The Sorbus latifolia (Lam.) Pers. aggregate in the British Isles

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ABSTRACT

An account is given of Sorbus decipiens (Bechst.) Irmisch, S. subcuneata Wilmott, S. devoniensis E. F. Warb., S. croceocarpa P. D. Sell, sp. nov., S. bristoliensis Wilmott, S. latifolia (Lam.) Pers. and S. vagensis Wilmott. All are thought to have been derived from hybridization between S. aria (L.) Crantz sensu lato and S. torminalis (L.) Crantz and are characterized by their broad, grey-felted leaves and yellow, orange or brownish berries. Detailed descriptions are given of S. decipiens, S. croceocarpa and S. latifolia, and specimens seen are listed.

INTRODUCTION

Warburg (1962) and Warburg & Kárpáti (1968) have grouped together a number of species related to Sorbus latifolia (Lam.) Pers. They are characterized by having broad leaves grey-felted below and fruits yellow, orange or brownish when ripe. In these respects they are morphologically intermediate between S. aria (L.) Crantz sensu lato and S. torminalis (L.) Crantz and are almost certainly derived from hybridization. S. vagensis Wilmott is at least sometimes a fertile diploid, while the remainder are probably all apomictic and in most years produce copious fruit. Flavone O-glycosides have been found in S. torminalis and not in S. aria sensu lato or S. aucuparia L. (Challis & Kovanda 1978). Their presence in S. decipiens, S. bristoliensis and S. devoniensis supports a relationship between these species and S. torminalis.

There is a tendency for taxonomists working on apomictic groups to try to guess at the exact origin of the taxa. All the species described here almost certainly have as one parent the diploid S. torminalis. On purely morphological grounds it would seem to me that the large-leaved, usually large-fruited S. croceocarpa and S. devoniensis had as the other parent the diploid S. aria sensu stricto. In the case of S. devoniensis there would have to have been a doubling of chromosomes. The chromosome number of S. croceocarpa is unknown. The narrow-based leaves of S. subcuneata perhaps suggest that S. rupicola is the other parent. Its chromosome number has not been counted. The triploid S. bristoliensis with small, broad leaves could perhaps have as its other parent the tetraploid cytodeme of S. porrigentiformis. S. latifolia, which is diploid, presumably has as its other parent S. aria sensu stricto. Its leaves, however, are much nearer S. torminalis, S. vagensis is of the same origin and same chromosome number and has both its leaves and fruit nearest to S. torminalis. A similar tree grows on the calcareous plateaux of Burgundy and Lorraine and has been called S. confusa Gremli by the French. It is possible that these three taxa should be regarded as nothomorphs of a sexual hybrid, but until their biology is better understood I recommend that they are best treated as species. I do not know S. decipiens in its native habitat and do not care to make any guess as to its exact origin.

I agree with Warburg (1962) on the taxonomy of the local endemics. The introduced species, which until now have been referred to S. latifolia aggregate, are sorted out here; three clearly separable species are involved: S. decipiens, S. croceocarpa (which has had to be described as new) and S. latifolia sensu stricto. Detailed descriptions of these three species are given below. The best leaves to consider are on the short shoots although most leaves on a mature tree are adequate for this group of Sorbus.

Contrary to the usual procedure for rare species exact localities for the trees have been given. Whole trees cannot be put in a herbarium and a little pruning probably does no harm. On the other hand if the exact sites of the trees are not known they could easily be cut down without anyone being aware of their interest. S. decipiens (Bechst.) Irmisch in Petzold & Kirchner, Arbor. Muscav. 301 (1864).

Crataegus hybrida Bechst. in Diana 1: 81 (1797). Neotype: J. M. Bechstein, Forstbot., 5th ed, 321, taf. 7 (1843), designated here; non Sorbus hybrida L., Sp. Pl., 2nd ed., 684 (1762).

Pyrus decipiens Bechst., Forstbot. 236, 614 (1815), nom. nov. pro Crataegus hybrida Bechst., non Pyrus hybrida Moench, Verz. Ausland. Bäume 90 (1785).

Vernacular name: Sharp-toothed Whitebeam.

Illustration: Bechst., Forstbot., 5th ed., 321, taf. 7 (1843).

Description: Tree up to 10 m with a rather narrow crown. Trunk up to 1.3 m in circumference. Bark greyish-brown, fissured and cracked horizontally. Branches ascending and arching, the lower pendulous; twigs thick and rigid, dull brown or greyish-brown with numerous lenticels; young shoots paler brown, more or less tomentose, with numerous lenticels. Buds $6-10 \times 2-6$ mm, ovoid, acute at apex; scales green with a narrow brown margin, more or less tomentose. Leaves $(3-)4-12 \times 2-8$ cm, $1\cdot3-1\cdot8$ (-2.5) times as long as broad, dark green above, greyish-green beneath, turning deep yellow in October, elliptical or ovate, acute at apex, lobed up to 1/5 of the way to the midrib, serrate-dentate, the teeth at the end of the lobes larger than the adjacent ones, rounded to cuneate at the base, glabrous above, evenly but not densely tomentose beneath; veins 10-13 pairs; petiole 10-30 mm, tomentose. Inflorescence with 5-144 flowers, with a sweet sickly smell; pedicels 2-10 mm, tomentose at least when young. Sepals $2\cdot5-3\cdot5$ mm, triangular-lanceolate, acute at apex, tomentose. Petals $6-8 \times 4-5$ mm, subrotund or broadly ovate, concave. Stamens 18-24; filaments 4-8 mm, whitish; anthers greenish-cream. Styles 2, greenish, connate at base. Fruit 8-17 $\times 8-16$ mm, turning orange when ripe, ellipsoidal or subrotund, mostly longer than broad, but some slightly broader than long, with scattered large and medium lenticels.

I have had much trouble trying to determine the correct name of this species. It seems to have been first named Crataegus hybrida Bechst. in the journal Diana in 1797. Johann Matthaeus Bechstein (1757-1822) is mentioned neither in Stafleu & Cowan (1976) nor Lanjouw & Stafleu (1954), and I have been unable to find out if he has an extant herbarium. I eventually obtained photocopies of the relevant pages in the rare journal Diana from Freiburg, W. Germany, Bechstein starts off by saving the species originated as a hybrid between Crataegus (i.e. Sorbus) aria and Crataegus (Sorbus) torminalis and is more intermediate between these species than Crataegus hybrida L. Crataegus hybrida L. was published on page 557 of the Appendix to the second edition of Flora Suecica in 1761 from Gotland and Finland. The diagnosis is "Species hybrida e Sorbo 435 & Crataego 433, ut vix dicerem cuinam propius accedat", which translated says: "A species hybrid between Sorbus 435 and Crataegus 433, so that I would hardly like to say to which it approaches closer". This does not, in my opinion, constitute a validating description. Crataegus hybrida L. is thus a nomen nudum. Bechstein's plant must therefore be regarded as a valid and legitimate new species which comes from a mountain at Walterhausen near Gotha, E. Germany. The description is long and detailed and accurately fits the species under discussion. He then talks about there being two kinds, that in which C. aria is the male parent and whose offspring are nearer to C. torminalis, and that in which C. torminalis is the male parent and whose offspring are nearer to C. aria. The leaves illustrated on Taf.II, 1 and 2, are clearly those nearest to C. torminalis and I cannot see how they differ from the earlier described Sorbus latifolia (Lam.) Pers. They do not fit the description of C. decipiens, in particular as regards the doubly serrate margin. It cannot be argued that it is a bad drawing as such a margin is clearly illustrated as 3 (aria) on the same plate. A leaf (and plant) that clearly illustrates Bechstein's description and which is the plant under discussion, is given on taf. 7 of the fifth edition of Bechstein's Forstbotanik in 1843 as Pyrus decipiens. In normal circumstances two variants of a hybrid with the same parents must be included under the same binomial. In the genus Sorbus, however, apomixis is prevalent and many apomicts which probably have the same origin are given separate binomials. The International Code of Botanical Nomenclature does not really cover this point except perhaps in that H3.4 Note 1 says that taxa believed to be of hybrid origin need not be designated as nothotaxa. It would be useful to have an extension of this note to cover apomicts and to have an example. The exact reproductive method of the species under discussion and Sorbus *latifolia* is not known, but both seem to reproduce themselves and be morphologically stable as in other known apomictic species of Sorbus.

