dry slopes. Talghera, Kunasa, 4300m, *SMDN-475* (Dolpa).

**Origin & Distribution:** Sino-Japanese-Indo-Malaysian. WCE Nepal (2500-3600m-4300m). Himalaya (Kashmir to Bhutan), NW India, China (S Tibet), Japan, Malaysia, Australia, Tasmania.

## Family 16. ELAEGNACEAE

### 1. *Hippophae* L.

#### 1. *H. tibetana* Schldl.

Dry scrubland. Tokkyu, Dho, 4300m, *Maan-160*; Sipchyo, Dho, 4200m, *SMDMN-229* (Dolpa)

**Origin & Distribution:** South east Chinese. CE Nepal (3800-4500m), Himalaya (Punjab to Bhutan), N & W China (Tibet).

## Family 17. ERICACEAE

### 1. *Cassiope* D. Don

#### 1. *C. fastigiata* (Wall) D. Don

Open moist meadows. Dokpa, 4000m, *SML-920a* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-5000m), Himalaya (Kashmir to Bhutan), China (S Tibet).

#### 2. *Rhododendron* L.

#### 1. *R. anthopogon* D. Don

var *hypenanthum* (Balf. f.) Hara

Open grassland. Buddhari, Dho, 4400m, *Maan-76*; Num la to Pelung, 4400m, *SMDN-326*; Malewachaur to Lunga (Kagmara phedi), 4500m, *SML-886* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3300-5000m), Himalaya (Kashmir to Bhutan), China (S Tibet).



2. **R. campanulatum** D. Don  
Scrubland, Dokpa, 3900m, July 1998 (fl), *PPI-135* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (2800-4400m), Himalaya (Kashmir to Nepal). China (Xizang).
3. **R. lepidotum** Wall. ex G. Don  
Dry meadows. Around Jella Pass (Sandak valley), 4000m, *SMDMN-49* (Mustang); Pelung Bag la to Chunar, 3400m, *SMDN-369* (Dolpa).  
**Origin & Distribution:** South east Chinese. WCE Nepal (2100-4700m), Himalaya (Kashmir to Arunnachal Pradesh), N. Myanmar, W & S China.
4. **R. nivale** Hook. f.  
Dry scrubland. Tsharka to Dho, 4600m *SMDMN-171* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (4600-5600m), Himalaya (Nepal to Bhutan), China (Xizang).

#### Family 18. EUPHORBIACEAE

1. **Euphorbia** L.  
1. **E. stracheyi** Boiss  
Rocky stream bank and open meadows. Around Jell pass, 4000m, *SMDMN- 61* (Mustang); Tsharka to Dho, 4200m, *SMDMN-223*; Dho to Num la Phedi, 4700m, *SMDN-281* (Dolpa).  
**Origin & Distribution:** South east Chinese. WCE Nepal (2000-5000m), Himalaya (Uttar Pradesh to Bhutan), China (W & S Tibet).

#### Family 19. GENTIANIACEAE

1. **Comastoma** (Wettst.) Toyok.  
1. **C. pedunculatum** (Royle ex D. Don) Holub,  
Open moist meadows. Kagmara, 4300m, June 2000 (fl), *SK - 00-8-54* (Dolpa).  
**Origin & Distribution:** WCE Nepal, Himalaya (Kashmir, Nepal to Bhutan), India, W & NC China.
2. **Exacum** L.  
1. **E. tetragonum** Roxb.  
Open meadows. Kunasa, 4000m, *DN-35* (Dolpa)  
**Origin & Distribution:** South east Chinese. WCE Nepal (900-2000m-4000m), Himalaya (UP to Bhutan), India, S. China, Indo-china, Malaysia.
3. **Gentiana** L.  
1. **G. algida** Pall.  
Open rocky meadows. Kagmara, 3800m, July 1998 (fl), *SP-426* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3800m, 4800m), Nepal, China (Xizang).
2. **G. capitata** Buch.-Ham. ex D. Don  
Moist meadows. Kunasa, 4000m, July 2001 (fl), *SG-744* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (1800-4500m), Himalaya (Uttar Pradesh to Bhutan), NE India (Assam), China (E Tibet).
3. **G. carinata** (D. Don.) Griseb  
Grassland. Talgera, Kunasa, 3900m, July 200, *PPI00* (Dolpa).  
**Origin & Distribution:** W. Himalaya endemic. W Nepal (3900m). Himalaya (Kashmir to Nepal).
4. **G. robusta** King ex Hook. f.  
Grass land. Tsugso, Dho, 4200m, 19<sup>th</sup> June 2002 (fl), *Maan-54* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WC Nepal (3500, 4200m), Himalaya (Nepal, Sikkim).
4. **Gentianopsis** Ma.

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1. **G. paludosa** (Murno ex Hook. f.) Ma  
Shrub land and Shady place. Malewachaur, 4200m, *SML-872*, Rupti, Dho, 4300m, *Maan-107* (Dolpa).  
**Origin & Distribution:** South east Chinese. WCE Nepal (4200m, 4300m), N Pakistan, Himalaya (Nepal to Bhutan), India, China (Tibet-Xizang).
5. **Halenia** Bork.  
1. **H. elliptica** D. Don  
Moist meadows. Kunasa, 3800m, July 2000 (fl), *PPI98* (Dolpa).  
**Origin & Distribution:** Holarctic. WCE Nepal (2000-4500m), W Asia, Kyrgyzstan, Himalaya (Uttar Pradesh to Bhutan), NE India (Assam), Myanmar, China (Xizang, Yunnan, Gansu).
6. **Lomatogonium** A. Braun.  
1. **L. sikkimense** (Burkill) H. Sm.  
Moist meadows. Talgera, Kunasa, 4200m, August 2000 (fl), *PPI00*.  
Origin & Distribution: South east Chinese. WCE Nepal (3000-4000m-4200m), Himalaya (Nepal to Sikkim), NE India (Assam ?), China (Tibet-Xizang).
7. **Swertia** L.  
1. **S. ciliata** (D. Don ex G. Don) B.L. Burt,  
Open grassland meadows. Ringmo, 3800m, August 1998 (fl), *PPI98* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (2800-4000m), NE Afghanistan, Himalaya (Kashmir to Sikkim).
2. **S. cuneata** D. Don.  
Moist meadows. Bangkal, 4200m, August 1998 (fl), *PPI98* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3900-5000m), Himalaya (Uttar Pradesh to Sikkim), NE India (Assam), China (Xizang).
3. **S. dilatata** C. B. Clarke  
Open moist meadows. Kunasa, 3900m, August 1998 (fl), *PPI98* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. W C Nepal (1800-4000m), Himalaya (Nepal to Bhutan), NE India (Assam), Myanmar, China (SE Tibet).
- \*4. **S. musotii** Franch.  
Open moist meadows. Kunasa, 4200m, August 1998 (fl), *PPI98-51* (Dolpa).  
**Origin & Distribution:** South east Chinese. W Nepal (4200m). China (1900-3800m, E Tibet, Xizang).

#### Family 20. GERANIACEAE

1. **Geranium** L.  
1. **G. donianum** Sweet  
Open meadows. Way to Kagmara, 3800m, June 2000 (fl +fr), *SG-443* (Dolpa).  
**Origin & Distribution:** Himalayan endemic. WCE Nepal (3200-4800m), Himalaya (Nepal to Bhutan), China (Tibet-Xizang).
2. **G. nakaoanum** Hara  
Open dry rocky meadows. Dho to Num la Phedi, 4700m, *SMDMN -283* (Dolpa).  
**Origin & Distribution:** E Himalayan endemic. WCE Nepal (3500-4500m-4700m), Himalaya (Nepal-Bhutan).
3. **G. pratense** L.  
Dry meadows. Tsharka to Dho, 4200m, *SMDMN-207*; Tongo, Dho, 4200m, *Maan-57B* (Dolpa).  
**Origin & Distribution:** Holarctic. WC Nepal (2200-3500m 4200m), Eurasia, Himalaya (Kashmir to Nepal).
4. **G. procurrens** Yeo



Shrub land and open moist meadows. Dunai to Sancta, 2700m, *SM-751*; Dhatunka, Pungmo valley, 4000m, *SM-844* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2100-3500m-4000m), Himalaya (UP to Bhutan), N & NE India.

