

LECTOTYPES FOR HIMALAYAN *SORBUS* TAXA (ROSACEAE)

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Lectotypes are provided for *Sorbus microphylla* Wenzig, *S. ursina* (G. Don) Schauer var. *wenzigiana* Schneider, *S. arachnoidea* Koehne and *S. rufopilosa* Schneider. Var. *wenzigiana* is transferred to *S. foliolosa* (Wallich) Spach var. *wenzigiana* (Schneider) Rushforth, *comb. nov.* A description of *S. microphylla* Wenzig, *emend.* is provided.

INTRODUCTION

Taxa of *Sorbus* subgen. *Sorbus* (Rosaceae) described from the Himalayas in the last century and earlier part of this century were mainly based on multiple collections for which no holotype was cited by the original author. In many cases, subsequent workers have concluded that these collections comprise more than one taxon. Lectotypes are needed, therefore, to stabilise the nomenclature. Lectotypes have been proposed for *S. foliolosa* (Wallich) Spach, *S. ursina* (Wallich) ex G. Don and *S. wallichii* (Hooker f.) Yu by Long (1987) and for *S. ursina* var. *ursina* (cited as '(Wenzig) Hedlund') and *S. microphylla* Wenzig by Gabrielian (1978). The other older Himalayan taxa of *Sorbus* are without lectotypes and the specimens chosen as lectotypes by Gabrielian do not satisfy the ICBN. In this paper I propose lectotypes for *S. microphylla* Wenzig, *S. ursina* var. *wenzigiana* Schneider (and thus for *S. wenzigiana* (Schneider) Koehne), *S. arachnoidea* Koehne and *S. rufopilosa* Schneider.

SORBUS MICROPHYLLA WENZIG

Small leaved rowans are frequent in the Sino-Himalaya. They include both diploid sexual species and tetraploids which are all believed to be apomictic in their breeding system. The variation in the sexual taxa appears to be geographically correlated. Due to their restricted breeding system, apomictic rowans are generally local taxa, showing uniformity within populations but with each population representing a discrete entity. As *S. microphylla* is the oldest name in this group, the correct and stabilized application of the name is important.

In describing *S. microphylla*, Wenzig (1874:76) cited seven specimens from throughout the Himalaya from the Berlin and Vienna herbaria as shown in Fig. 1.

Through the courtesy of their curators, I have been able to study at Edinburgh the surviving specimens in the Berlin-Dahlem herbarium and likely specimens at Vienna.

At Berlin (B), of the six syntype specimens cited by Wenzig, four survive: *Hooker & Thomson Sikkim 11–14000ft*; *Thomson Simla 10000ft*; *Falconer 390*; *Jaeschke 1868*.

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In herb. Berol.: Wallich. Lindley dedit. 1830. „Pirus
 ursina Wallich.“
 ex herb. Ind. Or. Hooker et Thomson.: Sikkim
 11—14000' alt. Reg. temp.
 „Pirus ursina W.“ Sikkim
 10—11000' alt. Reg. temp.
 „Pirus ursina W.“ Simla
 10000' alt. Reg. temp.
 „ „ Falconer: N. 390: Kaschmir.
 Jaeschke (1868): Himalaya: Rydang. (cult? Wg.)
 „ „ Vindobon.: Hügel: Tibet. N. 1093.

Fig. 1. Specimens of *S. microphylla* cited in Wenzig 1874:76.

The other *Hooker & Thomson* specimen from Sikkim and the *Wallich* specimen appear not to have survived the war.

At Vienna (W), there appears to be no trace of the *Hügel* syntype which is thus feared lost. There are, however, three specimens of some interest: a *Hooker & Thomson* specimen labelled 'India 10–11000ft'; a duplicate of the *Hooker & Thomson* Sikkim 11–14000ft collection with a hand written slip saying '*Sorbus microphylla* Wenzig' in what could be Wenzig's writing; specimen number 140863 which is labelled 'India orient. leg Wallich'.

