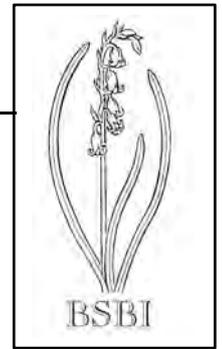


# Plant Crib



## SORBUS

### 1. General

Warburg's (1962) account of the British species is the major source of reference, with the following four exceptions:

- i) The *S. latifolia* group, which has been monographed by Sell (1989).
- ii) *S. × thuringiaca* (Ilse) Fritsch and *S. × pinnatifida* auct. (*S. hybrida* auct., non L.), which are widely confused. The latter is probably much the commoner taxon, distinguished by the distant pair of leaflets at the base of the leaf (Richards 1975).
- iii) The *S. porrigentiformis* group which has been investigated by Proctor & Groenhof (1992).
- iv) *S. domestica*; see Hampton & Kay (1995) and below.

The most important characters for identification are leaves and fruits; the best time to identify *Sorbus* is thus in the autumn, though with experience they can be identified any time once the leaves are mature (young leaves tend to be thinner and light green). Flower characters may also be useful but have not been fully investigated. It is important to select the correct leaves on a plant:

- i) Examine two or three of the broadest leaves from the whorls on the short, lateral shoots if possible (ignore the narrowest leaves); descriptions refer to these unless otherwise stated. Leaves from the leading shoots are more variable. Leaves on inflorescence shoots, often collected with the flowers, are more variable. Sucker shoots from the base of the stem are often quite different to all other leaves.
- ii) Examine leaves from sunny positions on the outside or top of the canopy if possible. Shade leaves are often easier to reach but are more variable (e.g. shaded *S. intermedia* leaves may have free lobes at their base).



Branch of *Sorbus* showing short, lateral shoots

When pressing leaves, leave them attached to the short lateral shoots and turn at least one over to show tomentum on the back (sometimes easiest when the plants have wilted in the press for a few hours; leaves wilted out of the press tend to shrivel and distort). Leaf length:width ratios exclude the petioles.

The shape, size and coloration of ripe fruits, and the distribution of lenticels (small, white scabs on the fruit surface) also provide important characters. When examining fruits, select the largest fruits (there are often two sizes present) and note length and width, and the distribution of lenticels before pressing. Estimating length:width ratios by eye can be surprisingly inaccurate. Colour is difficult to describe consistently, and it may be best to use RHS colour charts. When counting veins, count the total number of veins on a leaf and divide by two. Average at least five and round to nearest whole number.

# Plant Crib

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## Geographic lists

This “key” lists, under very general groupings, the taxa found in various regions. This may be useful as a short cut to identification, but be aware that some taxa may be more widespread than current knowledge suggests. There are local accounts of *Sorbus* for Arran (Bignall 1980), Lancashire/Cumbria (Halliday 1997; Rich & Baecker 1986, 1992) and Torbay (Proctor & Proctor 1990); further local accounts would be invaluable. Frequent, widespread or common species are underlined, rare or very localised taxa in *italics*.

1a. Leaves simple (margins toothed), hairy below

South-east England: *S. aria*, *S. croceocarpa*.

South-west England: *S. croceocarpa*, *S. porrigentiformis*, *S. aria*, *S. rupicola*, *S. vexans*, *S. wilmottiana*, ‘Taxon D’.

Northern England: *S. aria*, *S. rupicola*, *S. lancastriensis*, *S. croceocarpa*.

Ireland: *S. aria*, *S. rupicola*, *S. hibernica*.

Scotland: *S. aria*, *S. rupicola*, *S. croceocarpa*.

Wales: *S. aria*, *S. croceocarpa*, *S. porrigentiformis*, *S. rupicola*, *S. eminens*, *S. leptophylla*.

1b. Leaves lobed (margins toothed), hairy below

Eastern England: *S. aria*, *S. intermedia*, *S. croceocarpa*, *S. latifolia s.s.*, *S. decipiens*.

South-west England: *S. aria*, *S. intermedia*, *S. devoniensis*, *S. croceocarpa*, *S. latifolia s.s.*, *S. anglica*, *S. subcuneata*, *S. bristoliensis*, *S. vagensis*, *S. decipiens*.

Northern England: *S. aria*, *S. intermedia*, *S. croceocarpa*, *S. devoniensis*, *S. latifolia s.s.*, *S. devoniensis*.

Ireland: *S. aria*, *S. intermedia*, *S. anglica*, *S. devoniensis*.

Scotland: *S. aria*, *S. intermedia*, *S. arranensis*, *S. croceocarpa*, *S. decipiens*.

Wales: *S. aria*, *S. intermedia*, *S. anglica*, *S. vagensis*, *S. leyana*, *S. minima*, *S. croceocarpa*, *S. latifolia*.

1c. Leaves lobed or pinnate, ± glabrous

England and Wales: *S. aucuparia*, *S. torminalis*, *S. domestica*.

Ireland and Scotland: *S. aucuparia*.

## Key to groupings

In the following accounts, the taxa have been grouped according to the following artificial key and the group numbers refer to the numbers of the accounts for ease of reference.

