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NOTES RELATING TO THE FLORA OF BHUTAN: XII LEGUMINOSAE AND ROSACEAE

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ABSTRACT. Revision of Leguminosae and Rosaceae for the Flora of Bhutan has resulted in the following three new species and one variety: *Flemingia bhutanica* Grierson *sp. nov.*, *Rubus cooperi* Long *sp. nov.*, *Rubus sikkimensis* var. *canescens* Hara ex Long *var. nov.*, all endemic to Bhutan, and *Spiraea hemicryptophyta* Grierson *sp. nov.* from Nepal, Sikkim, Burma, SE Tibet and Yunnan. In *Sorbus* sect. *Aucuparia* new synonymy and lectotypifications of several names of critical taxa are proposed.

LEGUMINOSAE

Flemingia

Flemingia bhutanica Grierson, **sp. nov.** (Fig. 1), affinis *F. macrophyllae* (Willd.) Merrill sed habitu paene aphyllo florendi tempore, calyce leguminibusque glandulis rubellis obtectis, petalis pallide luteis differt.

Frutex 1–1·5 m altus, ramis cylindraceis, striatis, a primo pubescentibus, sub anthesin fere aphyllis. Folia palmatim 3-foliata; foliola ovato-elliptica, 5·5–7 cm longa, 1·5–4 cm lata, apice acuta vel acuminata, basi cuneata vel rotundata, praesertim in pagina inferiore pubescentia et glandulis minutis rubellis obtecta; petiolus 2·5–4 cm longus; stipulae lanceolatae 6–8 mm longae, deciduae. Racemi axillares 2·5–3 cm longi, sessiles, bracteis ovatis c.3 mm longis, 1·5 mm latis, deciduis. Calyx pubescens et glandulis minutis rubellis obtectus, tubo 2–3 mm longo, dentibus lanceolatis 4–8 mm longis. Petala pallide lutea; vexillum ellipticum 9–10 mm longum, 5–6 mm latum, appendicibus 2 minutis acutis ornatum; alae oblongae, laminis 9–10 mm longis, 5–6 mm latis (unguibus 3–4 mm longis inclusis) calcaribus brevibus acutis armatis; carina lunata, laminis 8·5–10 mm longis, 2·5–3 mm latis (unguibus 3–3·5 mm longis inclusis) apice acutis, cohaerentibus. Ovarium 1·5–2 mm longum, stylo 7–8 mm longo, parte superiore leviter incrassato. Legumen ellipsoideum, 10–12 mm longum, 6–7 mm latum, 5–6 mm crassum, subtiliter pubescens et glandulis minutis rubellis obtectum. Semina 2, subglobosa, 2·5–3 mm diametro, castanea.

BHUTAN (all Punakha district): 1 km below Mendegang, 27°31′N 89°49′E in warm broad-leaved forest, c.1580 m, 24 iv 1982, shrub 1·5 m, calyx green with reddish-glandular teeth, corolla pale yellow, *Grierson & Long* 4672 (fl.–**holo**. E; **iso**. THIMPHU, K, A, TI); Toiberong Chu, N of Lobesa, 27°31′N 89°52′E, on river bank, c.1310 m, iv 1982, *Grierson & Long* 4578 (fr.–E); Yuwak–Wangdu Phodrang, 1450–1600 m, iv 1967, *Hara et al.* 4428 (fr.–E, BM, TI); Wangdu Phodrang–Kyebaka, 1450–1600 m, iv 1967, *Hara et al.* 26348 (fr.–E, BM, TI); Tinlegang–Gon Chungnang, 1750–1600 m, v 1967, *Kanai et al.* 14849 (fr.–E, BM, TI).

The above specimens, all collected in April or May, are leafless or bear a few old leaves, although *Grierson & Long* 4578 has a young leafy side shoot.

FIG. 1. *Flemingia bhutanica* Grierson; holotype, Bhutan, *Grierson & Long* 4672 (E).

It would appear then that vegetative growth is delayed until fruiting is well advanced and this contrasts with the general leafy condition of specimens of *F. macrophylla*. This new species also differs from the latter by its cylindrical, not squarish or triangular branches, its yellow, not pink flowers and by its gland-dotted calyces and pods.

ROSACEAE

Rubus

Rubus cooperi Long, **sp. nov.** (Fig. 2).

