

FAMILY POLYGONACEAE IN INDIA

R.C. Srivastava

Botanical Survey of India, Kolkata-700064

*Author for Correspondence

ABSTRACT

Present studies have revealed the occurrence of 121 species and 29 varieties belonging to 12 genera in India. Nomenclature, flowering/ fruiting period, habit, habitat, distribution and uses are given. Keys to the genera/species and varieties are also given.

Keywords: Polygonaceae, India

INTRODUCTION

Polygonaceae-a cosmopolitan family of dicotyledonous angiosperms is also known as the knotweed family or smartweed-buckwheat family. The name of the family is based on the 'Type genus' *Polygonum*, and was first used by Antoine Laurent de Jussieu in 1789 in his book, *Genera Plantarum*. The name is derived from Greek words viz., 'poly' (means many) and 'goni' (means knee or joint) referring to the many swollen nodes on the stem/ branches. Many species are economically important (medicinal/edible/ornamental etc). Fruits of *Coccoloba uvifera* which is commonly known as sea grape, are eaten and a jelly made from it is sold commercially in Florida (USA). Seeds of 2 species of *Fagopyrum* commonly known as 'buckwheat' yielded flour. Leaves of *Rumex acetosa* (common sorrel) are eaten in salads or as a potherb. Many species of *Emex*, *Polygonum* (*s.l.*) and *Rumex* are the weeds.

Present studies were undertaken under Flora of India Project of Botanical Survey of India. Brief taxonomic account consisting of nomenclature, common/vernacular names, flowering/fruiting period, habit, habitat, distribution and uses (wherever known) of the recorded taxa are given in this paper.

MATERIALS AND METHODS

Scrutiny of the relevant literature (Meissner, 1856; Wu Zhengyi *et al.*, 2003) was made and the herbarium specimens collected during field tours deposited in K, E, LIV in CAL, BSHC, DD, BSD, ASSAM, BSHC, ARUN.MH, BLATT, DD, BSA, LBG, LWG herbaria were studied. Specimens collected during field surveys in different parts of India were processed as per standard herbarium methodology.

RESULTS

Present studies revealed the occurrence of 121 species and 29 varieties belonging to 12 genera within present political boundaries of India. Brief taxonomic account of these is presented below:

Family Polygonaceae

A family of ca 50 genera and 1120 species: worldwide, but primarily N. temperate with a few species in tropical regions; 121 species and 29 varieties (including exotics) under 12 genera in India.

Key to the Genera

- 1a. Plants with flattened thin jointed, ribbon-like phylloclades.....**Muehlenbeckia**
- 1b. Phylloclades absent.....2
- 2a. Fruit an achene enclosed in a hard covering of persistent basal portion of perianth, more or less top shaped with 3 radiate sharp and hard prickles, conical at base and apex, ca 8x6mm (incl. prickles)
- 4.....**7. Oxylum**
- 2b. Fruits not as above.....3
- 3a. Plants tendril climbers.....**1. Antigonon**
- 3b. Plants erect or scrambling or medium sized trees.....4
- 4a. Plants usually trees.....5

Research Article

4b.Plants erect or scrambling.....	6
5a. Tall trees, upto 33 m (or more) high. Seeds winged.....	12.Triplaris
5b.Small or medium sized trees, up to 18 m high.Seeds not winged.....	3.Coccoloba
6a.Perianth 3-5 cleft. Stamens 1-8, rarely more. Stigmas 2-3 capitellate, rarely fimbriate.....	7
6b.Perianth 4-6 cleft. Stamens 9(rarely 6).Stigmas fimbriate, peltate or horseshoe- shaped.....	9
7a.Shrubs.....	2.Calligonum
7b.Herbs or undershrubs.....	8
8a.Stamens 8 or less.Cotyledons flat.....	9.Polygonum
8b.Stamens 8. Cotyledons plaited.....	5.Fagopyrum
9a.Stamens 4.....	8.Oxyria
9b. Stamens 6.....	10
10a.Outer perianth segments spinyin fruit.....	4.Emex
10b.Outerperianth segments though some times toothed or tuberculate but never spiny in fruits.....	11
11a.Sepalsunchanged in fruits.....	10.Rheum
11b.Three sepals usually changed in fruits (except <i>R. acetosella</i>).....	11.Rumex

1. Antigonon Endl.

Gen. 310.1837; Benth.& Hook. f., Gen. Pl.3: 103.1883.*Corculum* Stuntz in U.S. Dept. Agr. Bur.Pl.Ind.Bull. 282:84.1913.

A genus of *ca* 3 species; native of Central America; 2 species introduced in India; one species viz. *Antigonon leptopus* Hook. & Arn.is now running wild. Another species viz.*Antigonon guatemalense* Meissn. (in DC., Prodr. 14:184.1856), is represented by solitary collection in DD herbarium; restricted to Indian Botanic Garden, Howrah(West Bengal)and ICFRE, New Forest Campus, Dehradun (Uttarakhand) in India.

1. **Antigonon leptopus** Hook. & Arn., Bot. Beechey Voy. 308.t.69.1838. *Corculum leptopus* (Hook.&Arn.) Stuntz in U.S.Dept.Agr. Bur.Pl.Ind. 282:84.1913. *Type:* Oaxaca in Mexico, *Lay & Collie* Shurbs, tendril climbing,

Fl. & Fr.: July – Nov.

Habitat: Common along roadside bushes and hedges, often cultivated.

*Distrib.:*Native of Mexico; INDIA: throughout plains

2. Calligonum L., Sp.Pl.1:530.1753

A genus of *ca* 35 species in N. Africa, Asia, S. Europe; one species in India.

1. **Calligonum polygonoides** L., Sp. Pl. 530.1753; Hook. f., Fl. Brit.India 5:22-23.1886.

Vernacular Names : Punjabi, Rajasthani: *Phog, Phok.*

Shrubs or small trees, almost leafless.

Fl. & Fr. April – June

Habitat: Common on sand-dunes

Distrib.: INDIA:(Punjab, Rajasthan), IRAN, IRAQ, PAKISTAN, RUSSIA, TURKEY, PALESTINE AND SYRIA

Uses: Wood is used as fuel. Flowers are edible.

3. Coccoloba P. Br.Civ. Nat. Hist. Jamaica. 209. 1756 (as *Coccolobis*)

A genus of *ca* 150 species in tropical and subtropical America; 2 species introduced in India.

Key to the species

- 1a. Leaves 2 3- times longer than broad. Staminate flowers 1-3 per ochreate fascicle....**1.C. diversifolia**
- 1b. Leaves wider than long. Staminate flowers 1- 7 per ochreate fascicle.....**2.C. uvifera**

Research Article



Calligonum polygonoides



Coccoloba diversifolia



Coccoloba uvifera (Anonymous)

1. Coccoloba diversifolia Jacq., Enum. Pl. 19. Carib 1760. *Coccoloba floridana* Meissn. in DC. Prodr. 14:165.1856. *Coccoloba laurifolia* Jacq. Hort. Schoenbr. 3:9, t. 267.

Common Names: Eng.: Pigeon – plum, dove – plum

Trees, upto 10 m high; branches spreading

Fl. & Fr.: almost throughout the year.

Distrib.: Native of Mexico, West Indies, Central America. Introduced in Indian Botanic Garden, Shibpur, Howrah .

Uses: Wood is strong and brittle.

Coccoloba uvifera (L.)L., Syst. Nat. ed.10.2:1007.1759. *Polygonum uvifera* L., Sp. Pl. 1753.

Eng.: Seaside Grape

Trees,

Fl. & Fr.: Almost throughout the year.

Distrib.: Native of Mexico, West Indies, Central and Soth. America. Introduced at Indian Botanic Garden, Howrah

Uses: A red sap obtained by cutting the bark is used for tanning and dyeing. Wood is strong.

4. Emex Campd. Monog. Rumex: 56.1819, *nom. cons.*

A genus with only 2 species, distributed in Mediterranean coastal parts. South Africa, Australia, Kenya, Iran, Pakistan, India and Arabia.

Emex spinosus (L.) Campdera, Monog. Rumex 58.1819. *Rumex spinosus* L. Sp. Pl. 337.1753.

Type: Habitat in Creta, Herb. Linn. 464.36 (LINN)

Herbs, annual, decumbent, branched, glabrous, upto 35 (-40) cm high

Fl. & Fr.: April-June

Habitat: in dry, sandy places

Distrib.: INDIA (Tamilnadu-Dharmapuri, Nilgiri). MEDITERRANEAN REGION, EXTENDING TO NW SPAIN AND AZORES, TURKEY, ARABIA, IRAQ, IRAN and PAKISTAN.

5. Fagopyrum Mill. Gard. Dict. Abridg. Ed. 4. 1754; Hook. f. Fl. Brit. India 5:54. 1886.

A genus of ca 15 species found in Europe and temperate Asia; **6 species in India.**

Key to the species

- 1a. Stems with few leaves; upper part of branches almost leafless. Leaves 1-1.5 x 0.8- 1.5 cm. Achenes more than 3 mm long..... **3.F. gilesii**
- 1b. Stems with several leaves; upper part of branches leafy. Leaves 2.5 – 8 x 2-4 cm. Achenes 4 – 8 mm long..... **2**
- 2a. Perennials, erect; wild..... **1.F. dibotrys**
- 2b. Annuals, ascending- erect; cultivated..... **3**
- 3a. Flowers ca 1 mm across; perianth segments 2.5-3 mm long, white or pink **4**
- 3b. Flowers 0.5-0.7 mm across; perianth segments 1.5-2 mm long, green..... **5**
- 4a. Achenes dark brown, dull, rough, edges not sharp..... **5.F. sagittatum**
- 4b. Achenes with zebra lines, edges sharp..... **2.F. esculentum**

Research Article

5a. Achenes with keeled edges, less pubescent **6.F.tataricum**
5b. Achenes keeled only at base, much pubescent..... **4.F. kashmirianum**

1. **Fagopyrum dibotrys** (D.Don) Hara in Fl. E. Himal. 69. 1966. *Polygonum dibotrys* D. Don, Prodr.Fl. Nep. 73. 1825. *Polygonum cymosum* Trevir. [Del. Sem. H. Vrat. (1824), *nom. Nud.*] in Nov. Act. Acad. Caes. Leop. Carol Nat. Cur. 13: 177. 1826. *Fagopyrum cymosum* (Trevir.) Meissn. in Wall., Pl. As. Rar. 3: 63. 1832 and in DC. Prodr. 14(1): 144. 1856; Hook.f. in Fl. Brit. India 5:55. 1886. *Fagopyrum emarginatum* var. *kunawarensis* Meissn. in DC Prodr. 14 (1): 144. 1956.

Type: In Nepalia and Narainhetty, *Buchanan-Hamilton, s.n.* (BM).

Vernacular name: Punjabi.: *Banogal*.

Herbs, perennial, wild, erect, simple or branched,

Fl. & Fr.: June – Sept.

Habitat: Temperate Himalayas; growing on moist slopes or in shady moist places.

Distrib.: INDIA : Himachal Pradesh, Kashmir to N.E. India (old Assam), CHINA, TIBET

2. **Fagopyrum esculentum** Moench, Method. 290. 1794; Meissn. in Wall., Pl. As. Rar. 3: 63. 1832 and in DC. Prodr. 14(1): 143. 1856; Hook.f., Fl. Brit. India 5:55. 1885. *Fagopyrum emarginatum* Meissn. in DC. Prodr. 14 (1): 143. 1856. *Polygonum fagopyrum* L. Sp. Pl. 364. 1753; Robx. Fl. Ind. 2: 292. 1832; Wall. Cat. 46, n. 1687. 1829.

Type : Habitat in Asia, Herb. Linn. 510. 37 (LINN).

Vernacular Names: Nep.: *Meethe Phaper*; Assam: *Doron*; Darjeeling: *Titaphapur*; Eng.: *Brank*, *Buckwheat*; Garhwal.: *Kotu*; Hindi : *Kotu, Kultu, Phaphra* Kashmiri: *Trambashirin*; Kumaoni: *Ogul*; Punjabi: *Daran, Obal, Ogal, Phaphar, Phulan*.

Herbs, annual, erect, simple, rarely branched, upto 40 cm long.

Fl. & Fr.: Aug.- Sept.

Distrib.: INDIA: (Himachal Pradesh, Jammu & Kashmir); Cultivated throughout Himalayas, at higher elevations.

Uses: Grains used in the form of flour; also used as stock and poultry feed. Hulls yield a dye. A promising source of rutin which reduces increased capillary fragility. Buckwheat flour is used for making bread, pancakes, and porridge. Leaves and young shoots boiled and eaten as spinach.

3. **Fagopyrum gilesii** (Hemsl.) Hedb. in Svensk. Bot. Tidskr. 40 (4): 390. 1946. *Polygonum gilesii* Hemsl. in Hook. Icon 18: t. 1756. 1887-88; Gage in Rec. Bot. Surv. India 2: 410. 1903. Type: Shoghot, 6000-7000ft, South of HinduKoosh, Dr. Giles(K).

Herbs, perennial, erect, upto 60 cm high, branched .

Fl. & Fr.: June – Aug.

Habitat: N.W. Himalaya; 1800 – 3300 m.

Distrib.: INDIA: Jammu & Kashmir (Kashmir). CHINA, PAKISTAN.

4. **Fagopyrum kashmirianum** A.H. Munshi in J. Econ. Taxon. Bot. 3(2): 627-630. f. 1. 1982. *Holotype*: Nilnag Yusmarg, 3000 m above sea level, A. H. Munshi, 410 (KASH). *Paratypes*: A. H. Munshi, 411, 412, 413, (KASH).

Herbs, annual, ascending, puberulous, branched upto 45 cm long.

Fl. & Fr.: July-Aug.

Distrib.: Jammu & Kashmir (Kashmir)

Notes: *Fagopyrum kashmirianum* is very close to *F. tataricum* but differs in having much pubescent petioles; hastate deltoid lamina; tubular, partite, much pubescent (at base) ochrea; more or less equal perianth segments and keeled (at base) achenes.

5. **Fagopyrum sagittatum** Gilib., Exere. Phyt. 2: 435. 1792; Lozinskaya in Fl. USSR 5: 702. 1936. *Fagopyrum fagopyrum* Karsten. Deutsch, Fl. 522. 1883.

Herbs, annual, erect, simple, branched, upto 40 cm high

Fl. & Fr.: Aug.-Sept.

Habitat: growing in association with *F. esculentum* as cultivated crop.

Research Article

Distrib.: INDIA: Jammu & Kashmir.

6. **Fagopyrum tataricum** (L.) Gaertn, Fruct. 2: 182.tab. 119.1791; Hook.f. in Fl. Brit. India 5: 55. 1885. *Polygonum tataricum* L. Sp. Pl. 364. 1753. *Fagopyrum rotundatum* Bab. in Trans. Linn. Soc. 18: 117. 1835.

Type: Habitat in tataria, Central Asia, Herb. Linn. 510. 36 (LINN)

*Common Name:*Eng.: Bitter Buckwheat. *Vernacular Names:*Ladakh: *Rjao, Trao, Brapu, Chin, Drawo, Kalatrumba, Karmabres, Kathu, Katu, Phaphra, Tsabri, Ugal, Ulgo;*Hindi: *Kaspat;*Punjabi, Himachali : *Brapu, chin, ugal.*

Herbs, annual, prostrate to erect, upto 40 cm long.

Fl. & Fr.: July- Aug.

Habitat : Throughout the Himalayas.

Distrib.: INDIA(Himachal Pradesh, Jammu & Kashmir, Sikkim. Cultivated as cereal crop at lower elevations in Kashmir), N. EUROPE & N. ASIA

Uses: Better source of “rutin” than *Fagopyrum esculentum*; used in the same manner as “Common Buckwheat.” Leaves are used as a pot-herb in summer when other greens are not available.

6. **Muehlenbeckia** Meissner, Gen.316;Comm.227.1840.

A genus of *ca* 23 species in Central America, S. America, Pacific Islands(News Zealand) and Australia; two species grown in Indian gardens; *M. platyclada* being the most common .

Key to the species

1a. Plants herbaceous twiners.....**1.M. gracillima**

1a.Plants shrubby.....**2.M. platyclada**

1.Muehlenbeckia gracillima Meissner in DC. Prodr.14(1):145.1856; Henry *et al.*, in Fl. Tamilnadu 2:197.1987.

Common Name: Eng.: *Slender Lignum*

Herbaceous twiners or climbers;

Native of Australia; introduced in India; grown in Gardens in Tamilnadu(V.Chandrasekaran in Henry *et al.*, 1987)

2.Muehlenbeckia platyclada (F.v. Muell. *ex* Hook.) Meissn.in Bot. Zeit. 22:313.1865. *Coccoloba platyclada* F.v. Muell.*ex* Hook. in Curtis, Bot. Mag. T. 5382. 1863.*Homalocladium platycladum*(F.V. Muell. *ex* Hook.) L. H. BaileyGentes Herbarium 2: 56. 1929; Man. Cult.Pl.ed. 2. 351. 1949.

Shurbs, glabrous; branches modified into phylloclades.

Planted (in sandyalluvial soils) in Botanical Gardens almost throughout India.

7. **Oxygonum** Burch.*ex* Campad.

Monogr.*Rumex*18.1819.Trav.1:548.1822;Benth.*et*Hook.f.Genera.Pl.:961862.*Ceratogonon* Meissn. in Wall.Pl.As.Rar.3:63.1832.*Owenia* Holsenb.*ex* Meissn. in DC. Prodr.14:39.1856.

A genus of *ca* 30 species distributed in tropical and S. Africa and Madagascar; one species introduced in India

1.Oxygonum sinuatum Dammer in Engl.*et*Prantl., Pflanzenfam.3.1.a.:30.1892;Ravi in J. Bombay Nat. Hist.Soc. 82(2):442-444.1985.

Diffused scabrid herbs; branches upto a metre long, decumbent to procumbent; internodes terete, striate and scabrid.