The lectotype should be selected from one of the surviving specimens which Wenzig saw and cited. Thus whilst the *Hooker & Thomson* India 10–11000ft and the *Wallich* specimen at Vienna may be the two missing syntypes cited as at Berlin (or duplicates of them) and the *Hooker & Thomson* Sikkim 11–14000ft specimen is clearly a duplicate of the Berlin syntype, under the recommendations of the ICBN a lectotype should be selected from one of the four sheets cited by Wenzig and which survive at Berlin.

Wenzig's description in Latin is translated below; it contains 31 clauses or descriptive entities (numbers in brackets). These are: 'Shrub (1). Branches erect-spreading (2), bark blackish-grey (3), buds glabrous (4), short (5). Leaves imparipinnate (6), rachis above caniculate (7) and leaves beneath median vein ferruginous tomentose (8); leaflets on both sides sparsely pilose (9) and peduncles sparsely pilose (10). Leaflets 17–22–29–31 (11), oblong-oval or oval (12), *apex obtuse* (13) [Wenzig's italics], mucronate (14), base not acute (15), *margin all serrate* (16) [Wenzig's italics], serration acuminate imbricate (17), above strongly green (18), beneath pale (19), becoming glabrous (20). Corymbs, peduncle long (21), sparsely pilose (22), pedicels ferruginous tomentose (23), few (10–20) flowers (24). Calyx glabrous (25), lobes broadly triangular (26). Corolla spreading (27), diameter 12mm (28). Pome 12mm high and in diameter (29), globose (30), reddish (31).'

I have compared the four Berlin syntypes for each of the descriptive clauses. A good match received a double tick (yy), whilst for a reasonable but not good match, only a single tick was given. Bad correlations are scored by double or single crosses as above. Where parts of the specimen match the description but parts do not, ticks and crosses are given in proportion to the degree of match and mis-match. On each specimen certain

TABLE 1. Comparison of the four Berlin syntypes of *S. microphylla*.

Character No	<i>Falconer</i> 390	<i>Hooker & Thomson</i>	<i>Hooker & Thomson</i>	<i>Jaeschke</i> 1868	<i>Thomson</i>
	Kashmir B7749	Sikkim, 11–14,000ft B7450C Part A	Sikkim 11–14,000ft B7450C Part B	Rydang B7450A	Simla 10,000ft B7450B
5 buds short	yy	xx	xx	yy	yy
9 leaflets on both sides sparsely pilose	x	xx	yy	yy	y
10 peduncles sparsely pilose	yy	xx	xx	yy	yy
11 leaflets 17–25–29–31	17–21	21–27	21–27	19–21	21–25 (–27)
13 apex obtuse,	xx	y	y	yxx	yy
24 few (10–20) flowers	yy	x	x	xx	y
26 calyx lobes broadly triangular	x	yy	yy	yy	yy
27 corolla spreading	yy	—	—	yy	yy
28 diameter 12mm.	x	—	—	y	x
29 pome 12mm high and in diameter,	—	yy	xx	—	—
30 globose,	—	yy	y	—	—
31 reddish	—	xx	yy	—	—

of the characters 27–31 are indeterminable and this is represented in Table 1 by a dash. The immaturity of the Jaeschke specimen means that for character 20 it is indeterminate.

The Berlin syntype of *Hooker & Thomson* Sikkim 11–14000ft contains two fruiting specimens. Schneider has annotated the sheet to indicate that they are not the same taxon. Accordingly, I have scored each part separately.

Characters 1, 2, 6, 7, 15, 16, 17, 19, 21 and 22 are shared by all the specimens. Characters 3, 8, 12, 14, 18, 20 and 25 are also reasonably shown by all the specimens, gaining either one or two ticks (20 is indeterminate in the Jaeschke specimen). Character 23 is not shown by any of the four sheets, whilst character 4 is also poorly correlated with any of the four sheets. These characters, therefore, are of no assistance in suggesting which specimen best matched Wenzig's description.

The characters which are of value in separating the four specimens, and which are here termed 'key' characters, therefore, are numbers 5, 9, 10, 11, 13, 24 and 26–31; i.e. 12, of which two are indeterminate on one sheet and three on the other three sheets. The score of each Berlin syntype for these 12 key characters is shown above in Table 1.