R. buergeri Miquel similis sed fruticulus robustior scandens; caules petiolique hirsuti pilis effusis et aculeis brevibus rectiusculis dispersis immixtis ferentes; stipulae suborbiculatae 10–13 mm diametro profunde laciniatae; flores maiores c.2 cm diametro, solitarii, axillares vel 3–6 in racemis 2–4 cm longis; bracteae stipulis similes usque ad 15 mm diametro; bracteolae ovatae 6–7 × 4–5 mm, laciniatae; hypanthium cupulatum 10–12 mm diametro, sepalis 8–10 mm apice et marginibus profunde dentatis; petala sepalis breviora; drupeolae multo numerosae, pilosae.

Scrambling or climbing subshrub, leafy branches spreading whitish-pilose and with scattered slender, slightly deflexed almost straight prickles 1–1·2 mm. Leaves suborbicular in outline, 5–8 × 5–8 cm, base shallowly to deeply cordate, mostly 5-lobed, lobes shallow, broadly rounded, margins serrate; pedately 5-veined at base; pubescent and reticulate or somewhat rugose above; softly hirsute beneath with a few prickles on main veins; petioles 4–7 cm, almost as long as laminae, spreading whitish pilose and sparsely prickly; stipules free, persistent, suborbicular 10–13 mm diameter, deeply laciniate into c.10 narrow lanceolate lobes, pilose-hairy. Flowers bisexual, solitary axillary or 3–6 in short axillary raceme-like cymes 2–4 cm. Bracts similar to stipules, up to 15 mm diameter; bracteoles ovate, 6–7 × 4–5 mm, laciniate. Pedicels short, 1–3 mm, hirsute. Hypanthium cup-shaped 10–12 mm diameter, densely hairy; calyx lobes triangular, 8–10 mm, deeply toothed at apex and on margins. Petals white, broadly ovate or suborbicular, 5–6 mm diameter. Ovaries c.80, hairy; styles c.5 mm, hairy. Fruits 1–1·3 cm diameter, drupelets 50–60.

BHUTAN: Mongar district, Sawang [27°43′N 91°13′E], 2740 m, 'Flowers white', 4 viii 1915, *Cooper* 4344 (**holo.** E, **iso.** BM); *ibidem*, 2740 m, 'edible fruit', 4 viii 1915, *Cooper* 4348 (E, BM).

Rubus cooperi belongs to subgenus *Malachobatus* (Focke) Focke and is related to *R. buergeri* Miquel, a widespread species in China and Japan. It differs primarily in its more robust habit, larger more persistent stipules and larger flowers with strongly toothed sepals.

Amongst the E Himalayan Rubi, *R. cooperi* is distinctive in its slender habit, simple leaves with shallow rounded lobes and large pectinate stipules. In habit it is similar to *R. sengorensis* Grierson & Long, another species endemic to the Mongar district of E Bhutan; the latter differs in its trifoliate leaves. *Rubus treutleri* Hook. f. is similar both in habit and foliage, but differs in having stems and petioles glandular-bristly, stipules more finely and deeply laciniate, and more acute leaf lobes.

FIG. 2. *Rubus cooperi* Long; holotype, Bhutan, *Cooper* 4344 (E).

FIG. 3. *Spiraea hemicryptophyta* Grierson; holotype, Sikkim, *Rohmoo Lepcha* 1121 (E).

A specimen from Seinghku Wang, Upper Burma (*Kingdon Ward* 6742, K) shares most of the important characters of *R. cooperi* and differs only in leaf size, indumentum and flower size. The leaves are smaller, 3–5 cm diameter, and are both softly hirsute and minutely white tomentose beneath; the sepals are c.13 mm long and the petals c.8 mm diameter. It may be only subspecifically distinct.

Rubus burkillii Rolfe from the Abor Hills of Assam is also related to *R. cooperi*. It differs in a number of characters, notably its shorter and narrower stipules 5–7 mm long, shorter petioles 1–3 cm, longer pedicels 5–7 mm, shorter calyx lobes 5–6 mm and much fewer drupelets.

A specimen from Manipur, *Watt* 5006 (E) labelled '*Rubus manipurensis*' Watt (*nom. nud.*) shows many similarities to *R. cooperi*. Unfortunately it is sterile, but the more ovate, acute less rugose leaves suggest it is probably not conspecific but possibly another undescribed but closely allied taxon.

Rubus sikkimensis Hook. f., Flora Brit. India 2:336 (1878) var. **canescens** Hara ex Long **var. nov.**

A varietate typica folliis subtus albotomentosis differt.

Differs from typical var. *sikkimensis* in having the leaves white tomentose beneath.