Fl. & Fr.: July- Oct..

*Distrib.:*Introduced inINDIA: Karnataka(Lalbagh, Bangalore), Kerala (Quilon Town).EGYPT.

8. **Oxyria** Hil, Veg, Syst. 10: 24. 1765

A genus with *ca* 2 species in Asia, Europe, North America; one species in India.

1.Oxyria digyna (L.) Hill, Hort. Kew. 158. 1768. *Rumex digynus* L., Sp. Pl. 1: 337. 1753.

Common/Vernacular names: Eng.: *Mountain sorrel* ; Punjabi : *Amlu, Chohahak.*

Herbs, perennial.

Fl. & Fr.: May – Nov.

Chr. No.: 2n = 14, 42.

Research Article

Habitat: alpine slopes, grasslands, wet valleys; 1300 – 4900 m.

Distrib.: INDIA(Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim), AFGHANISTAN, BHUTAN, CHINA, JAPAN, KAZAKHSTAN, KOREA, KYRGYZSTAN, MONGOLIA, NEPAL, PAKISTAN, RUSSIA (Far East, Siberia), TAJIKISTAN; SW ASIA, EUROPE, NORTH AMERICA.

9. **Polygonum** L. *nom. cons.*, Sp. Pl. 1: 359. 1753,

A genus of c.230 species; worldwide, mostly in Northern temperate regions; **75** species and **28** varieties in India.

Key to the species

1a. Twining plants.....	2
1b. Non-twining plants.....	4
2a. Fruit not winged.....	P. convolvulus
2b. Fruit winged.....	3
3a. Wings very little prolonged down the pedicel.....	dumetorum
3b. Wings distinctly prolonged down to the base of the pedicel.....	P. pterocarpum
4a. Inflorescence axillary.....	5
4b. Inflorescence therwise.....	17
5a. Leaves, elliptic, ovate or orbicular, length much less than four times the breadth.....	6
5b. Leaves linear or subulate, length more than four times the breadth.....	12
6a. Stipules with two distinct excurrent nerves.....	7
6b. Stipules without excurrent nerves.....	8
7a. Excurrent nerves spinescent; leaves mucronulate.....	P. biaristatum
7b. Excurrent nerves not spinescent; leaves not mucronulate.....	P. recumbens
8a. Leaves hirsute.....	P. filicaule
8b. Leaves glabrous.....	9
9a. Plants tufted delicate annuals with very minute flowers, bipartite stipules and non-tubular bracts.....	10
9b. Plants not tufted but prostrate or ascending with fair-sized flowers, bracts and stipules tubular, which latter may be slightly or much lacerate.....	11
10a. Leaves opposite.....	P. islandicum
10b. Leaves alternate.....	P. delicatum
11a. Stipules many-nerved.....	P. aviculare
11b. Stipules nerveless or showing only 1-2 nerves.....	P. cognatum
12a. Internodes, especially upper ones, almost or quite hidden by the very prominent white hyaline stipules which also considerably overlap the leaves.....	13
12b. Stipules confined to the base of the internodes, leaving the greater part (3/4-7/8) of each internode-uncovered.....	15
13a. Plant very dwarf, 2.5-5 cm high, and of thread-like slenderness.....	P. molliaeforme
13b. Plant always at least over 10 cm high, with more or less stout branches,.....	14
14a. Roots slender, annual.....	P. rottboellioides
14b. Root-stock very stout and woody.....	P. paronychioides
15a. Branches erect and rigid or erect and flexuous or erect and geniculate.....	P. setosum
15b. Branches prostrate.....	16
16a. Stipules very white, almost entire. Internodes very smooth, angled but not grooved. Leaves very small, subulate, fleshy, mucronulate.....	P. polycnemoides
16b. Stipules brownish, fimbriate. Internodes grooved. Leaves up to 2 cm. long, linear or narrowly lanceolate, flat, not mucronulate.....	P. plebeium
17a. Flowers closely on unbranched spikes or spiciform racemes.....	18
17b. Flowers and inflorescence not as above.....	27
18a. Leaves all sessile or only very shortly petioled.....	19
18b. All or at least the lower leaves long-petioled.....	23
19a. Lamina orbicular, broadly elliptic or oblong.....	21

Research Article

19b. Lamina linear or linear- lanceolate.....	22
20a. Plant dwarf, not creeping, leaves all radical and very hairy.....	P.hookeri
20b. Plant not dwarf, creeping, leaves cauline and glabrous.....	P.vaccinifolium
21a. Racemes many- flowered, from 60 upwards.....	P. affine
21b. Racemes few-flowered, rarely as many as 20.....	P. emodi
22a. Leaves ovate-cordate, upper ones amplexicaul.....	23
22b. Leaves lanceolate or linear lanceolate not amplexicaul.....	24
23a. Petiole winged above.....	P. bistorta
23b. Petiole not winged.....	P. amplexicaule
24a. Lower part of inflorescence bulbiliferous.....	P. viviparum
24b. Inflorescence not bulbiliferous.....	25
25a. Leaf-margins smooth. Leaves usually floating.....	P. amphibium
25b. Leaf- margins crenulated with marginal veinlets. Leaves not floating.....	26
26a. Lamina abruptly or acutely continuous with petiole.....	P.macrophyllum
26b. Lamina very gradually continuous with petiole.....	P. paleaceum
27a. Inflorescence of sessile or pedicelled flowers, closely set or distant on branched short, stout or long slender spike.....	28
27b. Inflorescence of small more or less globose or obpyramidal heads or paniculate.....	50
28a. Plants more or less beset with recurved prickles which are often restricted to the base of stipules...29	
28b. Plants unarmed.....	32
29a. Ochrea orbicular, foliaceous. Leaves peltate- deltoid; very long-petioled.....	P. perfoliatum
29b. Ochrea tubular, membranous. Leaves linear or linear-oblong, ovate or oblong-ovate, or linear-sagittate, or hastate; shortly petioled	30
30a. Racemes slender, 2.5 cm or more in length; bracts distant. Leaves linear-sagittate or hastate.....	P. praetermissum
30b. Racemes, 0.5-1 cm long; bracts crowded. Leaves ovate or oblong-ovate or linear oblong.....	31
31a. Leaves linear or linear-oblong, margin and midrib closely beset with strong recurved prickles.....	P. strigosum
31b. Leaves ovate or oblong-ovate, prickles absent from margin, and midrib, or only very feebly developed.	P. muricatum
32a. Racemes stout, compact. Bracts closely imbricating.....	33
32b. Racemes slender, loose. Bracts more or less interrupted.....	44
33a. Achenes orbicular or bi-convex.....	34
33b. Achenes trigonous	41
34a. Peduncles scurfily glandular.....	P. lapathifolium
34b. Peduncles eglandur and either glabrous or hairy.....	35
35a. Stipules and bracts eciliate.....	36
35b. Stipules and bracts ciliate.....	37
36a. Plants glabrous.....	P. glabrum
36b. Plant covered with a cottony tomentum.....	P. lanatum
37a. Leaves long-petioled	P. orientale
37b. Leaves short petioled or sessile	38
38a. Peduncles strigosely hairy.....	39
38b. Peduncles glabrous	40
39a. Stipules with a spreading or recurved scabrid limb.....	P. limbatum
39b. Stipules without a limb.....	P. pulchrum
40a. Spikes oblong-cylindrical. Achenes not less than 3 mm long.....	P. persicaria
40b. Spikes narrowly cylindrical. Achenes not more than 1.5mm long	P. kawagoeanum
41a. Branches and peduncles glandular and hairy.....	P. viscosum

Research Article

41b. Branches and peduncles hairy or glabrous but never glandular	42
42a. Bracts more or less hairy.....	P. stagninum
42b. Bracts quite glabrous.....	43
43a. Leaf-bases acute or acuminate.....	P. barbatum
43b. Leaf-bases obtuse or slightly cordate.....	P. longisetum
44a. Perianth glandular.....	45
44b. Perianth eglandular	46
45a. Racemes long- interrupted. Stipular cilia at least half as long as the tube or long.....	P.pubescence
45b. Racemes short-interrupted. Stipular cilia quite short or absent	P. hydropipe
46a. Stipules and bracts entire or only slightly fimbriate; never ciliate.....	P. praetermissum
46b. Stipules and bracts ciliate.....	47
47a. Achenes bi-convex.....	48
47b. Achenes trigonous.....	49
48a. Styles hooked.....	P. virginianum
48b. Styles not hooked.....	P. assamicum
49a. Achenes sharply trigonous, perfectly smooth and polished.....	P. posumbu
49b. Achenes obtusely trigonous finely puncticulate.....	P. mite
50a. Inflorescence of small more or less globose or obpyramidal heads.....	51
50b. Inflorescence paniculate.....	67
51a. Plants dwarf, not exceeding 15 cm. in height, often tufted.....	52
51b. Plants not dwarf ;never tufted.....	55
52a. Leaves orbicular or linear.....	53
52b. Leaves not as above.....	57
53a. Leaves orbicular.....	P. nummularifolium
53b. Leaves linear.....	54
54a. Leaves flat with two basal auricles.....	P. sibiricum
54b. Leaf margins recurved, and wanting basal auricles.....	P. perpusillum
55a. Heads in the axil of an involucre leaf.....	P. nepalense
55b. Heads without an involucre leaf.....	56
56a. Leaves sessile. Achenes bi-convex.....	P. humile
56b. Leaves long-petioled. Achenes trigonous.....	P. glaciale
57a. Plants armed more or less with recurved prickles, which may be reduced to a few at the base of the stipules.....	58
57b. Plants not as above.....	60
58a. Peduncles glabrous.....	P. sagittatum
58b. Peduncles glandular.....	59
59a. Leaves broadly hastate-acuminate, long-petioled. Achenes trigonous.....	P. arifolium
59b. Leaves elliptic-oblong or linear-oblong, short-petioled. Achenes orbicular bi-convex.....	P. dichotomum
60a. Leaves pinnatifid lobed.....	61
60b. Leaves entire.....	62
61a. Leaves coarsely lobed. Peduncles glandular-hairy.....	P. runcinatum
61b. Leaves finely cut. Peduncles glabrous.....	P. sinuatum
62a. Peduncles quite glabrous.....	63
62b. Peduncles glandular-hairy or hispidulous, at least near the heads	64
63a. Petioles winged; not auriculate.....	P. microcephalum
63b. Petioles auriculate, not winged.....	P. wallichii
64a. Every or almost every head in the axil of an involucre leaf.....	P. nepalense
64b. Heads not in the axils of involucre leaves.....	65

Research Article

65a. Main peduncles ending in a single capitulum or dividing into only 2-4 unicapitate branches.....	66
65b. Main-peduncles paniculately branched with numerous heads.....	P. chinense
66a. Leaves subsessile, auriculate.....	P. capitatum
66b. Leaves long-petioled, non-auriculate.....	P. sphaerocephalum
67a. Plant dwarf, unbranched, with only radical leaves.....	P. hookeri
67b. Plants shrubby and much branched, with cauline leaves.....	68
68a. Flowers very small not more than 4 mm. in diameter.....	69
68b. Flowers large, not less than 6 mm. in diam.....	73
69a. Plants glabrous.....	70
69b. Plants not glabrous.....	71
70a. Leaf-margins ciliate.....	P. paniculatum
70b. Leaf-margins smooth.....	P. frondosum
71a. Plants strigosely hairy, often with the hairs on the branches retrorse.....	P. rude
71b. Plants more or less pubescent.....	72
72a. Perianth baccate in fruit.....	P. molle
72b. Perianth not baccate.....	P. alpinum
73a. Perianth campanulate.....	74
73b. Perianth widely spreading.....	75
74a. Plant a low shrub with sessile leaves and dense- flowered panicle.....	P. tortuosum
74b. Plant a shrub of 60-120cm high with petioled leaves and lax divaricate cyme.....	P. campanulatum
75a Tall shrubs, 90-180 cm high, with large spreading terminal panicles.....	P. polystachyum
75b. Herbaceous plants, not more than 45 cm high, with small dense panicles axillary as well as terminal.....	P. rumicifolium

1. **Polygonum affine** D. Don, Prodr. Fl. Nepal. 70. 1825. *Bistorta affines* (D. Don) Greene, Leaft. I : 21. 1904. *Polygonum brunois* Wall. Cat. 1692. 1828

Undershurbs.

Fl.: July- Sept.

Habitat: Grassy slopes, rocky fissures; 4000-4900 m.

Distrib.: INDIA (N.W. India, Jammu & Kashmir, Sikkim): NEPAL, PAKISTAN.

2. **Polygonum alpinum** Allioni, Auct. Syn. 42.1773; Hook. f., Fl. Brit. India 5:49.1886. *Polygonum weyrichi* var. *alpinum* Maxim. ex Feash. et Sav., Enum. Pl. Jap. 2: 402. 1875. *Pleuropteropyrum alpinum* (Maxim.) Koidz. in Bot. Mag. Tokyo 30: 78. 1916; Munshi & Javeid Syst. Stud. Polygon. Kash. Himal. 78. 1986. *Polygonum angustifolium* Pallas, Reisa, Russ. Reich. 3: 230.1776

Herbs, perennial.

Fl. & Fr.: June- Aug.

Habitat: Forest margins, moist rocky/grassy slopes; 800-2400 m.

Distrib.: INDIA (Himachal Pradesh (Kulu), Jammu & Kashmir), AFGHANISTAN, KAZAKHSTAN, KYRGYSTAN, MONGOLIA, RUSSIA; SW ASIA, EUROPE, INDIA, CHINA.

Uses: Eaten raw or cooked. Herbs astringent; used in dysentery of calves and fawns; yield tannin.

3. **Polygonium amphibium** L. Sp. Pl. 1: 361.1753; Hook. f., Fl. Brit. India 5:34.1886. *Persicaria amphibium* (L.) S. F. Gray. Nat. Arr. Br. Pl. 8: 268.1821. *Polygonum amphibium* var. *natans* Leyss. Fl. Hall. 391.1761. *Polygonum amphibium* var. *terrestre* Leyss. Fl. Hall. 391. 1761.

Herbs, perennial, ascending to erect, pubescent.

Research Article

Fl. & Fr.: June- Sept.

Distrib.: Western Himalayas: INDIA (Kumaon to Kashmir) , ATLANTIC, NORTH ASIA AND RUSSIA.

Notes: Some times two varieties are recognized based on terrestrial and aquatic habit which does not seem to be justified.

4. **Polygonum amplexicaule** D. Don, Prodr. Fl. Nepal. 70. 1825; Hook. f. Fl. Brit. India 5: 32.1886. *Polygonum amplexicaule* var. *speciosa* Hook. f., Fl. Brit. India 5:32.1886. *Polygonum amplexicaule* var. *sinense* Forbes & Hemsley ex Stewart, Contrib. Gray Herb.n.s. 5:30.1930. *Polygonum petiolatum* D. Don, Prodr. Fl. Nepal. 70.1825. *Polygonum speciosum* Meissner, Monogr. Polygon. 66.1826. *Bistorta amplexicaulis* (D.Don) Greene, Leaflet. 1:21.1904. *Bistorta amplexicaulis* var. *alba* Munshi & Javeid in Syst. Stud. Polygon.Kash.Himal. 61. 1986; TYPE: J. & K: Kashmir, Tangmarg, 2508 msl, Munshi (KASH).

Hindi :Kukar makri, Durpa tandar

Herbs, perennial.

Fl. & Fr.: June – Sept.

Habitat.: Temperate Himalayas; shaded grassy places in valleys, mixed forests on mountain slopes, grassy slopes, forest margins; 1000-4000 m.

Distrib.; INDIA (Jammu & Kashmir, Sikkim), BHUTAN, CHINA, NEPAL, PAKISTAN

Uses: Root-stocks constitute the drug “Anjubar”, used medicinally in Unani and Ayurvedic systems of medicine; also contain tannin. Herb is a palatable fodder. Notes: Tremendous morphological variations are seen in the population of this species.



Polygonum amplexicaule



P. campanulatum var. pangianum



Polygonum convolvulus (after Pal & Maiti, 1984)

4.1. **Polygonum amplexicaule** var. **suffultum** (Maxim.) R.C. Srivast., *comb. nova. Polygonum suffultum* Maxim., Bull. Acad. Imp. Sci. Saint-Petersb. 22: 233. 1877.

Plants like *P. amplexicaule* var. *amplexicaule* but smaller (upto 40cm), high and more slender; leaves glabrous or weakly pubescent above; racemes slender, 1-5 cm, rarely branched; flowers white.

Fl. & Fr.: May- August

Habitat: Fir/ Rohododendron forests; 1300-4000 m.

Distrib.: INDIA(Sikkim.), BHUTAN, JAPAN, KOREA

5. **Polygonum arenastrum** Boreau, Fl. Centre France, ed. 3.2: 559. 1857. *Polygonum ebracteatum* Munshi & Javeid, Syst. Stud. Polygon.Himal. 56.1986.

Research Article

Herbs, annual.

Fl. & Fr.: June-Sept.

Chr. No.: $2n = 40, 60$.

Habitat: At sandy riversides, open grasslands; 100-3000 m.

Distrib.: INDIA (Jammu & Kashmir), CHINA, JAPAN, KOREA, MONGOLIA, RUSSIA, EUROPE, NORTH AMERICA; widely introduced elsewhere including Australia.

6. **Polygonum arifolium** L. Sp. Pl. 1753; Meissn. in DC. Prodr. 14: 1. 134. 1856; Hook. f., Fl. Brit. India 5:46.1886.

Herbs, weak, upto 90 cm high.

Fl. & Fr.: July – Oct.

Habitat : In forests, upto 1500 m

Distrib.: INDIA: (N.E. region, Meghalaya, West Bengal (Kurseong), Sikkim). AMERICA

Notes: Flowers and ripe fruits are formed on short stolons from the creeping base of the stem.