One is then faced with the typification of *Crataegus hybrida* Bechst. The illustrations on Taf. II of the Diana account must be regarded as syntypes, although they are clearly not the variant on which Bechstein placed most emphasis as they do not fit the detailed description. Article 7.8 of the International Code of Botanical Nomenclature states that "A neotype is a specimen or other element selected to serve as nomenclatural type as long as all of the material on which the name of the taxon was based is missing". Some let-out is needed to this in cases where a later author considers more than one taxon was included in a protologue. The truth of the matter is that when a description or diagnosis is included it is the most important part of a protologue and an author quite frequently placed emphasis on a particular plant so that it is often clear which specimen or illustration should be chosen as the lectotype. The late J. E. Dandy in fact used the term 'obligate lectotype'. In this case there are two taxa and no syntypes of the one on which the author places the most emphasis. It seems to me to be both illogical and unscientific to choose one of the figures in Diana as the lectotype, and I therefore designate Taf. 7 of the fifth edition of Bechstein's Forstbotanik as the neotype of Crataegus hybrida Bechst. I could have chosen the description as a lectotype, but in Sorbus the shape and toothing of a leaf are best indicated by a specimen or illustration. Although Bechstein was long dead, the author of the fifth edition of his work is most likely to know the plant he meant and it does accurately fit the description.

In the first edition of Bechstein's Forstbotanik Pyrus decipiens Bechst. is mentioned twice, on pages 236 and 614. In Pritzel (1871) the date of the first edition is given as 1810, but the copy at Kew (\mathbf{K}) is clearly dated on the title page as 1815. I suppose there is a possibility that the volume was issued in parts and that the first part was in 1810. If this is found to be true and that the diagnosis on page 236 is found to be in it, I propose that, as no synonyms are given, the same plate selected as the neotype of Crataegus hybrida also be designated as the neotype of Pyrus decipiens. However, there is no indication in the Kew copy that it was published in separate parts, so the total work is regarded as being published in 1815. On page 614, as Crataegus hybrida is given as a synonym, Pyrus decipiens is regarded as a new name, Pyrus hybrida Moench being already occupied in that genus. Its type is therefore the type of *Crataegus hybrida*. The long description and general account of the species that follows make it clear that Pyrus decipiens and Crataegus hybrida are the same thing with the same amount of variation. Irmisch's transference of Pyrus decipiens to Sorbus is also correct as Sorbus hybrida L. is already in use in that genus.

Sorbus decipiens is planted and has regenerated in the Avon Gorge, v.c. 6, (CGE) and has been collected from Ashtead Park, Surrey, v.c. 17, 4 Sept. 1949, A. E. Ellis (LANC), and on a railway cutting at Achnashellach, GR 28/014.488, W. Ross, v.c. 105, 15 August 1980, H. J. Killick & J. O. Mountford (CGE). There is a large tree in the Botanic Garden at Cambridge (Sell 82/255 in CGE) which fruits profusely every year. Doubtless it will be found planted elsewhere. It is a native of C. Europe in France and Germany. Pyrus latifolia var. decipiens, Pyrus rotundifolia var. decipiens and Sorbus latifolia var. decipiens, based on Pyrus decipiens, were wrongly applied to Sorbus subcuneata on the labels of many herbarium specimens.

Sorbus decipiens has dark green, shallowly lobed, cuneate-based leaves with sharp teeth, and orange fruits with scattered lenticels. It differs from S. subcuneata in its leaf toothing and fruit colour and from S. latifolia in its narrow-based leaves.

- S. subcuneata Wilmott in Proc. Linn. Soc. London 146: 76 (1934). Holotype: Greenaleigh Wood. near Minehead, S. Somerset, v.c. 5, 10 June 1914, E. S. Marshall 4027 (BM).
- S. minima × latifolia sensu E. S. Marshall in J. Bot. (Lond.) 54: 14 (1916); Pyrus latifolia var. decipiens auct.; Pyrus rotundifolia var. decipiens auct.; Sorbus latifolia var. decipiens auct.

Vernacular name: Slender Whitebeam.

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Description: see E. F. Warburg in A. R. Clapham, Tutin & E. F. Warb., Fl. Brit. Isl., 2nd ed., 436 (1962).

Distribution: v.c. 4, N. Devon. Waters Meet, near Lynton, 3 July 1850, C. C. Babington (CGE); 14 June 1906, A. Ley (CGE, NMW); 25 August 1917, W. C. Barton (CGE, K, NMW); 13 June 1956, H. Gilbert Carter (CGE); 28 June 1957, B. A. Miles (CGE); 7 June 1974, P. D. Sell 74/22, 74/25, 74/27 (CGE); 15 June 1974, O. M. Stewart (E); 20 September 1976, Q. O. N. Kay (UCSA). North facing slope above river, Myrtleberry Cleave, Lynmouth, GR 21/733.488, 20 September 1976, Q. O. N. Kay (UCSA); GR 21/743.489, 7 July 1978, J. Bevan (Herb. J.B.). Near Barnstaple, May 1933, Miss E. Young H1095 (K).

The following detailed information of trees seen in v.c. 4 is given by M. E. Proctor. All are in the 100 km Grid Square SS (21). Representative specimens are in CGE.

11 October 1984. No. 2. GR 7350.4880. Tall tree at 110 m altitude with western aspect, in oak wood, on east side of track, on right bank of East Lyn, about 100 m south of the New Bridge.

11 October 1984. No. 4. GR 7347.4889. Small tree at 100 m altitude with eastern aspect, on left bank of East Lyn, 26 m downstream (north) from the New Bridge.

11 October 1984. No. 5. GR c. 7345.4887. At 50 m altitude with eastern aspect, 20 m up slope on western side of path, on left bank of East Lyn near the New Bridge.

11 October 1984. No. 6. GR 7338.4900. Good tree 7 m with three trunks, at 90 m altitude with south-western aspect, on right bank of East Lyn, c. 15 m upstream from small picnic site near former Old Chiselcombe Bridge.

11 October 1984. No. 8. GR 7344.4901. Lowest of three trees at 100 m altitude with south-western aspect, c. 20 m up eastern edge of scree, just east (upstream) of former Old Chiselcombe Bridge on right bank of East Lyn.

11 October 1984. No. 31. GR c. 7345.4901. Second tree up eastern edge of scree, at 110 m altitude with south-western aspect, just east of former Old Chiselcombe Bridge on right bank of East Lyn, more in the oaks.

11 October 1984. No. 9. GR c. 7346.4902. Third tree up eastern edge of scree and further into the oaks, at 130 m altitude with south-western aspect, just upstream of former Old Chiselcombe Bridge on right bank of East Lyn.

15 October 1984. No. 1b. GR c. 7380.4870. At 120 m altitude with north-western aspect, between the path and left bank of the East Lyn, c. 200 m north-east of the limekiln and west of the Waters Meet water tank.

15 October 1984. No. 2. GR 7310.4878. Tall tree 12 m, and one sapling, at 180 m altitude with northern aspect, Barton Wood near the junction of the bridlepath and the footpath to Rockford from Waters Meet.

11 October 1984. No. 7. GR 7340.4876. Slender young tree, at 140 m altitude with eastern aspect, c. 20 m down path to East Lyn from the tarmac road, about 50 m north from Waters Meet Car Park.

15 October 1984 & 26 October 1984. No. 4. GR 7350.4884. Lowest tree on eastern side of scree at edge of the oaks at 130 m altitude with western aspect, on the scree opposite (north) the New Bridge over the East Lyn.

26 October 1984 & 14 June 1985. No. 2. GR 7336.4879. Tall tree at 60 m altitude with northern aspect, on left bank of East Lyn, c. 50 m upstream of Vellacott's Pool near Fisherman's Car Park. 26 October 1984. No. 34. GR 7333.4893. At 120 m altitude with northern aspect, on north of road between Myrtleberry Drive and top of path to East Lyn, c. 50 m north of Waters Meet Car Park. 26 October 1984. No. 35. GR 7333.4892. At 130 m altitude with northern aspect, on south of road opposite last locality.