#### Family 21. LABIATAE (LAMIACEAE)

##### 1. *Ajuga* L.

###### 1. *A. lupulina* Maxim

Open dry as well as moist meadows. Kunasa, 3800m, *SM-402*; Ringmo, Phoksundo, 3600m, *SML-780*; Dho, 4300m, *Maan-27* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (2200-4500m), NE India (Assam), China

##### 2. *Dracocephalum* L.

###### 3. *D. heterophyllum* Benth

Open rocky dry meadows. Khangar, Dho, 4300m, *Maan-47*; Charka to Dho, 4900m, *SMDMN-193*; Dho to Num la, 4300m, *SMDN-259*; Dho, 4100m, *SMDMN-244*;

**Origin & Distribution:** Centrasiatic. WC Nepal (3400-5500m), Turkistan, Himalaya (Kashmir to Sikkim), China (Xizang).

###### 4. *D. tanguticum* Maxim.

Dry meadows. Chumag, Dho, 4300m, *Maan-239* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3400-5000m), Himalaya (Nepal, Sikkim), China (Xizang).

##### 3. *Eriophyton* Benth.

###### 1. *E. wallichii* Benth.

Rocky dry place. Jyarko la, 5000m, *Maan-205* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (4000-5400m), Himalaya (Nepal to Bhutan), China (SE Tibet, Yunan).

##### 4. *Elsholtzia* Willd.

###### 1. *E. densa* Benth.

Moist meadows. Kunasa, 3900m, July 1998 (fl), *PPI98-63* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2400-4600m), Afghanistan, Pakistan, Chitral, Himalaya (Kashmir to Bhutan), India, China (S & E Tibet), Manchuria.

###### 2. *E. eriostachya* (Benth.) Benth.

Open slopes, alpine meadows, damp places. Kunasa, 4000m, July 1998 (fl), *PPI98-62* (Dolpa).

**Origin & Distribution:** Himalayan endemic or Indian?. WCE Nepal (3000-4800m). Himalaya (Kashmir to Bhutan), India, China (S & E Tibet).

##### 5. *Glechoma* L.

###### 1. *G. nivalis* (Benth.) Press.

Rock crevices of dry rocky meadows. Yak khark to Tsharka, 5000m, *SMDMN-131*; Jyarko la, 4600m, *SMDMN-184*; Pelung 4300m, *SMDMN-324*; Ribumba, Dho, 4300m, *Maan-47* (Dolpa); Juniperus forest base camp to yak Kharka, 4300m, *SMDMN-102* (Mustang)

**Origin & Distribution:** Himalayan endemic. W Nepal (4300-5500m), Himalaya (Kashmir to Bhutan), India, China.

##### 6. *Lamiophlomis* Kudô

###### 1. *L. rotata* (Benth. ex Hook. f.) Kudô

Dry meadows. Yak-kharka (Way to Tsharka), 5000m, *SMDMN-135*; Tongo, Dho, 4200m, *Maan-138* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (4100-5200m), Himalaya (Nepal, Bhutan), India, C. China.

##### 7. *Lamium* L.

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###### 1. *L. tuberosum* Hedge

Open rocky place. Around Jella pass to Pemajong (Sandak), 4000m, *SMDMN-50* (Mustang); Ribumba, Dho, 4200m, *Maan-59* (Dolpa).

**Origin & Distribution:** Nepal endemic. WC Nepal (3900-4800m), Nepal.

##### 8. *Micromeria* Benth.

###### 1. *M. biflora* (Buch.-Ham. ex D. Don) Benth.

Forest bed. Punikha, 3600m, *SMD-498* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (900-4000m), Afghanistan, Pakistan (Chitral), Punjab, Himalaya (Kashmir to Bhutan), India, Myanmar.

##### 9. *Origanum* L.

###### 1. *O. vulgare* L.

Moist shrubby grassland. Punikha (Pungmo valley) 3600m, *SM-494*; below khani, 3900m, *Maan-263* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (600-4000m), throughout Europe, Asia and N. America. NE Afghanistan, Himalaya (Kashmir to Nepal), China (E Tibet).

##### 10. *Phlomis* L.

###### 1. *P. bracteosa* Royle ex Benth.

Forest bed. Way to Malewachaur, 3600m *SML-865* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2400-4100m), Afghanistan, Punjab, Himalaya (Kashmir to Bhutan), India.

##### 11. *Salvia* L.

###### 1. *S. hians* Royle ex Benth.

Tubers are given to women during delivery to check excessive bleeding.

Moist grassland. Way to Pungfu, 3700m, *SM-532*; Siptyo, Dho, 4200m, *Maan-235* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2600-4100m), Himalaya (Kashmir to Bhutan).

##### 12. *Scutellaria* L.

###### 1. *S. prostrata* Jacq. ex Benth.

Open meadows. Ribumba gomba, Dho, 4200m, *Maan-80*; Sanda, 3800m, *SMDMN-95* (Mustang); Charka to Dho, 4500m, *SMDMN-230*; Pelung to Chunar, 4300m, *SMDNL-365* (Dolpa).

**Origin & Distribution:** Indian. WC Nepal (2400-4500m), Pakistan (Chitral), Himalaya (Kashmir to Bhutan), India.

##### 13. *Stachys* L.

###### 1. *S. sericea* Wall. ex Benth.

Dry meadows. Ringmo, 3600m, *ML-800a* (Dolpa).

**Origin & Distribution:** Himalayan endemic. W Nepal (2400-3900m), NE Afghanistan, Pakistan (Chitral), Himalaya (Kashmir to Bhutan), India.

##### 14. *Thymus* L.

###### 1. *T. linearis* Benth.

Moist as well as rocky dry land. Jomesome, 3000m, *SMDMN-1* (Mustang); Kunasa, 4000m, *SM-488*; Malewachaur, Way to Kagmara, 3600m, *SML-864* (Dolpa).

**Origin & Distribution:** Sino-Japanese or eastern Asiatic. WC Nepal (2400-4500m), NE Afghanistan, Pakistan (Chitral), Himalaya (Kashmir to Nepal), India, China (Xizang), Japan.

#### Family 22. LEGUMINOSAE (FABACEAE)

##### 1. *Astragalus* L.

###### 1. *A. candolleanus* Royle ex Benth

Moist grassland. Punikha, 3500m, *SM-505* (Dolpa).

**Origin and Distribution:** Himalayan endemic. WC Nepal (3500-4500m), W. Pakistan, W. Himalaya.

2. *A. donianus* DC.,

Open moist grassland, Kunasa, 4200 m, July 1997 (fl), *PPI* 97-167 (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (2900-4500m), Himalaya (Nepal to Bhutan)

3. *A. floridus* Benth. ex Bunge

Found on open meadows. Dokpa, 4000m, July 1997(fl), *PPI* 166 (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (4000m-4200m-4700m), Himalaya (Nepal to Bhutan), China (Xizang S. Tibet).

4. *A. yunnanesis* Franch.

Moist alpine meadows. Num la Phedi to Pelung, 4400m, *SMDN-350*, Pungfu, 4200m, *SM-548* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3500-5600m), Nepal, SW China.

2. *Caragana* Lam.

1. *C. brevifolia* Kom

Open dry meadows. Yak-Kharka to Tsharka Bhot, 4500m, *SMDMN-137* (Dolpa).

**Origin & Distribution:** West Himalayan endemic. ? Nepal, Himalaya [Kashmir to Uttar Pradesh (3300-4500m)].

2. *C. brevispina* Royle

Found in the shrubberies. Phalek, 3500m, *SMDMN-19* (Mustang); Khani, 3500m, *Maan-252* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2400-3200m-3500m), Himalaya (Kashmir to C Nepal).

3. *C. gerardiana* Royle

Open dry slopes. Jella Pass to Pemajong (Sandak), 3600m, *SMDMN-46* (Mustang).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3000-4200m), Afghanistan, N Pakistan, Himalaya (Uttar Pradesh, C Nepal).

4. *C. jubata* (Pall.) Poir

Open rocky slopes. Jella pass, 4000m, *SMDMN-52* (Mustang).

**Origin & Distribution:** South east Chinese. WC Nepal (3300-4000m), C Asia, Himalaya (Nepal to Bhutan), China, Mongolia.

3. *Chesneya* Lindl. ex Endl.

1. *C. nubigena* (D. Don.) Ali

Num la to Pelung, 4700m, *SMDN-296* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3600-5200m), Himalaya (Uttar Pradesh to Bhutan), Myanmar, China (S & E Tibet, Xizang).

4. *Gueldenstaedtia* Fisch.

