

SALIX CALODENDRON WIMM. in BRITAIN

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Two recent references to *Salix dasyclados* Wimm. in Britain (Rechinger, 1950, 273-4; Polunin, 1950, 362) show that there is some confusion concerning the identity of this willow, since I feel certain that, in both cases, the plants so named should have been referred, not to *S. dasyclados*, but to the closely related *S. calodendron* Wimm.

The confusion originated as far back as 1804 with the description by Sir J. E. Smith (1804, 1068) of a willow which he named *Salix acuminata*, under the mistaken belief that it was identical with the *S. acuminata* of Miller (1768, no. 14). Smith's plant was subsequently figured—again as *S. acuminata*—in *English Botany* (1805, t. 1434), and it was not until twenty-three years later that the mistake was corrected (Smith, 1828, 227), though in accordance with the fashion then prevailing, the name *S. acuminata* Sm. was retained, despite the fact that it was antedated by *S. acuminata* Mill., which, on Smith's own admission, was applicable to a different plant. Incidentally it is worth noting that *S. acuminata* Mill. may prove the correct name for the willow generally named *S. atrocinerea* Brot., for Miller expressly states it is the "common willow"—presumably the British shrub—though, following Ray, he cites as a synonym the "*Salix folio ex rotunditate acuminato*" of Bauhin (1623, 474). This, however, is a problem to be debated elsewhere.

S. acuminata (non Mill.) Sm. remained throughout the nineteenth century the name for the plant figured in *English Botany*, and continued to appear in plant-lists and local Floras until Fraser (1933, 368), acting on the advice of Floderus, discarded it in favour of *S. dasyclados* Wimm., a name which has since persisted, though examination of authentic material reveals that *S. acuminata* Sm. and *S. dasyclados* Wimm. are not identical.

The name *S. dasyclados* was first proposed by Wimmer (1849, 35) for a willow closely resembling the British *S. stipularis* Sm. but distinguished from that species by its more broadly lanceolate leaves, which are less silky beneath, and by its darker brown, sub-obtuse catkin-scales. The type material of *S. dasyclados* came from the neighbourhood of Troppau and Breslau, in Silesia.

Wimmer subsequently (1866, 42) reduced *S. dasyclados* to synonymy under *S. longifolia* Host (1828, 63), overlooking the fact that this name was invalidated by the earlier *S. longifolia* of Lamarck (1788, 232); in consequence *S. dasyclados* again becomes the valid name for a willow species (or hybrid) apparently not infrequent in some parts of northern and central Europe, though not yet correctly recorded from the British Isles.

The close relationship between *S. dasyclados* Wimm. and the *S. acuminata* of Smith and British botanists was recognized by Wimmer (1853, 163), and he first regarded *S. acuminata* as a hybrid, *S. Caprea* L. \times *dasyclados* Wimm., but later (1866, 187), feeling less certain concerning the affinities of these puzzling shrubs, he proposed the name *S. calodendron* in place of the supposed *Caprea* \times *dasyclados*, at the same time making it quite clear that this name and the invalid *S. acuminata* Sm. are synonymous, and that *S. calodendron* Wimm. and *S. dasyclados* Wimm. are distinct.

Andersson (1867, 71) wrongly united *S. dasyclados* and *S. calodendron* Wimm., and in this he has been followed by Buchanan-White (1890, 420) C. E. Moss (1914, 63) and Hylander (1945, 122). The attitude taken by Floderus (1931) is somewhat perplexing; on p. 78 he cites *S. calodendron* Wimm. (= *S. acuminata* Sm.) under *S. Caprea* L. \times *dasyclados* Wimm., but, on p. 83, *S. acuminata* Sm. is said to be the hybrid *S. Caprea* L. \times *viminalis* L., while, to make matters worse, he subsequently (*teste* Fraser, 1933, 368) refers *S. acuminata* Sm. to *S. dasyclados* Wimm.!