15 October 1984. No. 27. GR 7348.4867. Tree c. 7 m high, with five trunks, two c. 15 cm in diameter, three 3-5 cm in diameter, six strides below a point 22 m east from large white rock by Horner Neck Wood boundary, along path from East Lyn to Raven Seat Farm, above Waters Meet House. 15 October 1984. No. 28. GR 7347.4867. Tree 8 m high, c. six strides below no. 27.

15 October 1984. No. 50. GR 7348.4866. Tree 5 m high, with a very slender single trunk c. 8 cm in diameter, around six strides south of no. 27.

15 October 1984. No. 51. GR 7348.4864. On knoll c. 18 strides south down slope from no. 27. 15 October 1984. No. 52. GR 7350.4870. c. eight strides below sharp bend in East Lyn to Ravens Seat path.

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15 October 1984. No. 3. GR 7406.4898. At 130 m altitude with southern aspect, north side of path on right bank of East Lyn near Crook Pool, Trilly Wood.

15 October 1984. No. 36. GR 7406.4895. Two trees at 130 m altitude, near the river on the right bank of the East Lyn near Crook Pool.

14 June 1985. No. 30. GR 7399.4855. At c. 250 m altitude with northern aspect, on Myrtleberry Hangings, Myrtleberry Cleave, East Lyn valley.

26 October 1984. No. 13. GR 6330.4854. c. 4 m tall with six trunks, at 60 m altitude with northern aspect, towards tip of Neck Wood near Trentishoe, on northeast side c. 3 m from sheer cliff, above *Taxus* in oaks and near Rowan.

26 October 1984. No. 40b. GR 6335.4843. c. 5 m tall at c. 100 m altitude, with northern aspect, rooted on a ledge c. 6 m down cliff to east, seen from the neck of Neck Wood, Trentishoe. At least two more trees near here.

30 January 1988. No. 40c. GR 6335.4843. Tree c. 4 m high with a slender sinuous trunk, near No. 40b. on the east side of neck of Neck Wood.

30 January 1988. No. 40a. GR 6335.4843. Tree c. 4 m high with slender sinuous trunk, between 40b and 40c.

17 October 1984. No. 12. GR 6740.4865. Inside bend of main road, c. 30 m west of Woody Bay Car Park near Inkerman Bridge, Martinhoe.

31 January 1988. No. 58. GR 6690.4940. Tree c. 4 m tall, with two trunks dividing into three c. 9 m above path, 101 m west of National Trust stile, West Woody Bay Wood.

31 January 1988. No. 59. GR 6691.4942. Small tree c. 3 m high, below the path, 90 m west of National Trust stile as above.

31 January 1988. No. 60. GR 6692.4943. Tree c. 5 m high with one trunk c. 12 cm in diameter, with dense branches, 3 m below path, 83 m from National Trust stile as above.

31 January 1988. No. 61. GR 6698.4940. Tree c. 5 m tall with one trunk c. 15 cm in diameter, dividing into four with dense branching, c. 2 m above path, 4 m from National Trust stile as last. 7 February 1988. No. 63. GR 6680.4945. Dense ovoid tree c. 4.5 m high, with two trunks c. 10 cm in diameter, on edge of sea-cliff, c. 20 m into oaks, at west end of West Woody Bay Wood.

v.c. 5, S. Somerset. Greenaleigh Wood area near Minehead, July 1874, T. B. Blow (CGE, E); 5 September 1894, R. P. Murray (CGE, LANC); 4 August 1898, C. E. Salmon (CGE); 12 June 1906, E. S. Marshall (CGE, E); 19 June 1906, S. H. Bickham & A. Ley (CGE, E, K, LANC); 15 June 1908, S. H. Bickham (CGE, NMW); 10 June 1914, E. S. Marshall 4026 (CGE, NMW, E); Sept. 1933, E. F. & J. W. Warburg (LANC); 1935, W. Butt (K); 17 June 1942, J. E. Lousley (K, RNG); 20 May 1953, N. Y. Sandwith 4087 (K, NMW); 5 September 1978, J. Bevan (Herb. J.B.).

v.c. 35, Mons. A single large tree with seven boles, found in Lady Park Wood, GR 32/547.144, on a B.S.B.I. Excursion on 18 September 1982, had some of its leaves resembling S. subcuneata. Leaves collected the following year were much more like S. vagensis. The only fruits seen were immature and like S. vagensis at that stage. To be sure one would like to see ripe fruits, but with present information I would prefer to call the tree S. vagensis. Specimens in Herb. J. Bevan.

S. subcuneata was originally identified as Pyrus latifolia var. decipiens, Pyrus rotundifolia var. decipiens or Sorbus latifolia var. decipiens. These names, however, are based on Pyrus decipiens Bechst. (= Sorbus decipiens (Bechst.) Irmisch), a native of France and Germany but recorded in Britain as a cultivated tree and naturalized in the Avon Gorge. The specimens collected by A. Ley at Waters Meet in 1906 and published by Marshall (1916) as S. minima × latifolia? are S. subcuneata.

At Minehead S. subcuneata grows in thickets on the rocky hillside from the edge of the town along the coastal cliffs to Greenaleigh Wood. The rock is Lower Lias. On the Devon coast it grows in oak woods above the cliffs in the Martinhoe and Trentishoe areas (fide M. E. Proctor). At Waters Meet it grows with S. devoniensis on the slopes of the East Lyn valley, by the river, on cliffs and on the margins of screes. In this locality it is on the Lower Old Red Sandstone. There is a single record from near Barnstaple.

S. subcuneata is a rather slender tree up to 8 m with elliptical or narrowly ovate leaves which are shallowly lobed in the upper two thirds. When young the leaves are greenish-white beneath, but they get greyer as they get older. They are always narrowed towards the base, which may be cuneate or rounded. The fruits are brown or brownish-orange when ripe. M. E. Proctor considers the fruits to be sometimes nearly orange, but I have not seen any that I would call pure orange, and certainly not the colour of S. bristoliensis, S. croceocarpa, S. decipiens or S. latifolia. From S. devoniensis it

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may be distinguished by its narrower leaves with more tapered base and whiter lower surface, and the rather smaller, narrower, more orange and somewhat translucent fruits. Where S. devoniensis and S. subcuneata grow together at Waters Meet, they can be distinguished by the density of the canopy. S. devoniensis has a dense crown through which little or no sky can be seen and S. subcuneata a much more open crown through which much sky can be seen. Additionally, when the leaves are newly expanded and raised by a light breeze, the whiter lower surfaces separate S. subcuneata from S. devoniensis.

S. devoniensis E. F. Warb. in Watsonia 4: 46 (1957). Holotype: c. 1/4 mile from Hoo Meavy, S. Devon, v.c. 3, 28 September 1934, E. F. Warburg 115 (BM).

Vernacular names: French Hales, Devon Whitebeam.

Illustration: A. R. Clapham, Tutin & E. F. Warb., Ill. 2: 26, no. 650 (1960).

Description: see E. F. Warburg in A. R. Clapham, Tutin & E. F. Warb., Fl. Brit. Isles, 2nd ed., 436 (1962).

Distribution: v.c. 2., E. Cornwall. Bushy hedgebank, Bridgerule West, 31 May 1882, W. Moyle Rogers (BM); Rogers (1886) gives three localities "Between Marhamchurch and Titson", "About half a mile from N. Tamerton, on the Bridgerule Road, in two or three places", "Tetcott, several together in wooded lane south of the church". Beardon, Boyton, 12 October 1881, T. Archer Briggs (BM) (cf. Briggs 1881). Margetts & David (1981) say there are no subsequent records for Cornwall to the three given above. However, in 1986 they refound it at Bearden, GR 20/305.935, (CGE), though repeated searching in the Marhamchurch area had no success.

v.cc. 3 & 4. S. & N. Devon. A detailed account of the distribution in v.cc. 3 and 4 is given in Keble Martin & Fraser (1939) as S. latifolia. A map of the present distribution is given in Ivimey-Cook (1984).

The following detailed Devon localities have been supplied by M. E. Proctor. All the Grid References are in the 100 km square SS (21). Specimens are in CGE.

17 October 1984. No. 6. GR 6665.4935. Small tree, 120 m altitude with north northeastern aspect, 50 m west of Hollow Brook, c. 4 m above lower coast path, Martinhoe.