7. **Polygonum assamicum** Meissn. in DC., Prodr. 14(1): 111. 1856; Hook. f., Fl. Brit. India 5:36.1886.

Herbs, annual. Stems ascending or decumbent, 15-30 cm tall, glabrous..

Fl. & Fr.: June -Sept.

Habitat: Stream banks, wet valleys; 200-1000 m.

Distrib.: INDIA: (Assam -Cachar, Meghalaya, Nagaland), CHINA, MYANMAR

8. **Polygonum aviculare** L., Sp. Pl. 1: 362.1753; Hook. f., Fl. Brit. India 5: 26.1886; Gage, Rec. Bot. Surv. India 2: 378. 1903. *Polygonum ganderbalensis* Munshi et Javeid, Syst. Stud. Polygon. Kashm. Himal. 55-56.1986. *Holotype* : Ganderbal (Kashmir), 1700 m, Munshi 531 (KASH). *syn. nova* var. **aviculare**

Vernacular Names: Beng.: *Machutie*, Eng.: *Allseed, Armstrong, Beggerweed, Birds knotgrass, Birds tongue, Black snap, Bloodwort, Centinode, Cowgrass, Crabgrass, Crabweed, Cumberfield, Doorweed, Finxach, Hogweed, Irongrass, Knot, Knotgrass, Knotweed, Knotwort, Mantic, Nine Joints, Ninety-knot, Pig-grass, Pig-rush, Pigweed, Pinkweed, Red-legs, Red Robin, Redweeds, Sparrow tongue, Stoneweed, Surface twitch, Swine-carse, Swinegrass, Swine skir, Tackers grass, Way Grass, Wire grass, Wire weed*; Hindi: *Bannalia, Bigbund, Endrani, Hunraj, Machoti, Nishmoli*; Punjabi : *Banduke, Kesru*; Sanskrit : *Miromati, Nisomali*.

Herbs, annual. Stems prostrate, ascending, or erect, 10-40 cm high, much branched from base.

Fl. & Fr.: May -Aug.

Chr. No.: $2n = 40, 60$.

Habitat: Near fields, roadsides, waste places; sea level to 4200 m; distributed in Northern temperate zone; naturalized in Southern temperate zone.

Distrib.: INDIA: Western Himalayas: (Kumaon to Kashmir), EUROPE, N.ASIA

Uses: Plants are eaten as a vegetable; also used as fodder for the cattle and sheep. Herbs astringent, tonic antipyretic, diuretic, hemostatic, and vermifuge, used in diabetes, rheumatism and for ulcers. Decoction is given in diarrhoea and dysentery and to check excessive menses. Aromatic seeds are emetic and cathartic. Herb yields a blue dye similar to indigo.

Key to the varieties

1a. Leaves more or less uniform; internodes long.....var. **aviculare**

1b. Leaves heterophyllous; internodes short.....var. **heterophyllum**

8.1. **Polygonum aviculare** var. **heterophyllum** (Lindm.) Munshi et Javeid., Syst. Stud. Polygon. Kashm. Himalaya 54. 1986. *Polygonum heterophylla* Lindm. in Svensk. Bot. Tidskr. 6: 960.1912.

Differs from var. *aviculare* in being heterophyllous and having shorter internodes.

Fl. & Fr.: June – August

Habitat: at moist places

Distrib. : INDIA: Jammu & Kashmir (Gulmarg), EUROPE, RUSSIA.

Research Article

9. **Polygonum barbatum** L., Sp. Pl. 1: 362. 1753; Hook. f., Fl. Brit. India 5:40.1886. *Type*: China, Herb. Linn. 510. 15(LINN).var. **barbatum**

Vernacular Names: Beng.: *Bekhunjubaz*, Jashpu: *Mangarleta*, Malayalam: *Vellutamodelamukku*, Marathi: *Dhaktasherla*, Mundari: *Garaara*, *Naiara*, Punjabi: *Narri*, Tamil: *Atalari*, Telugu: *Kondamalle*, *Niruganneru*.

Perennial rhizomatous herbs.

Fl. & Fr.: Aug -Oct.

Chr. No.: 2n=60.

Distrib.: INDIA(throughout the hotter parts of India), BHUTAN, CHINA, INDONESIA, MALAYSIA, MYANMAR, NEPAL, NEW GUINEA, PAKISTAN, PHILIPPINES, SRI LANKA, THAILAND, VIETNAM.

Habitat: Streamsides, wet area; water sides; sea level to 1300 m.

Uses: fed to cattle; also used in curries. Decoction of shoots is used as a stimulating wash for ulcers; juice acts as a cicatrizant. Seeds tonic, purgative and emetic.

9.1. **Polygonum barbatum** var **nicobarica** R.C.Srivast.in Vigyan Parishad Anusandhan Patrika, 51: 70. 2008. *Holotype*: India, North, Nicobar, Arong, Car Nicobar, N.P. Balakr. 468 dt.1st2.08.1973 (PBL)

Differs from var. *barbatum* in having suboblong acute leaves and distinctly forked whitish transparent ochrea.

Fl. & Fr.: Aug.-Oct.

Habitat:Wetlands

Distrib.: INDIA: Nicobar Islnds

10. **Polygonum biaristatum** Aitch. & Hemsl., in J. Linn. Soc. 18: 90. 1881.*Type* : Seratigah, at 12000 ft; a dense woody miniature shrub, July 19th, 1879, *J. E. T. Aitchison* 816 (BM, K) .

Undershrubs, perennial, prostrate, branched from base; branches upto 12 cm long, glabrous, smooth.

Fl. & Fr.: June – Sept.

Habitat. : Grows on dry stony slopes between 3000 - 4000 m. Not common.

Distrib.: INDIA (Jammu & Kashmir), CENTRAL ASIA (PAMIR-ALAI, TIEN SHAN), AFGHANISTAN AND PAKISTAN.

11. **Polygonum bistorta** L., Sp. Pl. 1:360.1753; Gage in Rec. Bot. Surv. India 2: 390. 1903. *Type* : Described from Switzerland, Australia and France, Linn. Herb., 510.3 (LINN).

Herbs, perennial.

Fl. & Fr. : June – Sept.

Habitat : Hilly grasslands, meadows; 800-3000 m.

Distrib.: North Western Himalayas: INDIA: Uttarakhand (Garhwal; Binh Valley); 300-4000 m. CHINA, JAPAN, KAZAKHSTAN, NEPAL, MONGOLIA, PAKISTAN, RUSSIA, EUROPE.

12. **Polygonum campanulatum** Hook. f., Fl. Brit. India 5: 51. 1886.

Herbs, perennial. Stems suberect, prostrate at base, upto 90 cm high, branched, striate, pilose, tomentose upward.

Fl. & Fr.: July – Aug.

Habitat: Hill slopes, valleys; 2100-4000 m..

Distrib.: INDIA (Sikkim), BHUTAN, MYANMAR, NEPAL.

Key to the varieties

- 1a. Flowers yellow.....var. **pangianum**
- 1b. Flowers pinkish or red.....2
- 2a. Leaves, membranous, pubescence inconspicuous.Cymes much smaller than leaves.....var. **membranifolia**
- 2b. Leaves rather coriaceous, pubescence conspicuous.....3
- 3a. Leaves sparingly pubescentvar. **longipes**
- 3b. Leaves densely pubescent4
- 4a. Leaves with a dense fulvous tomentum on the lower surfacevar. **fulvidum**

Research Article

4b. Leaves more or less pubescent on both surfaces with grey, or (beneath) buff tomentum.....var. **campanulatum**

Polygonum campanulatum var. **campanulatum**

Distrib.: Himalayas:INDIA: Sikkim, Uttarakhand, West Bengal (Darjeeling district), BHUTAN, MYANMAR, NEPAL

12.1. **Polygonum campanulatum** var. **fulvida** Hook. f., Fl. Brit. India 5: 52. 1886.

Habitat: slopes, valleys; 1400-4100 m.

Distrib.: INDIA(Sikkim), NEPAL

12.2. **Polygonum campanulatum** var. **longipes** Hook. f., Fl. Brit. India 5:52.1886.

Distrib.: INDIA (*vide* Hook. f. 1886)

12.3. **Polygonum campanulatum** var. **membranifolia** Hook. f., Fl. Brit. India 5: 52.1886.

Habitat: In forests, 1800 – 3300 m.

Distrib.: INDIA: Sikkim

12.4. **Polygonum campanulatum** var. **pangianum**(G.D.Pal & G.G. Maiti) R.C.Srivast.in Indian Forester 133:271- 272. 2007. *Aconogonon pangianum* Pal & Maiti in Bull. Bot. Surv. India Vol. 26, (1 & 2): 95-96. 1984. *Holotype:* INDIA: Arunachal Pradesh, Subansiri district, Range, 3000 m, 19. 4. 1980, G.D. Pal 77734 (CAL).

Fl. & Fr.: April

Habitat: grows in moist loose sandy soil near water source and under shade; 3000 – 3500 m.

Distrib.: INDIA: Arunachal Pradesh(Subansiri district:Pange and Tale Valley localities). **Endemic.**

Etymology: the varietal epithet is based on the type locality (*Pange*) of the plant.

3. **Polygonum capitatum** Buch.-Ham. *ex* D. Don, Prodr. Fl. Nepal. 73. 1825; Hook. f. Fl. Brit. India 5: 44.1886. *Type:* Hab. in Nepalia, Buch.-Ham. (*vide* Quaiser 1999).

Herbs, perennial.

Fl. & Fr.: June -Oct.

Habitat: Subtropical and temperate Himalaya; on rocks, walls mountain slopes, shaded places in valleys;600-3500m

Distrib.: INDIA (Arunachal Pradesh, Meghalaya, Sikkim), BHUTAN, MALAYSIA, MYANMAR, NEPAL, SRI-LANKA, THAILAND, VIETNAM.

14. **Polygonum chinense** L. Sp. Pl. 1:363. 1753; Hook. f., Fl. Brit. India 5:52.1886(including vars. *corymbosa* Hook f. *parvifolia* Hook f. and *subastata* Hook. f. (1886). *Persicaria chinensis* (L.)Gross in Engl. Bot. Jahrb.49: 269, 277 & 315.1913. *Polygonum chinense* var. *brachiata* Gage in Rec. Bot. Surv. India 2:409.1903

Type: China, Herb. Linn. 510. 30. (LINN)

*Vernacular Names:*Marathi: *Paral*; Garhwali.: *Ameta*; Assamese.; *Kelnap*, *Kuki*; Lakhimpur:*Madhuri tenga*, *phiahapa*; Nepali.: *Kakur thotne*

Herbs, perennial

Fl. & Fr.: July- Dec.

Chr. No.: 2n = 22

Habitat : Subtropical and temperate Himalayas; upto 2400 m.

Distrib.: INDIA(Arunachal Pradesh, Assam, Meghalaya, Nagaland, Himachal Pradesh, Jammu& Kashmir, Sikkim, Uttarakhand), BHUTAN, INDONESIA, JAPAN, MALAYSIA, MYANMAR, NEPAL, PHILIPPINES, THAILAND, VIETNAM

Uses: Used in curries; also furnishes a good fodder relished by cattle. Herb tonic, antiscorbutic, and vulnerary. A good nectar and pollen source for bees.

Notes : A highly variable species with intergrading characters.

Key to the varieties

1a. Flowers red; ochrea upto 14 mm long.....var. **nicobarica**

1b. Flowers pinkish or white. Ochrea more than 14 mm long.....2

2a. Stems, branches, leaves and inflorescence hispidly hairy; hairs on branches reflexed.....var. **hispidum**

Research Article

2b. Stems, branches, leaves & inflorescence glabrous; sometimes leaves sparsely pubescent adaxially along veins.....3

3a. Leaves ovate or oblong-ovate, 10-16 x 6-8 cm, acute at both ends. Peduncles glandular hispid.....var. **ovalifolium**

3b. Leaves ovate oblong or deltoid-ovate, 4-10 x 2-4 cm; truncate or subcordate at base; peduncles eglandular.....var. **chinense**

14.1. **Polygonum chinense** var. **hispidum** Hook. f., Fl. Brit. India 5: 45. 1886. *Polygonum chinense* var. *scabra* Gage in Rec. Bot. Surv. India 2: 408. 1903

Stems and branches retrorsely hispid. Leaves ovate to elliptic, both surfaces hispid.

Fl. & Fr.: July -Nov.

Habitat: Mountain slopes, thickets in valleys; 600-2800 m

Distrib.: INDIA: N.E. Region; Meghalaya (Khasi Hills), Nagaland (Kohima), MYANMAR, THAILAND.

14.2. **Polygonum chinense** var. **nicobarica** R. C. Srivast. in Vigyan Parishad Anusandhan Patrika (CSIR) 51(1): 71. 2008. *Holotype*: India: N. Nicobars, Kardo vill., Katchal Island, P. Chakraverty 5545 dt. 26. 04. 1977 (PBL).

Differs from other varieties of *Polygonum chinense* in having red flowers and smaller ochrea.

Fl. & Fr.: April – May

Habitat: Marshy habitat, Sea Level.

Distrib.: INDIA: Nicobar Islands. Rare.

14.3. **Polygonum chinense** var. **ovalifolium** Meissn. in Wall., Pl. Asiat. Rar. 3: 60. 1832.

Stems and branches glabrous. Leaves broadly ovate or broadly elliptic, 10-16 x 6-8 cm.

Fl. & Fr.: July -Nov.

Habitat: N.W. Himalaya, E. Himalaya; mixed forests; 1200-3000 m.

Distrib.: INDIA (N.E. region, Tamil Nadu, Maharashtra, Uttarakhand), S. JAPAN, MALAYSIA, MYANMAR, NEPAL, THAILAND

15. **Polygonum cognatum** Meissn., Monogr. Polygon. 91. 1826; Hook. f., Fl. Brit. India 5: 26. 1886.

Herbs, perennial.

Fl. & Fr.: June -Sept.

Habitat: Gravelly mountain slopes; dry riverbeds; 1400-4600 m

Distrib.: INDIA (Jammu & Kashmir), CHINA, KAZAKHSTAN, KYRGYZSTAN, MANGOLIA, RUSSIA (SIBERIA), TAJIKISTAN.

Key to the varieties

1a. Leaves ovate, obtuse or acute, persistent.....var. **cognatum**

1b. Leaves elliptic, acute, deciduous.....var. **alpestre**

15.1. **Polygonum cognatum** var. **alpestre** in DC., Prodr. 14: 96. 1875; Munshi & Javeid, l.c. 53. 1986.

Stems leafy; internodes much shorter. Leaves elliptic, acute, deciduous, venation prominent.

Fl. & Fr.: Aug. – Sept.

Habitat: On bare rocky slopes.

Distrib.: INDIA: Jammu & Kashmir (Dras). RUSSIA

16. **Polygonum convolvulus** L., Sp. Pl. 1: 364. 1753. *Fallopia convolvulus* (L.) A. Love, Taxon 19: 300. 1970. *Bilderdykia convoloulus* (L.) Dumort. Fl. Belg. Prodr. 28. 1827.

Eng.: Climbing buckwheat.

Herbs, annual. Stems twining, 1-1.5 m long, striate, papillate, branched at base. Fl. & Fr.: May- Sept.

Habitat: Thickets in valleys, stream banks; in association with *Fagopyrum esculentum* Moen. in *Fagopyrum* cultivated fields; 100-3600 m.

Distrib.: INDIA (Jammu & Kashmir), AFGHANISTAN, BHUTAN, JAPAN, KAZAKHATAN, KOREA, MONGOLIA, NEPAL, PAKISTAN, RUSSIA, EUROPE, NORTH AMERICA (introduced).

Research Article

Uses: A good forage. Achenes are ground into flour used for pan cakes and porridge like those of *Fagopyrum esculentum* Moen. “Rutin” has been reported in the plant.

17. **Polygonum delicatulum** Meissn.in DC., Prodr. 14 (1): 127. 1857; Hook.f. Fl. Brit India 5:24.1886.*Koenigia deliculata* (Meissn.) Hara, Fl.East.Himal.70.1966.*Holotype:*Kumaon, 12000 ft., *R.Strachey&J.E.Winterbottom* 38(G); *Isotype* in K



Polygonum islandicum



Polygonum dumetorum



Polygonum emodi

Fl. & Fr. : July - Sept.

Chr. No.: $2n = 28$.

Habitat: Alpine meadows, mountain slopes, wet rocks; 2600-4900 m.

Distrib.: INDIA: Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand, West Bengal (Darjeeling District).

BHUTAN, CHINA, NEPAL, PAKISTAN, TIBET

18. **Polygonum dichotomum** Blume, Bijdr. Fl. Ned. Ind. 529. 1826. *Polygonum pedunculare* Wall. ex Hook. f. Fl. Brit. India 5: 48. 1886.

Herbs, annual.

Fl. & Fr.: June – Oct.

Habitat: Ditches, marshy areas; 100 – 1000 m.

Distrib.: INDIA : Assam Nagaland, Tamilnadu (Nilgiri Hills), .INDONESIA, JAPAN (RYUKYU ISLANDS), LAOS, MALAYSIA, PHILIPPINES, THAILAND, VIETNAM; AUSTRALIA.

Key to the varieties

- 1a. Leaves subsessile, 2.5-5 x 0.6-0.9 cm. Plants upto 25 cm high.....var. **assamica**
- 1b. Leaves petiolate. Plants more than 25 cm high.....2
- 2a. Stems smooth. Leaves obtuse.....var. **nilagirica**
- 2b. Stems with reversed prickles at nodes and angles.....3
- 3a. Leaves upto 5 cm long, elliptic-lanceolate or ovate –acuminate..var. **dichotoma**
- 3b. Leaves 7.5-12.5 cm long.....4
- 4a. Plants robust. Leaves 7.5-15 x 1.3-1.6 cm. Heads large.....var. **robusta**
- 4b. Plants not robust. Leaves 10-12.5 x 0.6-0.9 cm. Heads small.....var. **angustissimum**

18.1. **Polygonum dichotomum** Blume, var. *angustissimum* (Hook. f.) C.W. Park, Mem. Newyork Bot. Garden 47:75.1988. *Polygonum pedunculare* Wall.var. *angustissima* Hook. f., *l.c.* 5: 48.1886.