The male plant of *S. calodendron* Wimm. is unknown, and it has been suggested that this willow, also *S. stipularis* Sm. and *S. dasyclados* Wimm., are merely "nothomorphs" or variants of *S. Caprea* \times *viminalis* (Nilsson, 1928, 68-70, 82). It has also been argued that *S. calodendron* is a triple hybrid—*S. Caprea* \times *cinerea* \times *viminalis*, whilst some European botanists now give *S. dasyclados* specific rank and, following Wimmer's original opinion, cite *S. calodendron* as a hybrid—*S. Caprea* \times *dasyclados*. In the absence of additional data, it is impossible to confirm or to deny the correctness of any of these opinions, and, for the present at least, I feel it is better to employ binomials in distinguishing *S. calodendron* and its allies, thereby avoiding the difficulties which await those who attempt to unravel genetical problems without the necessary experimental evidence. In any case, it is clear that existing nomenclature should be put straight before the more complex problems of taxonomy can be dealt with. With this object in mind, I add the detailed synonymy of *S. calodendron*, together with a short account of its morphology and distribution. For the sake of completeness, very brief notes on the allied *S. stipularis* and *S. dasyclados* are included, and a key to the three willows.

1. Leaves broadly lanceolate or ovate (9-11 cm. long, 2.5-4 cm. wide); stigma shorter than style *S. calodendron*.
1. Leaves narrowly lanceolate (10-13 cm. long, 1.5-3 cm. wide); stigma as long as or longer than style 2.
2. Catkin-scales light brown, acute; leaves 1.5-2.5 cm. wide, silky-pubescent beneath *S. stipularis*.
2. Catkin-scales dark brown, subobtuse; leaves 2-3 cm. wide, thinly pubescent or subglabrous beneath *S. dasyclados*

1. SALIX CALODENDRON Wimm., 1866, *Salices Europaeae*, 187.

S. acuminata Smith, 1804, *Fl. Brit.*, **3**, 1068; 1805, *Eng. Bot.*, **20**, 1434; in Rees, 1815, *Cyclopaedia*, **31**, no. 129; 1828, *Eng. Fl.*, **4**, 227; Forbes, 1829, *Salictum Woburnense*, 261; Hooker, 1830, *Brit. Fl.*, ed. 1, 424; Babington, 1843, *Mam. Brit. Bot.* ed. 1, 274; Watson, 1849, *Cyb. Brit.*, **2**, 394; Syme, 1868, *Eng. Bot.*, **8**, 229; non Mill., 1768, *Gard. Dict.*, ed. 8, no. 14.

S. × Smithiana Willd. var. *acuminata* (Sm.) Anderss. in DC., 1868, *Prodr.*, **16**, pt. 2, 268, *pro parte*; White, 1890, in *Journ. Linn. Soc. Bot.*, **27**, 420, *pro parte*; cf. Hook. f., 1870, *Student's Flora*, 340.

S. Caprea-dasyclados Wimm., 1853, *Denkschr. Feier fünfzigjähr. Bestch. Schles. Ges.*, 163.

S. dasyclados Wimm. sec. Anderss., 1867, *Bot. Notiser*, 61, *pro parte*; Floderus sec. Fraser, 1933, *Rep. Bot. Soc. & E.C.*, **10**, 368; Hylander (as "*S. dasyclada*"), 1945, *Uppsala Univ. Arsskr.*, **7**, 122-3, *pro parte*: non Wimm. in *Flora* (Regensb.), **32**, 35 (1849).

S. (cinerea L. × *viminalis* L.) × *Caprea* L., A. & E. G. Camus, 1905, *Mon. Saules d'Europe*, **2**, 265.

S. × acuminata Linton, 1913, *Journ. Bot. Suppl.*, 33, *pro parte*, Moss, 1914, *Cambr. Brit. Fl.*, **2**, 63, *pro parte*.

S. Caprea L. × *viminalis* L., Floderus in Holmberg, 1931, *Skand. Fl.*, **1b**, 83.

S. viminalis L. var. *acuminata* (Sm.) Druce in Hayward, 1930, *Bot. Pocket-book*, ed. 19, 178.

An erect much-branched shrub 4-6 m. high; branches and twigs dark brown, thinly pubescent, the wood marked with scattered, long *striae*; young growing shoots densely and softly ashy-tomentose. Buds acute, silky-pubescent. Stipules conspicuous, caducous, reniform-acuminate, 0.5-1 cm. long, about 5 mm. broad, distinctly veined, upper surface thinly pubescent, lower surface densely ashy-pubescent, margin recurved glandular-denticulate. Petiole densely pubescent, 1-1.5 cm. long, slightly channelled above, strongly convex below; lamina broadly lanceolate or sometimes ovate, (8) 9-11 (13.5) cm. long and 2.5-4 cm. broad, gradually acuminate towards apex, cuneate or rounded at base, deep green and thinly puberulous above, ashy below, at first densely pubescent, later subglabrous; midrib yellowish or reddish, slightly depressed above, prominent and convex below, pubescent lateral nerves 20-25 pairs, rather prominent below; leaf-margin sharply and narrowly recurved, remotely glandular-denticulate. ♀ catkins appearing before the leaves, cylindrical, 4-7 cm. long and about 1 cm. broad, shortly pedunculate, the peduncles densely villous, and bearing 2-4 ovate, silky bracts; catkin-scales 2-3 mm. long and 1-1.5 mm. wide, ovate-acute or subobtusate, rarely acuminate, pale brown towards base, dark brown above, clothed with long, silky white hairs; nectary single, narrow, about 1 mm. long; ovary shortly pedicellate, narrowly ovoid, 2.5-3.5 mm. long, densely white-villous, style conspicuous, about 1 mm. long, stigmas