BHUTAN: Yuto La [Tongsa district, 27°32′N 90°36′E], 3200 m, 2 viii 1949, 'Shrub 6–7′. Flowers not seen. Fruit sweet and reddish yellow. In dense forest on banks. Seed taken', *Ludlow, Sherriff & Hicks* 19548 (**holo.** BM); Pangothang [Upper Bumthang Chu district, 27°53′N 90°40′E], 3350–3660 m, ix 1949, *Ludlow, Sherriff & Hicks* 19691 (BM).

Rubus sikkimensis Hook. f. is a poorly known plant characterized by its densely prickly and glandular-bristly stems, leaves pubescent beneath and glandular above and reddish-purple or pink petals. It is apparently known only from the type (Lachen, Sikkim, 3960 m, *Hooker* (K)) and three collections from Bhutan (*Cooper* 4514 (E), *Ludlow, Sherriff & Hicks* 20770 (BM) and 21145 (BM)). Two additional specimens from Bhutan differ only in having their leaflets densely white-tomentose beneath. One of these was annotated in BM by H. Hara as '*Rubus sikkimensis* var. *canescens* Hara' but apparently the name has hitherto not been validated.

Spiraea

Spiraea hemicryptophyta Grierson **sp. nov.** (Fig. 3) *S. bellae* Sims similis sed frutice rhizomato, caulibus simplicibus differt.

Frutex dioecius rhizomatus, caulibus 20–40 cm altis, simplicibus. Folia ovato-elliptica 2·5–4·5 × 1·75–3 cm, apice acuta, basi rotundata, margine serrata, glabra vel parce pubescentia, petiolis 2–5 mm longis. Flores in corymbo terminale 3–5 cm lato. Calyx cupuliformis 1·5–2 mm altus, 2·5–3 mm latus, pubescens, lobis triangularibus 1·5–2 mm longis. Petala alba vel rosea obovata 2·5–3 mm longa, 2 mm lata. Flores masculi staminibus circa 25, filamentis 3 mm longis ad marginem annulum glanduliferum insertis, pistillodis minutis. Flores feminei carpellis 5–6, ellipsoideis, 1·5–2 mm longis, stylis 1·5 mm longis, plus minusve a calyce cupuliforme exsertis, staminodis 0·5–1 mm longis. Fructus ignotus.

NEPAL: Kangrang La, 27°25′N 88°03′E, 3800 m, vi 1969, *Williams* 721 (BM); Tulo Thorme, 27°33′N 87°29′E, 4300 m, viii 1972, *Dobremez* 1687 (BM).
SIKKIM: Phedup, 3950 m, 12 viii 1913, *Rohmoo Lepcha* 1121 (fl.-**holo.** E); Kangling, 4250 m, 1913, *Ribu & Rohmoo* 6693 (E); Chowbhanjan, 3350 m, ix 1919, *Cave* s.n. (E).
NE UPPER BURMA: Chawchi Pass, 3650 m, viii 1920, *Farrer* 1862 (E).
SE TIBET: Tsarung, Salwin-Kui-chiang divide (28°40′N 98°15′E), vii 1919, *Forrest* 19052 (E).
SW CHINA: Yunnan, in regione alpina declivitatis montis Gomba-la supra Tschamutong versus lacum Tsukue, 3900 m, viii 1916, *Handel-Mazzetti* 9886 (E).

This new species derives its name from the fact that the annual shoots are killed off by the winter frosts and new growth the following year must come from the rhizome below soil level. Most of the above specimens have been identified in the past as *S. bella*, usually with some qualification. They differ, however, from the latter in having relatively short simple stems and broader leaves. To avoid any confusion with specimens that might have been cut from vigorous growth of a branching bush of *S. bella* (floral differences between the two species are trivial) all the above cited specimens show part of the underground stem (except *Farrer* 1862 but the collector has remarked on the label 'a mass of simple shoots ending in heads of soft pink blossom'). There are, however, a number of other specimens from Nepal which have the broader leaves of *S. hemicryptophyta* and apparently simple stems but lack underground parts. These are generally small plants, although in some cases their height may have been overstated; they may nevertheless belong to this species.
NEPAL: Arun valley, Wabak Khola, E of Num, 3350 m, viii 1956 ('shrub 4 ft') *Stainton* 1342 (BM); Tudam, 3650 m, (up to 3 ft), vii 1971, *Beer et al.* 8378 (BM); Milke Danda, 3800 m, ('up to $1\frac{1}{2}$ ft tall'), x 1971, *Beer et al.* 10164 (BM); Thudam, 3650 m, ('up to 2 ft 6 in high'), xi 1971, *Beer et al.* 10664 (BM); Jaljale Pokhari, 27°28′N, 87°27′E, 4000 m, viii 1972, *Dobremez* 1645 (BM).