Distrib.: INDIA: Bihar, Jharkhand, Goa, Karnataka (Belgam) Tamilnadu (Nilgiri Hills).

18.2. **Polygonum dichotoma** Blume var. **assamica** (Hook. f.) R.C. Srivast.in Indian Forester 133:271-272.2007.*Polygonum pedunculare*Wall .ex Meissn. var. *assamica* Hook. f. Fl. Brit. India 5:48.1886.

Distrib.: INDIA : Assam (Lakhimpur, Jynteapore), Meghalaya.

18.3.**Polygonum dichotoma** Blume var. **dichotoma**. *Polygonum pedunculare* Wall. ex Hook.f. Fl.Brit. India 5:48.1886 .

Fl. & Fr. : June – Oct.

Habitat : Marshy places; 100-1000 m.

Distrib.: INDIA : Assam (Brahmaputra Valley), Tamil Nadu (Pulney Hills).

18.4.**Polygonum dichotoma** Blume var. **nilagirica** (Hook. f.) R.C. Srivast., in Indian Forester 133:271-272.2007. *Polygonum pedunculare* Wall.var. *nilagirica* Hook. f., *l.c.* 5:48.1886.

Distrib.: INDIA : Tamil Nadu (Nilgiri, Conoor); ca 2000 m.

Research Article

18.5. **Polygonum dichotoma** Blume var. **robusta** (Hook. f.) R.C. Srivast. in Indian Forester 133:271-272.2007. *Polygonum pedunculare* Wall. var. *robusta* Hook. f., Fl. Brit. India 5:48.1886.

Distrib.: INDIA : Tamil Nadu (Nilgiri & Pulney Hills).

19. **Polygonum dumetorum** L. Sp. Pl. 522.1762. *Fallopia dumetorum* (L.) Holub, Folia Geobot. Phytotax.6: 176. 1971. *Bilderdykia dumetorum* (L.) Dumort., Fl. Belg. 18:1827.

Herbs, annual.

Fl. & Fr.: June- Sept.

Habitat: grassy slopes, thickets and mixed forests in valleys, mountain valleys, fields; 200- 2400 m.

Distrib: INDIA: Temperate Himalaya (Kunawar to Kashmir), N.India, Jammu & Kashmir), BHUTAN, JAPAN, KOREA, MONGOLIA, NEPAL, PAKISTAN, RUSSIA; SW ASIA, EUROPE.

20. **Polygonum emodi** Meissn. in Wall., P1. Asiat.Rar .3: 51. 1832; Hook. f., Fl. Brit. India 5:33.1886. *Bistorta emodi* (Meissn.) Hara, Fl. East. Himal. 69. 1966. *Polygonum meissneri* Wall. Cat. 1693. 1829. *nom. nud.*

SYNTYPES: Kumaon, Wall. Cat. 1693 (K), Isotype (E).

Undershrubs, tufted, 10-25 cm tall, much branched.

Habitat: Rocky fissures on mountain slopes, thickets, forest; 1300-3000 m.

Distrib.: INDIA (Jammu & Kashmir, Sikkim), BHUTAN, CHINA, NEPAL.

21. **Polygonum filicaule** Wall. *ex* Meissn. in Wall., P1. Asia. Rar. 3: 59. 1832; Hook. f. Fl. Brit. India 5:25.1886. *Polygonum binsarii* Silas & Gaur in J. Econ.Taxon. Bot. 14:111-112.1990; *Type*: R.A.Silas 7786 (GUH).

var. **filicaule**

Herbs, annual, flaccid, tufted, rather succulent, 10-30 cm high..

Fl. & Fr.: July -Oct.

Habitat: Subalpine and Alpine Himalaya: Mountain slopes, thickets in valleys; 2000-5500 m.

Distrib.: Western to Eastern Himalayas: INDIA(Jammu & Kashmir (Kashmir), Himachal Pradesh, Uttarakhand to Sikkim), BHUTAN, CHINA, MYANMAR, NEPAL, PAKISTAN. TIBET

Key to the varieties

1a. Plants upto 5 cm high.....var. **caespitosa**

1b. Plants more than 2.5 cm high.....2

2a. Stems and leaves very hirsute..... var. **villosa**

2b. Stems and leaves strigose.....var. **filicaule**

21.1. **Polygonum filicaule** var. **caespitosa** Gage in Rec. Bot. Surv. India 2: 377. 1903. *Type*: Eastern Himalaya: Sikkim; Taktoh, 10000 ft, *Kings Collector, s.n.* (CAL)

Plants upto 5 cm high.

Fl. & Fr.: July – Oct.

Habitat: Eastern Himalayan region; ca 3000m

Distrib.: Eastern Himalaya: INDIA: West Bengal (Darjeeling district- Taktoh), Sikkim.

21.2. **Polygonum filicaule** var. **villosa** Cumminsex Gage in Rec. Bot. Surv. India 2:378.1903.

Easily distinguished by its very hirsute stems and leaves.

Fl. & Fr.: July – Oct.

Distrib.: E.Himalaya: INDIA: Sikkim (Gnathang; 4000m, Gnatut; 5000 m).

NEPAL

22. **Polygonum frondosum** Meissner, in DC., Prodr. 14(1):137.1856; Hook. f. Fl. Brit.India 5:50.1886. *Polygonum molle* var. *frondosum* (Meissn.) A.J. Li in C.Y. Wu, Fl. Xizang. 1:622. 1983.

Glabrous, shrubs.

Habitat: Thickets in valleys, grassy slopes; 1200-2700 m.

Distrib.: Himalayas: INDIA: Uttarakhand to Sikkim.

BHUTAN, INDONESIA, NEPAL.

Notes: A very distinct species

23. **Polygonum glabrum** Willd. Sp. P1. 447. 1799; Hook. f. Fl. Brit. India 5:34.1886.

Research Article

Assam : *Bihagni, Bihlangani, Larborna, Pathaura* Bombay: *Raktarohida*, Santal: *Jioti, Sauriark*, Tamil: *Atalari*.

Glabrous annual herbs.

Fl. & Fr.: June -Sept.

Habitat: Riverbanks, streamsides, marshy areas; sea level to 3200 m.

Distrib.: INDIA: N.E.region (Assam) to Uttarakhand (Garhwal).TROPICAL ASIA, AFRICA, AMERICA

Uses: Young shoots and roots cooked with vegetables. Fruits parched and made into a kind of ‘*sattu*’. Infusion of leaves given in colic and as a febrifuge. Root-stocks are used for piles, jaundice, debility and consumption.

24. **Polygonum glaciale** Hook. f. , F1. Brit. India 5: 41. 886. *Persicaria glaciale* (Hook.f.) Munshi & Javeid, Syst. Stud. Polygon. Kash. Himal. 76.1986.



Polygonum glaciale



P. hypopiper .var. sarbhanganicum (after Rao. 1964)

Herbs, annual.

Habitat: Alpine and subalpine Himalaya; grassy slopes, wet valleys; 1300-4300 m

*Distrib.:*INDIA: (Himachal Pradesh, Jammu & Kashmir, Sikkim, Uttarakhand.)AFGHANISTAN, CHINA, NEPAL.

Key to the varieties

1a. Leaves entire margined. Achenes trigonous, 1-1.5 mm, finely granular.....**var. glaciale**

1b. Leaves 2-lobed at base, rarely entire. Achenes biconvex or trigonous, 1.8-2 mm, finely pitted.....**var. przewalskii**

24. 1. Polygonum glaciale var. glaciale

Leaves entire. Achenes trigonous, 1-1.5 mm, finely glandular.

Fl. & Fr.: June-Aug.

Habitat: Grassy slopes, wet valleys; 2100-4300 m.

Distrib.: INDIA(Sikkim), AFGHANISTAN, NEPAL.

24.2.**Polygonum glaciale** var. **przewalskii** (A.K. Skvortsov & Borodina) A.J. Li, F1. Reipubl. Popularis Sin. 25 (1): 62. 1998. *Polygonum przewalskii* A.K. Skvortsov Borodina, Rast. Tsentral. Azii 9: 106. 1989.

Leaves 2-lobed at base, rarely entire. Achenes biconvex or trigonous, 1.8-2 mm, finely pitted.

Fl. & Fr.: June -Aug.

Habitat: Grassy slopes, wet valleys; 1300-3600 m.

Distrib.: INDIA (Li Anjen *et al.*, 2003).AFGHANISTAN, CHINA, NEPAL.

25. **Polygonum hookeri** Meissn., Ann. Sci. Nat., Bot., ser. 5, 5: 352. 1866; Hook. f. F1. Brit. India 5: 1886.

Herbs, perennial, dioecious..

Research Article

Fl. & Fr.: June- Sept.

Habitat: Grassy slopes, thickets in valleys, alpine meadows; 3500-5000 m.

Distrib.: INDIA:(Sikkim)BHUTAN

26. **Polygonum humile** Meissn. in Wall., Pl. Asia. Rar. 3: 59. 1832; Hook.f., Fl. Brit. India 5:41.1886.

Herbs, annual.

Fl. & Fr.: Aug. - Oct.

Habitat: Temperate and alpine Himalaya; grassy slopes, shaded places in valley; 2400-3300 m.

Distrib.: INDIA : Himachal Pradesh, Sikkim, Uttarakhand (Kumaon).NEPAL.

27. **Polygonum hydropiper** L., Sp. Pl.1: 361. 1753; Hook.f., Fl. Brit. India 5:39.1886.

Vernacular Names: Beng.: *Packurmul*; Eng.: *Arsesmart, Biting, Pepper, BitingPersicaria, Smartweed, Water Pepper*

Herbs, annual.

Fl. & Fr.: May -Oct.

Chr. No.: 2n = 18-22.

Habitat: Riverbanks, streamsides, wet valleys; sea level to 3500 m.

Distrib.: Arunachal Pradesh, Jammu & Kashmir, Orissa, Sikkim, West Bengal (Darjeeling).

Uses: Used as a flavouring; stimulant, diuretic, styptic, emmenagogue, and lithontriptic. Liquid extract of herb is used as an oral contraceptive; infusion is used in uterine disorders and as a hemostatic. Roots are stimulant, diuretic, carminative, tonic and anthelmintic; root- juice used for skin affections. Bruised leaves and seeds are used as a vesicant like mustard poultice. Powder of the dried herb is used as a fish-poison. Plants yield a dye and an essential oil. Leaves are used as a condiment.

Key to the varieties

1a.: Plants glabrous and eciliate.....var. **hydropiper**

1b: Plants glandular or strigose.....2

2a. Plants covered everywhere with numerous minute gland.....var. **glandulosissima**

2b. Plants having strigose ochreae and bractsvar. **sarbhanganicum**

27.1. **Polygonum hydropiper** var. **glandulosissima** Gage, Rec. Bot. Surv. India 2: 401.1903.

Whole plant minutely glandular.

Distrib.: Peninsular India : (N.Canara, Dharwar), Maharashtra (Pune).

27.2. **Polygonum hydropiper** L. var. **sarbhanganicum** (Subba Rao) R.C. Srivastava, *comb. et stat. nova. Polygonum sarbhanganicum* (Subba Rao) Subba Rao in Bull. Bot. Surv. India 6:106.1964. *Polygonum glandulosum* Subba Rao, in Bull. Bot. Surv. India 5:257. 1963(non Poir. 1804).Type: India: Assam, Goalpara, sandy banks of Sarbhanga River; ca 1200 m, R. S. Rao 7162 A (ASSAM).

Fl. & Fr.: April

Habitat: Sandy bank of river; ca 1200m

Distrib.: INDIA: Assam (Goalpara Dt.)

28. **Polygonum islandicum** (L.) Hook. f. Fl. Brit. India 5: 24.1886. *Koenigia islandica* L., Mant. Pl. 35.1767. Type: *Habitat in Islandia detecta* 17651 Jo. Ger. Konig, qui *Islandicum* adit *Hilforium naturale* ejusdescripturus (vide Quaiser, 1999).

Herbs, upto 8 cm high, glabrous or slightly puberulous.

Fl. & Fr.: June – Aug.

Habitat: Alpine Western Himalaya; in moist areas, bogs, river banks; 3000- 5000m.

Distrib.: Western Himalays:INDIA(Himachal Pradesh, Jammu & Kashmir, Uttarakhand), CENTRAL ASIA, CHINA, PAKISTAN, CENTRAL EUROPE

Research Article

29. **Polygonum kawagoeanum** Makino, Bot. Mag. (Tokyo) 28: 115. 1914. *Polygonum minus sensu* Hook. f., Fl. Brit. India 5:36.1865 (*non* Huds.).

Herbs annual. Stems ascending or decumbent, 20-50 cm tall, slender, usually branched from base, glabrous, rooting at lower nodes

Fl. & Fr.: May-Oct.

Habitat: Himalayas; mostly valleys, waste lands, field margins; sea level to 1700 m.

Distrib.: INDIA: Himachal Pradesh, Jammu & Kashmir (Gulmarg), N.E.India (Assam, Manipur, Meghalaya) Sikkim, Uttarakhand, W.Bengal, Tamilnadu (Coimbatore, Madurai, Nilgiri Hills, Tinnelvely). BANGLADESH, CHINA, JAPAN, MALAYSIA, MYANMAR, NEPAL, PAKISTAN, EUROPE..

30. **Polygonum lanatum** Roxb. Fl. Ind. 2:285.1832. *Polygonum lanigerum auct. non* R. Br.; Hook. f. Fl. Brit. India 5:35.1886; Gage in Rec. Bot. Surv. India 2:394 – 395.1903.

Plants upto 1.5 m long, procumbent and creeping below; branches slender, much divided, divaricating, white, “deep red within especially at joints”(vide Roxb.).

Habitat: in ditches; up to 1500 m.

Distrib.: INDIA (Assam, Himachal Pradesh (Shimla), Rajasthan (Mt.Abu), Uttarakhand (Dehradun), West Bengal), MYANMAR

Notes: *Polygonum lanigerum* var. *glutinosa* Hook. f. (Hook. f., l. c. 5:35.1886) is *P. lapathifolium* L.(Gage 1903).

31. **Polygonum lapathifolium** L., Sp. Pl. 1: 360. 1753.; Hook. f. Fl. Brit. India 5: 35.1886. *Persicaria lapathifolia* (L.) S.F. Gray, Nat. Arr. Br. Pl. 2:270. 1821. *Polygonum nodosum* Pers., Syn.1:440.1805. *Polygonum lapathifolium* var. *salicifolium* Sibthorp, Fl. Oxon. 129.1794. *Polygonum lapathifolium* var. *lanatum* (Roxb.) Steward, Contrib. Gray Herb. n.s. 5:46.1930. *Polygonum lanatum* Roxb. Fl. Ind. 2:285.1832. *Polygonum laxum* Reichb., Ic. Crit. V. 56, t. 492. *Polygonum nutans* Roxb. Fl. Ind. 2: 285. 1832. *Polygonum donii* Meissn. in DC., Prodr. 14:119.1856. *Polygonum simlense* Royle ex Bab. in Trans. Linn. Soc. Bot. 18:102.1841.

Herbs, annual. Stems erect, up to 90 cm high, branched, glabrous, subglabrous, or lanose, swollen at nodes.

Fl. & Fr.: May - Oct.

Chr. No.: $2n = 22, 24$.

Habitat: Along roadsides ditches, wet field margins; sea level to 3900 m.

Distrib.: INDIA(Assam, Himachal Pradesh, Jammu & Kashmir:throughout plains of Kashmir, Sikkim, Uttarakhand, West Bengal), BANGLADESH, CHINA, INDONESIA, JAPAN, KAZAKHSTAN, KOREA, KYRGYSTAN, MONGOLIA, MYANMAR, NEPAL, NEWGUINEA, PAKISTAN, PHILIPPINES, TAJIKISTAN, THAILAND, TURKMENISTAN, UZBEKISTAN, VIETNAM, N. AFRICA, AUSTRALIA, EUROPE, N.AMERICA.

Uses: Used against cancer; said to cause dermatitis and death in cattle.

Notes: Glabrous or subglabrous plants are usually treated as *Polygoniumlapathifolium* var. *lapathifolium* and the plants having lanose leaves and stem are treated under separate variety viz. *Polygonum lapathifolium* var. *lanatum* (Roxb.) Steward, (Contrib. Gray Herb. N.s. 5:46.1930) which occur along field margins and ditches at the lower elevations (200 -1100m) in Bhutan, China, Indonesia (Java), Malaysia, Myanmar, Nepal and Philippines. *Polygonum lapathifolium* var. *salicifolium* Sibthorp (Fl. Oxon. 129. 1794) with densely lanose (abaxially) leaves is said to occurs in India, China, Indonesia (Sumatra), Japan, Myanmar and Russia (Siberia) along road sides, watersides at the elevations from 100 – 3300 m (Li Anjen *et al.*, 2003).This variety posses Chr. No.: $2n = 22$. J. D.Hooker (1886) treated *Polygonum laxum* Reichb. as a variety of *P. lapathifolium* L

Research Article



Polygonum lapathifolium



Polygonum longisetum

32. ***Polygonum limbatum*** Meissn. in DC., Prodr. 14(1) 123. 1856; Hook. f. Fl. Brit. India 5: 30.1886; Gage in Rec. Bot. Surv. India 2:387. 1903.

Herbs, very stout, erect.

Distrib.: INDIA(Bihar, Karnataka, Uttarakhand (Garhwal), Uttar Pradesh, West Bengal), TROPICAL AFRICA

33. ***Polygonum longisetum*** deBruyn in Miq., Pl. Jungh. 3: 307. 1854. *Polygonum serrulatum sensu* Hook. f., Fl. Brit. India 5:38.1886, *non* Lag.1817.