1. *G. himalaica* Baker

Open rocky dry meadows. Juniperus forest base camp (Sandak valley), 4300m, *SMDMN-101* (Mustang); Num la Pass, 4700m, *SMDN-294*; Kunasa, 4100m, June 2000 (fl), *SG-1027* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3300-4600m-4700m), Himalaya (UP to Bhutan), China (S Tibet).

5. *Lotus* L.

1. *L. corniculatus* L.

Near cultivated land. Phalek, 3500m, *SMDMN-23* (Mustang).

**Origin & Distribution:** Holarctic. WC Nepal (1500-3900m), Europe, Africa, Himalaya (Kashmir top Nepal), India, Japan, Korea, Australia.

6. *Medicago* L.

1. *M. falcata* L.

Near cultivated land. Phalek, 3500m, *SMDMN-20* (Mustang)

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**Origin & Distribution:** Holarctic. WC Nepal (2700-4000m), Europe, W & C Asia, Himalaya, China, Siberia, Introduced in E Asia.

7. *Oxytropis* DC.

1. *O. arenae-ripariae* Vassilcz.,

Rocky meadows. Tuche la to Yak Kharka, 5200m, *SMDMN-108*, (Mustang); Tsharka to Tsharka pasture, 4700m, *SMDMN-156* (Dolpa).

**Origin & Distribution:** Nepal endemic. WE Nepal (4500-4700m-5200m), Nepal.

2. *O. humifusa* Kar. & Kir.

Open rocky meadows. Tsharka to Dho, 4700m, *SMDMN-155* (Dolpa)

**Origin & Distribution:** Centrasiatic. WCE Nepal (3900-4800m-5000m), C Asia, Hiamalaya (Pakistan to Himachal Pradesh), China (Tibet).

3. *O. lapponica* (Wahlenb.) J. Gay

Open moist meadows, Kagmara, 3800m, June 2000 (fl), *SP-330* (Dolpa).

**Origin & Distribution:** Holarctic. E Nepal (3400-4400m), NE Afghanistan, Himalaya (Nepal to Bhutan), China (E Tibet), Temperate N hemisphere.

4. *O. microphylla* (Pall.) DC.

Open dry meadows. Sandak to Yakkharka, 4500m, *SMDMN-100a* (Dolpa).

**Origin & Distribution:** South east Chinese. C Nepal (2700-4100), Himalaya to Mongolia, SE Siberia and S. China.

5. *O. williamsii* Vassilcz

Open rocky dry slopes. Way to Phalek, 2900m, *SMDMN-2* (Mustang); Dho to Num la Phedi, 4300 m, *SMDMN-257* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2500-4400m), Nepal.

8. *Parochetus* Buch.-Ham. ex D. Don.

1. *P. communis* Buch.-Ham. ex D. Don

Open moist meadows. Kunasa, 4000m, *SM-426*; Jagdulla, 3650m, June 1998, *SP-503* (Dolpa).

**Origin & Distribution:** Tropical. WCE Nepal (900-4000m), Himalaya (Nepal to Bhutan), China (S & E Tibet).

9. *Trigonella* L.

1. *T. emodi* Benth

Near cultivated land and rocky slopes. Dho, 4100m, *Maan-15*; Dho to Num la Phedi, 4200m, *SMDMN-248* (Dolpa).

**Origin & Distribution:** Centrasiatic. WCE Nepal (1300-4900m), NE Afghanistan, Turkistan, Himalaya (Kashmir to Nepal), China (Tibet and Xizang).

10. *Thermopsis* R. Br.

1. *T. barbata* Royle

Open moist meadows and dry land. Above Raytega, Dho, 4400m, *Maan-147*; Kunasa, 4100m, *SMD-460* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WC Nepal (2700-4600m), Himalaya (Kashmir to Bhutan), China (Tibet).

2. *T. lanceolata* R. Br. Ex W. T. Aiton

Dry rocky meadows. Yak Kharka (Way to Tsharka), 4800m, *SMDMN-125* (Dolpa).

**Origin & Distribution:** Centrasiatic. WC Nepal (3600-4300m-4800m), C Asia, Nepal, China (Tibet-Xizang), Mongolia, Siberia.

Family 23. LENTIBULARIACEAE

1. *Pinguicula* L.

1. *P. alpina* L.

Open moist meadows. Pelung (in between Num la & Bag la), 4100m *SMDMN-243* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (3000-4400m), Europe, Himalaya (Kashmir to Arunnachal Pradesh), N. Myanmar, China (Sichuan, Shensi, Yunnan).

#### Family 24. LOGANIACEAE

##### 1. *Buddleja* L.

###### 1. *B. crispa* Benth.

Dry shrub land. Tujekarmo to Juniperus forest base camp (Sandak valley), 3800m, *SMDMN-86* (Mustang).

**Origin & Distribution:** South east Chinese. WC Nepal (1800-4400m), Afghanistan, Pakistan, Himalaya (Nepal to Bhutan), China (S Tibet, Xizang).

#### Family 25. OROBANCHACEAE

##### 1. *Boschniakia* C. A. Mey.

###### 1. *B. himalaica* Hook. f. & Thomson ex Hook. f.

Open moist meadows. Chunlebar, 4000m, *SML-915* (Dolpa).

**Origin & Distribution:** Sino-Japanese or eastern Asiatic. WCE Nepal (2900-4300m), Himalaya (Uttar Pradesh to Arunnachal Pradesh), China, Taiwan.

#### Family 26. PAPAVERACEAE

##### 1. *Corydalis* Vent.

###### 1. *C. alburyi* Ludlow

Rocky place, on scree. Dho, 4200m, *Maan-161* (Dolpa)

**Origin & Distribution:** Nepal endemic. WC Nepal (4200-5300m)

###### 2. *C. cashmeriana* Royle

Open alpine screes. Chudeula, 3600m, June 1998, *PPI 163*; Kunasa, 4000m, June 1999, *PPI99-63* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2800-5500m), Himalaya (Kashmir to Bhutan), China (Xizang)

###### 3. *C. govaniana* Wall

Found in the shrubberies, open slopes, meadows. Dho to Num la Phedi, 4500m, *SMDMN-266*; Dho, 4400m, *Maan-96*.

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-4800m), Himalaya (Kashmir to Nepal).

###### 4. *C. latiflora* Hook. & Thomson

Rocky place. Tsharka to Dho, 4400m, *SMDMN-211*; Dho, 4200m, *Maan-187* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (4200-5500m). Himalaya (Nepal, Sikkim), China (S Tibet).

###### 5. *C. megacalyx* Ludlow

Open dry rocky slopes. Pungfu (Pungfu valley), 4200m, *SMD-553*; Kagmara, 4500 m, July 1998, *SP 385*; Dho-Tarap, 4200m, June 1997, *PPI97- 311*, Dho to Siptyo, 4200m, , *Maan-188*; Jagdula, 4025m, June 1998, *SP-513* (Dolpa).

**Origin & Distribution:** Nepal endemic. WCE Nepal (3600-5500m).

###### 6. *C. meifolia* Wall

Open rocky slopes. Malewachaur (Way to Kagmara), 4500m, Kagmara, 4500 m, July 1999, *PPI99-149*.

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3900-5700m), Himalaya (Uttar Pradesh, Nepal to Bhutan), China (S.E. Tibet, Xizang).

###### 7. *C. cf. polygalina* Hook. f. & Thomson

Rocky dry meadows. Talghera, Kunasa, 4300m, *SMDN-466* (Dolpa).

**Origin & Distribution:** Sino-Japanese. E Nepal (3900-6100m), Himalaya (Nepal to Bhutan), China (Xizang).

##### 2. *Dicranostigma* Hook.f. & Thomson.

###### 1. *D. lactuoides* Hook.f. & Thomson

Dry place. Ribumba, Dho, 4200m, *Maan-1*.

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**Origin & Distribution:** Western Himalayan endemic. WC Nepal (2700-4000m-4200m), Himalaya (Garwal to Nepal).

##### 3. *Hypecoum* L.

###### 1. *H. leptocarpum* Hook.f. & Thomson

Open rocky slopes. Siptyo, Dho, 4200m, *Maan-112* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (4400-4800m), Pakistan (Chitral), Himalaya (Nepal-Bhutan), China (Xizang).

##### 4. *Meconopsis* Vig.

###### 1. *M. grandis* Prain

**Origin & distribution:** Himalayan endemic. WCE Nepal (3000-5200m). Himalaya (Kashmir to Bhutan), N. Myanmar, W. China. Flowers are used in cough and fever.