17 October 1984. No. 5. GR 6720.4895. 6 m tall, one trunk, c. 20 cm diameter, at 80 m altitude with northeastern aspect, top of cutting on outside of bend on road to Martinhoe Manor.

17 October 1984. GR c. 672.491. c. ten trees at c. 60 m altitude with northeastern aspect, in windblown area of West Woody Bay Wood, Martinhoe.

7 February 1988. No. 62. GR 6682.4945. Slender tree in a gorse bush, 30 m below path, c. 4 m west of Woody Bay Wood.

7 February 1988. No. 64. GR 6685.4945. Big sprawling tree c. 5 m high, at cliff edge, top of gully, c. 30-40 m into Woody Bay Wood.

31 January 1988. No. 56. GR 6690.4943. Tree c. 5 m high with several trunks and a dense crown, 108 m west of National Trust stile, near the path from Hollow Brook Beck through Woody Bay Wood.

31 January 1988. No. 57. GR 6690.4940. 103 m west of National Trust stile, see no. 56.

26 October 1984. No. 8. GR 6720.4880. c. 6 m tall with seven trunks, at 200 m altitude with northeastern aspect, 250 m along Old Coast Road from gate at bend on road, west of Inkerman Bridge, north of track, near Martinhoe.

10 June 1985. No. 41. GR 6742.4860. Small tree at 210 m altitude with north-eastern aspect, 50 m uphill from first bend on south side of road west of Inkerman Bridge.

6 August 1985. No. 37. GR 7390.4955. About 1.5 m tall with one trunk, at 140 m altitude with northern aspect, c. 50 m below small *Acer pseudoplatanus* to east and above a point 50 m west of top of zigzag on path to Sillery sands, Lynmouth.

26 October 1984. No. 38. GR 6325.4843. Small tree at 60 m altitude with south-western aspect, on western side of and well below top of waterfall on western side of Neck Wood, Trentishoe.

26 October 1984. No. 39. GR 6327.4842. At 90 m with northern aspect, above waterfall, western side of Neck Wood, Trentishoe.

26 October 1984. No. 11. GR 6331.4844. c. 5 m tall with six trunks, at c. 120 m altitude with western aspect on c. 40° slope, c. 20 m north along 'neck' and 3 m down, western side of Neck Wood, Trentishoe.

11 October 1984. No. 1. GR 7341.4879. Large old tree with split trunk at 150 m altitude with eastern aspect, top of path to East Lyn from road, c. 50 m north from Waters Meet Car Park at 'No Parking' site.

11 October 1984. No. 3. GR 7347.4884. c. 3 m tall with one trunk, at 100 m altitude with eastern aspect, 2 m above the New Bridge over the East Lyn, on the left bank between the river and the footpath.

11 October 1984. No. 10. GR 7341.4878. Separate small tree, at 150 m altitude with eastern aspect, adjacent to no. 1, top of path to East Lyn from road, c. 50 m north from Waters Meet Car Park. 15 October 1984. No. 8. GR 7365.4866. Tree c. 11 m growing out of rocks c. 2 m above path on right bank of East Lyn above Waters Meet.

7 February 1988. No. 70. GR 7367.4866. Near no. 8., but c. 10 m upstream and 6 m below path. 15 October 1984. No. 9. GR 7365.4865. Tree c. 12 m high, below path and no. 8 and c. 4 m from the East Lyn.

7 February 1988. No. 71. GR 7365.4864. Just before a large rock outcrop below path, south-west of no. 8.

7 February 1988. No. 72. GR 7362.4865. Tree c. 7 m, growing out of rock 2 m above path, near no. 8.

7 February 1988. No. 73. GR 7361.4864. To west of no. 72.

7 February 1988. No. 74. GR 7363.4865. Tree c. 10 m, opposite outcrop, just below path.

15 October 1984. No. 11. GR c. 7360.4885. At c. 200 m altitude with western aspect, just below Raven Nest viewpoint in Horner Neck Wood, East Lyn valley.

15 October 1984. No. 24. GR c. 7352.4884. c. 3m tall, at 130 m altitude with western aspect, above path between Raven Nest and riverside track and on ridge near scree opposite New Bridge.

15 October 1984. No. 25. GR c. 7350.4883. Good 15 m tree at 130 m altitude with western aspect, in oaks, south of scree above New Bridge between riverside track on right bank and higher narrow footpath.

26 October 1984. No. 6. GR 7374.4868. About 7 m tall with six trunks, at 120 m altitude with northern aspect, c. 100 m east of the limekiln on the left bank of the East Lyn, 3 m up the slope on the eastern side of the path.

11 October 1984. No. 26. GR 7343.4901. Tall tree at 120 m altitude with southern aspect, near top of western side of scree above former Old Chiselcombe Bridge near Picnic site.

3 January 1988. No. 54. GR 7344.4901. Near western side of scree above former Chiselcombe Bridge near no. 26.

3 January 1988. No. 55. GR 7344.4901. Young tree c. 60 cm, below no. 54.

14 October 1984. No. 29. GR 7390.4857. At c. 250 m with northern aspect, on Myrtleberry Hangings in Myrtleberry Cleave, East Lyn valley.

v.c. 71, Man. Specimens collected on 18 June 1987 by T. C. G. Rich from a large tree in a wood in an old quarry near Ballasalla, GR 24/267.701, during a B.S.B.I. field meeting have been provisionally (but almost certainly) identified as *S. devoniensis*, but ripe fruits are required for confirmation.

v.c. H6, Co. Waterford. Near the shrine, on the road to Dunmore, Tramore, 18 August 1975, L.F. & I.K. Ferguson 3426 (CGE, DBN).

v.c. H11, Co. Kilkenny. Bank of River Nore, 2 miles above Kilkenny, 20 May 1926, R. A. Phillips (DBN). By the Waterford Road near New Ross, just within Co. Kilkenny, 13 June 1952, N. Y. Sandwith 3989 (K). Roadside near Rosbercon, 29 May 1909, M. C. Knowles (DBN).

v.c. H12, Co. Wexford. In native scrub with Ash, Oak, Thorn, Hazel, Willow and Poplar, along the shores of the estuary, Pilltown, 18 Sept. 1921, A. W. Stelfox (DBN). Pilltown estuary, 25 May 1958, H. J. Hudson (DBN). Roadside near Pilltown House, about 4 miles due south of New Ross, 5 July 1962, N. D. Simpson & C. West (CGE). Roadside, north end of New Ross, Aug. 1932, R. L. Praeger (DBN). Hedgerow 1 mile south of New Ross, on west side of river, 5 May 1971, D. A. Webb (TCD). One fair-sized tree on the east side of the road c. 1 km north of New Ross, 23 May 1981, D. A. Webb (TCD). Pilltown, 11 Aug. 1958, S. M. Walters (TCD).

v.c. H13, Co. Carlow. Carrigleade Wood, near Craignamangh, 16 October 1934, M. O'Leary (DBN).

v.c. H38, Co. Down. Below bridge at Raleagh, east of Ballynahinch, 31 August 1986, W. J. Harron (sterile); fruit from same tree, 24 Oct. 1987 (both in CGE).

S. devoniensis has broad, shallowly lobed, grey-tomentose leaves and large, rounded, brown to orange-brown fruits. It is distinguished from S. subcuneata by its larger, rounded-based leaves, dense crown and usually larger, browner fruits. The fruits, however, vary in size, the smaller remaining more orange when ripe, but duller than in S. subcuneata (fide M. E. Proctor). The leaves of S. croceocarpa are very similar to S. devoniensis, but are even more shallowly lobed, have more veins and the teeth terminating the main veins are broader. The fruits of S. croceocarpa are bright orange or reddish-orange when ripe.

Several trees at Waters Meet, near Lynton, Devon have the leaves sharply and more deeply lobed. It has been suggested that these are either a distinct taxon, called *admonita* by E. F. Warburg, or a variant of *S. subcuneata*, but they have the broad rounded leaf base and dense crown of *S. devoniensis* and are in my opinion best included in that species. The apparently native distribution of this endemic species in the south-western peninsula of Great Britain and south-eastern Ireland is interesting and further consideration needs to be given to the trees in Co. Down and Isle of Man. It does not seem to be a tree which is much planted.