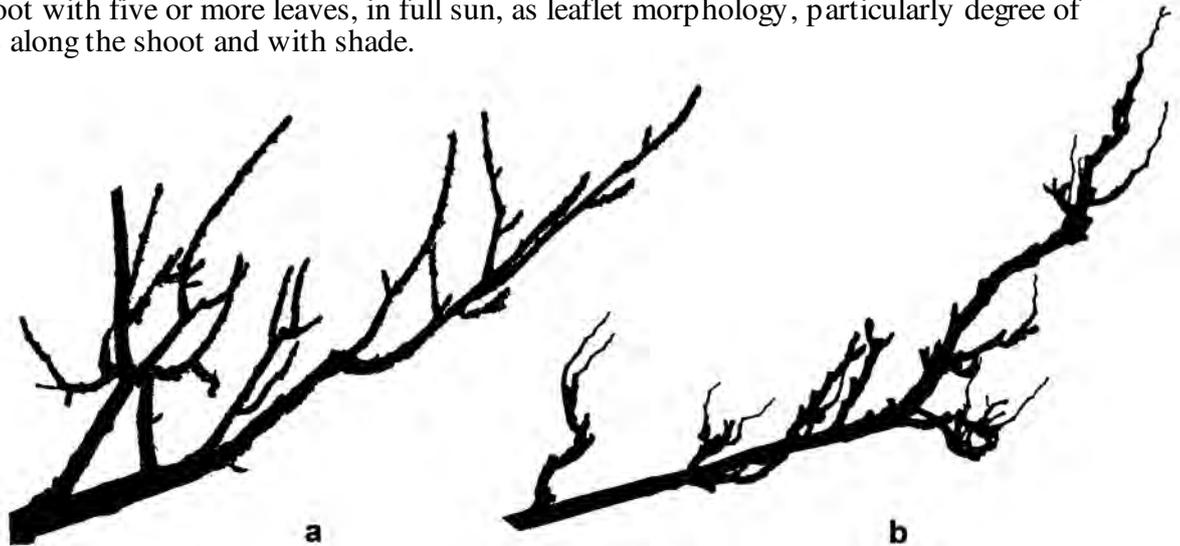
- |   |   |  |
|---|---|--|
| 1 | Leaves with at least one free lobe/leaflet at base  | 2  |
| 1 | Leaves lobed to simple, without any lobes/leaflets free at base   | 3  |
| 2 | Leaves regularly pinnate with 4 or more pairs of leaflets   | Group 2. <i>S. aucuparia</i> / <i>S. domestica</i> |
| 2 | Leaves with 1-2 free lobes/leaflets at base   | Group 3  |
| 3 | Leaves simple (margins toothed)   | Group 6. <i>S. aria</i> aggregate                  |
| 3 | Leaves lobed  | 4  |
| 4 | Leaves glabrescent; veins 4-6 pairs; ripe fruits brown  | <i>S. torminalis</i> (L.) Crantz                   |
| 4 | Leaves hairy, at least below, veins 7-14 pairs; ripe fruits yellow, orange, red or brownish                             | 5  |
| 5 | Leaves broad, grey-felted below, lobes usually acute, shallow, veins 7-13 pairs; ripe fruits yellow, orange or brownish | Group 4. <i>S. latifolia</i> agg.                  |
| 5 | Leaves narrow, grey tomentose beneath, lobes rounded to acute, shallow to deep, veins 7-10 pairs; ripe fruits red       | Group 5. <i>S. anglica/intermedia</i> agg.         |
| 5 | Leaves white beneath, lobes rounded, shallow, veins 8-14 pairs; ripe fruits red   | Group 6. <i>S. aria</i> agg.                       |

# Plant Crib

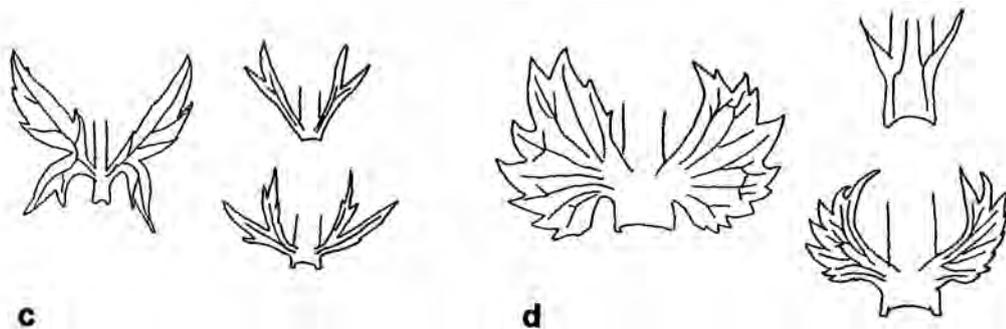
## 2. *Sorbus domestica* / *S. aucuparia*

The recent discovery of *S. domestica* in two sites in S Wales (Hampton & Kay 1995; Hampton 1996) and three in Gloucestershire suggests that there could be other sites in the south and west or even possibly Ireland. All known populations occur on sea or estuarine cliffs where characters visible from a distance or through binoculars are valuable. Further, the irregular flowering and very rare mature fruiting of *S. domestica* increases the importance of vegetative characters. Plants should be looked for on south-facing limestone or rocky cliffs and slopes (*S. aucuparia* is uncommon in these situations), usually in semi-shade and associated with ancient woodland.