Type: Insulam Javae in monte Gede, altitude, 3000-5000 ft, ubi flor. legit mens. Dec.- Feb. (Junghuhn) *vide* Quaiser, *l.c.* 48.

Herbs, annual.

Fl. & Fr.: May -Aug.

Habitat: Moist valleys, along stream banks, shaded places along ditches, water sides; sea level to 3100 m.

Distrib.: INDIA (Andaman & Nicobar Islands, Jammu & Kashmir, Uttar Pradesh, Uttarakhand, West Bengal), AFGHANISTAN, BANGLADESH, CHINA, JAPAN, N.MYANMAR, NEPAL

34. ***Polygonum macranthum*** Meissn. in DC. Prodr. 14 (1): 207.1856; Hook. f. Fl. Brit.India 5: 40.1886.

Herbs, upto 90 cm high, erect..

Habitat: Marshy lands, ditches, streamsides, river banks; upto 1700m.

Distrib.:INDIA(Assam, Meghalaya), BANGLADESH

35. ***Polygonum macrophyllum*** D. Don, Prodr. Fl. Nepal. 70. 1825.*Polygonum sphaerostachyum* Meissn. Monogr. Polygon. 53. 1826; Hook. f.. Fl. Brit. India 5: 32. 1886. *Bistorta macrophylla* (D.Don) Sojak in Preslia 46: 152. 1974; Chowdhery & Wadhwa, Fl.Himachal Pradesh 608.1984.

Herbs, perennial. Rhizomes curved, large, 1-2 cm in diam..

Fl. & Fr.: June – Sept.

Habitat: Temperate and sub-alpine Himalaya

Distrib.: INDIA(Himachal Pradesh, Sikkim, Uttarakhand), BHUTAN, CHINA, NEPAL

Uses: Used as an astringent.

36. ***Polygonum microcephalum*** D. Don, Prodr. Fl. Nepal. 72. 1825; Hook.f., Fl. Brit India 5:42.1886..

Vernacular name: Assamese : *Madhu fulong, Madu suleng*

Herbs, perennial..

Habitat: Temperate Himalayas; forest; grassy places; 500-3200 m.

Distrib.: INDIA: Assam (Sibsagar), Meghalaya (Khasi Hills), Nagaland, Sikkim, West Bengal (Darjeeling district).

BANGLADESH, BHUTAN, CHINA, NEPAL

Uses: Apical portion of young shoots are used as a flavouring agent.

Research Article

37. **Polygonum mite** Schrank, Baier, Fl. 668.1789; Schiman-Czeika & Rech. f. in Rech. f., Fl. Iran. 56: 61. 1968. *Polygonum hydropiper* ssp. *mite* (Schrank) A.Majeed & Kak in Journ.Bombay Nat. Hist. Soc. 517. 1984. *Persicaria hydropiper* ssp. *mite* (Schrank) Munshi & Javeid, Syst. Stud. Polygon. Kash. Himal.75.1986.

Type: Described from Bavaria (*vide* Quaiser, *l.c.*).

Herbs, annual, erect to suberect, upto 60 cm high, branched, glabrous.

Distrib.: N.W.Himalaya: INDIA(Himachal Pradesh, Jammu & Kashmir, Uttarakhand)EUROPE, N.W.AFRICA, TEMPERATE ASIA, N.AMERICA.

38. **Polygonum molle** D. Don Prodr. F1. Nepal. 72. 1825; Hook. f., Fl. Brit. India 5: 50.1886.

Vernacular Names: Lepcha: *Kandyepam*; Nepal: *Patuswa*, *Thotne*, *Totnye*, *Tuknu*; Assam: *Kochomah* Undershrubs.

Fl. : & *Fr.* : Aug.-Nov.

Habitat: Central and Eastern Himalayas; slopes, forest, grassy places and thickets in valleys; 1200-3500 m.

Distrib.: INDIA:(Arunachal Pradesh (Mishmi Hills), Sikkim), BHUTAN, INDONASIA, N .MYANMAR, NEPAL, THAILAND.

Uses : Pleasantly acidic, young shoots are eaten like rhubarb; also used in the preparation of jellies. Herbs are astringent; used in diarrhoea.

39. **Polygonum molliiforme** Boissier, Diagn. P1. Orient., ser. 1, 7:84. 1846; Hook. f. Fl. Brit. India 5:27.1886.

Annual Herbs.



Polygonum molliiforme



Polygonum muricatum

Fl. & Fr.: Jun -Aug.

Habitat : Himalayas

Distrib.: INDIA: Himachal Pradesh, Sikkim, West Bengal (Darjeeling district).NEPAL

40. **Polygonum muricatum** Meissn., Monogr. Polyg. 74. 1826; Hook. f. Fl. Brit. India. 5: 45. 1886.

Herbs, annual.

Fl. & Fr.: July-Oct.

Habitat: Central and Eastern Himalays; wet valleys, ditches; 1200- 3600 m.

Distrib.: INDIA: N.E.region (Khasi Hills in Meghalaya), Sikkim), CHINA, JAPAN, KOREA, NEPAL, RUSSIA (FAR EAST), THAILAND

42. **Polygonum nepalense** Meissn., Monogr. Polyg. 84. 1826. *Polygonum alatum* Buch.–Ham. *ex* Spreng. Syst. Veg. Cur.Post. 154. 1827. *Polygonum alatum* var. *nepalense* Hook. f., Fl. Brit. India 5: 41-42. 1886..

Eng.: *Snakeweed*; Punjabi: *Satbalon*; Tam.: *Kangany-machan-pillu*

Research Article

Herbs, annual..

Fl. & Fr. : May-Oct.

Habitat: Mountain slopes, moist valleys; 200-4000 m

Distrib.: Almost throughout INDIA: (Arunachal Pradesh, Meghalaya, Kashmir to Sikkim, Uttarakhand, W. India, S. India).AFGANISTHAN, BHUTAN, CHINA, INDONESIA, JAPAN, KOREA, MALAYSIA, NEPAL, NEW GUINEA, PAKISTAN, PHILIPINES, RUSSIA (FAR EAST), THAILAND; TROPICAL AFRICA.

Uses: Leaves applied to swellings. Grown as a cover crop in tea plantations; dies under heavy shade but regenerates from seeds in pruned fields.

Notes: A highly variable species particularly in the indumentums, size of heads, involucre bracts and biconvex or trigonous achenes (nuts).



Polygonum nepalense



P. paronychioides

41.1. **Polygonum nepalense** Meissn. var. **kumaonum** (Subba Rao & Kumari) R.C. Srivast., *comb. et stat. nova*. *Polygonum kumaonum* Subba Rao & G. R. Kumari in J. Indian. Bot. Soc. 55: 168 – 177. 1976. *Holotype*: W. Himalayas: Kumaon, Shafandiyar, Ramam Valley, 19. 8. 1899, *Inayat* 24904 (CAL).

Differs from *P. nepalense* var. *nepalense* in having longer internodes; deflexed hairs on stem and ochreae; recurved leaf margins and smooth epunctate achenes.

Fl. & Fr.: Aug.

Distrib.: W. Himalayas: INDIA: Uttarakhand (Kumaon).

42. **Polygonum nummulariifolium** Meissn. in DC. Prodr. 14 (1): 127. 1857; Hook. f. Fl. Brit. India 5:53.1886.

Herbs, perennial, dwarf. Stems creeping, forming matted tufts; branches 1.5-3 cm, internodes short, rooting at nodes. *Fl. & Fr.*: Aug.- Oct.

Habitat: Alpine Himalayas; grassy slopes; 3300-4800 m

Distrib.: INDIA (Jammu & Kashmir, Sikkim, Uttarakhand), BHUTAN, MYANMAR, NEPAL.

43. **Polygonum orientale** L., Sp. Pl. 1: 362. 1753; Hook. f., Fl. Brit. India 5 : 30.1886.

Vernacular name: Beng.: *Bara pani mirich*

Herbs, annual.

Fl. & Fr.: June - Oct.

Habitat: Roadsides, near houses, wastelands, usually cultivated in gardens; upto 3000 m.

Distrib.: N.E.India (Assam; ascending to Himalayas), Jammu & Kashmir (Jammu), Uttar Pradesh, West Bengal.

Uses: Plants eaten as pot-herb; also used as a tonic and vulnerary. Concentrated infusion poisonous to fish. Achenes prescribed for tubercular swellings and flatulence.

Notes: End of the branches when moistened become thickly glutinous (*cf.* Roxburgh *vide* Hook.f., *l.c.* 50.).

Research Article

43.1. **Polygonum orientale** var. **glabrata** Hook. f., Fl. Brit. India 5: 30.1886.

Recognized on the basis of very sparsely pubescent or glabrate parts and presence of winged petioles.

Distrib.: INDIA: Uttar Pradesh (Saharanpur).

44. **Polygonum paleaceum** Wall. ex Hook. f., Fl. Brit. India 5:32. 1886.

Herbs, perennial.

Habitat: Grassy slopes, forest margins; 1500-4000 m.

Distrib.: INDIA(Assam, Meghalaya), MYANMAR

45. **Polygonum paniculatum** Bl. Bijdr. 533.; Hook. f., Fl. Brit. India 5: 49.1886.

Shrubs, glabrous, 1.5 – 2 m high; branches terete, flexuous, not grooved.

Habitat: Temperate Himalayas; 1500 2400 m.

Distrib.: North Western Himalayas to Eastern Himalayas: INDIA: N.E. region (Old Assam), Nagaland, Sikkim, West Bengal (Darjeeling District)

46. **Polygonum paronychioides** C.A. Meyer ex Hohenacker, Bull. Soc. Imp. Naturalistes Moscou 11:356. 1838; Hook. f., Fl. Brit. India 5: 26. 1886.

Subshrubs, prostrate or ascending, 5-15 cm tall, papillate.

Fl. & Fr.: June-Sept.

Habitat: Gravelly mountain slopes; ca 3500 m.

Distrib.: INDIA(Jammu & Kashmir), AFGHANISTAN, CHINA, KAZAKHSTAN, KYRGYZSTAN, PAKISTAN, TAJIKISTAN, TURKMENISTAN, UZBEKISTAN; SW ASIA

47. **Polygonum perfoliatum** L., Syst. Nat., ed. 10, 2:1006. 1759; Hook. f., Fl. Brit. India 5: 46.1886.

Khasi :*Ma-seinthli*

Herbs, annual..

Fl. & Fr.: June- Oct.

Habitat: Central and Eastern Himalayas; near fields and roads, wet valleys; 100-2300 m

Distrib.: INDIA:Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Sikkim, West Bengal (Darjeeling District), Uttarakhand.

BANGLADESH, BHUTAN, CHINA INDONESIA, JAPAN, KOREA, MALAYSIA, NEPAL, NEW GUINEA, PHILIPPINES, RUSSIA (FAR EAST), THAILAND, VIETNAM; SW ASIA NORTH AMERICA (introduced)

Uses: Herbs are pleasantly acrid, eaten; emollient, used as poultice on tumours; also employed for softening ivory and bones for easy carving. Seeds contain a fatty oil.

48. **Polygonum perpusillum** Hook.f. Icon. Pl. 15.1990.1885; Hook.f. Fl. Brit. India 5:32.1886; Gage in Rec. Bot. Surv. India 2:1903. *Syntypes*: Alpine Himalayas, alt. 14 -15000 ft, Garhwal and Kumaon, *Strachy & Winterboom*, *Duthie* (K); Sikkim, *J.D. Hooker* (K)

Plants very dwarf, subcaespitose.

Habitat: Alpine Himalaya; 366 – 4500m

Distrib.: Sikkim, Uttarakhand.), BHUTAN, TIBET

49. **Polygonum persicaria** L., Sp. Pl. 1: 361. 1753; Hook. f., Fl. Brit. India 5:35.1886.

Eng.: *Common red Persicaria*, *Ladysthumb*, *Spotted Redshank*.

Herbs, annual. *Fl. & Fr.*: June -Sep.

Chr. No.: $2n = 22.42$.

Uses : Astringent, laxative, styptic, vulnerary and lithontriptic; also used as a cardiac stimulant and in colds, fevers and asthma. Infusion useful as a gargle in inflammation of pharynx. Cases of dermatitis and poisoning among livestock have been reported; it may also induce abortion. Herb yields an essential oil, and seeds a fatty oil.

50. **Polygonum plebeium** R. Br., Prodr. 420. 1810; Hook.f., Fl. Brit. India 5:27.1886 (incl. all varieties except var. *effusa*).

Vernacular Names: Santal.: *Raniphul*, *Meree arak*; Beng.: *Chemti sag*, *dubia sag*; Guj.: *Zinako okhard*; Kan.: *Siranige soppu*; Oriya: *Muthi saga*; Delhi: *Macheti*; U.P.: *Machichi*, *chotimachhachhie*; Lakhimpur: *Banjuluk*

Research Article

Prostrate, annual herbs.

Fl. & Fr.: May -Sept.

Chr. No.: $2n = 20$.

Habitat: Near fields and roads, wet areas; sea level to 2200 m.

Distrib.: INDIA(almost throughout country), CHINA, INDONESIA, JAPAN, KAZAKHSTAN, MYANMAR, NEPAL, PHILIPINES, RUSSIA, (FAR EAST), THAILAND; N. AFRICA, AUSTRALIA, INTRODUCED IN EUROPE.

Uses: Used as a vegetable; also given in bowel complaints and pneumonia.

Notes: A highly variable species, particularly in leaf–size, shape of ochrea; sessile or pedicellate flowers; equal, subequal to unequal petals etc. A number of infraspecific taxa are recognized on the basis of these intergrading characters but one form intergrades with the other so imperceptibly, that it is almost impossible to draw a line between two infraspecific taxa.

50.1.**Polygonum plebeium** R.Br. var. **effusum** (Meissn.) Hook. f. *Fl. Brit India* 5: 28. 1886. *Polygonum effusum* Meissner in DC. *Orodr.* 14: 93. 1856. *Syntypes:* *India Orientalis regno OudeWall.* 1691/3 (K); Kumaon, *Strachey & Winterboom Himal.* 4. 22. (K); Afghanistan, *Griffith (G-DC, K)*

Differs from *P. plebeium* var. *plebijum* in having distinctly pedicellate flowers exerted from the ochreae and equal sized tepals.

Fl. & Fr.: March – Oct.

Habitat: Grows in moist cultivated fields or drying ditches; upto 1250m

Distrib.: INDIA: Assam, Maharashtra, Manipur, Gujrat, N.W. region of the country, Uttarakhand (Kumaon).

51.**Polygonum polycnemoides** Jaub. & Spach. *Ill. Pl. Or.* 2:30. T. 120. 1845; Gage in *Rec. Bot. Surv. India* 2:381.1903.

Herbs, annual, prostrate, much branched.

Fl. & Fr.: June – Sept.

Habitat: Among stones, rock crevices and shady places; 1000 -4000 m

Distrib.: North Western Himalayas:INDIA(Himachal Pradesh, Jammu & Kashmir), AFGHANISTAN, PAKISTAN, CAUCASUS, IRAN, IRAQ, TURKEY

52.**Polygonum polystachyum** Wall. *ex Meissn. in Wall., Pl. Asiat. Rar.* 3: 61.1832; Hook. f., *Fl. Brit. India* 5: 50.1886.

Vernacular Names: Punjab: *Amldandi, chuchi, tror*;U.P.: *Sarai*

Undershurbs.

Fl. & Fr.: Aug.-Oct.

Habitat: In forests, valleys; 2200-4500 m.

Distrib.: INDIA:(Jammu & Kashmir, Sikkim.), AFGHANISTAN, BHUTAN, MYANMAR, NEPAL, PAKISTAN.

Uses : Young leaves eaten as a pot-herb; stalks consumed either raw, after peeling, or stewed like rhubarb. Provides palatable fodder.

Key to the varieties

1a. Lamina broadly lanceolate or oblong-lanceolate.....var. **polystachyum**

1b. Lamina narrowly lanceolate or linear-oblong.....var. **longifolium**

52.1.**Polygonum polystachyum** var. **polystachyum**

Leaves broadly lanceolate or oblong- lanceolate, 6- 17x3-7 cm.

Fl. & Fr.: Aug. – Oct.

Habitat: mixed forests on mountain slopes, valleys; 2700 – 4500 m.

Distrib.: INDIA(Jammu & Kashmir, Sikkim), AFGHANISTAN, BHUTAN, MYANMAR, NEPAL, PAKISTAN.

52.2.**Polygonum polystachyum** var. **longifolium** Hook. f., *Fl. Brit. India* 5: 51.1886.

Leaves narrowly lanceolate or linear oblong, 8- 15 x 1.5- 3 cm.

Habitat: Forests, valleys; 2200-3800 m.

Research Article

Distrib.: INDIA: Sikkim.

53. **Polygonum posumbu** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 71. 1825; Hook. f. Fl. Brit India 5: 36. 1886.

Herbs, annual.

Fl. & Fr.: June -Oct.

Habitat: Mixed forest on mountain slopes, moist valleys; 100-3000 m.

Distrib.: Temperate and subtropical Himalaya: INDIA: Arunachal Pradesh, Assam, Meghalaya, Manipur, Nagaland, Sikkim, West Bengal (Darjeeling district). BANGLADESH, CHINA, NEPAL

54. **Polygonum praetermissum** Hook. f., Fl. Brit. India 5: 47. 1886.

Herbs, annual.

Fl. & Fr.: June – Sept.

Habitat: Valleys, hilly grasslands, stream banks; 100-1650 m.

Distrib.: INDIA(Meghalaya), BANGLADESH, CHINA, KOREA, RUSSIA (FAR EAST), SRI LANKA.

55. **Polygonum pterocarpum** Wall. Cat, 1690.1825; Hook. f., Fl. Brit. India 5: 54.1886.

Herbs. Stems twining, with obscure lines of pubescens

Habitat: Temperate Himalayas; 1800 – 2700 m.