###### 2. *M. horridula* Hook.f. & Thomson.

Dry rock cushion and Riverine valley. Tsharka to Dho, 4600m, *SMDN-219*; Rupti, Dho, 4500m, *Maan-167* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-5800m). Himalaya (Kashmir to Bhutan), N. Myanmar, W. China.

###### 3. *M. paniculata* Prain

Moist scrub land. Near Punikha, 3700m, *SMDN-477* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-4400m), Himalaya (Uttar Pradesh to Arunnachal Pradesh), NE India (Assam).

#### Family 27. PARNASSIACEAE

##### 1. *Parnassia* L.

###### 1. *P. nubicola* Wall. ex Royle,

Moist grassland. Near Punikha, 3800m, *SML-814* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2900-4200m). Afghanistan, Himalaya (Kashmir to Bhutan), China (SE Xizang, NW Yunnan).

###### \*2. *P. sp* Drude (New species from Nepal)

Moist meadows. Way to Kagmara, 4200m, *SML-814* (Dolpa).

**Origin & Distribution:** Sino Japanese or Eastern Asiatic. W Nepal (4200m). China (3100-4500m Gansu, Qinghai, Sichuan, Xizang, E Tibet, Yarlung Tsangpo valley).

#### Family 28. PLANTAGINACEAE

##### 1. *Plantago* L.

###### \*1. *P. depressa* Willd.

Moist grassland. Dho, 4100m, *dho 1, 2, 3* (Dolpa).

**Origin & Distribution:** Centrasitic. C Nepal (?3500m-Muktinath and trans Himalayan valley), Ural mountains, Siberia, Mongolia, Maanchuria, Sakhalin, The Tien Shan, Western Himalayas, China, Japan,

###### 2. *P. erosa* Wall.

Punikha, 3500m, *SM- 499*; Dho, 4200m, *Maan-111*. (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (900-4100m), India, Srilanka, Himalaya (Uttar Pradesh to Bhutan), NE India, Myanmar, China (Tibet).

#### Family 29. POLYGALACEAE

##### 1. *Polygala* L.

###### 1. *P. sibirica* L

Rock crevices. Sandak, 3800m, *SMDMN- 77* (Mustang).

**Origin & Distribution:** Holarctic. WC Nepal (2700-3600m-3800m), E Europe, Siberia, Himalaya (Kashmir to Nepal), NE India, China (Xizang), N. Korea.

#### Family 30. POLYGONACEAE

##### 1. *Bistorta* Scop.

###### 1. *B. affinis* (D. Don.) Greene

Open grass landland Rocky open slopes. Pungfu (Pungfu valley), 4100m, *SMD-516*; Talghera, Kunasa, 4300m (fl), *DN4-465*; Dho, 4300m, *Maan-151* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3500-4800m). Afghanistan, Himalaya (Kashmir to Sikkim), China (Tibet-Xizang).

2. **B. amplexicaulis** (D. Don) Greene

Moist place. Dho, 4300m, *Maan-154*; Kagmara, 4000 m, *SP-390*; Jagdulla, 3800 m *PPI-232* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (2100-4800m). NE Afghanistan, Himalaya (Kashmir to Nepal), China (Tibet-Xizang).

3. **B. macrophylla** (D. Don) Soják

Open grassland meadows. land.: Num la to Pelung, 4000m, *SMDN-340*; Rupti Khola, Dho, 4400m, *Maan-140*; Gunasa, 4200 m, *PPI99-79* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (2700-4500m). Himalaya (Utter Pradesh to Bhutan), NE India (Assam), WC China.

4. **B. milletii** Lévy

Open Rocky as well as wet meadows. Near Kewa la, 4300m (Mustang); Dho, 4200m, *SMDMN-233* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3000-3400m-4300m). Himalaya (Nepal to Bhutan), W. China.

5. **B. vivipara** (L.) Gray

Moist place. Dho, 4200m, *Maan-280*. Gunasa, 4200m, August 1998, *PPI00* (Dolpa)

**Origin & Distribution:** Holarctic. WCE Nepal (3300-5000m). Europe, WC Asia, Himalaya, Siberia, China, Japan, N. America, Greenland. Wide spread

2. **Oxyria** Hill.

1. **O. dignya** (L.) Hill

Open moist grass land. Pelung (In between Num la and Bag la), 4100m, *SMDN-328* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (2400-5000m). Europe, W. Asia NE Afghanistan, Himalaya (Kashmir to Bhutan), Siberia, China (Tibet-Xizang), N. Japan.

3. **Rheum** L.

1. **R. australe** D. Don

Moist scrub land. Punikha, 3700m *SM-478*; Punikha, 3700m, June 1998, *SG-639* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3200-4200m). Himalaya (Himachal Pradesh to Nepal), Bhutan, China (Tibet-Xizang).

2. **R. moorcroftianum** Royle

Open rocky gravel. South face of Kewala, 4800m, *SMDMN-109* (Mustang); River bank, Rupti khola, Dho, 4500m, *Maan-165* (Dolpa).

**Origin & Distribution:** Himalaya endemic. WC Nepal (3600-4400m-4800m). Himalaya (Utter Pradesh, Nepal), China (High Tibetan plateau).

4. **Rumex** L.

1. **R. nepalensis** Spreng.

Open dry grassland. Dho\_tarap, 400m, *PPI-282* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (1200-4200m). Sw Europe, W asia, Ne Afghanistan, Hiomalaya (Kasmir to Bhutan), India, WC china, ?java.

\*2. **Rumex patens** L. subsp. **tibeticus** (Rech.f.) Rech.f.

Open meadows. Near Phoksumdo lake, 3600m, *SML-777* (Dolpa)

**Origin & Distribution:** W Asiatic. W Nepal (3600m). Afghanistan to Himachal Pradesh, C. Asia, Iran.

1. **Androsace** L.

\*1. **A. alaschanica** Maxim

Rocky streamside. Dho to Num la, 4300m, *SMDN-277* (Dolpa).

**Origin & Distribution:** South east Chinese. China (1500-4500m, Gansu, Nei Mongol, Ningxia, S. Qinghai).

2. **A. globifera** Duby

Dry rocky place. Tuche la (Sandak), 5200m, *SMDMN-107* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3200-4700m-5200m), Himalaya (Punjab to Bhutan), NE India (Assam).

3. **A. muscoidea** Duby

forma **longiscapa** (Kunth) Hand.-Mazz.

Moist meadows. Perikarpu, 4000m, July 1997 (fl), *PPI 52* (Dolpa)

**Origin & Distribution:** Himalayan endemic. WC Nepal (3100-5600m), Karakoram, Himalaya (Kashmir to Nepal), China (SW Tibet).

4. **A. robusta** (Knuth) Hand.-Mazz

Open rocky meadows. Num la, 4700m, *SMDN-325* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3100-5600m), Pakistan, Himalaya (Kashmir to Nepal), China (Xizang).

5. **A. tapete** Maxim.

Rocky meadows. Tsharka to Dho, 4500m, *SMDMN-172* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3800-5200m), Himalaya (Nepal), China (Sichuan).

2. **Primula** L.

1. **P. buryana** Balf. f.

Rocky dry meadows. Num la, 4500m, *SMDN-306* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3100-5600m), Nepal, China (Tibet-Xizang).

2. **P. capitata** Hook f.

Open dry meadows. Phoksundo, 3700m, *SGL-782* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WE Nepal (3700m, 3800m), Himalaya (Nepal to Bhutan), China (Xizang).

3. **P. graminifolia** Hook. f.

Near Rocky water canal. Bag la, 4300m, *SMDN-364* (Dolpa).

**Origin & Distribution:** South east Asiatic Malaysian. WCE Nepal (2800-4600m), Himalaya (Nepal to Bhutan), NE India, Myanmar, China (Xizang, Yunnan).

4. **P. glandulifera** Balf. f. & W. W. Sm

Rocky dry place. Pungfu, Pungfu valley, 4200m, *SM-513* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3500-5600m), Himalaya (Uttar Pradesh to Nepal).

5. **P. glomerata** Pax

Dry meadows. Jella pass, 4000m, *SMDMN-45* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3100-5200m), Himalaya (Nepal, Sikkim, ?Bhutan), China (Xizang).

6. **P. macrophylla** D. Don

Near water canal. Pelung, 4100m, *SMDN-334* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3400-5600m), Pakistan (Chitral), Himalaya (Kashmir to Bhutan), China (Xizang).