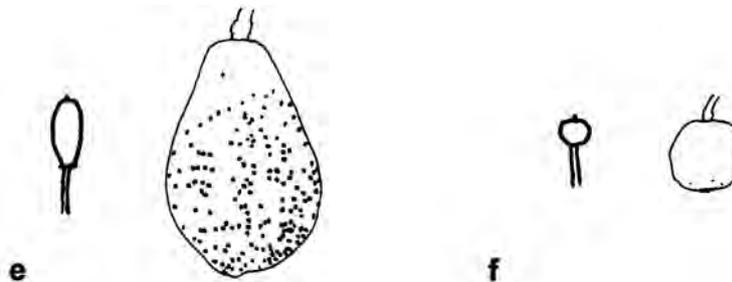
All characters in the Table on the following page are for the apparently native plants, utilising unshaded, mature material unless otherwise stated. Leaves should be sampled as above, using the third leaf up a sterile short-shoot with five or more leaves, in full sun, as leaflet morphology, particularly degree of serration, varies along the shoot and with shade.



Branch morphology of (a) *Sorbus domestica*, (b) *S. aucuparia*



Stipules (c) *Sorbus domestica*, (d) *S. aucuparia*



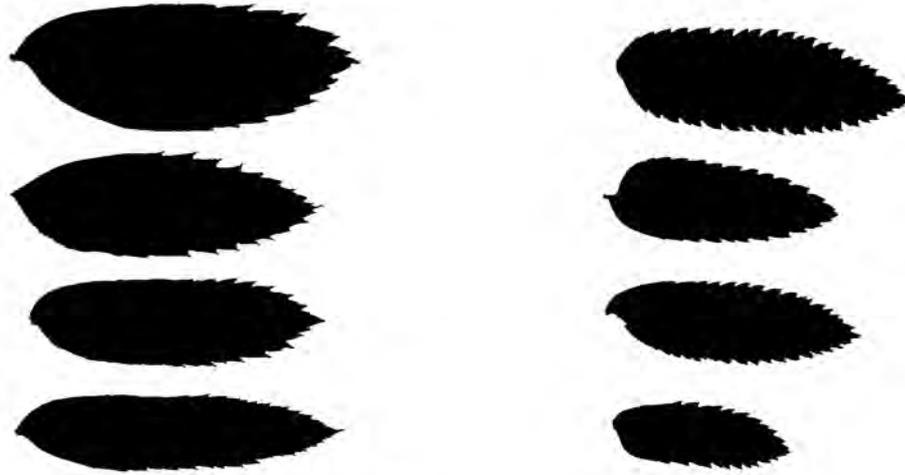
Ovaries and fruits (e) *Sorbus domestica*, (f) *S. aucuparia*

# Plant Crib

	<i>Sorbus domestica</i> L.	<i>Sorbus aucuparia</i> L.
Habit	Small tree (up to 20 m+ in cultivation) usually on soils of pH above 7	Small tree usually on soils of pH less than 6.5
Bark	On trunk and lower branches deeply and narrowly fissured, sharply flaking	On trunk and branches smooth, greyish, sometimes with vertical fissures at base in aged trees
Mature flowering branches	Mostly on short shoots, not or rarely retaining main inflorescence peduncle through winter; fertile short shoots not thickened below, frequently wholly abscised; branches which flower repeatedly of constant diameter (Fig. a)	Mature flowering branches usually showing some alternate long shoot growth; main inflorescence peduncle retained in winter; base of fertile short shoots thickened, often forming 'chains' of sympodially linked fertile shoots (Fig. b)
Long shoots	Arising at mean angle of c. 60°, spreading; only central leaders, epicormic shoots and suckers ascending	Arising at mean angle of c. 30-40°, usually ascending and upswept
Buds	Ovoid, glabrous and viscid, shining, green or pale brown, scales 4-9; fertile buds opening before sterile buds	Conical on smooth stems, tomentose, especially on scale margins, dark brown or purplish, scales 2-5; fertile and sterile buds opening simultaneously
Young leaves	Emerging sterile shoot leaves silvery tomentose, visible from a distance especially in sun	Emerging leaves pastel green; hairy
Stipules	6-14 mm, initially simple, strap-like, viscid, soon divided at or below half-way (Fig. c), usually dropping early, but some can usually be found, especially on epicormic or basal shoots, and then larger and further divided	Initially lanceolate, later fan-shaped (Fig. d), persistent on long shoots
Leaves	Leaves often pale green or yellowed, finely pubescent above, with arachnoid hairs below; rachis green; leaflets 9-17; clusters of longer arachnoid hairs mixed with glandular papillae which occur along the rachis between leaflet pairs are frequently divided into 2 clumps; leaflets entire along ± first half of margin, the teeth usually closer together nearer tip; narrowing into outwardly curved acuminate apices (Fig. g); epidermal cells around stomata on lower leaf epidermis with central papillae flanked by radiating ridges, so that 5-6 papillae surround each stoma; no conspicuous 'collar' ridge present around stoma	Leaves usually mid to dark green, often red-tinged, glabrous above; rachis often red or red-tinged at least above; leaflets 9-15; clusters of hairs and glandular papillae forming a single cluster or fringe between the leaflets; leaflets entire along first quarter of margin, teeth equally spaced and without acuminate apices (Fig. h); epidermal cells around stomata on lower leaf epidermis with sinuous median ridges but lacking papillae; stoma with 'collar' ridge
Inflorescence	A lax corymbose panicle up to 120 mm across with 40-80 flowers; inflorescence enlarging before leaves, but subtended by expanding leaves at flowering	A flat-topped dichasially cymose panicle up to 100 mm across with 50-400 flowers; inflorescence enlarging with leaves
Flowers	15-18 mm wide; corolla urceolate, ovate, frequently reddish below; styles 5(-7)	6-10 mm wide, corolla narrowly urceolate; styles 3-4
Fruits and ovaries	Ovaries pyriform at anthesis, narrowing into pedicel (Fig. e); mature fruit rare, 18-25 mm wide, ovoid or pyriform, green, with few lenticels (in wild plants), often red on sunny side	Ovaries globose or ovoid at anthesis, not narrowing into pedicel (Fig. f); mature fruit 6-9 mm wide, globose, bright red, freely produced