Both elements of *Hooker & Thomson* Sikkim 11–14000ft fail to match on 5, 10 and 24, with part A failing on 9 and 31 and part B on 29. Characters 28 and 29 are indeterminate. Therefore this sheet fails to match the description on 8 out of 12 key characters.

Falconer 390 fails to match on characters 9, 13, 26 and 28 whilst 29–31 are indeterminate, i.e. on 7 out of 12 key characters.

Jaeschke 1868 fails to match number 24 and is confused (i.e. most leaves not matching but some matching) on number 13. As 29–31 are indeterminate, it fails to match the description on 5 out of 12 key characters.

Hooker & Thomson Simla 10000ft fails to match only on character 28, with 29–31 being indeterminate, i.e. on only 4 out of 12 key characters. It makes only a partial match

on character 24, having a total of approximately 20–25 flowers (cf. 10–20) but in a cyme with two branches, each with 10–12 flowers. In the description Wenzig italicized character 13 (apex obtuse) and this is the only specimen which fully matches character 13 (on the fertile element, the match is not quite so strong on the purely sterile extension shoot but is still there). With the sterile shoot forming part of the specimen, it is the specimen which most fully covers the range of leaflets number, i.e. 21–27 cf. 17–31 in the description.

Gabrielian (1978) has proposed a duplicate of the *Hooker & Thomson Sikkim 11–14000ft* at E as lectotype. This is not acceptable as it was not cited by Wenzig and there is no evidence to indicate that he ever saw the Edinburgh specimen. It would be acceptable only if no specimens had survived the war at either Berlin or Vienna.

The *Hooker & Thomson Sikkim 11–14000ft* specimen has been treated by several authorities as the type although not formally so. Schneider has annotated the Berlin specimen as comprising two elements which he considers specifically distinct (he has annotated the Vienna specimen as containing three elements). I do not disagree with his opinion. Also, the Berlin specimen is extremely poor, with only one fruit remaining on part A. Accordingly, and in addition to its failure to match the description on 8 out of 12 'key' characters, the Berlin sheet of the *Hooker & Thomson Sikkim 11–14000ft* collection is not appropriate as a candidate for lectotype.

Falconer 390 is the type number of *Sorbus cashmiriana* Hedlund. Although Hedlund (1901) did not cite the location of the type specimen (*Falconer 390* is represented in several herbaria), he amended the description of *S. microphylla* to exclude *Falconer 390*. *Jaeschke 1868* was made the type of *S. cashmiriana* forma *jaeschkeana* Koehne (1912). It falls within the circumspection of *S. cashmiriana*, where Schneider (1906) placed it (along with the *Hugel 1093* specimen which appears lost). The choice of this specimen as lectotype would prejudice the status of *S. cashmiriana* and thus would not serve the stability of nomenclature.

Thomson Simla 10000ft was cited by Koehne (1912) as the type of his *S. cashmiriana* ?forma *thomsonii*. Schneider (1906) referred the specimen to *S. cashmiriana*, but from which it is quite different in the more numerous leaflets, which are obtuse at the apex, and the smaller flowers with petals only 2–3 x 2mm.

The only extant specimen which fits for character 23 is the *Hooker & Thomson India 10–11000ft* at Vienna. Although annotated *S. microphylla* Wenzig, it is not a candidate for lectotype.

The *Wallich* specimen cited by Wenzig has been lost. As he did not cite a number, it is uncertain whether the specimen at Berlin was part of *Wallich 676* to which Wallich gave the name *Pyrus microphylla* nomen nudum. The specimen at Vienna is also unnumbered but appears to belong to this widely distributed collection by Webb from near Simla.

Falconer 390 and *Jaeschke 1868* are in my opinion referable to *S. cashmiriana* whose circumscription is unaltered by the choice of lectotype made here. *Hooker & Thomson Sikkim 11–14000ft* is mixed, including *S. rufopilosa* and *S. aff. microphylla* in the specimen at Berlin.