A plant grown from seed of a specimen of typical S. devoniensis collected at Waters Meet and examined by Q. O. N. Kay was tetraploid with 2n = c. 68.

Sorbus croceocarpa P. D. Sell, sp. nov. Holotype: The Mound, Lleiniog, Anglesey, v.c. 52, GR 23/ 620.791, 1 October 1980, R. Hattey L2 (CGE).

Vernacular name: Orange-berried Whitebeam.

Illustration: Ross-Craig, Draw. Brit. Pl. 9: 33 (1956) as S. latifolia.

S. devoniensis E. F. Warb. affine, a quo foliis lobatis obscurioribus, venis lateralibus numerosioribus, fructibus maturescentibus croceis differt. Ab S. latifolia (Lam.) Pers. quo nomen id plerumque false cognita, foliis magnioribus obtusiore serratis venis lateralibus numerosioribus distinguibilis.

Arbor ad 21 m alta, corona lata rotundata compacta adornata. Truncus ad 1.7 m in ambitu. Cortex griseo-brunnea, aspera, vade fissurata. Rami patentes vel ascendentes; ramuli griseobrunnei, crassi; ramuli hornotini rubro-brunnei, plus minusve tomentosi pilis arachnoideis vestiti, lenticellis subrotundis ellipticis numerosis praediti. Gemmae 5-12 mm longae, 4-7 mm latae, ovoideae; squamae virides marginibus angustis brunneis. Folia 7.5-15 cm longa, 5.5-12 cm lata, $1\cdot 2-1\cdot 6(-1\cdot 8)$ -plo longiora quam lata, supra hebete obscure viridia, subtus griseo-viridia, in Octobris aurescentia, utiliter ovata, interdum elliptica, rare obovata, apice plus minusve acuta, basi utiliter late rotundata interdum late cuneata, duplicato-serrata dentibus latis acuminatis (sed obtusiusculis) nervos primarios terminantibus prominentibus, aliis multo minoribus, aliquot folia lobis vadis, supra glabra, subtus aequaliter tomentosa pilis arachnoideus vestita; vena laterales utrinque (8-) 9-11; petioli 1.5-3.5 cm longi, plus minusve tomentosa pilis arachnoideus vestiti. Inflorescentia floribus 8–85, dilute odoratis; pedicelli 5–27 (-40) mm longi plus minusve tomentosi pilis arachnoideis vestiti. Sepala 2–3 mm longa, triangulari-ovata, apice plus minusve acuta, plus minusve tomentosa pilis arachnoideis vestita. Petala 6-9 mm longa, $5\cdot0-6\cdot5$ mm lata, late ovata, acetabuliformes. Stamina 18-22; filamenta 7-10 mm longa, albiuscula; antherae cremeae. Styli 2, viridiusculi, basi connati. Fructus 11-22 mm longus, 11-16 mm latus, subglobosus vel leviter longior quam latus vel leviter latior quam longus, maturescens flaviusculo-croceus vel saturate croceus interdum rubro-complano, lenticellis parvis mediocribusque numerosis et basin versus paucis maxima praeditus.

Tree up to 21 m with a broad, rounded, compact crown. Trunk up to 1.7 m in circumference. Bark greyish-brown, rough, shallowly fissured. Branches patent or ascending; twigs greyish-brown, thick; young shoots reddish-brown, more or less tomentose, with numerous subrotund and elliptical lenticels. Buds $5-12 \times 4-7$ mm, ovoid; scales green, with narrow brown margins. Leaves $7 \cdot 5-15 \times 5 \cdot 5-12$ cm, $1 \cdot 2-1 \cdot 6$ ($-1 \cdot 8$) times as long as broad, dull dark green above, greyish-green beneath, becoming deep yellow in October, mostly ovate, sometimes elliptical, rarely obovate, more or less

acute at apex, usually broadly rounded, sometimes broadly cuneate at base, doubly serrate with broad prominent, acuminate (but rather blunt) teeth terminating the main veins, the other teeth much smaller, some leaves often with very shallow lobes, glabrous on upper surface, evenly tomentose on lower surface; veins (8-) 9–11 pairs; petioles 1.5–3.5 cm, pale green to reddishbrown, more or less tomentose. Inflorescence with 8–85 flowers, with a faint, sweet smell; pedicels 5–27 (-40) mm, more or less tomentose. Sepals 2–3 mm, triangular-ovate, more or less acute at apex, more or less tomentose. Petals $6-9 \times 5-6.5$ mm, broadly ovate, concave. Stamens 18–22; filaments 7–10 mm, whitish; anthers cream. Styles 2, greenish, connate at base. Fruit 11–22 × 11–16 mm, subglobose, or slightly longer than broad or broader than long, ripening yellowish-orange or deep orange, sometimes flushed red, with numerous small and medium lenticels and a few larger ones towards the base.

In all specimens of which I have seen living ripe fruit they are bright orange. They are marked below with an asterisk. T. C. G. Rich has seen a tree in which the fruits are brown and the leaves of which neither he nor I can distiguish from S. croceocarpa. It is marked below with a dagger. The taxonomic position of this tree is not clear, but for the present it is best included in S. croceocarpa. Local recorders should attempt to establish fruit colours of those records based on pressed specimens.

Distribution: v.c. 6, N. Somerset. *A large tree, Leigh Woods, Avon Gorge, 30 June 1957, P. J. M. Nethercott (OXF); still there (GR 31/561.733) with saplings nearby, 1980, C. M. Lovatt. Lovatt also records other trees by the Leigh Woods quarries at GR 31/564.739, 31/559.744 and 31/558.744. v.c. 11, S. Hants. In a plantation, West Meon, 3 June 1935, A. N. Cater (BM); 1 September 1935, E. C. Wallace (RNG).

v.c. 17, Surrey. Near Burgh Heath, 30 July 1916, C. E. Salmon (BM, RNG) (see Salmon, Fl. Surrey 303 (1931) as S. latifolia); 4 June 1935, E. C. Wallace (E,K) as S. latifolia var. decipiens; 3 June 1939, A. E. Ellis (LANC). Leatherhead Downs, 16 July 1916, J. Fraser (K); 13 June 1935, E. C. Wallace (Herb. J. Bevan). Appearing quite wild in scrub, mainly Crataegus, with S. aria & S. intermedia, north side of Leatherhead – Tothill Road, near Tyrell's wood, 15 May 1957, A. E. Ellis (LANC). Between Leatherhead and Mickleham Downs, near Tyrell's wood, 4 October 1949, A. E. Ellis (LANC). Woodland Addington Hills, 12 July 1942, A. E. Ellis (LANC). *Planted Cameron Road, Croydon, 1986, T. C. G. Rich 320-86 (Herb. T.C.G.R.). (Specimens in LANC, from Leatherhead Downs, 1938, A. E. Ellis, suggest S. latifolia sens. strict. also grows there, but the specimens appear to be from young hedgerow saplings and I cannot be sure. Yet another specimen from 1939 may be a hedgerow S. decipiens.)

v.c. 20, Herts. Opposite Preston School, in the grounds of Temple Dinsley, Hitchin, 11 June 1912, J. E. Little (CGE) as Pyrus aria.

v.c. 29, Cambs. *A tree 14 m high, beside Grange Farm Bridge, GR 53/296.085, 9 July 1955, A. O. Chater (CGE); 17 October 1986, R. Payne (CGE). *Tree c. 8 m planted on roadside outside 118, Brooks Road, Cambridge, GR 52/475.577, 9 October 1982, R. D. l'Ons (CGE). *On Cambs. bank of Old South Eau, near Falls Bridge, GR 53/275.092, 17 October 1986, R. Payne (CGE). *Planted near Ely railway station, GR 52/543.794, 19/7/1986, C. D. Preston; ripe fruits 19/10/1986, C. D. Preston & T. C. G. Rich (CGE).

v.c. 32, Northants. Two trees presumably planted, east side of Bedford Purlieus, 25 July 1955, S. M. Walters (CGE); 6 August 1958, J. Rishbeth (CGE).

v.c. 33, E. Gloucs. Haresfield Hill, near Stroud, 28 September 1934, H. J. Riddelsdell (BM).