# Plant Crib

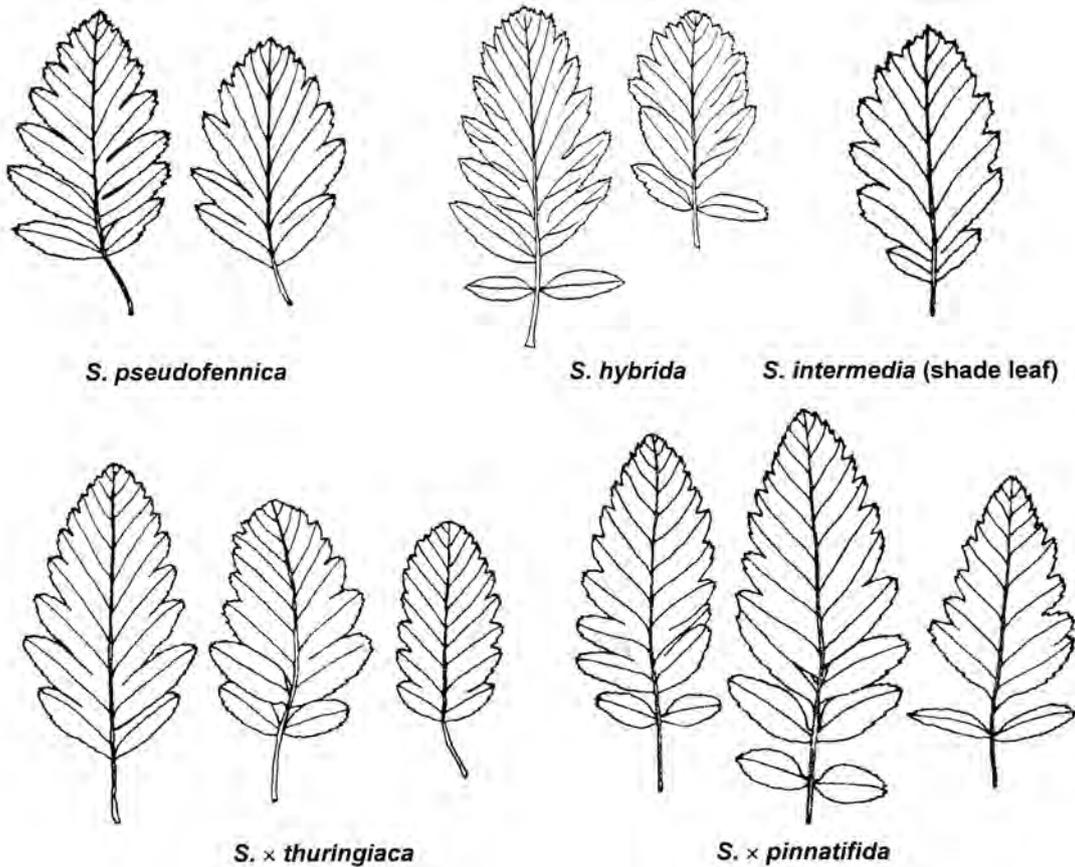
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Leaflets (g) *Sorbus domestica*, (h) *S. aucuparia*

Author M. Hampton, January 1998.

## Group 3. *Sorbus*, taxa with leaves with 1-2 free lobes at base of leaf



## Group 3. *Sorbus* species with at least one free lobe at base (not to scale)

# Plant Crib

- S.* × *pinnatifida* auct. (? *S. intermedia* × *S. aucuparia*): Leaves ± lanceolate, length (1.5-)1.8-2.3(-2.4) times width; lowest pair of leaflets usually distant; veins 9-13 pairs. Often planted, rarely naturalised.
- S.* × *thuringiaca* (Ilse) Fritsch: Leaves ± elliptic, length (1.5-)1.6-2.2(-2.4) times width; veins (including free leaflets) (9-)10-12(-13) pairs. Probably rare in wild and gardens.
- S. pseudofennica* E. F. Warb.: Leaves ± ovate, length (1.3-)1.5-1.7(-2.2) times width; veins 7-9(-10) pairs. Arran (V.c. 100) only.
- S. intermedia* (shade leaves): Leaves ± elliptic, length (1.5-)1.6-1.8(-1.9) times width; veins 7-9 pairs. Widely planted and naturalised.
- S. hybrida* L.: Leaves ± ovate, length (1.2-)1.4-1.7(-1.9) times width; veins 8-10 pairs. Rare escape.
- S. leyana* (shade leaves only): Leaves ± ovate, length 1.4-1.7(-1.9) times width; veins 5-7 pairs. Brecon (V.c. 42) only.