I find the *Thomson* Simla 10000ft specimen provides the best match with Wenzig's description on the 'key' characters. It also has the advantage of not causing any confusion in the application of the names *S. cashmiriana* and *S. rufopilosa*.

***Sorbus microphylla* Wenzig emend. Rushforth in Linnaea 38:76 (1874).**

Lectotype: Simla, 10000ft, *Thomson* (B, selected here). **Fig. 2.**

As *S. microphylla* is such a pivotal species in the Himalayan small leaved rowans, a full description based on the lectotype, in addition to the photograph of the lectotype, is provided.

Shoot 2.5–3mm diam., dark grey when mature, in current year reddish brown and white pilose, glabrescent. *Buds* small, conical, 2mm (not fully developed?), pilose at apex. *Leaves on fertile shoot: leaf* with 10–11 pairs (21–23) leaflets, 8–10cm long by 2.5–2.8cm wide, oblong elliptic in outline; rachis caniculate, slightly winged, pilose with white hairs; petiole 0.7–1.0cm, interstitis 0.6–0.8cm; *stipules* dry, awn-shaped, 3mm long by 1mm wide, rufous pilose; *leaflets* oblong to oval, obtuse at apex, acuminate, rounded oblique at base or broad cuneate on one side only, serrate except at base, glabrous above, pilose beneath, mainly on main vein, 1.2–1.5cm long by 0.5–0.8cm wide; *Leaves on sterile extension shoot: leaf* with 11–13 pairs (23–27) leaflets, to 17cm long by 4cm wide; rachis narrowly winged, sparsely pilose, more so at nodes; *stipules* leafy, small, 5mm long by 2mm wide, toothed, slightly hairy; *leaflets* oval, apex obtuse to acute, mucronate, base rounded, oblique, serrate with acuminate teeth almost to base, glabrous above, pilose beneath, mainly on main vein, 1.5–2.0cm long by 0.7–1.0cm wide; *flowers: peduncles* long, 3.0–4.3cm, two from base of cyme, each with approximately 10–12 flowers, pilose, 1mm diam.; *pedicels* short, glabrous, 1.5–3mm long, 0.5mm in diameter; *calyx* lobes broad triangular, 1mm high by 1.5mm wide, glabrous on outer side, hairy on inside, slightly toothed; *flowers* when open with rather spreading petals, 0.7–0.8mm wide; *petals* rather spreading when open, white?, 2–3mm long by 2mm wide, erose; *styles* 5, distantly inserted in the ovary; *ovary* densely honey hairy.

SORBUS URSINA VAR. WENZIGIANA SCHNEIDER

Schneider (1906) described var. *wenzigiana* as 'Differt: pube ferrugineo (non cinereo intermixta), foliolis ± angustioribus, acutioribus, tantum ad apicem tenuissime serrulatis, cetera ut in Handbuch indic.' His characters, therefore, are the rufous hairs not intermixed with grey hairs and the more or less narrow acute leaflets which are only finely serrulate at the apex.

He cited the specimens as:

'Kumaon: Ig. *Wallich* n. 675A.

Nepal, Ig. ?

Sikkim: Ig. *Tandun* (?) n. 131 (Mt. Tonglo); Ig. *Kurz* (Tongloo); Ig. *Hooker* (10-11000'); Ig. *Clarke* n. 34989 (Sundakphoo).'

The location of the syntypes is given as '(in allen Herb.)'. The main herbaria cited within the article are Berlin (B), Geneva (Herb. Boissier-Barbey) and Vienna (W), although Paris (P) is cited on one occasion.

Through the courtesy of the Curators of Berlin, Geneva and Vienna, I have been able to study the surviving specimens listed above and annotated by Schneider. These are: *Wallich* 675A (B, W); *Clarke* 34989 (G); *T. Anderson* 131 (Tandun?) (G); *Hooker & Thomson* Sikkim 10–11000ft (G).

The *Kurz* specimen has not been found. In addition, at Geneva there is a further specimen under *Wallich* 675A. However, this is not annotated by Schneider. The Nepal specimen also has not been found. However, from the question mark, I wonder whether it ever existed or whether Schneider was indicating that as he recorded his taxon from both sides of Nepal he thought it likely to occur there as well?

