Aria – Thibetica group

Following the RHS Woody Plants Committee meeting on the 18 September 2008 at Wisley, **HUGH McALLISTER AND KEITH RUSHFORTH** thought it might be helpful to draw together their personal conclusions on the *Thibetica* group within the genus *Aria*. (This group is often treated as part of *Sorbus* but the authors restrict *Sorbus* to the rowans.). Their view is that this is a natural group extending along the Himalaya and into North Burma and China and that they are trees growing in the upper deciduous and within the conifer (mainly but not exclusively *Abies*) zones from *c.* 2,500 - 3700m.

The group is conveniently characterised by the fruit greenish with scattered lenticels often flushed red where exposed to the sun, ripening to more or less orange and often with free carpel apices (not *hemsleyi*). Other groups (e.g. *Alnifoliae, Micromeles*) have leaves lacking the persistent white tomentum beneath and/or much smaller fruits in pyramidal panicles (*epidendron*), brownish fruits with many lenticels.

The oldest basionym in the group is *Pyrus lanata* D.Don (1825), followed by *Pyrus vestita* Wallich ex G.Don (1832), *Pyrus kamaoensis* Wallich ex G.Don (1832), *Crataegus cuspidata* Spach (1834), *Sorbus hedlundi* C.K.Schneider (1906), *Sorbus pallescens* Rehder (1915), *Sorbus ambrozyana* C.K.Schneider (1917), *Sorbus ochrocarpa* Rehder (1917), *Pyrus thibetica* Cardot (1918), *Pyrus coronata* Cardot (1918), *Sorbus atrosanguinea* Yu & Tsai (1936) and *Sorbus wardii* Merrill (1941). We also question whether *Micromeles hemsleyi* C.K.Schneider (1906) and *Micromeles schwerinii* C.K.Schneider (1906) belong in the group (*Sorbus henryi* Rehder (1915) is a new name for *Micromeles schwerinii* in *Sorbus* as *Sorbus schwerinii* Schneider is an entirely different plant). Steven Spongberg has pointed out that *Sorbus xanthoneura* Rehder (1915) is based on the same type as *Micromeles hemsleyi* and thus invalid).

Our view is that this represents one extended gene pool and to date all entities within it have been found to be diploid.

We agree the circumspection of *lanata*, being the most westerly entity and having large fruits and lobulate leaves. *Pyrus kamaoensis* is generally understood as a superfluous name for *lanata.*

We agree that *vestita* is distinct from *lanata* but not the range of variation within this entity, and thus exactly how far to the east it extends.

KR considers that it represents a central Himalayan entity, characterised as described by David Long (1987) in Flora of Bhutan "by the margins regularly crenate-serrate; laterals veins 6 - 11 pairs; styles 3 - 5" and "petals woolly within". He is highly dubious that it is found in Sikkim. He identifies Chadwell & McKelvie 1040 from the Ganesh Himal in central Nepal and a tree collected on Mount Furkai in Nepal as both belonging in *vestita*.

KR considers that the eastern boundary of *vestita* is probably formed broadly by the limits of the floristic region in eastern Nepal – this has *Abies spectabilis* on and to the west of the Milke Danda ridge (EMAK 1079 representing the most easterly *Abies spectabilis*) and *Abies densa* on and to the east (NPT 160 from the Milke Danda ridge), similarly *Picea spinulosa* and *Rhododendron falconeri* and *R. grande* occurring to the east but not to the west of this area.

KR considers that the common whitebeam found in Sikkim eastwards (and presumably in East Nepal but he has not seen any whitebeam in Nepal) is within the circumspection of *thibetica* as given by David Long, with "leaf margins sharply irregularly and often doubly serrate; lateral veins 11 - 14 pairs; styles 2 - 3(-4)" and "petals with a few white hairs within".

He treats as belonging to *hedlundi* plants found in a few localities – he has only seen them at Sengor in eastern Bhutan (KR 1679, 1687 & 1810 & TH 034) and in cultivation from the Milke Danda (BLM 020) and of unknown origin but notes the type as from Tonglu, Sikkim and the Flora of Bhutan records it from the Upper Kuru chu and Upper Kulong chu areas. He is not aware of this entity extending east into Arunachal Pradesh. He accepts the circumspection of *hedlundi* as given in the Flora of Bhutan, viz leaves brown tomentose on the midrib and main veins and less so on the underside generally (but white tomentose on young plants and vigorous extension shoots on intermediate ones), with lateral veins in 12 - 17 pairs and styles 3 - 5. In the Sengor population, the seeds are located near the centre of the fruit (*cf.* just below the calyx in *thibetica*), and the leaves are up to 25cm by 15cm. He notes that Stephen Spongberg has identified specimens from the Yunnan-Burma border, and Aldosoro et al a specimen from the Cang Shan, as being *hedlundii* but he does not accept these specimens as being the same as the Bhutan-east Nepal taxon.