## Group 4. *Sorbus latifolia* aggregate

### Key to *S. latifolia* agg. with leaves and fruits

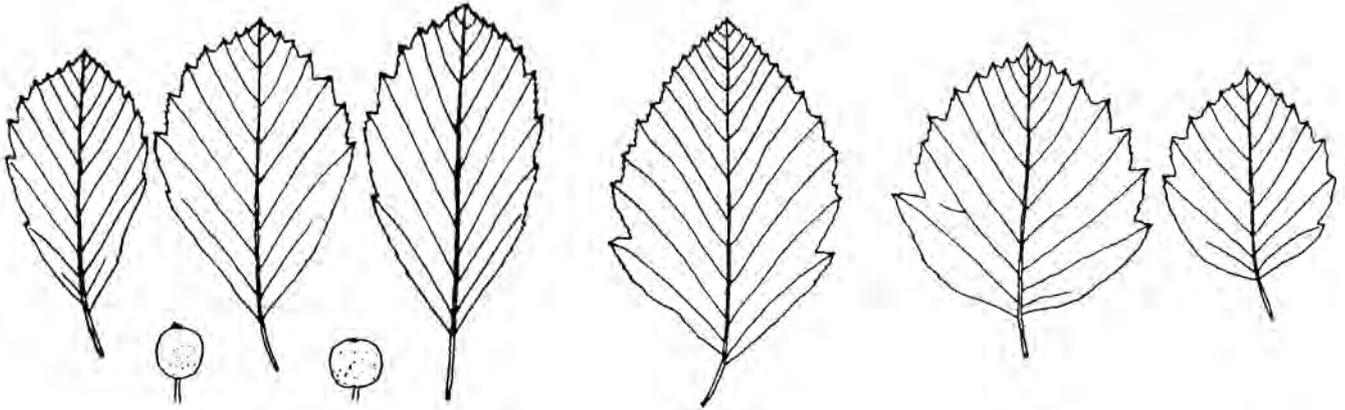
- |   |   |                         |
|---|---|-------------------------|
| 1 | Ripe fruits yellow to orange  | 2                       |
| 1 | Ripe fruit brown to brownish orange   | 5                       |
| 2 | Leaves narrowly to broadly cuneate or narrowly rounded at base                              | 3                       |
| 2 | Leaves truncate, broadly rounded to rounded at base (sometimes some leaves broadly cuneate) | 4                       |
| 3 | Veins (7-)8-9(-10) pairs  | <i>S. bristoliensis</i> |
| 3 | Veins 10-13 pairs   | <i>S. decipiens</i>     |
| 4 | Leaf length 1.2-1.6(-1.8) times width   | <i>S. croceocarpa</i>   |
| 4 | Leaf length 1.1-1.3 times width   | <i>S. latifolia</i>     |
| 5 | Leaf bases cuneate to narrowly rounded  | <i>S. subcuneata</i>    |
| 5 | Leaf bases truncate, broadly rounded or rounded   | 6                       |
| 6 | Ripe fruit 10-15 mm, lenticels numerous   | <i>S. devoniensis</i>   |
| 6 | Ripe fruit 7-12 mm, lenticels few   | <i>S. vagensis</i>      |

### Key to *S. latifolia* agg. based on leaves alone

- |   |   |                         |
|---|---|-------------------------|
| 1 | Leaves narrowly to broadly cuneate or narrowly rounded at base                              | 2                       |
| 1 | Leaves truncate, broadly rounded to rounded at base (sometimes some leaves broadly cuneate) | 4                       |
| 2 | Leaves obovate  | <i>S. bristoliensis</i> |
| 2 | Leaves ovate to elliptical  | 3                       |
| 3 | Veins 10-13 pairs   | <i>S. decipiens</i>     |
| 3 | Veins (6-)8-9(-10) pairs  | <i>S. subcuneata</i>    |
| 4 | Leaf length 1.1-1.3 times width   | <i>S. latifolia</i>     |
| 4 | Leaf length 1.2-1.7(-2.1) times width   | 5                       |
| 5 | Leaves simple or shallowly lobed  | <i>S. croceocarpa</i>   |
| 5 | Leaves lobed up to ¼ way to midrib  | 6                       |
| 6 | Leaf base rounded   | <i>S. devoniensis</i>   |
| 6 | Leaf base broadly cuneate   | <i>S. vagensis</i>      |