7. **P. minutissima** Jacquem. ex Duby

Dry meadows. Jella pass, 4000m, *SMDMN-59* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3700-5200m), Himalaya (Kashmir to Sikkim), China (W Xizang).

8. **P. reidii** Duthie

var. **williamsii** Ludlow

Near water canal. Kunasa, 3800m, *SMDN-416* (Dolpa).

**Origin & Distribution:** Nepal endemic. WC Nepal (3200-4800m), Nepal.

9. *P. rotundifolia* Wall.

Rocky meadows. Kunasa, 4300m, *SMDN-434* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3700-4900m), Himalaya (Nepal, Sikkim), NE India (Assam), China (S Xizang).

10. *P. sikkimensis* Hook. f.

Near water canal. Tsharka to Dho, 4200m, *SMDMN-225* (Dolpa).

**Origin & Distribution:** South east asiatic Malaysian. WCE Nepal (2900-4800m), Himalaya (Nepal to Bhutan), NE India, Myanmar, China (NW Yunnan, Xizang, Sichuan).

11. *P. tibetica* Watt

Stream side. Dho, 4200m, 18<sup>th</sup> June 2002 (FI), *SMDMN-246* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3100-4800m), Himalaya (Uttar Pradesh to Bhutan), China (Xizang).

### Family 32. RANUNCULACEAE

1. *Aconitum* L.

1. *A. bisma* (Buch.-Ham.) Rapaics,

Open grassland. Jagdulla, 4100m, *SG-415* (Dolpa).

**Origin & Distribution:** Himalaya and Tibetan. WC Nepal. Himalaya (Nepal, Arunachal Pradesh), China (Xizang).

2. *A. ferox* Wall. ex Ser.

Found on shady, moist and open localities in shrubberies. Phoksundo, 4000m, August 1998 (FI), *PPI00* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2100-3800m-4000m). Himalaya (Nepal to Bhutan).

3. *A. naviculare* (Brühl) Stapf

Open rocky dry slopes. Dho-Tarap, 4200m August 1998, *PPI00* (Dolpa).

**Origin & Distribution:** Himalaya endemic. WC Nepal (4200-4900m). Himalaya (Nepal to Bhutan)

4. *A. spicatum* (Brühl.) Stapf

Found on open and damp places, in forests, shrubberies, grassy slopes. Chuniya, 3700m, July 1998, *SP 396*; Mukroman, 3600m, July 1998, *PPI 200*; Jagdulla, 3500m, Aug 1996, *PPI 264* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1800-4200m). Himalaya (Nepal to Bhutan), China (Tibet-Xizang).

2. *Anemone* L.

1. *A. obtusiloba* D. Don

subspecies *obtusiloba*

Found in open dry slopes, grazing grounds. Dokpa, 4000 m, July 1998, (*PPI- 119*). Num la, 4600m, *SMDN-373* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2300-4200m-4600m). Afghanistan, Pakistan, Himalaya (Kashmir, Kumaun, Nepal, Sikkim, Bhutan), China (S. Xizang), Mongolia, Myanmar.

2. *A. polyanthes* D. Don

River bank. Mukroman, 3600m (*PPI 192*); Dokpa, 3500 m (*PPI97-142*); Takkyu, Dho, 4200 m, *Maan-289* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2700-4600m). Himalaya (Kashmir, Uttar Pradesh to Bhutan). NE India (Assam), China (S Xizang).

3. *A. rivularis* Buch.-Ham. ex DC

Streamside, cultivated fields, shrubberies, meadows. Phalek, 3300m, *SMDMN-14* (Mustang); Dho to Num la, 4800m, *SMDN-267*; Kunasa, 4100m, *SML-824* (Dolpa).

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**Origin & Distribution:** Sino-Japanese-Indian. WCE Nepal (1600-4000m-4800m). Himalaya (Nepal to Bhutan), China (W. & N. China, Xizang), Myanmar, Sri Lanka, Indonesia.

4. *A. rupestris* Wall. ex Hook. f. & Thomson

Open rocky dry slope. Jyarko la, near Dho, 4500, *SMDMN-212*; Num la Pass, 4700m, *SMDN-292*; Siptyo, 4300m, *Maan-197*; Kagmara, 4500 m, July 1998 (FI), *PPI99* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-4800m). Himalaya (Nepal to Bhutan), NE India (Assam), China (S Xizang).

5. *A. rupicola* Cambess.

Found on rocks, open slopes, moist meadows. Near Dho, 4200m, *SMDMN-232*; Perikarpo 4200 m (*PPI97-30*); Ringmo, 3600m, *SP 264*; Mukroman, 3600 m, *PPI97-173* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (2700-4800m). Afghanistan, Himalaya (Kashmir to Bhutan), China (Tibet-Xizang).

\*6. *A. tetrasepala* Royle

Moist meadows. Kunasa, 4100m, *SM-431*.

**Origin & Distribution:** Himalayan endemic. W Nepal (4100m). W. Afghanistan to Himachal Pradesh, Himalaya (Kashmir to Nepal), China (SW Xizang).

3. *Caltha* L.

1. *C. paulstris* L.

Damp places. Dho, 4000 m, *SG-435* (*PPI97-286*) (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2400-4200m), Himalaya (Uttar Pradesh to Bhutan).

4. *Clematis* L.

1. *C. barbellata* Edgew

Open Rocky dry land. Tsharka Bhot, 4300m, *SMDMN-205* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3000-3200m-4300m). Himalaya (Kashmir, Uttar Pradesh, Nepal).

2. *C. montana* Buch.-Ham. ex DC

Abies forest. Pungmo, 3200m, *SMDN-378* (Dolpa).

**Origin & Distribution:** Sino-Japanese or eastern Asiatic. WCE Nepal (1600-4000m). Afghanistan, Himalaya (Kashmir to Bhutan), NE India (Assam), W. & C. China, Taiwan.

3. *C. orientalis* L.

Open dry grass land. Dho-Tarap, 3800m, July 2000. *PPI00* (Dolpa).

**Origin & Distribution:** Nepal endemic. C. Nepal (2000-3800m).

7. *C. tibetana* var. *vernayi* (C. E. C. Fisch.) Grey Wilson

Riverside and cultivated land. Phoksundo, 3600m, July 1998, *SG- 459* (Dolpa).

**Origin & Distribution:** Himalaya endemic. WC Nepal (1700-4150m). Himalaya (Uttar Pradesh, Nepal), China (S. Tibet-Xizang).

5. *Delphinium* L.

1. *D. brunonianum* Royle

Open stony moist slopes. Kagmara, 4600m, July 1998, *SG- 660* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3800-5500m), Afghanistan, Himalaya (Kashmir to Nepal), China (SE Tibet-Xizang).

2. *D. caeruleum* Jacquem. ex Cambess.

Grassy and Rocky slopes. Solak pasture, Dho 4150 m, *PPI97 333*, Chudeula 3560m, *PPI97-118* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3000-5800m). Pakistan, Himalaya (Kunawar to Bhutan), China (Xizang, S.E. Tibet).

3. *D. cashmerianum* Royle

Open dry place. Kagmara, 4200m, July 1998, *SG-608* (Dolpa)

**Origin & Distribution:** Nepal Endemic. WC Nepal (4100-4200m).

4. **D. drepanocentrum** (Brühl) Munz.,

Open moist grassland. Jagdula, 3900m, July 1998, *Sk-502*.

**Origin & Distribution:** Central Himalaya endemic. WCE Nepal (3500-5500m). Himalaya (Nepal, Sikkim)

5. **D. himalayai** Munz

Found on open slopes, meadows. Mucroman, 4100m, July 2000, *Shahi-413(4c)*. Jagdula 3400 m (*SP 528*)

**Origin & Distribution:** Nepal endemic. WC Nepal (3400m-3500-4500 m)

6. **D. viscosum** Hook. f. & Thomson,

Open dry rocky place. Kagmara, 4700m, *SM-892b* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-5200m). Himalaya (Nepal to Bhutan), China (SE Tibet-Xizang), NE India (Assam).

6. **Paraquilegia** J. R. Drumm. & Hutch.

1. **P. microphylla** (Royle) J. R. Drumm. & Hutch.

Open rocky dry place. Tsharka to Dho, 4300m, *SMDMN-203*; Pungfu valley, 4200m, *SMD-555*; Rupti, Dho, 4500m, *Maan-2* (Dolpa).