The four surviving collections are all in flower and fit Schneider's characters. However, they differ markedly in stipules and other characters.

Wallich 675A has small leafy to dry lanceolate stipules and leaflets to 3.5cm by 1–1.1cm which are very strongly papillate beneath. *Clarke* 34989 has large leafy stipules but is very immature, with the foliage and flowers not developed. *T. Anderson* 131 also has leafy stipules, to 6 x 6mm. The leaflets are up to 4.5cm long with brown and white hairs on the midrib beneath and are not papillose beneath. It was collected post anthesis with the petals shed. *Hooker & Thomson* India 10–11000ft has dry lanceolate stipules which are rufous pilose. The leaves and flowers are not fully developed. This is the specimen which is discussed above under *S. microphylla* and may be an iso-syntype or syntype of that.

Koehne (1912) gave the taxon specific status. His description fits the *Wallich* specimen and it is only *Wallich* 675A at Berlin that he has annotated *S. wenzigiana* (Schneider) Koehne. *Wallich* 675A is therefore the best candidate for lectotype. The Berlin specimen, annotated by both Schneider and Koehne, is far better preserved than the Vienna specimen and is thus chosen.

Clarke 34989 and *T. Anderson* 131 fit *S. arachnoidea* Koehne. *Hooker & Thomson* India 10–11000ft is rather immature for precise determination but appears to fit *S. himalaica* Gabrielian on the stipules. I have some reservations about the value of the stipular character for circumscribing *S. himalaica* which is otherwise best separated (from *S. foliolosa*) by the pink flowers and non-papillose undersurface to the leaf.

Long's (1987) lectotypification of *S. foliolosa* shows that *S. ursina* cannot be separated from *S. foliolosa*. Var. *wenzigiana* shows some character differences from *S. foliolosa* and comes from the Kamaon region of northwest India rather than the Gossain Than of east central Nepal. I think it is appropriate, therefore, to make the combination placing var. *wenzigiana* within *S. foliolosa*.

***S. foliolosa* (Wall.) Spach var. *wenzigiana* (Schneider) Rushforth, comb. nov.**

Basionym: *Sorbus ursina* var. *wenzigiana* Schneider, Bull. Herb. Boiss., sér. 2, 6:316 (1906). Type: *Wallich* 675A, Kamaon, India, leg. *Blinkworth* (lectotype B, selected here). **Fig. 3.**

NOTE ON TYPIIFICATION OF *SORBUS URSINA*

Sorbus ursina (G. Don) Shauer in Otto & Dietrich, Allg. Gartenz. 17: 84 (1849) is based on *Pyrus ursina* (Wallich Cat. 20, no. 675) nom. nud. ex G. Don. A lectotype based on *Wallich* 675C in the Kew-Wallich herbarium is proposed by Long (1987).

Gabrielian (1978: 95) proposed the Geneva specimen of Wallich 675A as the lectotype for *S. ursina* but with the basionym as '*S. foliolosa* β . *ursina* Wenzig', raised to *S. ursina* (Wenzig) Hedlund (1901). Wenzig (1874) cites only *Wallich* 675 and *Wallich* 675A at Berlin, thus the choice of a Geneva specimen is not appropriate. The Geneva specimen of *Wallich* 675 is ascribed to Kumaon and should, therefore, be the Blinkworth collection in flower. However, it is a mature fruiting specimen. It does not match the *Wallich* 675A collection in the *Wallich* herbarium at Kew (nor the Berlin and Vienna specimens) but does match the *Wallich* herbarium 675C collection from Gossain Than in Nepal. It is more likely that the sheet was distributed with the wrong label (i.e. as 675A not as 675C) than that the Blinkworth collection included both flowering and fruiting material. For these two reasons, I find the lectotype proposed by Long (1987) using the *Wallich* 675C specimen in the *Wallich* herbarium at Kew much more useful.