Beer et al. 10664 is in fruit and the follicles measure 3–3·5 mm and are sparsely pubescent.

Sorbus

by D. G. Long

Sorbus vestita (Wall. ex G. Don) Loddiges, Cat. Plants ed. 16, 66 (1836).
Basionym: *Pyrus vestita* Wall. [Cat. 20 n. 679 (1828) *nom. nud.*] ex G. Don, Gen. Hist. 2:647 (1832). Syntypes: Nepal, Sheopore Monte, v & vi 1821, *Wallich* 679.1 (**lectotype** K-W); Kumaon, *R. Blinkworth*, Wall. Cat. 679.2 (K-W).
Syn.: *Crataegus cuspidata* Spach, Hist. Nat. Vegetaux 2:106 (1834), *nom. illeg.* Type: *Pyrus vestita* Wall. ex G. Don (1832).
Sorbus cuspidata (Spach) Hedlund, Kongl. Svenska Vet.-Akad. Handl. 35:89 (1901).

Although Hooker (1878) and his contemporaries used Wallich's *nomen nudum Pyrus vestita* for this plant, it has been widely replaced this century

in horticulture and botanical literature (e.g. Clarke, 1980; Ohashi, 1979) by the name *Sorbus cuspidata*. However, the name *Pyrus vestita* was validated by G. Don in 1832, and the name *Crataegus cuspidata* Spach 1834 was based on the same type and is therefore illegitimate. Thus *Sorbus vestita* is the correct name for the plant.

NOTES ON SORBUS FOLIOLOSA AND ITS ALLIES IN THE E HIMALAYA

Sorbus sect. *Aucuparia* consists of a number of critical taxa in the E Himalaya; several of these have long been a source of great confusion, notably *S. foliolosa*, *S. ursina*, *S. wallichii* and *S. wenzigiana*. Much of this confusion has arisen for two reasons; firstly general problems of *Sorbus* taxonomy, such as apomixis and polyploidy, are possibly present in this group; secondly, because of the persistent ambiguous application of the name *Sorbus foliolosa* to two quite different plants, which has now gone on for over one and a half centuries. The purpose of this note is to attempt to stabilize the nomenclature by lectotypification, not to finally resolve the taxonomic problems which must await detailed biological and cytological investigation.

1. SORBUS FOLIOLOSA AND S. WALLICHII

The name *Pyrus foliolosa* dates back to 1828 when it was first published as a *nomen nudum* by Wallich in his 'Catalogue', with the following details:

677 Pyrus foliolosa, Wall. in Herb. 1824.
Napalia 1821.

In 1831 Wallich validated the name in his *Plantae Asiaticae Rariores* 2:81–82, and illustrated the plant on t. 189. Unfortunately, in his herbarium (K-W), he included two different plants, both collected in Nepal in 1821, under Wall. Cat. 677. Although these elements (designated 677a and 677b here) are clearly recognizable as two quite different species, it is not obvious from Wallich's description, illustration or herbarium whether he recognized that they were different, and if he did, to which of them he intended to apply the name *Pyrus foliolosa*. In his protologue, Wallich quite clearly cited both collections 'Crescit versus apicem montis Sheopur, et ad Gossain Than' and it seems more likely that he considered both to belong to a single species, and that his description (including both flower and fruit characters) was based on a combination of features of both plants.

In order to achieve stability of nomenclature, a lectotype for *Pyrus foliolosa* is desirable, and should obviously be one of these two elements which in K-W are mounted on separate sheets and labelled as follows:

[677a] Pyrus foliolosa Wall.
An a P. ursina distincta?
E Gossain Than Aug. 1821.

[677b] Pyrus foliolosa Wall.
An ab ursina Wall. distincta?
Legi a montis Sheopore descensum septentrionalem. fl. Mayo.

The most striking differences between the two plants are that 677a has 9–11 pairs of leaflets, minute reddish tomentum on the branchlets and leaf undersides, and is in fruit; whilst 677b has 6–8 pairs of leaflets, woolly white tomentum on the petioles, leaf undersides and peduncles, and is in flower.