**Origin & Distribution:** Centrasiatic. WCE Nepal (3400-4900m). Himalaya (Kashmir, Uttar Pradesh to Bhutan), China (Xizang, W. China), Mongolia, S. Siberia.

7. **Ranunculus** L.

1. **R. brotherusii** Freyn

Open dry place. Chudeula, 3600m, August 1998, *PPI 162*, Dho, 4000m, August 1998, *PPI 338* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3000-5000m). C. Asia, Himalaya (Kashmir, Uttar Pradesh to Arunnachal Pradesh), NE India (Assam), China (Xizang, WC china)

2. **R. hirtellus** Royle ex D. Don

Open moist meadow. Dokpa, 3800m, July 1998, *PPI 132* (Dolpa).

**Origin & Distribution:** Sino-Japanese. WCE Nepal (2800-5500m), Afghanistan, N Pakistan, Himalaya (Kashmir, Uttar Pradesh to Bhutan), China (Tibet, W. China, Xizang).

3. **R. pulchellus** C.A. Mey

\*1. var. **typicus**

Moist meadows. Tsharka to Dho, 4100m, *SMDMN-240* (Dolpa).

**Origin & Distribution:** Nepal Endemic. W Nepal (4100m)

2. var. **sericeus** Hook f. & Thomson

Open Rock Cushion. Yak Kharka to Charka, 4800m, *SMDMN-147* (Dolpa).

**Origin & Distribution:** Himalaya endemic. WE Nepal (4600-4800m), C. Asia, Himalaya (Uttar Pradesh to Nepal)

4. **R. tricuspis** Maxim

Open dry rocky slopes and moist meadows. Kewa la, 5000m, *SMDMN-115* (Mustang). Jyarko la (Dho), 4800m, *SMDMN-186*; near Dho, 4500m, *SMDMN-210*; Num la, 4800m, *SMDMN-317*; Pelung, 4500m, *SMDN-349* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (2600-4400m-5000m), NE Afghanistan, Himalaya (Kashmir to Bhutan), N Pakistan, China (S Tibet, N. China, Xizang), Persia, N & S America.

8. **Thalictrum** L.

1. **T. alpinum** L.

var **minutissimum** H. Hara

Open moist meadows. Around Jella pass (Sandak), 3800m, *SMDMN-5* (Mustang). Tsharka to Dho, 4500m, *SMDMN-166* (Dolpa).

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**Origin & Distribution:** Nepal endemic. WC Nepal (3800-5000m).

2. **T. elegans** Wall. ex Royle

Forest margins, grassy slopes. Kunasa, 4200m, *SML-810a*.

**Origin & Distribution:** Himalaya endemic. WCE Nepal (3100-4100m-4200m), Pakistan Himalaya (Kashmir, Uttar Pradesh to Bhutan), NE India, China (Xizang).

3. **T. foetidum** L

Open moist meadows. Kagmara, 4000m, July 1998, *SP-357*; Kagmara-Chuniya, 3800m, July 1998, *SP-415* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2700-4700m), Europe, Himalaya, Nepal, China (W Tibet), Japan.

9. **Trollius** L.

1. **T. pumilus** D. Don

Moist meadows as well as Rocky dry place. Tsharka, 4800m, Dho, 4100m, *SMDMN-239*; Num la pass, 4200m, *SMDN-310 SMDMN-152* (Dolpa)

**Origin & Distribution:** South east Chinese. WCE Nepal (3500-5800m). Himalaya (Nepal to Bhutan), NE India, N. Myanmar, China (W. China, SE Xizang).

### Family 33. ROSACEAE

1. **Cotoneaster** L.

1. **C. microphyllus** Wall. ex Lindl.

Moist meadows. Jagdula, 3500m, July 1998 (fl), *SG-543* (Dolpa).

**Origin & Distribution:** South east Chinese. WE Nepal, (2000-5400m) Himalaya Kashmir to Bhutan, NE India (Assam), China (S & E Tibet-Xizang).

2. **Geum** L.

1. **G. elatum** Wall. ex G. Don

Rocky grassland. Dho to Num la Phedi, 4500m, *SMDN-284* (Dolpa).

**Origin & Distribution:** Hiamlayan endemic. WCE Nepal (3600-4200m). Himalaya (Kashmir to Sikkim), China (Xizang).

3. **Potentilla** L

1. **P. anserina** L.

Moist grassland. Dho, 4100m (fl), *SMDMN-242* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (3600-4600m), Himalaya (Kashmir to Sikkim), NE Afghanistan, Pakistan, China (Tibet-Xizang), Europe, Asia, Tasmania, New Zealand, America.

2. **P. argyrophylla** var **atrosanguinea** (Lodd.) Hook. f., Grassland. Chucho, 3700m, *SP-328* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3300-4600m). NE Afghanistan, Pakistan (Chitral), Himalaya (Kashmir to Bhutan). China (Tibet)

3. **P. cuneata** Wall. ex Lehm.

Open moist meadows. Kagmara, 3900m, June 1998, *SP-337*.

**Origin & Distribution:** South east Chinese. WCE Nepal (2400-4900m), Himalaya (Kashmir to Bhutan).

4. **P. fruticosa** L

var 1. **pumila** Hook.f.

Juniperus forest base camp (Sandak valley), 3800m, *SMDMN-255* (Mustang).

**Origin & Distribution:** South east Chinese. WCE Nepal (4200m-5500-6000m), NE Afghanistan, Pakistan (Chitral), Himalaya (Kashmir to Bhutan), China (S & E Tibet-Xizang).

var 2. **ochreate** Lindl. ex Lehm.

Open dry rocky meadows. Num la vanjyang, 4200m, *SMDMN-333* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3700-4600m), China (Tibet-Xizang).

5. *P. microphylla* D. Don

Num la vanjyang, 4700m, *SMDN-295*; Dho to Num la Phedi, 4400m, *SMDN-273* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3800-5100m), Himalaya (Kashmir to Bhutan), NE India (Assam), China (S Tibet).

1. *R. biflorus* Buch.-Ham. ex Sm.

Moist shrubby place. Way to Malewachaur, 3800m, *SML-867* (Dolpa).

**Origin & Distribution:** Himalaya endemic. WCE Nepal (2100-3300m-3800m). Himalaya (Kashmir to Bhutan), China (Xizang).

2. *R. pentagonus* Wall. ex Focke

Open grass land. Pungfu Valley, 4100m, *SMD-531* (Dolpa).

**Origin & Distribution:** Sino Japanese. WCE Nepal (2100-3000m-4100m). Himalaya (Uttar Pradesh to Bhutan), N. Myanmar, China (Xizang).

5. *Sibbaldia* L.

1. *S. cuneata* Hornem. ex Kuntze

Dry rocky grassland. Num la vanjyang, 4500m, *SMDN-297* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (3400-4500m), C Asia, Afghanistan, Himalaya, China.

\*2. *S. purpurea* Royle var. *purpurea*

Open rocky land. Kagmara, 4600m, *SML-913* (Dolpa).

**Origin & Distribution:** South east Chinese. WC Nepal (3900-5600m), Himalaya (Kashmir to Bhutan).

6. *Spiraea* L.

1. *S. arcuta* Hook. f.

Whole plants are used in wounds, allergy and irregular menstruation.

River bank. Dho, 4100m, *Maan-246* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3500-4900), Himalaya (Uttar Pradesh to Bhutan), N. Myanmar, China (S & E Tibet).

Family 4 RUBIACEAE

1. *Galium* L.

1. *G. aparine* L.

Dry place. Ribumba, Dho, 4200m, *Maan-69*, Pelung to chunnar, 3800m, *SMDN-383a* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2700-3600m-4200m), Europe, W. Asia, N. America, widely naturalized in Asia. Wide spread.

2. *G. hirtiflorum* Req. ex DC

Dry place. Lawan, Dho, 3500m, *Maan-266*. (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1200-2200m-3500m), Himalaya (Kashmir to Sikkim).

2. *Rubia* L.

1. *R. manjith* Roxb. ex Fleming

Near cultivated land. Phalek, 3300m, *SMDN-42* (Mustang).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1200-2100m-3300m), Himalaya (Himachal Pradesh to Bhutan), NE India, China (SE Tibet).

Family 35. SALICACEAE

1. *Salix* L.

1. *S. calyculata* Hook. f. ex Andersson

Rocky dry slope. Tsharka, 4500m, *SMDMN-180a* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3600-4400m-4500m); Himalaya (Nepal to Bhutan), China (Xizang), N. Myanmar.