KR accepts that there is variation within the "*thibetica*" entity in Bhutan and West Kameng, Arunachal Pradesh, treating a "high" elevation entity and a "low" elevation entity in Rushforth 1991 & 1992. The "low" elevation entity has leaves almost orbicular with a shortly acute apex to 20cm by 15cm, 11 - 15(-18) pairs of veins and leaves densely hairy beneath. The Sikkim plants (AGSES 347) differ only in the leaves being more acute. The "high" elevation form has elliptic leaves 12 - 13cm with (10-)11 - 12 pairs of veins and much less hairy leaves. However, this variation may simply be a cline and thus of limited botanical significance. However, it appears to be repeated on the Yunnan-Burma border, judging by specimens at Edinburgh, so may warrant formal recognition.

KR records *thibetica* from eastern Arunachal Pradesh in N.E India to near Caojian in western Yunnan, and on the Yonde shan in southwest Yunnan. He currently lists all of these as within the variation of *thibetica*; however he feels that there may be value in recognising variation within this range, but does not have the detailed information at present to justify this, and for this reason currently does not uphold *atrosanguinea*. He considers the Yu 8423 collection as

most closely resembling (and geographically closest to) the type of *thibetica*.

In Burma, KR recognises two distinct entities: *wardii* is a small tree with leaves elliptic to obovate, nearly glabrous, 6-8cm by 3-5cm with 9-11 pairs of veins and fruits in trusses of only 1-7. The veins are parallel and slightly incurved. This is in cultivation under KW 21127 from Tama Bum. The KW 21127 specimen in the Edinburgh Herbarium shows curious rounded "lumps" on the leaf underside, a feature not evident in fresh leaves but apparent in dried ones from living trees. This feature does not appear to be present in dried leaves of *thibetica*.

Also in cultivation but without a name, is KW 20834 from Ahkail, Burma, from 2450-2750m. This has leaves elliptic to obovate, to 24cm by 13cm and *c*. 15 pairs of veins. The tertiary veins often form a ladder effect, joining completely between the secondary veins. This plant is often called *vestita* but differs in the multi-veined and larger leaves.

HMcA agrees the above entities but considers that they are all part of the variation within *vestita*, and thus that subspecific status may be more appropriate for some if intergradation is found.

We are uncertain as to the correct attribution of *ambrozyana* and *coronata* (and note the priority of *ambrozyana*). Plants raised from ACE collections in Yunnan may belong here. We note that two collections, 181 & 1100 from the 1984 SABE expedition to the Cang shan have been annotated as *S. coronata*, and
52 that CLD 1501 is from the same locality as 1984 SABE 1100. We also note that confusingly Aldosoro et al refer these two SABE collections to *dunnii*, despite their differences from Rehder's description of this species. Previously we had treated CLD 1501 as part of *thibetica*.

We agree that to the north and east are found plants named *pallescens*. This is recorded from northwest Yunnan and western Sichuan and is characterised by the smaller leaves, 4-10cm by 2-5cm, with 10-12 pairs of veins. Trees of *pallescens* are distinct in general appearance from those further west in being more slender. We note that Rehder sunk his *S. ochrocarpa* (1917) into his *S. pallescens* (1915) in 1927 but do not have an opinion on whether his 1917 or 1927 opinion is correct.

On the Emei shan in west Sichuan, *pallescens* occurs but there is also another entity – in cultivation from KR 161, Lancaster 465, and from seeds distributed by Shanghai Botanic Garden in 1992 as seed number 267 as *S. folgneri* (which is quite unrelated, belonging to the *Alnifoliae*); this makes an upright tree and has leaves which are broader than *pallescens*, often lobulate or double toothed and with somewhat pointed buds recalling *hemsleyi*. This is not *Micromeles schwerinii* (in *Sorbus* it is *henryi* but in *Aria* it will revert to *schwerinii)*, and differs from *hemsleyi* in the much less hairy underside to the broader leaves with double toothing and the fruit which retains the calyx. As it occurs on the Emei shan, as does *pallescens*, it may represent past introgression of *hemsleyi* into *pallescens*.

KR considers that the related plants in the Pome region of southeast Tibet do not match *pallescens* but that they may represent a related entity showing characters of both *pallescens* and *thibetica*. They appear to fit the plant listed in the *Flora of China* as *S. coronata* var. *glabrescens* but do not appear to be related to other plants listed as being *coronata*. The status of these plants needs further investigation.

In Hubei eastwards occurs *hemsleyi*. This differs from other members of the group in the deciduous calyx and fused carpel apices. In southeast China is *dunnii*, which we tentatively place here.

In southeast China there is *Sorbus dunnii* Rehder, which we tentatively place here. Until recently we did not know whether it was in cultivation, however, a tree at Westonbirt from seeds sent by Shanghai Botanic Garden to Kew in 1982 from Zhejiang close to the Fujian border has the many veined elliptic leaves with yellow-brown hairs typical of *dunnii*.

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