Previous workers on the genus have interpreted Wallich's *P. foliolosa* in two different ways, for example Yu & Lu (1974), Ohashi (1979) and H. McAllister (annotations in BM and E dated 1977 & 1980) have followed the interpretation of J. D. Hooker (1878), that Wallich's name *P. foliolosa* essentially referred to 677a, the fruiting plant from Gossain Than, and that 677b, the flowering plant from Sheopore, represented a new species, *Pyrus wallichii* Hook. f.

Conversely, workers such as Schneider (1906), Koehne (1913), Gabrielian (1971) and Clarke (1980) have followed Hedlund's (1901) interpretation, that *P. foliolosa* should apply to the flowering Sheopore plant, of which *P. wallichii* thereby became a superfluous synonym, and that 677a could be referred to Wallich's *P. ursina*.

TABLE 1

	Description of *P. foliolosa*	**Illustration of *P. foliolosa* (t. 1899)**	**Gossain Than plant (Wall. Cat. 677a)**	**Sheopore plant (Wall. Cat. 677b)**
1. Branchlet: indumentum	Densely white-lanuginose	?	Red-brown pubescent becoming glabrous	White woolly becoming glabrous
2. Leaf: length	15 cm	7–13 cm	9–15 cm	9–11 cm
3. Leaflet: no. pairs	7–8	6–8	9–11	6–8
4. shape	oblong-lanceolate	elliptic-lanceolate	oblong	oblong-elliptic
5. size	2·4 cm +	2–3 × 0·9 –1·2 cm	2–3 × 0·6 –0·9 cm	2–3 × 0·7 –0·8 cm
6. serration	near apex cuspidate-serrate, lower half entire	serrulate throughout	upper half serrate, lower half entire	upper $\frac{1}{10}$–$\frac{1}{5}$ serrate, lower $\frac{4}{5}$–$\frac{9}{10}$ entire
7. indumentum beneath	ferruginous-tomentose becoming glabrous	?	finely red-brown tomentose beneath	white woolly tomentose beneath, becoming glabrous
8. Petiole: length	2·4–3·5 cm	c.2 cm	2–2·5 cm	1·5–2 cm
9. Stipule: length	c.6 mm	?	6–8 mm	2–3 mm
10. shape	lanceolate, acuminate, sometimes lobed	?	ovate-lanceolate, sometimes bilobed	subulate, unlobed
11. Peduncle: indumentum	villose	?	finely brownish-tomentose	white-woolly, becoming glabrous

In order to decide which plant better fits the protologue of *P. foliolosa*, the important diagnostic characters in this group of species have been listed (Table 1) and comparison made between the two syntypes 677a and 677b, and Wallich's description and also his illustration. The results of this comparison are:

i. The description of *P. foliolosa* fits the specimen 677a more closely on characters 2, 7, 8, 9 and 10; it fits 677b more closely on characters 1 and 3; it is equivocal (i.e. could fit both or neither equally) on characters 4, 5, 6 and 11.

ii. The illustration of *P. foliolosa* fits 677a more closely only on character 6; it fits 677b more closely only on character 3; it is equivocal on characters 2, 4, 5 and 8, and due to the limits of resolution of the figure, characters 1, 7, 9, 10 and 11 cannot be compared.

It is concluded from these comparisons that Wallich's description of *Pyrus foliolosa* is based more on features of 677a, the fruiting plant from Gossain Than, particularly on leaflet size, indumentum and on stipule characters, although it disagrees on leaflet number and branchlet indumentum. The illustration of *P. foliolosa* fits neither 677a nor 677b very closely, particularly because many of the important characters are not clearly illustrated. Because the illustration is of a flowering branch, it is more likely to be the Sheopore plant, 677b, but the illustration yields little hard evidence for typification.

The fact that the description agrees more closely with 677a, supports Hooker's (1878) application of the names *P. foliolosa* and *P. wallichii* and lectotypification of these names can be formalized below.

2. PYRUS URSINA AND SORBUS WENZIGIANA

Pyrus ursina, like *P. foliolosa*, dates back to Wallich's 'Catalogue' of 1828, but unlike that name was not validated by Wallich, but by G. Don in 1832; most authors, e.g. Ohashi (1979), have erroneously assumed it was not validated until 1873 by Wenzig. In his protologue, Don cited Wall. Cat. 675, and gave the localities 'Native of Nipaul, Kamaon and Gossaingthan'. Like *P. foliolosa*, the name *P. ursina* has never been formally lectotypified; the lectotype should be one of the Wallich Catalogue elements cited by Don. These collections, in K-W, were listed as follows by Wallich (1828):

675 Pyrus ursina Wall. in Herb. 1824
1. Kamaon
2. Srenaghur, Webb
3. Gossain Than

Of these, the only 'Nipaul' plant is 675.3, from Gossain Than, whilst the Kamaon plant is 675.1, collected by Blinkworth. Thus 675.2 was probably not seen by Don and cannot be chosen as lectotype. In K-W 675.1 is a flowering plant with acuminate leaflets, whilst 675.3 is a fruiting plant with obtuse or subacute leaflets. Don's protologue describes *P. ursina* as having leaflets 'blunt at both ends' and having 'pomes globular, red'. Thus Wall. Cat. 675.3 from Gossain Than agrees more closely and is the obvious choice for lectotype.