2. *S. lindleyana* Wall. ex Andersson

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Dry scrub land, Jyarko la, 4900m, *SMDMN-191* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3800-5000m), Himalaya (Uttar Pradesh to Sikkim), W China (SE Tibet).

3. *S. sclerophylla* Andersson

Rocky dry slope. Near Juniperus forest base camp, Sangdak, 3800m, *SMDMN-87* (Mustang).

**Origin & Distribution:** Himalayan endemic. W Nepal (3600-5500m). Himalaya (Kashmir to Nepal), China (Xizang).

Family 36. SAXIFRAGACEAE

1. *Chrysosplenium* L.

1. *C. carnosum* Hook. f. & Thomson

Open grass land. Kunasa, 4200m, July 2000 (fl), *PPI00* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3800-5500m). Himalaya (Uttar Pradesh to Bhutan), NE India, N. Myanmar, China (W Sichuan, E Xizang).

2. *Saxifraga* L.

1. *S. andersonii* Engl.

Open dry meadows. Jella pass, Sandak, 4000m, *SMDMN-63*, (Mustang); Mirbo pasture, Dho, 4200m, *Maan-181* (Dolpa).

**Origin & Distribution:** Himalayan Endemic. WCE Nepal (3400-5500m). Himalaya (Nepal to Bhutan), China (Xizang).

2. *S. brachypoda* D. Don

Open rocky slopes. Kagmara, 4400m, June 2000 (fl), *SG-626* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3300-5000m), Himalaya (Uttar Pradesh to Bhutan), NE India, Myanmar, China (Xizang).

2. *S. brunonis* Wall. ex Ser

Open meadows. Jagdula, 4000m, June 1997 (fl), *SG-671* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2400-5600m), Himalaya (Kashmir to Bhutan), China (Xizang, Sichuan).

3. *S. hemisphaerica* Hook. F. & Thomson

Alpine rock crevices, open hill. Mirba pasture, Dho, *Maan-201* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WE Nepal (4500-5100m), Himalaya (Uttar Pradesh to Bhutan), China (Xizang).

4. *S. hirculoides* Decne

Open rocky dry slopes. Kagmara, 4700m, *SM-908* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (4700-5000m), Himalaya (Kashmir to Nepal)

\*5. *Saxifraga* c.f. *josephii* Eng.

Shaded rock crevices. Jagdula, 4000m, June 1997 (fl), *SG-622* (Dolpa).

**Origin & Distribution:** Tibetan. China (Xizang), 1300-3500m.

6. *S. melanocentra* Franch.

Shaded of rock crevices. Dokpa pasture, 4300m, *SM-936* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3000-4900m), Himalaya (Kashmir to Bhutan), China (Tibet-Xizang, NW Yunnan).

7. *S. mucronulata* Royle

Open hill, Mirbok, Dho, 4200m, *Maan-216* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3800-4800m), Himalaya (Kashmir to Bhutan). China (Sichuan, S Xizang).

8. *S. parnassifolia* D. Don

Open moist meadows. Kagmara, 3700m, June 2000 (fl), *SK-577* (Dolpa).



**Origin & Distribution:** Himalayan endemic. WCE Nepal (1900-4900m), Himalaya (Uttar Pradesh to Bhutan), China (Xizang).

9. *S. pilifera* Hook. f. & Thomson

Open rocky meadows. Pelung Bagal to Chunar, 4700m, *SMDMN-359* (Dolpa).

**Origin & Distribution:** Eastern Himalayan endemic. WE Nepal (4700m-4800m), Himalaya (Nepal to Bhutan).

10. *S. pulvinaria* H. Sm

Rock crevices. Tuche La to Kewla, 5200m, *SMDMN-120a* (Mustang).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3800-5800m), Himalaya (Kashmir to Bhutan), China (SW Xizang, NW Yunnan).

11. *S. sibirica* L.

Alpine rocky meadows. Pelung To Bag la, 4500m, *SMDMN-353*; Lunga, Kagmara, 4300m, *MS-883* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (4100-5000m). E. Europe, C. Asia, Himalaya (Kashmir to Nepal), Mongolia, Siberia, China (N & W China).

12. *S. strigosa* Wall. ex Ser.

Forest margin and meadows. Chuche, 3200m, June 1998 (fl), *Sp-314* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (2100-4200m), Himalaya (Uttar Pradesh to Bhutan), NE India, Myanmar, China (S Xizang, Yunnan).

\*13. *S. wallichiana* Sternberg.

Open rocky meadows. Kagmara, 4300m, July 1996 (fl), *SG-575* (Dolpa).

**Origin & Distribution:** South east Asiatic-Malaysian. W Nepal (4300m). Himalaya (Nepal, Sikkim, Bhutan) India, Myanmar, China (W Sichuan, E & S Xizang).

### Family 37. SCROPHULARIACEAE

1. *Euphrasia* L.

1. *E. himalayica* Wettst.

Open meadows. Kunasa, 3800m, *SM-999* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3200-4200m), Afghanistan, Himalaya (Kashmir to Bhutan)

2. *Lagotis* Gaertn

1. *L. kunawurensis* (Royle ex Benth.) Rupr.

Moist dry place. Yakkharka (way to Tsharka), 5000m, *SMDMN-110*; Charka pasture, 4700m, *SMDMN-162*; Raytega, Dho, 4200m, *Maan-8* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (3900-5500m), Himalaya (Balistan to Bhutan), China (Xizang).

3. *Lancea* Hook. f. & Thomson

1. *L. tibetica* Hook. f. & Thomson

Open Rocky place. Sandak Valley, 4200m, *SMDMN-65* (Mustang); Charka pasture to Dho, 4300m, *SMDMN-200*; Dho, 4100m, *SMDMN-245*; Londje, Dho, 4200m, *Maan-2* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE (3300-4400m), Himalaya (Kashmir to Bhutan), China (SE Tibet).

4. *Neopicrorhiza* Hong.

1. *N. scrophulariiflora* (Pennell) Hong.

Rocky meadows and moist meadows. Around Jella pass, 3700m, *SMDMN-44* (Mustang); Talghera, 4200m, *SMDMN-457* (DN-1); Num la, 4400m, *Maan-182*

**Origin & Distribution:** South east Chinese. WCE Nepal (3500-4800m), Himalaya (Uttar Pradesh to Bhutan), N. Myanmar, China (Sichuan, Xizang, Yunnan).

5. *Oreosolen* Hook. f.

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1. *O. wattii* Hook. f.

Rock cushion of rocky meadows. Yak-Kharka (way to Charka Bhot), 5000m, *SMDMN-113*; Way to the Charka-Bhot, 4500m, *SMDMN-139*; Tsharka to Dho, 4500m, *SMDMN-167* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (4400-5800m), Himalaya (Nepal to Bhutan), China (SE Tibet-Xizang).

6. *Pedicularis* L.

1. *P. anas* Maxim. subsp. *nepalensis* (T. Yamaz.) T. Yamaz., Yamazaki

Rockly meadows. Rupti Khola, Dho, 4400m, *Maan-241* (Dolpa).

**Origin & Distribution:** Central Himalayan endemic. C Nepal (4200-4800m), Nepal, China (Xizang).

2. *P. cheilanthifolia* Schrenk

Riverine valley. Rupti Khola, Dho, 4200m, *Maan-185* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (4200-4900m), Pakistan, Himalaya (Kashmir to Nepal).

3. *P. hoffmeisteri* Klotzsch,

Riverine valley. Rupti Khola, 4400m, *Maan-176* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2300-3900m). Pakistan (Chitral), Himalaya (Himachal Pradesh to Nepal).

\*4. *P. koengboensis* Tsoong var *kongboensis*

Open moist meadows. Kunasa, 3600m, *SM-836* (Dolpa).

**Origin & Distribution:** South east Chinese. W Nepal (3600m). China (SE Xizang), ca. 4100m.

5. *P. longiflora* Rudolph

var *tubiformis* (Klotzsh) Tsoong

Moist grassland, Open meadows. Kunasa, 4300m, *SM-820a*; Chumaga, 4200m, *Maan-198* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3300-5000m), Kyrgyzstan, Himalaya (Balistan to Bhutan), Mongolia, Russia (Siberia), W. China.

6. *P. megalantha* D. Don

Riverine Valley. Rupti Khola, 4200m, *Maan-264* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2800-4300m), Pakistan (Chitral), Himalaya (UP, Nepal to Bhutan), China (Xizang).