2, undivided, about 0.75 mm. long, abruptly pointed or almost obtuse, greenish-yellow. The ♂ catkins are unknown.

BRITISH ISLES.

- V.-C. 17, SURREY; Thames bank near Kingston, 1899, 1913, and 1925, *J. Fraser*, 36, 534 (K.); Basingstoke canal, Woking, 1926, 1928, *J. Fraser*, 630 (K.).
- 19, N. ESSEX; Audley End, 1842, *Leeffe*, 37 (K., B.M.).
- 20, HERTS.; Ickleford, 1921, *J. E. Little* (K., B.M.); pond by Midland Rly., Icknield Way, 1921, *J. E. Little* (K., B.M.); Brook End, St. Ippolitts, 1922, *J. E. Little*, 527 (K., B.M.); Roxley, Willian, 1923, *J. E. Little*, 570 (K.).
- 21, MIDDLESEX; Margin of Welsh Harp reservoir, 1948, *R. D. Meikle* (K.).
- 25, E. SUFFOLK; Hopton, cult. Bournemouth, *E. F. Linton*, Set of British Willows, 13 (K., B.M.).
- 27, E. NORFOLK; Near R. Wensum, Norwich, 1883, *E. F. Linton* (B.M.); Dolphin Ferry, Norwich, 1883, *E. F. Linton* (B.M.).
- 28, W. NORFOLK; King's Marsh, Wolferton, 1922, *J. E. Little*, 512 (K.); Coalyard Creek, Wolferton, 1950, *E. L. Swann*, 1981 (K.); Holme next the Sea, 1950, *E. L. Swann*, 1982 (K.).
- 29, CAMBS.; Cherry Hinton, *herb. Borrer* (K.); near end of Jesus Lane, *Ed. Forster* (B.M.).
- 30, BEDS.; St. Neots Bridge, 1888, *E. F. Linton* (B.M.); pond at Turvey, 1890, *E. F. Linton* (B.M.).
- 38, WARWICK; Shrewley, 1876, *R. L. Baker* (B.M.) and, same place, 1881, *E. A. Lomax & H. Bromwich* (B.M.).
- 39, STAFFS.; Trysull, Wolverhampton, 1873 and 1878, *W. & J. Fraser* (K., B.M.).
- 53, S. LINCS.; Pond near Medlam House, between Carrington and New Bolingbroke, 1945 (= *Simpson*, 165), *A. H. G. Alston* (B.M.).
- 64, MID WEST YORK; York, by the Ouse; *herb. Borrer* (K.).
- 68, CHEVIOTLAND; Roadside, Carham, planted, 1876, *A. Brotherston* (B.M.).
- 90, FORFAR; Barry Links, near Carnoustie, 1947, *K. H. Rechinger*, 28 (B.M.).
- 93, N. ABERDEEN; Wayside near Old Pitsligo, Rosehearty, 1927, *J. Fraser*, 687 (K.).
- H.3, W. CORK; Hare Island, (1947 or 1948), *P. J. Newbold* (K.).
- H.38, DOWN; Roadsides near Newtownards, 1945, *R. D. Meikle* (K.).
- EUROPE. Germany, Sweden, Denmark, cultivated or escape.

2. *SALIX STIPULARIS* Sm., 1803, *Eng. Bot.*, 1214.