# Plant Crib

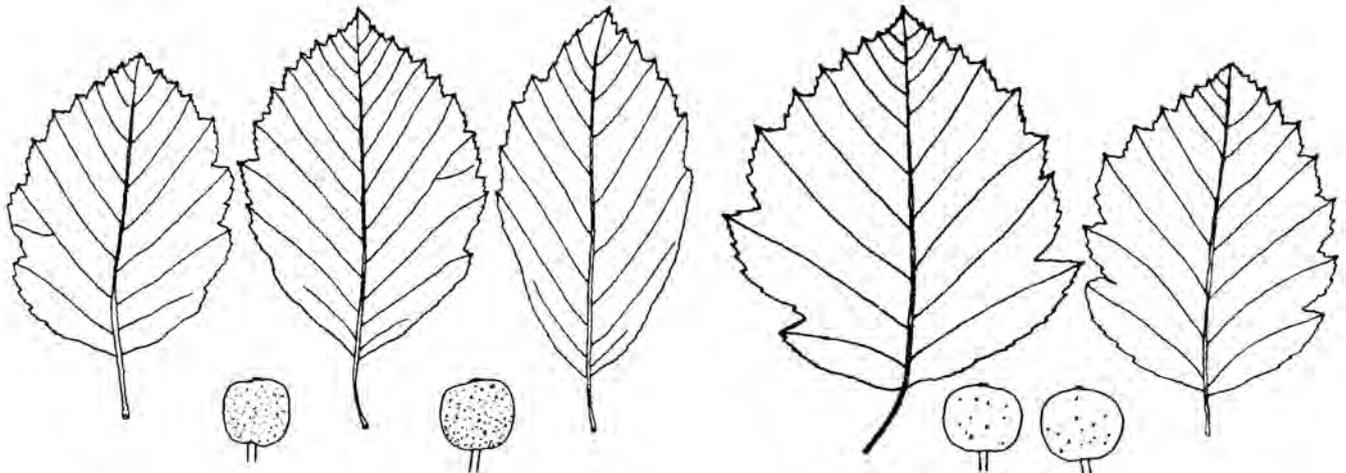
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*S. bristoliensis*

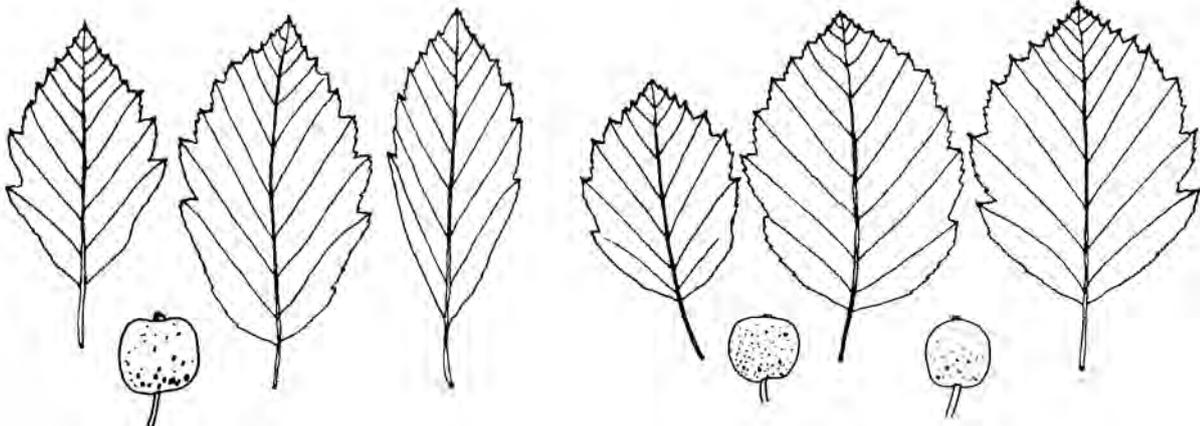
*S. decipiens*

*S. vagensis*



*S. croceocarpa*

*S. latifolia*



*S. subcuneata*

*S. devoniensis*

**Group 4. *Sorbus latifolia* aggregate**

# Plant Crib

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## Group 4. *S. latifolia* descriptions (after Sell 1989)