7. *P. rhinanthoides* Schrenk ex Fischer & C. A. Meyer

Rocky place. Above Raytega, 4300m, *Maan-117* (Dolpa).

**Origin & distribution:** South east Chinese. WCE Nepal (3300-4800m), Himalaya (Kashmir to Bhutan), W and N China.

8. *P. siphonantha* D. Don

Rocky meadows. Kunasa, 4300m, *SM-444* (Dolpa).

**Origin & Distribution:** WCE Nepal (3000-4400m), Himalaya (? Uttar Pradesh, Nepal to Bhutan), ? NE India, China (Xizang).

9. *P. trichoglossa* Hook. f.

Open rocky meadows. Kagmara, 4100m, July 2000 (fl), *SG-559* (Dolpa).

**Origin & distribution:** Himalayan endemic. WCE Nepal (4000-4800m), Himalaya (Uttar Pradesh to Bhutan).

10. *P. oederi* Vahl subsp *oederi*

Numla to Pelung, 4100m, *SMDMN-327*; Malewachaur to Kagmara Phedi, 4600m, *SM-894* (Dolpa).

**Origin & distribution:** Himalayan endemic. WCE Nepal (3600-5100m), Himalaya (Uttar Pradesh to Bhutan), China (SE Tibet).

7. *Verbascum* L.

1. *V. thapsus* L.

Rocky place. Dho, 4100m, *Maan-174* (Dolpa).

**Origin & distribution:** Holarctic. WCE Nepal (1800-4000m-4100m). NE Afghanistan, N Pakistan (Chitral), Himalaya (Kashmir to Bhutan), China (N & S Tibet)

**8. Veronica L.**

**\*1. V. ciliata** Fisch. subsp. *ciliata*

Open moist grassland. Punikha, 3700m, *SM-504* (Dolpa).

**Origin & Distribution:** Central Asiatic. W Nepal (3700m). China (Gansu, NW Sichuan, N Xizang), Kazaskstan, Kyrgyzstan, Mongolia, Russia, Tajikistan

**Family 38. SOLANACEAE**

**1. Hyoscyamus L.**

**1. H. niger L.**

Near cultivated land. Tsharka Bhot, 4100m, *SMDMN-149*, Raytega, Dho, 4300m, *Maan-52* (Dolpa).

**Origin & Distribution:** Holarctic. WC Nepal (2000-3400m-4300m), Europe, N. Africa. NE Afghanistan, Pakistan (Chitral), SW & C China, N America.

**Family 39. TAMARICACEAE**

**1. Myricaria DESV.**

**1. M. rosea** W. W. Sm

Riverine scrubland. Siptyo, Dho, 4300m, *SMDMN- 221* (Dolpa).

**Origin & Distribution:** Himalayan endemic. CE Nepal (3300-4500m), Himalaya (Uttar Pradesh to Bhutan), W. China.

**1. M. squamosa** Desv

Riverine valley. Near Juniperus forest base camp (Sandak valley), 3800m, *SMDMN-91*(Mustang); Rupti, Dho, 4300m, *Maan-166* (Dolpa).

**Origin & Distribution:** Western Himalayan. WC Nepal (3200-3900m-4300m), Altai, C. Asia, Afghanistan, Himalaya, Dhauria, China.

**Family 40. THYMELACEAE**

**1. Stelleria L.**

**1. S. chamaejasme L**

Open rocky grassland. Kunasa, 4000m, *SMDN-428*, Dolpa.

**Origin & Distribution:** Holarctic. WC Nepal (2700-4200m), C Asia, Himalaya (Uttar Pradesh to Bhutan), Mongolia, E Siberia, N China.

**Family 41. UMBELLIFERAE**

**1. Bupleurum L.**

**1. B. falcatum L**

Cultivated areas. Takkyu, Dho, 4300m, *Maan-243*.

**Origin & Distribution:** Himalayan endemic. WC Nepal (2700-4200m), Pakistan (Karakorum) Himalaya (Kashmir to Sikkim).

**2. Chaerophyllum L.**

**1. C. reflexum** Lindl.

Moist meadows. Kunasa, 4200m, July 2000 (fl), *SK-408* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2100-3500m-4200m); Himalaya (Kashmir to Bhutan), NE India (Assam), China (Xizang, Yunnan).

**2. C. villosum** Wall. ex DC.

Moist meadows. Swebutang, Kunasa, 4200m, *SML-809* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (2100-3500m-4200m), Himalaya (Kashmir to Bhutan).

**3. Cortia DC.**

**1. C. depressa** (D. Don) C. Norman

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Dry rocky meadows and moist place. Jyarko la, Dho, 4800m, *SMDMN-201*; Dho, 4300m, *Maan-36* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1600-4900m), Himalaya (Kashmir, Nepal to Bhutan), China (Tibet-Xizang).

**4. Cortiella Norman**

**1. C. hookeri** (C. B. Clarke) C. Norman

Rocky meadows. Kagmara south (Lunga), 4700m, *SM-898*, Dolpa.

**Origin & Distribution:** Eastern Himalayan endemic. WE Nepal (4500-5400m), Himalaya (Nepal, Bhutan).

**5. Heracleum L.**

**1. H. nepalense** D. Don

Rocky moist grass land meadows. Way to Swebutang, Kunasa, 4200m, *SM-807* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (1800-3700m), Himalaya (Uttar Pradesh, Nepal, Bhutan), NE India (Assam).

**6. Pleurospermum Hoffm.**

**1. P. brunosis** (DC.) C.B. Clarke

Near farm land. Khangar, 4200m, *Maan-200* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (4200m-4400-5000m). Himalaya (Kashmir to Nepal).

**7. Selinum L.**

**1. S. candollei** DC

Moist meadows. Jagdula, 4000m, July 1998, *SK-572* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WC Nepal (3000-3800m), Himalaya (Kashmir, Nepal, Sikkim).

**\*2. S. tenuifolium** Wall. ex C.B. Clarke

Near farm land. Khangar, Dho, 4200m, *Maan-206* (Dolpa).

**Origin & Distribution:** Himalayan endemic. WCE Nepal (2700-4800m). Himalaya (Kashmir to Bhutan), NE India (Assam), China (S Tibet).

**Family 42. URTICACEAE**

**1. Urtica L.**

**1. U. hyperborea** Jacqueum. ex Wedd.

Rocky dry meadows. Yakkharka to Tsharka 4500m, *SMDMN-127*; Tsharka Bhot, 4500m, *SMDMN-163* (Dolpa).

**Origin & Distribution:** Central Asiatic. WC Nepal (4100-5100 m). Himalaya (Kashmir to Bhutan), China (Xizang), Mongolia.

**Family 43. VALERIANACEAE**

**1. Nardostachys DC.**

**1. N. grandiflora.** DC

Moist grassland and rocky dry meadows. Pungfu, 4100m, *SM-540*; Swebutang, 4400m, *SMDN- 447*; Buddhari, Dho, 4500m, *Maan-132* (Dolpa).

**Origin & Distribution:** South east Chinese. WCE Nepal (3200-5000m), Himalaya (Uttar Pradesh to Bhutan), China (S & E Tibet-Xizang).

**Family 44. VIOLACEAE**

**1. Viola L.**

**1. V. biflora** L.

Dry rock crevices and open Riverine valley. Thujekarmo (Sandak valley), 4200m, *SMDMN-64* (Mustang); Rupti Khola, Dho, 4400m, *Maan-179* (Dolpa).

**Origin & Distribution:** Holarctic. WCE Nepal (2100-4500m), Europe, Siberia, C. Asia, Himalaya (Kashmir to Nepal), NE India (Meghalaya), SW China. Wide spread.

**2. V. kunawarensis** Royle,

Open grass land and rocky meadows. Buddhari, Dho, 4300m, Maan-41 (Dolpa).

**Origin & Distribution:** Centrasiatic. WC Nepal (3600-3900m), Turkestan, Himalaya (Kashmir to C Nepal, Bhutan) W. China (Tibet-Xizang).

\* New species to Flora of Nepal.

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**Abbreviations used in checklist:** W = west Nepal, C = central Nepal, E = east Nepal, m = metres above sea level, SMDMN, SMDN, SG, SM, SMD, SML = notation given to herbarium collected by Mani Raj Shrestha (M). Suresh kumar Ghimire (S), Dhan Prasad Shahi (D), Maan B. Rokaya (M), Nagendra Kurumbang (N), Davala Baiji (D), Lanka Shahi (L).

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