v.c. 34, W. Gloucs. *Tree at back of Clifton Parish Hall, 13 June and 21 October 1935, H. S. Thompson (BM, OXF, K, RNG); still there 1980 (C. M. Lovatt, pers. comm.). *Tree c. 14 m high, Bridge Valley Road, by the Portway, GR 31/564.734, with frequent seedlings round about, 1980, C. M. Lovatt; this is presumably the same tree labelled Avon Gorge, collected by Mr Lavender (OXF); 16 May 1957, P. J. M. Nethercott (OXF) and 8 September 1960, B. A. Miles 60/133 (CGE). *Planted tree 40-50 years old Durdham Downs, Bristol, GR 31/561.749, 2 November 1980, C. M. Lovatt. Nethercott (1988) writes: "There is one large tree in Leigh Woods and several other small trees and saplings on both sides of the Avon Gorge. A small number of trees, from large to saplings are present in Sneyd Park, of which a few of the large trees have been felled in the course of residential development. There are two large trees on Durdham Down and a sapling on Tickenham Hill. The population in the Bristol area probably arose from the planted trees in Sneyd Park." *Symonds Yat,

E. F. Warburg. A small tree so labelled was found in E. F. Warburg's garden after his death and was transplanted to the University Botanic Garden at Cambridge where it now flowers and fruits freely (*Sell 77/249* (CGE)).

v.c. 40, Salop. Old mine workings, Wombridge, GR 33/690.117, August 1974, F. H. Perring (CGE). Lincoln Hill, Coalbrookdale, GR 33/669.039, Oct. 1985, W. E. Wiggins (CGE). Numerous trees up to 5 m tall, mostly in scattered clumps along rim of old limestone quarry. Self-sown Laburnum also present, together with older and larger Beech, Ash, Oak, Sycamore and some Hazel. The geology is the Wenlock series of the Silurian.

Beverley Pit Mound, near Oakengates, GR 33/688.108, Oct. 1985, W.E. Wiggins (CGE). Many specimens, ranging from young saplings c.1m to three older (30–40 years) trees which must be the parents. These form a small copse with *Betula pendula* of similar age and stature. Where self-seeding (prolific) has occurred the ground vegetation is pure *Calluna vulgaris* with occasional self-sown *Crataegus monogyna*. The soil is a clay loam with a pH 3·9.

v.c. 44, Carms. One tree by roadside near Carreg Cennen (road from Derwydd) GR 22/65.19, 21 May 1970, Mrs I. M. Vaughan (NMW) (cf. Watsonia 9: 380 (1973) as S. latifolia).

v.c. 46, Cards. *One large tree 21 m high with a trunk 130 cm in girth, copse by lane and stream, 100 m E.S.E. of Rhosgellan-Fawr, Wallog, GR 22/597.855, 10 July 1977 (vegetative), 5 October 1980 (fruiting), A. O. Chater (CGE). S. latifolia (Lam.) Pers. is also planted in this locality.

v.c. 49, Caerns. *Nantporth Nature Reserve (North Wales Naturalists' Trust), GR 23/570.720, October 1977, S. Ward 1-3 (CGE); 1 October 1980, R. Hattey 4 (CGE). R. H. Roberts (pers. comm.) says there are a number of young trees there and the site appears to be more acid than the Anglesey ones. Edge of shore, west of University boathouse, Menai Straits, Bangor, GR 23/ 567.723, 19 September 1985, T.C.G. Rich (Herb. T.C.G. R.).

v.c. 51, Flints. Caergwrle Castle rocks, 30 September 1942, J. A. Webb (NMW).

v.c. 52, Anglesey. *There are ten to twelve trees up to 14 m high with trunks up to 70 cm in girth on and about the Mound, Lleiniog, GR 23/620.791. R. H. Roberts (in litt., 1980) says the Mound is a hillock of very calcareous boulder-clay, which incorporates pebbles and boulders of Carboniferous Limestone, and that several calcicole species such as *Rubia peregrina* occur there. Roberts goes on to say that the trees of *Sorbus* on the Mound are clearly of different ages, grow in a more or less random fashion and certainly do not suggest having been planted in what is a wild unfenced area of ground. In addition to the mature trees there are several seedlings.

*A few trees also occur in a narrow belt of woodland around 200 m to the south-west (GR 23/ 617.791) and there are two or three younger ones on the cliff above the beach further south (GR23/ 618.787). Both these areas are calcareous boulder-clay. R. Hattey, writing to me on 7 November 1980, says "Regarding the conservation of *S. croceocarpa*: since a good concentration of the species (around a dozen trees) occurs on the Anglesey shore side of the Menai Straits and is now included in the extended Friar's Road Shore Site of Special Scientific Interest, this is the obvious population to try to conserve. The owner, as I mentioned I think, has a large mature specimen of *S. croceocarpa* (my sample *LG*) in her garden; she believes that the adjacent population was derived from this tree, which she says was planted about 50 years ago." There are specimens of these trees in CGE collected by R. H. Roberts and S. D. Ward (*no. 1, 2, 3, 5, 5c*) on 13 October 1977 and by R. Hattey (*LG, L1–* 4) on 1 October 1980.

*Hedgerows in lane leading to Tyddyn Isaf, near Gaerwen, GR 23/502.717 and 23/504.714, October 1977, G. Howells & R. H. Roberts nos. 1-4 (CGE). Roberts says that the soil in this locality is a brown loam and is generally acidic, with a pH 5.5 to 5.8.

Limestone outcrop between Llanfairpwll and Brynsiencyn, GR 23/496.682, 6/1979, R.H. Roberts. *Two small trees on Church Island, Menai Bridge, GR 23/552.718, 1 October 1984, R.H. Roberts. v.c. 58, Cheshire. Small tree in wood, Newton, near Chester, 12 August 1936, C. Waterfall (OXF, BM, RNG) (cf. Rep. botl Soc. Exch. Club Br. Isl. 11: 400 (1937); ibid 11: 476 (1938) as S. latifolia); not refound, 1983, A. Newton (pers. comm.).

v.c. 60, W. Lancs. †One fruiting shrub c.4 m tall, (five shrubs in all), limestone pavement, Warton Crag, Carnforth, GR 34/495.726, 12 September 1983, M. Baecker, L. Rose & T. C. G. Rich (Herb. T.C.G. R.). Youngish shrub, c.2 m, edge of limestone pavement, Scout Wood, Silverdale, September 1983, T. C. G. Rich (Herb. T.C.G. R.). Yealand Hall Allotment, Silverdale, September 1983, M. Baecker (Herb. T.C.G. Rich).

v.c. 64, Mid-W. Yorks. Cultivated Skipton, 1983, L. Rose (Herb. T.C.G. Rich).

v.c. 69, Westmorland. Large tree in limestone field with outcrop, west side of Leighton Beck, Cold Well, Hazelslack, GR 34/477.782, 12 August 1986, G. Halliday (LANC).

v.c. 69b, Furness. Young shrub on shore near Roanhead, Dalton-in-Furness, 14 June 1985, M. Baecker (Herb. T.C.G. Rich).

v.c. 80, Roxburghs. One large tree c.14 m, by the main road (A6091) at Melrose, GR 36/54.34, 18 July 1959, P. D. Sell 59/31, N. D. Simpson & C. West (CGE).

v.c. 96, Easterness. Among alders etc., by a burnside between Loch-an-Eilean and Aviemore, September 1909, E. Armitage (OXF). Planted near the farm, Glen Affric Lodge, GR 28/1.2, 23 July 1971, M. McCallum Webster (CGE).

v.c. 99, Dunbarton. Delmuir, 26 May 1883, L. Watt (CGE).

v.c. 103, Mid Ebudes. Planted near Pennyghael, Mull, 22 May 1971, A. G. Kenneth & A. McG. Stirling (BM) (see Jermy & Crabbe, Island of Mull 11.26 (1978), as S. latifolia).