Habit and height as in *S. calodendron*. Young shoots densely whitish-pubescent, older twigs brown, glabrous or subglabrous. Stipules as in *S. calodendron* but narrower, and often produced into a long subulate apex, margins glandular, sub-entire or inconspicuously denticulate. Petioles rather short, usually less than 1 cm. long, very shortly puberulous; lamina narrowly lanceolate, or linear-lanceolate, 10-13 cm. long, 1.5-2.5 cm. broad, gradually narrowed towards apex and base, thinly puberulous above, white silky below; leaf-margin very narrowly recurved, undulate but scarcely denticulate. ♀ catkins 4-5 cm. long, pedunculate; peduncles silky, with 2-4 thinly villous leaf-like bracts; catkin-scales narrower and more acuminate than in *S. calodendron*, light brown below, darker at apex; nectary as in *S. calodendron*; ovary subsessile or very shortly pedicellate, narrowly ovoid, 3-4 mm. long, closely white-silky; style almost 1 mm. long, stigma 2 mm. or more long,

filiform, tapering. ♂ catkins unknown, all records being based on erroneous identifications.

GREAT BRITAIN.

- V.-C. 13, W. SUSSEX; Osier-bed, Warnham, 1860, *H. Trimen* (B.M.).
 18, S. ESSEX; Walthamstow, by Lea Bridge, *herb. Borrer* (K.).
 19, N. ESSEX; Near Audley End, 1874, *Leefe* (K.).
 26, W. SUFFOLK; Bury St. Edmonds, *Smith* (K.).
 28, W. NORFOLK; Norfolk, 1805, *Mr. Crowe* (K.).
 41, GLAMORGAN; Swansea, cult. Shirley, Derby, 1893, *W. R. Linton*, Set of British Willows, no. 9 (K.).
 68, CHEVIOTLAND; Tweedside, Carham, 1874-76, *A. Brotherston* (B.M.).
 70, CUMBERLAND; Keswick, 1853, *herb. Borrer* (K.).
 72, DUMFRIES; Annan Water, Oakridge side, *J. T. Johnston* (B.M.).
 79, SELKIRK; Roberton Moss, Borthwickshiels, 1879, *A. Brotherston* (B.M.).
 80, ROXBURGH; Peatry Bog, 1874, *A. Brotherston* (B.M.). Side of Bowmont Water, above Prinside Mill, 1876, *A. Brotherston* (B.M.).
 81, BERWICK; Boggy ground at Coldingham Loch, 1877, *A. Brotherston* (B.M.).
 (85, FIFE; "Cultivated at Balmuto, from Rev. J. E. Leefe, 1877," *J. T. Boswell-Syme* (B.M.).)
 88, MID PERTH; Glen Lyon near Fortingal, 1894, *W. R. Linton* (B.M.), and ? from same locality, cult. Shirley, 1896, *W. R. Linton*, Set of British Willows, no. 84 (K.).
 90, FORFAR; Near Easthaven station, 1911 and 1912, *R. & M. Corstorphine* (K.).
 107, W. SUTHERLAND; Railway cutting, Helmsdale, *E. F. Linton* (B.M.).

EUROPE. Cultivated in Germany, Sweden and Western Russia.

3. *SALIX DASYCLADOS* Wimm., 1849, in *Flora* (Regensb.), 32, 25.

Habit and height as in *S. calodendron*. Young shoots densely white tomentose, older twigs dull or (rarely) rather lustrous dark brown. Buds acute, densely pubescent. Stipules conspicuous, narrowly reniform-acuminate, intermediate in appearance between those of *S. calodendron* and *S. stipularis*. Petioles 1-1.5 cm. long, flattened above, convex below, thinly pubescent; lamina lanceolate, (8) 11-13 (23) cm. long, 2-3 cm. wide, gradually narrowed towards apex and base, glabrous or subglabrous and rather glossy above, ashy-pruinose below and subglabrous except on midrib and nerves or very sparsely pubescent; leaf-margin narrowly recurved, inconspicuously undulate-denticulate. ♀ catkins 4-5 cm. long and 1 cm. broad, with short white-silky peduncles; bracts 2-4 small, ovate, thinly silky-villous; catkin-scales smaller than those of *S. calodendron*, obtuse or almost rounded above, rich brown with a darker apex, clothed with long, silky, white hairs; nectary as in *S. calodendron*; ovary sessile or very shortly stalked, narrowly ovoid, 3-4 mm. long, densely white-silky; style 1-2 mm. long, stigmas tapering, a little shorter than in *S. stipularis* but longer than in *S. calodendron*. ♂ catkins similar in shape and size to ♀, but perhaps a little more villose; stamens 2, filaments glabrous, 4-5 mm. long.

EUROPE. Germany; Austria; Czechoslovakia; Poland.

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- , 1853, Wildwachsende Bastardpflanzen, hauptsächlich in Schlesien beobachtet, *Denkschr. Feier fünfzigjähr. Besteh. Schles. Gesellsch.*
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