Both Wall. Cat. 675.2 and 675.3 have leaflets and stipules of the type found in typical *Sorbus foliolosa*, and they belong to that species. Indeed the lectotypes of both species are from Gossain Than, Nepal, and could be parts

of the same population or even collection. *Pyrus ursina*, therefore, must be regarded as a synonym of *Sorbus foliolosa*.

Sorbus wenzigiana is a poorly known taxon first described in 1906 by Schneider as *Sorbus ursina* var. *wenzigiana*, based on six syntypes, including Wall. Cat. 675.1 (a flowering plant from Kumaon), a collection from Nepal and four from Sikkim. In 1912 Koehne elevated it to the rank of species, without designating any particular type specimen.

The name has been applied to populations of *S. foliolosa* characterized by their proportionally narrower, acuminate and more finely serrulate leaflets. Other populations of *S. foliolosa* include plants with relatively broad, rounded and shortly mucronate apices (e.g. Wall. Cat. 675.2). Both these extremes are found throughout the Himalayan range of the species and have no clear geographical basis. In addition, many intermediates occur between these extreme forms, and in fact the type specimen of *S. foliolosa* (see below) is somewhat intermediate in this respect. Thus var. *wenzigiana* as currently defined by vegetative characters is not considered to be worthy of recognition at any rank.

3. Typification and synonymy

Sorbus foliolosa (Wall.) Spach, Hist. Nat. Vegetaux 2:96 (1834).

Basionym: *Pyrus foliolosa* [Wall. Cat. 20, No. 677 (1828) *nom. nud.*] ex Wall., Plantae Asiaticae Rariores 2:81 (1831). Type: Nepal, Gossain Than, Aug. 1821, *Wallich* Cat. 677a (K-W **lectotype**—selected here).

Syn.: *Pyrus ursina* [Wall. Cat. 20, No. 675 (1828) *nom. nud.*] ex G. Don, Gen. Hist. 648 (1831). Type: Nepal, Gossain Than, *Wallich* Cat. 675.3 (K-W, **Lectotype**—selected here; E, BM iso.).

Sorbus ursina (Wall. ex G. Don) Schauer in Otto & Dietrich, Allg. Gartenz. 17:84 (1849).

Sorbus ursina (G. Don) Schauer var. *wenzigiana* Schneider in Bull. Herb. Boiss. Ser. 2, 6:316 (1906). Syntypes: Kumaon, *Blinkworth* in Wall. Cat. 675.1 (BM, E, K, K-W, isosyntypes); Sikkim, Sundukphoo, 3660 m, vi 1884, *Clarke* 34989 (BM, K, isosyntypes).

Sorbus wenzigiana (Schneider) Koehne in Repert Spec. Nov. Regni Veg. 10:516 (1912).

Sorbus wallichii (Hook. f.) Yu, Fl. Reip. Pop. Sin. 36: 329 (1974).

Basionym: *Pyrus wallichii* Hook. f., Flora Brit. India 2: 376 (1878). Type: Nepal, Sheopore, 1821, *Wallich*, Cat. 677 [*b*] (K-W, **lectotype**—selected here; BM, E, iso.).

4. Sorbus arachnoïdea Koehne

The names *Sorbus foliolosa* and *S. ursina* have been widely applied in the literature and herbaria to collections from Sikkim and Bhutan, but in fact *S. foliolosa* as defined above is very local there. By far the commonest plant of this complex in the area belongs to the widely neglected taxon *Sorbus arachnoidea* Koehne, described in 1912 from Sikkim and Chumbi. It differs from *S. foliolosa* in its large, persistent, foliaceous, broadly ovate or suborbicular stipules 0·5–1·5 cm wide, and larger fruits 9–10 mm.