This species will be known to most British botanists from the note by Warburg (1962), where he refers to it as an allied form of Sorbus devoniensis, rather frequently planted and sometimes naturalized. It has, however, been known to gardeners for a much longer period. The Lawson Company of Edinburgh were offering 'Pyrus theophrastii' as early as 1874. It appeared in the 3rd and 4th editions of the Hand-list of trees and shrubs at Kew (Hill 1925; Bean 1934) as Pyrus aria var. Theophrasta and Sorbus aria var. theophrasta, but no descriptions were given. In Pierre Lombarts' Beschrijvende Prijscourant of 1947-8 it was called Sorbus theophrasta, but only a few descriptive words in Dutch were given. The name is thus invalid under Art. 36 of the International Code of Botanical Nomenclature, K. J. W. Hensen has described it as Sorbus devoniensis cv. Theophrasta in Dendroflora 3: 62, fig. 1 (1966). The type is a plant received from the Dutch nurseryman, P. Lombarts, which originally came from a tree at Kew (no. 695), which in turn was received from the Edinburgh Botanic Garden in 1922 as S. aria var. theophrasta. The tree at Edinburgh still exists, as does its offspring at Kew, but is of unknown provenance. In the fourth volume of edition 8 of Bean's Trees and Shrubs it is called Sorbus 'Theophrasta', and an excellent account of it as a garden tree is given. The epithet 'Theophrasta' means 'food of the gods', in reference to its large and abundant fruit.

In my opinion this taxon is not a cultivar as is generally understood by the term, but is as distinct as any other of the apomictic species of *Sorbus*. For this reason I wish to dissociate it from the gardeners' epithet *Theophrasta* and to give it the new name of *S. croceocarpa*, based on the population of trees occurring in a natural habitat by the Menai Straits but almost certainly introduced. I have listed all the known localities for it, but fully expect it to be found elsewhere. Nowhere is it known with certainty as a native plant. There is some indication that in Cambridgeshire it has been planted as a street tree.

Sorbus croceocarpa is nearest to S. devoniensis in the shape of its leaves, but they have more numerous veins and are less distinctly lobed. Warburg's statement (1962) that the leaves are scarcely ever lobed is misleading. At least some leaves on nearly every specimen or tree I have seen have some shallow lobing, but it is not as clear-cut as in S. devoniensis. The illustration given by Henson (1966) also seems to over-emphasize the non-lobing of the leaves. The clear orange, sometimes flushed red, fruits are quite distinct from those of S. devoniensis which are brown turning orange-brown. The fruits of the true S. latifolia are similar to those of S. croceocarpa, but usually have fewer, larger lenticels, and the leaves are quite distinct, being smaller, more ovate, distinctly lobed and with fewer veins.

S. bristoliensis Wilmott in Proc. Linn. Soc. London 146: 76 (1934). Holotype: Clifton Down, Bristol, W. Gloucester, v.c. 34, 16 September 1933, A. J. Wilmott 3980 (BM).

Vernacular name: Bristol Whitebeam.

Illustration: A. R. Clapham, Tutin & E. F. Warb., Ill. 2: 25, no. 648 (1960).

Description: See E. F. Warburg in A. R. Clapham, Tutin & E. F. Warb., Fl. Brit Isl., 2nd ed., 435 (1962).

P. D. SELL

Distribution: Endemic to rocky woods and scrub on Carboniferous Limestone crags and slopes on both sides of the Avon Gorge near Bristol. Trees are difficult to count, but P. J. M. Nethercott reckons there might be about a hundred with more on the Leigh Woods side than on the Clifton side.

S. bristoliensis has more or less obovate leaves which are shallowly lobed mainly above the middle with a broadly cuneate base, which distinguish it from all the other species of British Sorbus with berries which are yellow or orange when ripe. The glossy leaves are almost translucent in bright sunlight, like those of Fagus sylvatica, especially when they are young.

Warburg (1962) records this species as being triploid, 2n = 51.

S. latifolia (Lam.) Pers., Syn. Pl. 2: 38 (1806).

Crataegus latifolia Lam., Fl. Fr. 3: 486 (1779). Lectotype: Prés. dans la forêt de Fontainebleau, France, Herb. Lamarck (P), designated here.

Pyrus latifolia (Lam.) Syme in Rep. botl Soc. Exch. Club Br. Isl. 1872-4: 19 (1875).

Illustration: Keble Martin, New Concise Br. Fl. pl. 31 (1982).

Description: Tree up to 20 m with a broad pyramidal crown. Trunk up to 1.3 m in circumference. Bark greyish-brown, rough, shallowly fissured. Branches patent, the lower often drooping; twigs strongly divaricate, greyish-brown, thick; young shoots reddish-brown, more or less tomentose, with scattered elliptical lenticels. Buds $8-10 \times 4-5$ mm, narrowly ovoid; scales green, with narrow brown margins. Leaves $(6\cdot 8-)8-11\cdot 5 \times (6-)7-9\cdot 2$ cm, $1\cdot 1-1\cdot 3$ times as long as broad, dark green above, greyish beneath, becoming deep ochre in October, broadly ovate, acute at apex, usually broadly rounded, sometimes broadly cuneate at base, shallowly lobed (up to 1/4 of the way to the midrib) with broadly triangular, acute lobes, the lowest lobes often patent, doubly serrate with prominent, acuminate teeth terminating the main veins, the other teeth smaller but acute or acuminate and sometimes with curved sides, glabrous or with very occasional hairs on upper surface, rather evenly, but not very densely tomentose on lower surface; veins 7-9 pairs; petioles 1.5-3 cm, pale green to reddish-brown, more or less tomentose. Inflorescences with 10-50 flowers, with a sweet sickly smell; pedicels 2-10 mm, tomentose at least when young. Sepals 2.5-3.5 mm, triangular-ovate or lanceolate, more or less acute at apex, tomentose. Petals $6-10 \times 5-7$ mm, subrotund or ovate, concave. Stamens 18-22; filaments 4-8 mm, whitish; anthers greenish-cream. Styles 2–3, greenish, connate at base. Fruit $14-17 \times 15-17$ mm, subglobose or slightly longer than broad, yellowish-orange to deep orange when ripe, with few to numerous mostly rather large lenticels.

Distribution: v.c. 6, N. Somerset. Leigh Woods, C. M. Lovatt (pers. comm.).

v.c. 10, Wight. Planted in interior of Carisbrooke Castle, September 1869, P. Stratton (BM, OXF). v.c. 17, Surrey. Single tree near the Keeper's Cottage, Box Hill, 30 August 1934, E. F. Warburg (BM). One sapling on steep slope, south side of Box Hill, July 1985, T. C. G. Rich (herb. T.C.G. R.). Kew Gardens, 28 October 1938, A. E. Ellis (LANC).

v.c. 22, Berks. In grassland, Windsor Home Park, 25 September 1933, C. E. Hubbard (K).

v.c. 23, Oxon. Oxford Botanic Garden, October, 1911, G. C. Druce (CGE, NMW, OXF).

v.c. 29, Cambs. Two large trees about 13 m high in the grounds of Newnham College, Cambridge, GR 52/441.577, 6 October 1977, P. D. Sell 77/250 (CGE) (in fruit); flowers from the same tree 29 May 1979, P. D. Sell 77/250b (CGE).

v.c. 33, E. Gloucs. Plantation edge, Clapton to Sherborne, 12 September 1935, H. J. Riddelsdell (K).

v.c. 34, W. Gloucs. Single old tree above tennis courts on a steep slope with *Pinus nigra* nearby, Clifton Down, 18 September 1966, S. M. Walters (CGE). The Gully, Clifton Down, Avon Gorge, 7 July 1957, P. J. M. Nethercott (OXF). On rocks above the New Zigzag, near Bridge Valley Road, Bristol, 8 September 1960, B. A. Miles 60/135 (CGE). Both sides of the Avon Gorge, P. J. M. Nethercott (Nethercott 1980).

v.c. 46, Cards. Seven large trees apparently planted in a line, in a copse immediately north-west of Rhosgellan-Fawr farmyard, 4 km N.N.W. of Aberystwyth, 45 m alt., GR 22/5972.8555, October 1980, A. O. Chater (CGE).