SORBUS ARACHNOIDEA KOEHNE

Koehne described this species on the basis of two specimens, *Gammie* 474 from Tankra mountain in Sikkim and *Dungboo* s.n., 1877, from the Chumbi valley. It is probable that he was working from specimens at Berlin but he did not indicate this. Schneider (1906) also mentioned both collections but without locating them.

Material of neither collection is now located at Berlin. A letter sent to the curators of all the herbaria listed in the Collector's Index as holding either *Gammie* or *Dungboo* specimens and a search of Kew, the BM and Edinburgh produced only a single specimen of the *Dungboo* collection at Vienna. This may be an iso-syntype rather than a syntype. However, it appears the only available specimen of the collections cited by Koehne and is accordingly proposed as lectotype.

The *Dungboo* s.n. (W) specimen consists of four fragmented leaves, shoots with buds and a mature fruiting truss. It agrees with Koehne's description except that the leaves appear slightly shorter, the twig slightly narrower but still stout (4–5mm vs. 5–7mm) and being in mature fruit (Koehne states immature fruit but at least one pome is mature and 7–8mm x 7–8mm). Only one of the characteristic stipules remains attached to a leaf but this clearly fits Koehne's description. A description of *S. arachnoidea* is given in Rushforth (1991).

***Sorbus arachnoidea* Koehne in Repert. Spec. Nov. Regni Veg. 10: 514 (1912). Type: Tibet, Chumbi valley, 1877, *Dungboo* s.n. (lectotype W, selected here). Fig. 4.**

SORBUS RUFOPILOSA SCHNEIDER

Schneider (1906) described this on the basis of two syntypes from Darjeeling district – a collection from Sundakphoo (18 vii 1884, 11000ft), and one from Phulloot (12 ix 1884). In the Barbey Boissier herbarium at Geneva there are two specimens from Sundakphoo fitting the above details and three sheets from Phulloot.

The Phulloot sheets are all from 12000ft but one is collected on 10th September, the others on the 12th. Only the collection on the 12th was cited or annotated by Schneider.

There is some difference between the Sundakphoo and Phulloot collections. One sheet of the Sundakphoo collection has very few flowered cymes of 5–6 flowers with leaves with 10–14 pairs of distant leaflets to 1 x 0.6cm. The leaflets appear shortly petiolate



FIG. 4. *Sorbus arachnoidea*. Dungboos s.n. Lectotype, W.



FIG. 5. *Sorbus rufopilosa*. Sikkim, Phulloom, 12 ix 1884. Lectotype, G.

and have 5–6(–7) pairs of lateral teeth. It appears to be a sparsely branched shrub rather than a small tree. It keys out in Rushforth (1991) to the unnamed plant referred to as *S. aff. filipes* and this sheet may be better referred there.

The Phulloom specimens have larger cymes of fruits, with 3–4 branches and 9–12 fruits. The leaflets are mainly 9–10mm but up to 12mm long by 4–6mm wide and thus better fit the circumscription of *S. rufopilosa* as currently employed, e.g. Long (1987), Rushforth (1991). It also accords better with Schneider's subsequent annotations (e.g. on *Hooker & Thomson Sikkim 11-14,000ft* at Berlin and Vienna).

Accordingly, I propose the Phulloom specimen as lectotype.

Sorbus rufopilosa Schneider in Bull. Herb. Boiss. ser. 2: 317 (1906). Type: Sikkim: Phulloom, 12 ix 1884 (lectotype G, selected here). **Fig. 5.**

ACKNOWLEDGEMENTS

I wish to thank the Dr P. Heipo of the Berlin-Dahlem Herbarium for advice and the loan of material and the curators of Geneva, Vienna and Paris for the loan of material, the Keepers of the Herbaria at Kew and the BM for access to their collections and the curators of A, CAL, L, LE, MICH, U and US for checking their collections for the Dungboo and Gammie collections of *S. arachnoidea*. Martin Vogt of Switzerland kindly made translations of the German text in Koehne's and Schneider's articles and annotations on herbarium sheets. I particularly wish to thank David Long and colleagues at E for obtaining specimens on loan and both David Long and Hugh McAllister for general advice and assistance.

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