Distrib.: INDIA: Himachal Pradesh (Shimla), Jammu & Kashmir, Sikkim (Lachung, Yoksum, Lingdam), Uttarakhand (Kumaon), West Bengal (Darjeeling district).

Notes : A less known/ collected species.

56. **Polygonum pubescens** Bl., Bijdr. Fl. Ned. Ind. 532. 1826. *Polygonum flaccidum* auct. non Roxb., Meissner in DC., Prodr. 14: 107.1856; Hook. f., Fl. Brit. India 5:39.1886.

Herbs, annual (perennial). stems erect, often reddish, 60-90 cm tall, sparsely hispidulous, branched above, swollen at nodes.

Fl. & Fr.: Aug. - Oct.

Habitat: Along ditches, water sides, field margins; sea level to 2700 m.

Distrib.: common throughout India.

57. **Polygonum pulchrum** Bl., Bijdr. Fl. Ind. 530. 1826. *Polygonum tomentosum* Willd, Sp. Pl. 2:477; Hook. f., Fl. Brit. India 5:30.1886.

Plants perennial, .

Fl. & Fr.: Sept.-Nov.

Habitat: In ditches

Distrib.: INDIA:N.E.India(Assam), Maharashtra, Kerala, West Bengal), CHINA, INDONESIA (Java), MALAYSIA, MYANMAR, PHILIPPINES, SRI LANKA, THAILAND, AFRICA(?), AUSTRALIA

Uses : Eaten by cattle. Leaves used in salads. Decoction given to cattle in black-gall sickness. Root-stocks contain an acrid resin which acts as a cardiac depressant.



Polygonum pulchrum



Polygonum rumicifolium

Research Article

58. **Polygonum recumbens** Royle *ex* Bab. in Trans. Linn. Soc. 18:116.1838; Meissn. in DC. Prodr. 14 : 96. 1856; Hook.f., Fl. Brit. India 5: 25.1886. *Type*: Mussoree, August, Royle (LIV) (*vide* Stansfield 1953). Herbs, perennial, prostrate to ascending, with stout long, much branched, more or less grooved stem, glabrous or puberulous; internodes short.

Habitat: N.W. Himalayas; 1500 - 4000 m.

Distrib.: North Western Himalaya: Jammu & Kashmir (Kashmir), Himachal Pradesh to Uttarakhand (Garhwal, Kumaon).

58.1. **Polygonum recumbens** var. **roylii** (Bab.) R.C. Srivast., *comb. etstat. nova. Polygonum roylii Bab. in Tans. Linn. Soc. 18: 115. 1838. *Type*: Theog and Phagoo, in June (*vide* Quaiser 1999).*

Distinguished from *Polygonum recumbens* Royle *ex* Bab. var. *recumbens*, on the basis of linear leaves and dull brown achenes.

Habitat: on dry slopes; 3000 – 4000 m.

Distrib.: Jammu & Kashmir (Zanskar, Bok; 11500 ft., Walter Koelz 2961 in E, K)

Notes: A rare or under collected species.

59. **Polygonum rottboellioides** Jaub. and Spach, Illus. Pl. Or. 2:32 1845. *Polygonum tubulosum* Boiss. Diagn. Pl. Or. Nov. Ser. 1.7:83.1846; Hook. f., Fl. Brit. India 5:27.1885. *Polygonum durum* Brenckle in Phytologia 3:365.1950.

Herbs, annual, prostrate or ascending, branched, 10 to 40 cm high..

Fl. & Fr. : June - Sept.

Habitat : In dry as well as moist places on high altitudes.

Distrib.: INDIA (Jammu & Kashmir), AFGANISTHAN, IRAN ALPS, TIBET

Key to the varieties

1a. Leaves linear; internodes covered with ochrea; prostrate to ascending.....var. **rottboellioides**

1b. Leaves linear to lanceolate; internodes partially covered with ochrea; ascending to erect.....var. **tibetica**

59.1. **Polygonum rottboellioides** var. **tibetica** (Hook. f.) Stewart in Annot. Cat. Fl. Pak. 210.1972.

Polygonum tubulosum var. *tibetica* Hook. f., Fl. Brit. Ind. 5:27.1885.

Erect or ascending, branches long, more slender. Leaves lanceolate or very rarely linear.

Fl. & Fr. : June - Sept.

Habitat : At moist places at higher elevations.

Distrib.: INDIA : (Jammu & Kashmir), TIBET

60. **Polygonum rude** Meissn. in DC., Prodr. 14 (1): 137.1856; Hook. f., Fl. Brit. India 5: 49. 1886.

var. **rude**

Shrubs, robust, upto 2.5m high.

Habitat: Slopes, forest, thickets in valleys, 1400-3500 m.

Distrib.: INDIA (Meghalaya (Khasi Hills), BHUTAN, N. MYANMAR NEPAL, THAILAND.

60.1. **Polygonum rude** var. **sikkimensis** Hook. f., Fl. Brit. India 5: 50.1886.

Differs from var. *rude* in having glabrous (except a few deflexed hairs at nodes) branches. Perianth not baccate.

Fl. & Fr.: Aug. – Nov.

Habitat: E. Himalaya; ca 3300 m.

Distrib.: INDIA: Sikkim (Lachen).

61. **Polygonum rumicifolium** Royle *ex* Bab. In Trans. Linn. Soc. 18: 112.1838; Hook. f. Fl., Brit. India 5: 51. 1886; Gage in Rec. Bot. Surv. India 2: 415. 1903. *Type*: Kunawar, Royle, *s.n.* (LIV).

Herbs, erect, upto 60 cm high.

Habitat: Moist and shady places in open rocky slopes or alpine meadows, along streams, in rock crevices: 3000-4500 m.

Fl. & Fr.: June - July.

Distrib.: N.W. Himalayas: (INDIA: Himachal Pradesh, Jammu & Kashmir, Uttarakhand), AFGHANISTAN, CHINA, PAKISTAN, NEPAL, XIZANG.

Research Article

62. **Polygonum runcinatum** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 73. 1825; Hook. f., Fl. Brit. India 5:43.1886.

Vernacular Name: Nepali: *Ratna*

Herbs, perennial.

Fl. & Fr.: July – Sept.

Chr. No. : $2n = 22$

Habitat: Grassy mountain slopes, wet valleys, thickets in valleys; 800-3900 m.

Distrib.: INDIA: Assam, Jammu & Kashmir, Nagaland, Sikkim, Tamilnadu (Nilgiri Hills), West Bengal (Darjeeling district). INDONESIA (SUMATRA), MALAYSIA, MYANMAR, NEPAL, PHILIPPINES, THAILAND.

Uses: Leaves and flowers eaten raw as well as cooked, tastes like rhubarb.



Polygonum runcinatum Buch.-Ham.ex D. Don

63. **Polygonum sagittatum** L., Sp. Pl. 1: 363. 1753; Hook. f., Fl. Brit. India 5:47.1886. *Polygonum sieboldii* Meissn. in DC. Prodr. 14:133. 1856.

Herbs, annual, scandent, 0.3–2 m tall.

Fl. & Fr. : July – Sept.

Habitat: Western Himalaya; in moist grassy situations, often in partial shade, occurring naturally in meadows, pastures, margins of swamps, ponds and along stream banks, common as a weed along roadsides and other disturbed sites; 100-2200 m.

Distrib.: INDIA: Himachal Pradesh (Kulu), Meghalaya (Khasi Hills at Myrung, Shillong), Manipur (Myang Khong Valley), Uttarakhand (Kumaon)., JAPAN, KOREA, MONGOLIA, RUSSIA (FAR EAST), E NORTH AMERICA.

Notes: An extremely variable species; known from Asia and North America; some times treated under two varieties viz. var. *sagittatum* (in N. America) and var. *sieboldii* (in E.Asia). Recent molecular studies on N. American and E.Asian population indicate that these may be recognized as a single polymorphic species (*P. sagittatum s.l.*). In Park's monograph (in Syst. Bot. 12:167-179.1987 & Mem. New York Bot. Gard. 47:1-823.1988) *P. sagittatum* and *P. sieboldii* are recognized as conspecific based on flavonoid chemistry and also the observation that the N. American plants are well within the range of variability of E.Asian ones.

64. **Polygonum setosum** Jacq., Obs. I:8, t. 57; Gage in Rec. Bot.Surv. India 2: 380. 1903.

Shrubby plants, glabrous, 15–30 cm high, more or less tufted.

Distrib.: N.W.Himalayas: INDIA(Himachal Pradesh, Jammu & Kashmir, Uttarakhand), AFGHANISTAN

65. **Polygonum sibiricum** Laxmann, Nov. Com. Acad. Sci. Petrop. 18: 531. 1773; Hook. f., Fl. Brit. India 5: 52. 1886.

Research Article

Herbs, perennial.

Fl. & Fr.: June- Sept.

Habitat: Western Himalayas; along roadsides, sands, riverbanks, wet places; upto 5100 m.

Distrib.: INDIA(Himachal Pradesh, Jammu & Kashmir, Sikkim), AFGHANISTAN, CHINA, KAZAKHISTAN, KYRGYZSTAN, MONGOLIA, NEPAL, PAKISTAN, RUSSIA, TAJIKISTAN, W. TIBET.

Uses: Leaves eaten.

Key to the varieties

1a. Stems 10-25 (-43) cm tall. Leaves narrowly elliptic or lanceolate, 5-15mm wide.....var. **sibiricum**

1b. Stems 2-5 (-8) cm tall. Leaves linear.....var. **thomsonii**

Polygonum sibiricum var. **sibiricum**

Stems 10-25 (-43) cm tall. Leaves narrowly elliptic or lanceolate, 5-15 mm wide. Inflorescence large.

Fl. & Fr.: July – Sept.

Habitat: roadsides, saline deserts, sands, riverbanks; upto 5000 m.

Distrib.: INDIA: Kashmir, Sikkim.), KAZAKHSTAN, MONGOLIA, RUSSIA (FAR EAST, SIBERIA).

65.1. **Polygonum sibiricum** var. **thomsonii** Meissn., Ann. Sci. Nat., Bot., ser. 6: 351. 1866.

Stems short, 2-5 (-8) cm tall. Leaves linear, narrow, 1.5-2.5 mm wide. Inflorescence small.

Fl. & Fr.: June- Sept.

Habitat: Wet places near saline areas by rivers; 3200- 5100 m.

Distrib.: INDIA:(Jammu & Kashmir.), AFGHANISTAN, KYRGYZSTAN, NEPAL, PAKISTAN, RUSSIA, TAJIKISTAN.

66. **Polygonum sinuatum** Royle *ex* Bab, in Trans. Linn. Soc. 18: 108.1838; Meissn. in DC., Prodr. 14:130.1856; Hook.f., Fl.Brit. India 5: 44.1886.*Type:* Rogee in Kunawur (LIV).

Herbs, annual, prostrate, glabrous, upto 45 cm long, branched.

Fl. & Fr. : Aug. – Sept.

Habitat: Wester Himalayas; near streams; 2500- 3300m.

Distrib.: INDIA: Himachal Pradesh, Sikkim, Uttarakhand, West Bengal (Darjeeling District), Uttarakhand (Kumaon, Garhwal).PAKISTAN

67. **Polygonum sphaerocephalum** Wall. *ex* Meissn. in Wall. Pl. Asiat.Rar. 3:60. 1832; Hook. f., Fl. Brit. India 5: 43.1886. *Polygonum microcephalum* var. *sphaerocephalum* (Wall. *ex* Meissn.) H. Hara, Bull. Univ. Mus. Univ, Tokyo 2: 23. 1971.

Herbs, perennial, rarely glabrous.

Habitat: Temperate Himalayas; forest , grassy slopes; 500-3200 m.

Distrib.: INDIA: Tamilnadu (Nilgiri Hills), Uttarakhand (Kumaon), CHINA, NEPAL

.68. **Polygonum stagninum** Buch. – Ham. *ex* Meissn. in Wall. Pl. As. Rar. 3: 56. 1832; Hook. f., Fl. Brit. India 5:37.1886.*Syntypes:* In Bengalia inferior, *Wallich* 1815 (K).

Herbs, annual or perennial, erect, upto 2 m high, branched from the base. *Fl. & Fr.:* June – Sept.

Habitat: throughout hotter parts of India, ascending upto 1200m in Sikkim and Uttarakhand states of India.

Distrib.: INDIA(throughout hotter parts of the country.), BANGLADESH, PAKISTAN , MYANMAR.

69. **Polygonum strigosum** R. Br., Prodr. 420. 1810; Hook.f., Fl.Brit. India 5:47.1886.

Herbs, annual. Stems erect or decumbent, 50-100 cm tall, branched, angulate, with retrorse prickles.

Fl. & Fr.: Aug.- Oct.

Habitat: Tropical Himalayas; wet valleys, forests; 100-2000m.

Distrib.: INDIA: Himachal Pradesh (Kulu) to Sikkim, N.E. region (Meghalaya-Kashi Hills), BANGLADESH, BHUTAN, INDONESIA, MALAYSIA, MYANMAR, NEPAL, NEW GUINEA, THAILAND, VIETNAM; AUSTRALIA.

Uses: Infusion used as fish-poison. Cases of poisoning in livestock reported

Research Article

70. **Polygonum tortuosum** D. Don, Prodr. Fl. Nepal. 71. 1825; Hook. f., Fl. Brit. India 5:52.1886. *Aconogonum tortuosum* (D.Don) Hara in Fl. East. Himal. 632.1966. *Pleuropteropyrum tortuosum* (D.Don) Munshi & Javeid, Syst. Stud. Polygon. Kash. Himal. 80.1986.

Punjab.: Niala.

Undershrubs.

Fl. & Fr.: Aug. – Sept.

Habitat: Dry rocky slopes at higher elevations; 3500-3900m.

Distrib.: Western Himalayas: INDIA: Himachal Pradesh, Jammu & Kashmir (Dras in Ladakh), Sikkim, Uttarakhand (Gangotri).

Uses: Browsed by goats and yaks at high altitudes; also yields a yellow dye.

Key to the varieties

1a. Flowers in racemes.....var. **kuttiense**

1b. Flowers in spikes.....var. **spicata**

70.1. Polygonum tortuosum var. **kuttiense** (Maiti, Dutta & Babu) R.C.Srivastava, *comb. et stat. nov.* *Polygonum kuttiense* G.G. Maiti, R. M. Dutta and C. R. Babu in J. Bombay Nat. Hist. Soc. 77: 303-305. figs. 1-5 on p. 304. Type: India: U.P.; Kutti, R.M.Dutta 277 A (CAL).

Characterised by flowers being in racemes; glabrous perianth and smaller leaves.

Fl. & Fr. : July- Oct.

Habitat: Western Himalayas; 1200 – 4300m.

Distrib.: INDIA: Uttarakhand (Kumaon; Kutti village on way to Samzurkchen Glacier).

Etymology: specific epithet is after the type locality

70.2. Polygonum tortuosum var. **spicata** Hook.f. Fl.Brit.India 5:52.1886. Type: Dras, T. Thomson, s.n. (K)

Differs from var. *tortuosum* in having flowers in solitary simple terminal and axillary spikes which are longer than leaves.

Fl. & Fr.: Aug.-Sept.

Habitat: 2400 – 2700 m

Distrib.: INDIA: Jammu & Kashmir (Ladakh: Dras)



Polygonum tortuosum var. **spicata**



Polygonum tortuosum var. **kuttiense**



Polygonum vacciniifolium

71. **Polygonum vacciniifolium** Wall. ex Meissn. in Wall., Pl. Asiat. Rar. 3: 54.1832; Hook.f., Fl. Brit. India 5: 33. 1885. *Bistorta vacciniifolia* (Wall.) Greene, Leaflet. 1:21.1904.

Subshrubs, densely tufted, 10-20 cm high, much branched. Bark black- brown, longitudinally exfoliating; branches nearly prostrate; branchlets suberect, dense. Leaves elliptic, 1-2 x 0.6 – 1 cm, thinly coriaceous, midvein prominent abaxially, base narrowly cuneate, margin entire, slightly revolute; petioles short. Ocrea brown, tubular, ca 1 cm, membranous, veins numerous, large, apex oblique, not ciliate, usually lacerate. Inflorescence terminal, spicate, lax, 4-8 cm long, 6-8 mm in diam; bracts narrowly ovate,

Research Article

membranous, apex acute, each 1- or 2- flowered. Pedicels longer than bracts. Perianth purple- red, 5-parted; tepals narrowly elliptic, 3.5-4.5 mm. Stamens 8, exerted ; anthers purple. Styles 3; stigmas capitate. Achenes included in persistent, dull, narrowly ellipsoid, trigonous, 3-4 mm.

Fl. & Fr.: Aug - Oct.

Habitat:: Thickets on mountain slopes, mountainous rocky crevices; 3000-4200 m.

Distrib: INDIA: (Jammu & Kashmir, Sikkim), BHUTAN, NEPAL, PAKISTAN.

72. **Polygonum virginianum** L. Sp. Pl. 360. 1753; Hook. f. Fl. Brit. India 5: 31.1886; Gage in Rec. Bot. Surv. India 2: 388.1903. *Type*: Cirscit Juxia Nagasaki (*vide* Quaiser, 1999 p. 179). *Tovara virginiana* Rafin. Fl. Tellur. 3:12.

Herbs, perennial, erect, upto 1 m high.

Habitat: Temperate Himalayas: 1000 – 2500 m

Distrib.: INDIA: (Arunachal Pradesh, Jammu & Kashmir, Sikkim, West Bengal (Darjeeling district)BHUTAN, CHINA, PAKISTAN, JAPAN, AMERICA.

73. **Polygonum viscosum** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 71. 1825; Hook. f., Fl. Brit. India 5:36.1885.

Herbs, annual, odoriferous.

Fl. & Fr.: July -Oct.

Habitat: near along road side ditches, in moist grasslands; upto 1900 m.