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v.c. 61, S. E. Yorks. Two large bushes, not obviously planted, on 60° chalk cutting slope of railway, Sewerby, Bridlington, GR 54/195.696, 9 August 1977, J. O. Mountford (CGE).

v.c. 62, N. E. Yorks. York, W. Ingham (NMW).

v.c. 63, S. W. Yorks. Old tree in Weston Park, Sheffield, GR 43/339.873, October 1985, C. D. Pigott (CGE).

v.c. 83, Midlothian. Near Logan House, Pentlands, May 1866, A. Craig-Christie (E). Glencorse, 31 July 1868, A. Craig-Christie (E).

v.c. 86, Stirlings. Single tree, not obviously planted, at S.W. corner of water basin east of Police Station, Grangemouth. GR 26/923.822, 7 October 1987, C. D. Preston, N. F. Stewart & S. D. Webster (CGE).

v.c. 96, Easterness. Single tree in a lane between Croy village and Holme Rose, 10 October 1966, M. McCallum Webster (ABD, CGE). Almost certainly planted, on the rough river-bank, Ness-side, 8 August 1931, G. C. Druce & R. H. Corstorphine (K, NMW, OXF). Island in River Ness, Inverness, 29 September 1930, Mrs Wedgwood (BM); The Islands, GR 28/664.439, 20 June 1947, U. K. Duncan (E).

v.c. 97, Westerness. Planted Arisaig, August 1903, H. J. Riddelsdell (E).

v.c. 106, E. Ross. One fine old tree about 14 m high by the Conan River, about a mile above the bridges, near Conan, 10 August 1892, E. S. Marshall (BM, CGE); and 16 July, 1909, E. S. Marshall 3370 & W. A. Shoolbred (BM, CGE, E, GL, K, LANC, NMW, OXF) (cf. Marshall 1910; Marshall & Shoolbred 1910). U. K. Duncan (1980) says the tree is no longer there and remarks that the record by Marshall of S. aria (L.) Crantz from the same locality probably refers to the same tree. This is not true as there are perfectly good specimens of S. aria in CGE collected as Marshall 3371 from the same locality on the same date.

Sorbus latifolia was first described as Crataegus latifolia Lam. A clear description of the species is supplied and Crataegus folio subrotundo, serrato vel laciniato Vaill. Paris. 42 is given as a synonym. The locality is given as "On trouve cet arbre dáns la forêt de Fontainebleau". I wrote to Paris on 30 October 1980, requesting photographs of any type material in the herbaria of Lamarck and S. Vaillant. I received photostat copies of three specimens in Lamarck's herbarium, but nothing from that of Vaillant. All three sheets from the Lamarck herbarium are labelled Crataegus latifolia and come from Fontainebleau, but bear no date. They are, in my opinion, all the same taxon and must be regarded as syntypes of Crataegus latifolia Lam. I have designated one of the sheets as the lectotype of that species.

Sorbus latifolia has a broadly ovate leaf with few veins, and shallow, but definite lobes which become gradually smaller upwards and have small sharp subsidiary teeth. The fruit is yellowishorange to deep orange when ripe and has rather few large lenticels. It has been gathered by later authors in the woods about Fontainebleau, where it is a native characteristic of sandstone block ridges (fide C. D. Pigott, specimen in CGE). It is the least frequently planted tree that has been called *S. latifolia* in the British Isles. The new species, *S. croceocarpa*, described in this paper, is the species most frequently called *S. latifolia* in Britain. The largest tree of the true *S. latifolia* in the grounds of Newnham College at Cambridge is about 13 m high and the trunk 149 cm in circumference. The seven trees at Rhosgelan-Fawr in Cardiganshire are up to 20 m high and the trunks are from 60 to 130 cm in girth (fide A. O. Chater). As the species occurs in native habitats, as in Leigh Woods and Clifton Downs near Bristol and by the Conan River in E. Ross, where it has probably been bird-sown, it seems wise to include it in the list of British naturalized trees. Its characteristic leaf-shape and lobing distinguish it from all other British species.

According to Poucques (1951) the Fontainebleau *Sorbus latifolia* is diploid with 2n = 34 and its pollen mostly poorly developed. Nevertheless it produces abundant well-formed fruit.

S. vagensis Wilmott in *Proc. Linn. Soc. London* 146: 78 (1934). Holotype: large tree just inside Mrs Harris's tea garden, Symonds Yat, W. Gloucester, v.c. 34, 18 September 1933, *A. J. Wilmott* 4492 (BM).

Vernacular name: Wye Whitebeam

Illustration: Proc. Linn. Soc. London 146: 78 (1934).

Description: See E. F. Warburg in A. R. Clapham, Tutin & E. F. Warb., Fl. Brit. Isl., 2nd ed., 436 (1962).

Distribution: v.c. 6, N. Somerset. Weston Big Wood, GR 31/45.75, 1968, J. F. Archibald (D. Ratcliffe, Nat. Conserv. Rev. 2: 69 (1977)). Three trees were seen by P. J. M. Nethercott in 1978 (Nethercott 1980). Two coppiced trees, Kings Wood, Yatton, 1984, P. J. M. Nethercott (Nethercott 1986).

v.c. 34, W. Gloucs. Coldwell Rocks, near Symonds Yat, Oct. 1877, B. M. Watkins (CGE, OXF); 24 July 1916, E. Armitage (NMW); Sept. 1935, E. F. Warburg (BM); 5 Sept. 1956, B. A. Miles (CGE). Bicknor Walks, Symonds Yat, 9 June 1874, A. Ley (CGE); 23 June 1877, A. Ley (E); June, 1888, E. Armitage (NMW); 27 Oct. 1892, A. Ley (E, OXF); 13 June 1899, A. Ley (BIRM). Below the Symonds Yat Rock, 29 Sept. 1975, P. D. Sell 75/139 & D. Briggs (CGE). Symonds Yat, June 1871, A. Ley (CGE); 12 Aug. 1872, A. Ley (E); 25 May 1875, A. Ley (CGE, E, K); 12 Oct. 1882, A. Ley (NMW); 13 June 1899, A. Ley (E, K, NMW, OXF); 12 June 1901, W. A. Shoolbred (NMW); 8 June 1907, S. H. Bickham & A. Ley (CGE); May 1909, A. Ley (K). Woods near Stanton, 28 June 1881, A. Ley (CGE).

v.c. 35, Mons. The Wyndcliffe, 23 June 1873, A. Ley (BIRM); 9 June 1878, W. A. Shoolbred (NMW); 25 June 1894, W. A. Shoolbred (NMW); 20 Aug. 1903, S. H. Bickham (CGE, E); Sept. 1935, E. F. Warburg (BM). Near Well Head, Usk Road, Chepstow, 7 June 1909, W. A. Shoolbred (NMW). Near Temple Door, Piercefield Park, 23 June 1932, A. J. Wilmott (BM).

v.c. 36, Herefs. Great Doward, 1880, B. M. Watkins (CGE); 11 June 1888, A. Ley (CGE); Sept. 1935, E. F. Warburg (BM).

S. vagensis has ovate to elliptical or rhombic-elliptical leaves variously lobed from 1/7 to over 1/4 of the way to the midrib with a finely serrate margin with small teeth. The fruit is brownish-orange to brown with a few small to moderate lenticels and variable in size.

The area of the Wye valley in which most S. vagensis occurs is one of the few places where its presumed parents, S. aria sensu stricto and S. torminalis, grow together. Warburg (1962) gives the diploid chromosome number, 2n = 34. Although the species is variable and can apparently be either sterile or fertile and sexual I have seen no Continental material that matches its morphology exactly. It is therefore, at least for the time being, best treated as a species.

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The late E. F. Warburg went through all the CGE material with me and gave his opinion of the S. *latifolia* aggregate. It was in accord with the conclusions I have reached here, except that he had not typified S. *latifolia* and S. *decipiens* and had no name for S. *croceocarpa*. M. E. Proctor has allowed me to include much of the detailed work she has done on S. *devoniensis* and S. *subcuneata* in Devon. Other contributors were: R. K. Brummitt, A. O. Chater, R. W. David, R. Hattey, C. King, P. J. M. Nethercott, C. D. Preston, T. C. G. Rich, R. H. Roberts, N. K. B. Robson, C. Turner, S. M. Walters and D. A. Webb, to all of whom I extend my thanks. I am also grateful to the curators of ABD, BM, E, K, LANC, NMW and OXF for the loan of specimens, and the librarian of the Albert Ludwigs University, Freiburg, for assistance.

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