- S. bristoliensis* Wilmott: Leaves  $\pm$  obovate, length 1.4-1.7(-2) times width, shallowly lobed mainly above middle up to 1/6 way to midrib; base broadly cuneate; veins (7-)-8-9(-10) pairs. Largest ripe fruits 9-11 mm, longer than broad; yellow or orange; lenticels frequent, small to moderate, mainly at fruit base. Avon Gorge (V.c. 6, 34) only.
- S. croceocarpa* P. D. Sell: Leaves mostly ovate, sometimes elliptic, rarely obovate, length 1.2-1.6(-1.8) times width,  $\pm$  simple to shallowly lobed; base broadly rounded, sometimes broadly cuneate; veins 9-11 pairs. Ripe fruits 11-22  $\times$  11-16 mm, subglobose; yellowish orange or deep orange; lenticels numerous, mostly small to medium with a few larger ones at the base. Widespread (V.c. 6, 11, 17, 20, 29, 32-34, 40, 44, 46, 49, 51, 52, 58, 60, 64, 69, 70, 80, 96, 99, 103).
- S. decipiens* (Bechst.) Irmisch: Leaves elliptical or ovate, length 1.3-1.8(-2.5) times width, lobed up to 1/5 way to midrib; base rounded to cuneate; veins 10-13 pairs. Ripe fruit 8-17  $\times$  8-16 mm, ellipsoid to sub-rotund; orange; lenticels scattered, medium to large. Rare (V.c. 6, 17, 105).
- S. devoniensis* E. F. Warb: Leaves ovate to oblong-ovate, length 1.3-1.6(-1.8) times width, shallowly lobed up to 1/4 way to midrib (usually less); base rounded; veins 7-9 pairs. Ripe fruits 10-15  $\times$  11-15 mm, subglobose or wider than long; brownish-orange to brown; lenticels numerous, large at base becoming smaller above. W Britain and E Ireland (V.c. 2-4, 71, H6, H11-H13, H38).
- S. latifolia* (Lam.) Pers.: Leaves broadly ovate, length 1.1-1.3 times width, shallowly lobed up to 1/4 way to midrib; base broadly rounded, sometimes broadly cuneate; veins 7-9 pairs. Ripe fruit 14-17  $\times$  15-17 mm; subglobose or slightly longer than broad; yellowish orange to deep orange; lenticels few to numerous, mostly rather large. Widespread (V.c. 6, 10, 17, 22, 23, 29, 33, 34, 46, 60-63, 83, 86, 96, 97, 106).
- S. subcuneata* Wilmott: Leaves narrowly ovate or elliptic, length (1.5-)-1.6-1.9(-2.5) times width; base cuneate to narrowly rounded; veins (6-)-8-9(-10) pairs. Ripe fruits 10-13 mm, subglobose; brownish-orange to orange; lenticels numerous, large below, smaller above. Rare (V.c. 4, 5).
- S. vagensis* Wilmott: Leaves ovate to elliptical or rhombic-elliptic, length (1.1-)-1.2-1.7(-2.1) times width, lobed from 1/7 to over 1/4 of the way to the midrib; base cuneate or rounded; veins (6-)-7-10 (-12) pairs; margin finely serrate with small teeth. Ripe fruit 7-12 mm, longer than broad or subglobose; brownish orange to brown; lenticels few, small to moderate. Rare (V.c. 6, 34-36).

## Group 5. *Sorbus anglica* / *S. intermedia* aggregate

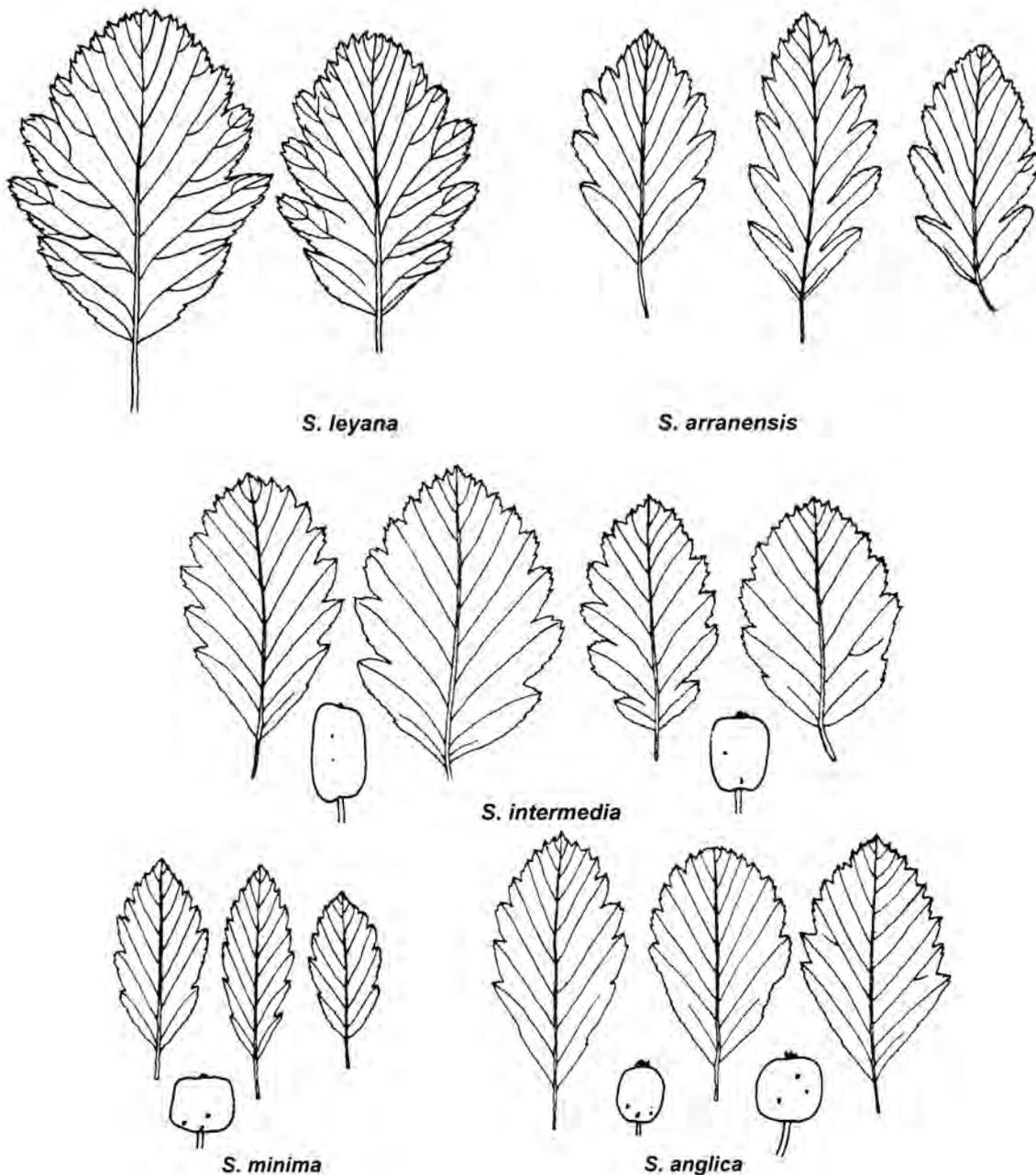
- |   |  |                                    |
|---|--|------------------------------------|
| 1 | Deepest lobes extending more than 1/3 way to midrib (measure along direction of veins)   | 2                                  |
| 1 | Deepest lobes extending less than 1/3 way to midrib (rarely a few to 1/2 way)  | 3                                  |
| 2 | Leaves 6-9 cm, length 1.5-2.1(-2.6) times width, deepest lobes extending (1/3-)-1/2-3/4 way to midrib; fruits 8-10 mm, ovoid. Arran (V.c. 100) only                              | <i>S. arranensis</i> Hedl.         |
| 2 | Leaves 7-9 cm, length 1.4-1.7(-1.9) times width, deepest lobes extending (1/4-)-1/3-3/4 way to midrib; fruits c. 10 mm, subglobose. Brecon (V.c. 42) only                        | <i>S. leyana</i> Wilmott           |
| 2 | Leaves 7-12 cm, length (1.5-)-1.6-1.8 (-1.9) times width, lobed (1/4-)-1/3-1/2 way to midrib; fruits 12-15 mm, much longer than broad. Widespread                                | <i>S. intermedia</i> (Ehrh.) Pers. |
| 3 | Leaves 6-8 cm, length (1.4-)-1.8-2.2 times width, lobed 1/5-1/3(-1/2) way to midrib; fruits 6-9 mm, subglobose. Brecon (V.c. 42) only  | <i>S. minima</i> (Ley) Hedl.       |
| 3 | Leaves 7-11 cm, length 1.3-1.7(-1.8) times width, lobed 1/6-1/4 way to midrib; fruits 7-12 mm, subglobose. Variable between populations (see notes 1 and 2). Widespread but rare | <i>S. anglica</i> Hedl.            |