Distrib.: Assam, Meghalaya, Nagaland

74. **Polygonum viviparum** L., Sp. Pl. 1: 360. 1753; Hook. f., Fl. Brit. India 5:31.1885.

Eng.: *Alpine Knotweed, Viviparous Bistort*; Kashm.: *Maslun*; Punjab.: *Anjabar, Bajir, Dori, Mamech, Maslun*; Urdu: *Anjabar*.

Herbs, perennial, up to 60 cm high.

Fl. & Fr.: May -Sep.

Chr. No.: $2n = ca. 12$.

Habitat: Forest margins, grassy slopes, alpine, steppes; 1200-5100 m.

Distrib.: INDIA: Himachal Pradesh, Jammu & Kashmir (Aphrawat, Dras), Sikkim (Dzongri to Alokthang, Lachen, Tankraa), Uttarakhand (Kumaon)

BHUTAN, CHINA, JAPAN, KAZAKHSTAN, KOREA, KYRGYZSTAN, MONGOLIA, MYANMAR, NEPAL, RUSSIA, TAJIKISTAN, THAILAND, S.W.ASIA, EUROPE, N.AMERICA

Uses: Young leaves and root-stocks are edible. Seeds are considered a delicacy in Russia. Root-stocks tonic and astringent, used in diarrhoea, dysentery, and hemoptysis. Decoction of herb is used as a gargle and lotion for ulcers.

75. **Polygonum wallichii** Meissn. Monogr. Polygon. 83. 1826; Hook. f., Fl. Brit. India 5: 43.1886.

Herbs, annual. Stems upto 25 cm high, angulate, glabrous..

Fl. & Fr.: July- Oct.

Habitat: Temperate Himalays; in mixed forests, moist hill slopes, wet valleys; 2500-3400 m.

Distrib.: INDIA: Sikkim

CHINA, NEPAL

Excluded Taxa

1. **Polygonum bellardii** All., Fl. Pedem. 2:205.t.90, f.2.; Gage in Rec. Bot. Surv. India 2:380.1903. *Polygonum patulum* Bieb., Fl. Taur. Caucas. 1:3.304.1808.

Herbs, annual, glabrous.

Fl. & Fr.: July – Aug.

Habitat: In ditches, wetlands; 400 -1800m.

Distrib.: N.W.Himalaya. AFGHANISTAN

Notes: A native of Spain. Its occurrence within present political boundaries of India could not be ascertained

2. **Polygonum forrestii** Deils, Notes Roy. Bot. Gard. Edinb. 5: 258.1912.

Herbs, perennial. Stems creeping, tufted; branches erect, 5- 20 cm tall, villous. *Fl. & Fr.*: July- Sept.

Research Article

Chr.No.: $2n = 14$.

Habitat: Grassy slopes, alpine meadows; 3500- 4800 m.

Distrib.: INDIA: Jammu & Kashmir (Kashmir), Sikkim (*vide* Li Anjen *et al.*, 2003).BHUTAN, MYANMAR, NEPAL.

Notes: A native of Tibet, Yunnan. Its occurrence in India seems to be doubtful. No specimen could be available during this study, hence excluded.

3. *Polygonum griffithii* Hook. f., Fl. Brit. India 5:54.1886; Wright in Curtis Bot. Mag. 143, pl.8724. 1917.

Distrib.: North. India, BHUTAN, MYANMAR

Notes: A less known species.

4. ***Polygonum maritimum*** auct.(non L); Munshi & Javeid, Syst. Stud. Polygon. Kash. Himal. 54.1986.

Herbs, mostly perennial, procumbent to ascending.

Fl. & Fr. : June – Aug.

Habitat : in wastelands, at a dry places.

Distrib. : INDIA : Jammu & Kashmir (Munshi & Javeid, 1986).

Notes : Native of Europe and N.Africa (Munshi & Javeid, *l.c.*). Perhaps a native of Chile. Its occurrence in India seems to be doubtful. No specimen could be available during this study, hence excluded.

5.***Polygonum milletii*** (H. Leveille) H.Levaille, in Fedde Repert. 12: 286. 1913. *Bistorta milletii* H. Leveille, in Fedde Repert.12:286.1913.

Herbs, perennial..

Fl. & Fr.: July. - Oct.

Habitat: Mountain slopes, meadows, wet valleys; 1700-3900 m.

Distrib.:N.India (*vide* Li Anjen *et al.*, 2003).BHUTAN, CHINA, NEPAL

Notes: A native of China (Yunnan). Its occurrence in India could not be ascertained. No specimen could be seen during present study, hence excluded.

6. ***Polygonum palmatum*** Dunn, Bull. Misc. Inform. Kew 1912: 341. 1912.

Herbs perennial.

Fl. & Fr.: July -Oct.

Habitat: valleys along streams banks, moist forests; 400-1500 m.

Distrib.: INDIA:Assam.CHINA.

Notes:No specimen could be available during present study, hence excluded.

10. ***Rheum*** L., Sp. 1:371. 1753.

. A genus of *ca* 60 species (perennial herbs)in temperate and subtropical Asia; **8 species** in India.

Key to the species

- 1a. Panicles usually similar to spike or capitulum. Stem absent or solitary, stout, with dense leaves and large bracts, nodes inconspicuous.....2
- 1b. Panicles terminal, without leaves or with bracts, not spicate or headlike.Stem rarely absent; nodes usually inflated5
- 2a. Stems stout, simple, with leaves and large bracts. Panicles not similar to spike or capitulum; stamens longer than perianth.....**R.nobile**
- 2b. Stems absent. Panicles similar to spike or capitulum; stamens subequal to perianth.....3
- 3a. Plants less than 10 cm high. Panicles similar to capitulum. Fruits broadly ovoid, slightly constricted at both sides.....**R. globulosum**
- 3b. Plants upto 30 cm high. Panicles similar to spike. Fruits ellipsoid or ovoid.....4
- 4a. Leaves broadly ovate or ovate-elliptic, both surfaces hairy, apex obtuse. Fruit ellipsoid; perianth green.....**R. spiciforme**
- 4b. Leaves ovate or triangular- ovate, glabrous or hairy abaxially, apex obtuse to acute. Fruits ovoid or broadly ovoid; perianth yellow-white.....**R. moorcroftianum**
- 5a. Leaves coriaceous or subcoriaceous; cauline leaves lacking**R. tibeticum**
- 5b. Leaves papery, not coriaceous; cauline leaves present6

Research Article

6a. Plants upto 80 cm high. Cauline leaves 1 or 2 (or 3), cordate, reniform-cordate, or triangular – cordate, margin entire. Inflorescence a lax panicle, 1- or 2- branched**R. acuminatum**

6b. Plants upto 2 m high. Cauline leaves many, triangular – ovate. Inflorescence large, more than 2- branched.....7

7a. Leaves narrowly triangular to broadly ovate, not cordate, with 5 – 7 basal veins.....**R. australe**

7b. Leaves cordate or broadly ovate, with 5 basal veins.....**R. webbianum**

1. **Rheum acuminatum** Hook. f. & Thoms., Bot. Mag. 81: t. 4877. 1855; Hook. f., Fl. Brit. India 5:57.1886.

Herbs, upto 80 cm tall.

Fl. & Fr.: June - Sept.

Habitat: Himalayas: hill – slopes, forests; 2800 – 4000 m.

Distrib.: INDIA: Jammu & Kashmir to Sikkim), CHINA, MYANMAR, NEPAL.

2. **Rheum australe** D. Don, Prodr. Fl. Nepal. 75. 1825. *Rheum emodi* Wall. ex Meissn. in Wall. Pl. As. Rar. 3. 5. 1832; Hook. f., Brit. India 5: 56. 1886.

Vernacular Names: Beng.: *Banglarevanchini*; Mumbai: *Ladakhir evandachini*; Canarese: *Natrevalchini*, *Natrevalchinni*; Deccan: *Natkirevanchini*; Garhwal.: *Archu*; Gujrati: *Gamnirevanchini*; Hindi: *Dolu*, *Hindirevandchini*; Ladakh: *Lachu*; Marathi: *Mulkacharevalchini*, *Revachini*; Nepal.: *Padamchal*; Persian: *Bikhrewas*, *Revandehindi*; Punjab.: *Arts*, *Artso*, *Atsu*, *Chotial*, *Chuchi*, *Chukri*, *Chutial*, *Kandaul*, *Khabiun*, *Lachu*, *Pambash*, *Rewandchini*, *Ribas* Tamil: *Nattirevalchinni*, *Nattumanjatc hinnakkilangu*; Telugu: *Nattupampuchinagadda*, *Natturevalchinni*; Urdu: *Rewanchini*).

Herbs, upto 2 m tall.

Fl. & Fr: May – Sept.

Habitat: Subalpine and Alpine Himalaya: grassy slopes; 3400-4300 m.

Distrib.: INDIA (Himachal Pradesh (Kinnaur, Lahul, Spiti), Sikkim), CHINA, MYANMAR, NEPAL, PAKISTAN.

Uses: Dried rhizomes and roots constitute the Himalayan rhuarb; used as a purgative and astringent tonic; its stimulating effect combined with aperient properties renders it especially useful in a tonic dyspepsia. Its use is prohibited for patients suffering from gout, rheumatism, epilepsy, and uric acid troubles. Powdered roots are used for cleaning teeth, also sprinkled over ulcers. Roots are used as a constituent of the preparations employed for dyeing fabrics. Leaf stalks eaten are boiled or cooked, also dried and stored for consumption with other foods, or made into a preserve; cooked stalks, however, have a purgative action. Leaves and flowers are also eaten. ‘Rutin’ is present in leaves and flowers.

3. **Rheum globulosum** Gage, Bull. Misc. Inform. Kew 1908: 181. 1908.

Herbs, upto 8 cm tall.

Fl. & Fr.: June - Aug.

Habitat: Alpine slopes; 4500 m.

Distrib.: INDIA (Sikkim.) CHINA.

4. **Rheum moorcroftianum** Royle, Ill. Bot. Himal. Mts. 1:315, 318. 1839; Hook. f., Fl. Brit. India 5:56.1886.

Herbs, dwarf, procumbent. Stem absent

Fl. & Fr.: June- Sept.

Habitat: Western Himalayas; in drier ranges, slopes, river banks; 4500 – 5300 m

Distrib.: INDIA: Himachal Pradesh (Kangra), Uttarakhand (Kumaon). AFGHANISTAN, CHINA, NEPAL, PAKISTAN, E. TAJIKISTAN, WESTERN TIBET.

Uses: Rhizomes and roots purgative. Roots used also for dyeing wollens.

5. **Rheum nobile** Hook. & Thoms., Ill. Himal. Pl. t. 19. 1855; Hook. f. Fl., Brit. India 5: 57.1886.

Vernacular Name: Sikkim.: *Tchuka*

.Herbs, upto 2 m high

Fl. & Fr: June- Sept.

Habitat: Eastern Himalayas (inner ranges); hill- slopes; 4000 – 4800 m.

Research Article

Distrib. : INDIA: Sikkim (Katao), West Bengal (Darjeeling district). AFGHANISTAN, BHUTAN, CHINA, MYANMAR, NEPAL, PAKISTAN.

Uses: Stems are pleasantly acidic, used for salads. Dried leaves sometimes used as a substitute for tobacco.

6. **Rheum spiciforme** Royle, Ill. Bot. Himal. Mts. 1: 318. 1839; Hook. f., Fl. Brit. India 5:55.1886.

Vernacular Names: Garhwal.: *Archu*; Ladakh: *Lachu*; Spiti: *Lachu*.

Herbs, short, stout. Stem absent..

Fl. & Fr.: June- Aug.

Habitat : Western Himalayas; hill - slopes; 4000- 5000 m.

Distrib.: INDIA:(Himachal Pradesh (Lahul & Spiti), Jammu & Kashmir, Sikkim, Uttarakhand.) AFGHANISTAN, BHUTAN, CHINA, PAKISTAN.

Uses: Roots purgative, mixed with Himalayan rhubarb. Petioles are eaten either raw or cooked.

7. **Rheum tibeticum** Maxim. ex Hook. f., Fl. Brit. India 5: 56. 1886.

Herbs, upto 25 cm high.

Fl. & Fr.: July-Aug.

Chr. No.: 2n = 22.

Habitat: Western Himalayas; hill- slopes, 4000-4600 m.

Distrib.: INDIA: (Jammu & Kashmir), AFGHANISTAN, CHINA, PAKISTAN, WESTERN TIBET.

8. **Rheum webbianum** Royle, III. Bot. Himal. Mts. 1: 318. 1839; Hook., f., Fl. Brit. India 5:57.1886.

Vernacular Names: Garhwal: *Archu*; Ladakh: *Lachu*; Nepal.: *Padamchal*; Spiti: *Lachuiti*).

Herbs, upto 1.5 m high. *Fl. & Fr.:* Aug. - Sept.

Chr. No.: 2n = 44.

Habitat: Central and Western Alpine Himalayas: hill - slopes; 3300 –4300 m

Distrib.: INDIA: N.W. India, Himachal Pradesh (Chamba, Kinnaur Kulu) Jammu & Kashmir.

CHINA, NEPAL, PAKISTAN.

11. **Rumex** L. Sp. Pl. 1:333.1753

A genus of ca 200 species; herbs, perennial, sometimes annual, rarely shrubs, rarely dioecious: widely distributed in N. and S. temperate zones; 22 species in India.

Key to the species

- 1a. Leaves hastate or sagittate. Flowers dioecious or polygamous.....2
- 1b. Leaves never hastate or sagittate. Flowers usually androgynous.....8
- 2a. Annual herbs.....3
- 2b. Perennial herbs.....6
- 3a. Flowers and fruits usually in twins on a common pedicel. Valves upto 20 cm in diam.... **R. vesicarius**
- 3b. Flowers and fruits not as above. Valves 3-4 x 1.5-2 mm.....4
- 4a. Margins of valves entire..... **R. microcarpus**
- 4b. Margins of valves long dentate or denticulate.....5
- 5a. Margins of valves with 1 pair of teeth 3-4 mm..... **R. trisetifer**
- 5b. Margins of valves with ca 3 pairs of teeth 2.5-3mm..... **R. maritimus**
- 6a. Suffrutescent, profusely branched..... **R. hastatus**
- 6b. Perennials, herbaceous plants, with leafy branched stem.....7
- 7a. Basal or lower stem leaves sagittate. Rhizomes absent or short. Valves longer than achenes, tubercled. Pedicels articulate near middle.....8
- 7b. Basal or lower stem leaves hastate. Rhizomes horizontal. Valves shorter than or equaling achenes; without tubercles. Pedicels articulate near middle..... **R. acetosella**
- 8a. Valves cordate at base. All leaves long- petioled. Whorls 2-4 flowered..... **R. scutatus**
- 8b. Valves orbicular. Cauline leaves sessile. Whorls 6-8- flowered..... **R. acetosa**
- 9a. Valves grainless.....10
- 9b. Valves all or at least the anterior with a grain.....12
- 10a. Lower leaves small, lanceolate. Panicles narrow with few single simple short branches.. **R. angulatus**

Research Article

10b. Lower leaves large, oblong-ovate, with cordate base. Panicles very large, lower branches fasciculate and profusely branched.....	11
11a. Pedicels 1.5- 2 cm long, articulate near base. Valves subentire, anterior one with a minute elongate grain.....	R. arcuatoramosus
11b. Pedicels 2.5-3.5 mm long, articulate at middle. Valves subentire, without a grain, with middle nerve slightly increase towards the base	R. paulsenianus
12a. Valves entire.....	13
12b. Valves not entire.....	16
12a. Valves 2.5-3.5mm long.....	13
12b. Valves larger.....	14
13a. Panicles narrow, dense, branches few, erect, whorls distant, without subtending leaves. Valves rotundate- cordate; grains much smaller than valves.....	R. crispellus
13b. Panicles broad, open, branches many, broadly arcuate- divaricate. Whorls remote, almost all subtended by a leaf. Valves ligulate, each with a prominent grain covering most of the valve surface.....	R. conglomeratus
14a. Stems usually 1-2 m high. Basal leaves oblong-ovate, with cordate base. Panicles very large, lower branches fasciculate and repeatedly branching. Fruiting pedicels of varying length, partly 2-3.5 times longer than the valve.....	15
14b. Stems not so high. Basal leaves lanceolate or oblong-lanceolate with cuneate or truncate base. Panicles narrower. Fruiting pedicels shorter.....	R. thianschanicus
15a. Basal leaves oblong, upto 3 times longer than broad.....	R. patientia
15b. Basal leaves lanceolate, more than 3 times as long as broad.....	R. crispus
16a. Annuals. Stems branching from near base or unbranched. Leaves small.....	R. dentatus
16b. Perennials. Stems paniculate above the middle.....	17
17a. Teeth of valves hooked at apices.....	18
17b. Teeth of valves not hooked.....	19
18a. Basal leaves much larger (6-32 x 2-15 cm), compactly arranged in dense panicle, Valves orbicular-ovate, ca 3 x 2 mm, reticulately veined; stamens with short filaments, anthers with acute apex.....	R. gangotrianus
18b. Basal leaves upto 15 x 8 cm. Valves triangular- ovate, 4-5 x 2.5-3 mm, net veined	R. nepalensis
19. Pedicels upto twice longer than the valve. Valves cordate with acute tip with 4-9 unequal teeth near base.....	R. chalepensis
19b. Pedicels almost as long as the valve. Valves broadly cordate- scutiform with broadly attenuate apex, irregularly inciso- denticulate towards the base.....	R. punjabensis

1. Rumex acetosa L. Sp. Pl. 1: 337. 1753, *nom. cons.*; Hook. f., Fl. Brit. India 5: 60. 1886.

Common/Vernacular Names: Eng.: *Dock Sorrel, Sorrel, Sour Dock*; Hindi: *Khatta palak*; Beng.: *Chukapalam*.

Herbs, perennial, dioecious, upto 1m high. Stem grooved, glabrous, simple..