5. SORBUS HIMALAICA GABRIELIAN

Scattered throughout the Himalaya another close relative of *S. foliolosa* occurs, *S. himalaica*, which is distinguished from the former species by its narrow linear-subulate, pubescent, early caducous stipules, more slender branchlets, and larger often red flowers and larger fruit. It is more closely allied to *Sorbus rehderiana* Koehne than to *S. foliolosa*, but differs from the former in its slender branchlets. In Koehne's (1913) useful treatment of Chinese *Sorbus* it keys out close to *S. rehderiana*, whereas *S. foliolosa* keys out next to *S. prattii* Koehne and its allies.

Selected specimens from Himalayan Region (additional to the types cited above).

Sorbus arachnoidea

NEPAL: Iswa Khola, 3570 m, ix 1975, *Beer* 25502 (BM); Kasuwa Khola, 3050 & 3350 m, viii 1975, *Beer* 25320 (BM), 25346 (BM); Milke Danda, 2980 m, x 1971, *Beer* 10061 (BM); Tudam, 3660 m, vii 1971, *Beer* 8393 (BM); Dohate, 3500 m, vii 1971, *Shrestha & Joshi* 174 (BM); Dudh Kosi, SE of Lukla, 27°30′N 86°45′E, 3350 m, vi 1964, *McCosh* 276 (BM); Arun Valley, Barun Khola, N of Num, 3660 m, v 1956, *Stainton* 623 (BM).
SIKKIM: Tonglu, *Hooker* s.n. (K); Lachen, *Hooker* s.n. (K); Sandukpho, 3660 m, ix 1880, *Gamble* 8480 (E, K); Jongri, 3660 m, x 1875, *Clarke* 26114 (BM); Tonglu, 3050 m, v 1902, *Lace* 2242 (E); between Tongloo and Sandakfu, 3050 m, v 1881, *Watt* 5351 (E); Tonglu, 2750 m, v 1913, *Lacaita* s.n. (BM); Kapup, 3660 m, vii 1913, *Cooper* 157 (E, BM); Phedup, 3960 m, viii 1913, *Rohmoo* 1130 (E); Chamnago, 3960 m, ix/x 1914, *Ribu & Rohmoo* 6998 (E); Migothang–Nayathang, 2900–3300 m, vi 1960, *Hara et al.* 2019 (BM).
BHUTAN: Thimphu district, Zado [= Jato] La, 2900 m, vii 1914, *Cooper* 2731 (E, BM); Bumthang district, Pumthang [= Bumthang], 3050 m, ix 1914, *Cooper* 2090 (E, BM); Bumthang district, below Yuto La, 3500 m, viii 1983, *Sargent* 205 (E); Upper Bumthang Chu district, Shimitang, 3050 m, vi 1949, *Ludlow, Sherriff & Hicks* 18931 (E); Upper Kulong Chu district, Shingbe, 3500–3800 m, vi 1949, *Ludlow, Sherriff & Hicks* 20386 (E, BM).