Fl. & Fr.: May-Aug. (-Sept.)

Chr. No.: 2n = 14, 15, 22

Habitat: mountain slopes, forest margins, moist valleys; 400 – 4100 m.

Distrib.: INDIA: Jammu & Kashmir (Gulmar, Mahadev in Srinagar, Dras in Ladakh), CHINA, JAPAN, KAZAKHSTAN, KOREA, KYRGYZSTAN, MONGOLIA, RUSSIA, EUROPE, NORTH AMERICA.

Uses: Leaves are cooked and eaten like spinach; also used in salads. Herb are antiscorbutic (Vitamin ‘C’ 124 mg/ 100 g); also used in bronchial diseases and in homoeopathy, for skin troubles and convulsions. Leaves refrigerant and diuretic, used for cutaneous tumours. Infusion of roots is used as a diuretic and for skin troubles; powdered roots are given in diarrhoea. Roots contain tannin. Fruits yield as a fatty oil.

2. Rumex acetosella L., Sp. Pl. 1: 338. 1753; Hook. f., Fl. Brit. India 5: 61. 1886..

Research Article

Common/Vernacular Names:Eng.: Bread and Cheese, Cuckoo's Meat, Cuckoo's Sorrel, Field Sorrel, Lammie- Sourocks, Ranty Tanty, Sheep's Sorrel, Sheep's Sourack, Sooracks, Soorocks, Souracks, Sour Docken; Hindi: Chuk; Beng.: Chukapalam.

Herbs, perennial, dioecious.

Fl. & Fr.: June- Aug.

Chr.No.: 2n = 14, 42.

Habitat: hilly grasslands, forest margins, moist valleys; 400-3200 m.

Distrib.: INDIA: (Himachal Pradesh, Jammu & Kashmir). CHINA, JAPAN, KOREA, KAZAKHSTAN, MONGOLIA, RUSSIA, EUROPE, NORTH AMERICA.

Uses: Leaves are used in cases of cancer and other tumours. Fresh plant juice is considered refrigerant, diaphoretic, diuretic and antiscorbutic, total ascorbic acid content of leaves varies from 750-1200 mg/ 100 g on dry weight basis. Young leaves contain maximum amount of ascorbic acid and the free ascorbic acid content (50-150mg/ 100g) remains constant throughout the year. Young shoots are recommended for salads.

3. **Rumex angulatus** K.H. Rechinger, *Condollea* 12: 51. 1949.

Herbs, perennial. Stems erect, purple-red, 40 – 60 cm tall, glabrous, grooved.

Fl. & Fr.: June- Aug.

Habitat: watersides, moist valleys; 3000-4200 m.

Distrib.: INDIA (Himachal Pradesh, Jammu & Kashmir), AFGHANISTAN, CHINA, PAKISTAN.

4. **Rumex arcutoramosus** Rech.f. in *Fl. Pak.* 205: 146. 1999. *Type:* Kashmir: Mahadey versus Harwan, 8000-9000 ft., June- July 1975, A.H. Munshi 2080 (W).

Herbs.

Fl. & Fr.: June- July

Habitat: Western Himalayas; 2400-2700 m.

Distrib.: INDIA: Jammu & Kashmir (Kashmir). PAKISTAN

5. **Rumex chalepensis** Miller, *Gard. Dict.*, ed. 8, *Rumex* no. 11. 1768; Munshi & Javeid, *Syst. Stud. Polygon. Kash. Himal.* 5:94. 1986.

Herbs, perennial.

Fl. & Fr.: April- June

Habitat: along ditches, moist valleys; 100-1500 m.

Distrib.: INDIA: (Jammu & Kashmir), AFGHANISTAN, CHINA, KAZAKHSTAN, KYRGYSTAN, TURKMENISTAN, SW. ASIA, EUROPE.

6. **Rumex conglomeratus** Murray, *Prodr. Des. Strip. Gott.* 52. 1770; Munshi & Javeid, *Syst. Stud. Polygon. Kashm. Himal.* 90. 1986

.var. **conglomeratus**

Perennials, rarely biennials, erect or sometimes ascending, branched, upto 120 cm long herbs.

Fl. & Fr.: June- Aug.

Habitat: in ditches, banks of waterbodies, moist wastelands.

Distrib.: INDIA: Jammu & Kashmir (Srinagar, Bemina, Nishatganj, Shivpora), N.W. EUROPE, AFRICA, S.W. ASIA.

6.1. **Rumex conglomeratus** var. **nigricans** (Hook. f.) R.C. Srivast., *comb. nov. Rumex nigricans* Hook. f., *Fl. Brit. India* 5:59. 1886.

Differs from var. *conglomeratus* in having panduriform leaves and acute tipped valves.

Distrib.: Bihar, Meghalaya (Khasi Hills), West Bengal, Deccan Peninsula.

7. **Rumex crispellus** Rech. f. in *Fl. Pak.* 205: 151. 1999. *Holotype:* Chitral: Ayun, in running water, 4900 m, 8 VII. 1968, Yasin Nasir 4982 (RAW). *n.v*

Herbs, perennial. *Fl. & Fr.:* July

Habitat: in wetlands, running water; 700 – 1800 m.

Distrib.: INDIA: Jammu & Kashmir (Kashmir). PAKISTAN

Research Article

8. **Rumex crispus** L. Sp. Pl. 1: 335. 1753; Meissn. in DC. Prodr. 14: 44. 1856; Munshi & Javeid, Syst. Stud. Polygon. Kash. Himal. 90.1986. Type: “ Hab. In Europe succulentis” (vide Quaiser, 1999)

Eng.: *Yellow dock, Curled dock*

Herbs, perennial. Fl. & Fr.: May- July (- Aug.).

Habitat:: field margins, stream-sides, waste lands; sea level to 2500 m.

Distrib.: INDIA: Jammu & Kashmir (Tangamag, Harwan in Srinagar). **Rare.** JAPAN, KAZAKHSTAN, KOREA, PAKISTAN, NORTH AMERICA, EUROPE

Uses: Roots are purgative. Leaves are eaten as vegetable. Seeds are given in diarrhoea; also used as a poultry feed.

9. **Rumex dentatus** L. Mant. Pl. 2: 226. 1771; Hook. f., Fl. Brit. India 5:1886. *Rumex klotzschianus* Meissn. in DC. Prodr. 14:57. 1856.

Vernacular Names: Hindi: *Ambavah, amrule*; Delhi.: *Lal bibi, jungle palak*.

Herbs, annual, upto 70 cm high, branched from base, grooved; branches ascending to nearly divaricate, glabrous..

Fl. & Fr.: May- July

Chr. No.: 2n = 40

Habitat: moist valleys, mountain slopes; sea level to 2500 m.

Distrib.: INDIA: (Jammu & Kashmir to Sikkim), AFGHANISTAN, CHINA, KAZAKHSTAN, KYRGYZSTAN, NEPAL, RUSSIA, N. AFRICA, S.E. EUROPE.

Uses: Leaves cooked and consumed as a vegetable, a rich source of calcium (612 mg/ 100 g), β -carotene, Vitamin “A” (11, 700 I.U./ 100 g), and Vitamin “ C ” (115 mg/ 100 g). Roots employed in applications for cutaneous disorders; also yield a dye.

Notes: *Rumex dentatus* is an extremely variable species represented in N Africa, Asia, and Europe by several quite distinct races, recognized taxonomically mostly as subspecies. A taxon native mostly to E. and S. Asia (China, India, Japan, and Korea) is usually recognized as *R. dentatus* subsp. *klotzschianus*. However, subspecies of *Rumex dentatus* are still insufficiently understood taxonomically and insufficiently delimited geographically.

10. **Rumex gangotrianus** Aswal & Srivastava in Candollea 42 : 389-391. 1987. *Holotype*: Uttarkashi district between Lanka & Gangotri, 2800m, 05. 06. 1986, B.S. Aswal 11370A (CDRI).

Herbs, erect, annual, upto 1.1m high.

Fl. & Fr.: May - July.

Distrib.: INDIA: Uttarakhand

Etymology: Specific epithet is after the type locality (Gangotri).

11. **Rumex hastatus** D. Don, Prodr. Fl. Nepal. 74. 1825; Hook. f., Fl. Brit. India 5: 60. 1886.

Vernacular names: Kumaon.: *Amlora, chulmora*; Punjabi.: *Khattimal, katambal*.

Shrubs, upto 90 cm high. Branches purple-brown, finely grooved; branchlets green, glabrous.

Fl. & Fr.: April – June.

Habitat : dry mountain slopes, rocky fissures; 600-3200 m.

Distrib.: INDIA: (Himachal Pradesh, Jammu & Kashmir), NEPAL, PAKISTAN.

Uses: Leaves have a pleasant acid taste and eaten; used in chutneys and pickles. Root bark yields tannin (21-23%).

12. **Rumex maritimus** L., Sp. Pl. 1: 335. 1753; Hook. f., Fl. Brit. India 5:59. 1886.

Vernacular Names: Beng.: *Bunpalung*; Eng.: *Golden Dock, Small Water Dock*; Hindi: *Janglipalak*; Punjabi.: *Bijband, Hulaobul, Junglipalak, Khattikan, Zagukei*; Urdu: *Bijaband*.

Research Article



Rumex maritimus



Rumex hastatus



Rumex acetosa



Rumex nepalensis

Herbs, annual, rarely biennial. Stems erect, upto 60 cm high, branched below middle, grooved, glabrous or weakly shortly papillose.

Fl. & Fr.: May- July.

Chr.No.: 2n = 40

Habitat: field margins, riverbanks, streamsides; sea level to 1800 m.

Distrib.: INDIA (N.E. Region, West Bengal), KAZAKHSTAN, MONGOLIA, MYANMAR, RUSSIA (Far East, Siberia); EUROPE, NORTH AMERICA.

Notes: *Rumex maritimus* str. is native to Asia and Europe, but it is nearly absent from E Asia, where it is substituted by closely related and/or similar species.

13. ***Rumex microcarpus*** Campdera, Monogr.Rum.143.1819.

Herbs, annual. Stems erect, upto 80 cm high, branched above, glabrous grooved..

Fl. & Fr.: April – July.

Habitat: at moist places in valleys, along field margins; upto 2200 m

Distrib.: INDIA, CHINA, VIETNAM

14. ***Rumex nepalensis*** Sprengel, Syst.Veg. 2: 159. 1825; Hook. f. , Fl. Brit. India 5:60.1886.

Vernacular Names: Beng.: *Pahari palang*; Kashmir: *Palak*; Kumaun: *Kulii* .

Herbs, perennial.

Fl. & Fr.: April- July

Habitat: grassy slopes, moist valleys, along ditches; 1000-4300 m.

Distrib. : INDIA:(Himachal Pradesh, Sikkim, West Bengal –Darjiling district), AFGHANISTAN, BHUTAN, CHINA, INDONESIA, JAPAN, MYANMAR, NEPAL, PAKISTAN, TAJIKISTAN, VEITNAM, SW ASIA.

Uses : Infusion of leaves given in colic and applied to syphilitic ulcers; strong decoction used for bilharziasis. Leaves are rubbed on the affected part for relief from irritation caused by stinging nettle (*Urtica dioica* L.).

15. ***Rumex patientia*** L. Sp. Pl. 1:333. 1753; Munshi & Javeid in Syst. Stud. Polygon. Kash. Himal. 89. 1996.

Herbs, perennial.

Fl. & Fr.: May - Aug.

Chr. No.: 2n = 40.

Habitat: along ditches, water sides, moist valleys; sea level to 4000 m.

Distrib.: INDIA: (Jammu & Kashmir).KAZAKHSTAN, KYRGYZSTAN, MONGOLIA, RUSSIA, TIJKISTAN, EUROPE.

Uses: Plants are eaten as pot-herb; refrigerant, also used as antipruritic. Leaves cathartic, applied also to burns. Roots purgative, used as a substitute for rhubarb.

16. ***Rumex paulsenianus*** Reich.f. in Fedde. Reper. 29: 246. 1931 & in Candollea 12: 67. 1949; Munshi & Javeid, Polygon. Kashm. Himal: 89. 1986.

Perennials, erect, unbranched, up to 60 cm high..

Fl. & Fr.: July-Aug.

Research Article

Habitat: on river banks

Distrib.: INDIA: J. & K: Kashmir (Achabal).CENTRAL ASIA AND TIBET.

17. **Rumex punjabensis** Vaid & Naithani in Indian Forester 1979: 802-804. 1979. *Type:* India, Punjab, Amritsar, 20th May 1950, P.N. Mehras.n. (Holotype in DD).

Herbs, perennial, erect, stout, up to 1.5 m high.

Fl. & Fr.: April - May.

Distrib.: INDIA: (Punjab).PAKISTAN

18. **Rumex scutatus** L. Sp.Pl. 1753; Hook. f. , Fl. Brit. India 5:60.1886. *Rumex hastifolius* M. Bieb. Fl. Taur. Cauc. 1: 290.

Herbs, perennial, polygamous, papillose, somewhat glaucous.

Distrib.: Western Himalaya. INDIA:(Himachal Pradesh).PERSIA, Middle and SOUTH EUROPE, N. AFRICA.

19. **Rumex thjanschanicus** Losinsk. in Kom. Fl. URSS 5:466.1936; Rech.f. in Feddes Repert 49:2.1940 *et* in Candollea 12:68.1949; Fl.Iran. 56:10.1968. *Type:* Tian Shan, Semirjatschensk, Alexandroski Mt., Valley of Alarczi River Titov 1506 (LE).

Herbs, perennial.

Fl. & Fr.: May - July

Habitat: grows in dry ranges, moist valleys, forest margins on hill slopes; (1100-) 2200-2700 (-3500) m.

Distrib.: INDIA: (Jammu & Kashmir).AFGHANISTAN, KIRGYSTAN, PAKISTAN, TAJIKISTAN, TIANSCHAN, TURKMENISTAN, S.W.ASIA.

Notes: differs from its allied species viz. *R. paulsenianus* Rech.f. in having lax inflorescence with few-flowered whorls and the anterior valves bearing a subglobose or ovate grain.

20. **Rumex trisetifer** Stokes, Bot. Mat. Med. 2: 305. 1812.

Herbs, annual.

Fl. & Fr.: May - July

Habitat: Field margins, moist valleys, water sides; sea level to 1300 m.

Distrib.: INDIA: (*cf.* Li Anjen *et al.*, 2003).BHUTAN, LAOS, MYANMAR, THAILAND, VEITNAM.

21. **Rumex vesicarius** L. Sp. Pl. 336.1753; Hook. f., Fl., Brit. India 5:61.1886. *Acetosa vesicaria* (L.) Love in Rep. Univ. Inst. App.Sci. Reykjaik, Dept. Agr. 115 (5): 108. 1948.

Hindi: *Khatta Palak*

Herbs, annual, pale green, 15- 30 cm high, monoecious, branched from the root, glabrous, dichotomously branched, rather fleshy..

Fl. & Fr.: Jan. – March.

Habitat: on the Salt range and hills; cultivated as an escape in other parts of India.

Distrib.: INDIA: Western Punjab, N.E. Region, Uttar Pradesh (cultivated).

Uses: Leaves are cooked with pulses. Leaves and seeds are medicinal.

Excluded taxa

Rumex alveolatus Loz.-Lozinsk. Fl. Turkmen 2: 44. 1937.

Perennials, ascending to erect, glaucous or slightly puberulous simple, rarely branched, upto 80 cm long.

Fl. & Fr.: June - Aug.

Habitat: In ditches or along banks of water bodies.

Distrib.: ASIA:INDIA: Jammu & Kashmir.

Notes: Quaiser (1999) opined that this Central Asian species does not extend beyond Afghanistan and all the specimens cited under this species belong to *Rumex punjabensis* Vaid & Naithani which differs from *Rumex alveolatus* mainly in the smaller dimensions of the valves, its shorter denticulation, more slender reticulation, the smaller achenes and by the more slender growth.

Hybrids

Rumex paulsenianus x *punjabensis* = *Rumex munshii* Rech.f.

Type: Kashmir: Harwan, 6000-7000 ft, July 1975, A.H.Munshi 1726 (W).

Distrib.: INDIA: Jammu & Kashmir (Kashmir), PAKISTAN

Research Article

Rumex paulsenianus x nepalensis; *Rumex x kaschmirianus* Rech. f.; Quaiser, l.c.163.

Type:INDIA: Jammu & Kashmir (Kashmir): *montes Pir Panjal inter Chari Sharif et Yusmarg ad meridiem urbis Srinagar*, 2100-2200 m, 26.08.1986, *inter parentes*, K.H. Rechinger fil. 62196 (W)

Notes: Quaiser (1999) mentioned that there is a similar venation of the valves in all hybrids of *Rumex nepalensis* with long teeth and species with broad entire or shortly toothed valves; the teeth are straight, not hooked (Reich.f. in Feddes Repert. 31:277-278.1933, t 137. Fig.10).

Triplaris Loefl. ex L.Loefl., It. Hisp. 256.1758; Linnaeus, Syst. ed. 10:881.1759.

A genus of ca 25 species in tropical south America; one species introduced in India.

1. **Triplaris surinamensis** Cham. in Linnaea 8:138.1833.

Trees, deciduous, slender, graceful, more than 33 m high..

Distrib. : Native of Surinam. Introduced in India at Indian Botanic Garden, Shibpur, Howrah

Propagation: by seeds.

Discussion: Extensive survey and exploration work in project mode is the prime need of the time in view of the economic importance of the family.

ACKNOWLEDGEMENTS

Author is grateful to the Director, Botanical Survey of India, for facilities.

REFERENCES

Meissner CF (1856). Polygonaceae. In: *Prodromus Systematis Naturalis regni Vegetabilis* edited by Alpha de Candolle **14** 1-186, 693-695.

Zhengyi Wu, Raven PH and Deyuan H (2003). *Flora of China* **5** 277-350.