Sorbus foliolosa

NW HIMALAYA: Murali, 3350 m, ix 1888, *Watt* 8633 (E); Jalauri Pass, 3050 m, x 1888, *Watt* 9606 (E); Muruli Hill, Sangri, 3200 m, v 1890 & vi 1891, *Watt* 10113 (E), 13563 (E); Mussoorie Range, 1869, *King* s.n. (BM, E); above Almi, Chamba State, 3200 m, vi 1899, *Lace* 1957 (E); Kangra district, 3050 m, vi 1900, *Hart* 261 (E); Phuloyn, v 1874, *Watson* s.n. (E); Punjab, Chur, 3350 m, ix 1884, *Drummond* 1549 (K); Mussoorie, Kidar Kanthar, 2740 m, vi 1904, *Drummond* 24393 (E, K); Bassahir, Kunawar, 1885, *Drummond* 24389 (E, K); Jubbul-Sirmoor States, Chaur Peak, 3350 m, vi 1937, *Parkinson* 7455 (E); Bashahr State, above Sdeeling, 3200 m, vii 1890, *Lace* 332 (E); Kumaon, Pindari Glacier, West Almora, vi 1933, *Bis Ram* 2128 (E); N Garhwal, Buhna, 3200 m, vi 1959, *Rau* 10252 (E); Garhwal, Chanshir Pass, Dehra Dun, vi 1934, *Parmanand* 298 (E); Doodotolee, 2660 m, *Madden* s.n. (K); Kumaon, Dwali, 3200 m, *Strachey & Winterbottom* 4 (BM, K); Jaunsar, Chackpur, 3050 m, vi 1892, *Gamble* 23531 (K); Rikshin, Tehri Garhwal, 2660 m, v 1898, *Gamble* 26856 (K); Rikshin Ridge, 2900 m, vi 1906, *Haines* 2254 (K); Punjab, Jubbal State, Chur Mt, 3350 m, vi 1901, *Kanjilal* 1011 (K); Tungnath, Choor, 2740–3350 m, 1844, *Edgeworth* 306 (K).
NEPAL: Topke Gola, 3660 m, x 1971, *Beer* 10774 (BM); Corapani to Ulleri, 2670 m, vi 1971, *Barclay & Synge* 2696 (K); Ankhu Khola, Hindung, 3050 m, v 1962, *Bowes Lyon* 116 (BM); W of Mailung Khola, 28°11′N 85°13′E, 3500 m, viii 1974, *de Haas* 2437 (BM); Ramkot, 29°43′N 81°13′E, 3200 m, v 1973, *Dobremez* 2180 (BM); Gadhibasa Forest, v 1929, *Bis Ram* 487 (BM); Barbaria Lekh, SE of Jumla, 3810 m, ix 1952, *Polunin, Sykes & Williams* 5424 (BM); Lukarban Khola, W of Beni, 3050 m, v 1954, *Stainton, Sykes & Williams* 461 (BM, E); Rambrong, Lamjung Himal, 4270 m, vii 1954, *Stainton, Sykes & Williams* 6151 (BM); Barun Valley, Yangle, 3650 m, x 1972, *Wraber* 34621 (BM); above Siklis, S of Annapurna, 28°07′N 84°06′E, 3000 m, viii 1976, *Troth* 981 (BM).
BHUTAN: Thimphu district, Pumola area, 3660 m, v 1938, *Gould* 223 (K).
SE TIBET: above Trulung, Pome, 3660 m, vi 1947, *Ludlow, Sherriff & Elliot* 13203 (E).

Sorbus himalaica (Specimens additional to those cited by Gabrielian, 1971)

NW HIMALAYA: without locality, *Watt* 3314 (E); Kumaon, 1900, *Duthie* 24386 (K); Doodotoolie, 3050 m, *Madden* s.n. (K); Kunawar, Harangati Pass, 3600 m, x 1933, *Parker* 3284 (K).
SE TIBET: Mago, 3960 m, vii 1934, *Ludlow & Sherriff* 723 (E); Doshong La, Kongbo, 3660 m, ix 1947, *Ludlow, Sherriff & Elliot* 13286 (E); valley above Sang, Kongbo, 29°33′N 94°42′E, 3200 m, vi 1938, *Ludlow, Sherriff & Taylor* 4998 (E).

Sorbus wallichii

NEPAL: above Sedwa Ridge, 2290 m, v 1965, *Banerjee et al.* 3400 (BM); Arun Valley, Maghang Khola, E of Num, 3050 m, vi 1956, *Stainton* 204 (BM, E); SW of Rambrong, 2440 m, iv 1954, *Stainton, Sykes & Williams* 5077 (BM, E); Rambrong ridge, N of Pokhara, 3050 m, iv 1954, *Stainton, Sykes & Williams* 5107 (BM, E); Chyangthapa, 2440 m, vi 1969, *Williams* 547 (BM).
SIKKIM & DARJEELING: Lachen, 2440 m, xi 1911, *Ribu & Rohmoo* 6123 (E, K); Chor Pokri to Tongloo, 2440–2900 m, iv 1881, *Watt* 7009 (E); Senchal, 2440–2740 m, *Hooker* s.n. (K); Pankabari, 2440 m, v 1904, *Haines* 1999 (E); Darjeeling, *Griffith*, K. D. 2084 (K); Yoksam, 2590 m, iv 1966, *Bowes Lyon* 3022 (BM); Senchal, 1980 m, vii 1874, *Gamble* (BM).
BHUTAN: Upper Kuru Chu district, Dengchung, Khoma Chu, 2300 m, iv 1949, *Ludlow, Sherriff & Hicks* 18772 (E, BM); Upper Kulong Chu district, Tobrang, Trashi Yangse Chu, 2130 m, v 1949, *Ludlow, Sherriff & Hicks* 20245 (E, BM); Upper Mo Chu district, Gichha (= Gasa), 2740 m, viii 1914, *Cooper* 3148 (E, BM).
AARUNCHAL PRADESH: SE of Apa Tani Valley, Subsansiri Division, 1650 m, iv 1965, *Cox & Hutchison* 376 (E, K); Manda La, Balipara Frontier, 9–10,000′, v 1935, *Kingdon Ward* 11454 (BM).

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