# Plant Crib

- 3 Leaves 7-12 cm, length (1.5-)1.6-1.8(-1.9) times width, lobed (1/4-)1/3-1/2 way to midrib; fruits 12-15 mm, much longer than broad. Widespread  
*S. intermedia* (Ehrh.) Pers.

## Notes

1. *Sorbus anglica* populations often have consistently different fruit and leaf shapes. The Irish plants and material from North Wales both differ from those in S Wales and SW England and both may merit recognition as distinct taxa. Some leaves may be nearly simple. *S. anglica* often comes into leaf and flowers before other species.
2. *Sorbus anglica* and *S. intermedia* are the two commonest species, and might be confused. Leaves of *S. anglica* are usually obovate and cuneate at the base, and the fruits are subglobose or broader than long. Leaves of *S. intermedia* are usually elliptic and mostly broadly rounded to truncate at the base, and the fruits are much longer than broad.



## Group 5. *Sorbus anglica/intermedia* aggregate

# Plant Crib

## 6. *Sorbus aria* aggregate

This group contains the very variable *S. aria*, and the mainly endemic apomictic species which are usually very constant within populations, and very a little between populations. Many other taxa are planted in gardens, towns and cities, and will no doubt become naturalised with time.

### Key to *S. aria* agg. with leaves and fruits (see also Warburg 1962)

1	Fruits longer than broad	2
1	Fruits subglobose or broader than long	5
2	Veins usually more than 10 pairs	3
2	Veins 8-9(-10) pairs	4
3	Teeth markedly biserrate, prominent; leaves obovate, mainly 9-12 cm	<i>S. leptophylla</i>
3	Teeth uniserrate to biserrate; leaves very variable	<i>S. aria</i>
3	Teeth uniserrate, leaves 15+ cm	<i>S. vestita</i>
4	Fruits 12-15 mm long	<i>S. vexans</i>
4	Fruits 8-12 mm long	<i>S. wilmottiana</i>
5	Veins usually more than 10 pairs	6
5	Veins 8-9(-10) pairs	8
6	Lenticels numerous	<i>S. aria</i>
6	Lenticels few, large, at base of fruit	7
7	Leaves obovate, sometimes almost round	<i>S. eminens</i>
7	Leaves ovate	<i>S. hibernica</i>
8	Leaf length 1.6-2.5 times width	<i>S. rupicola</i>
8	Leaf length 1.3-1.7 times width	9
9	Teeth strongly biserrate	<i>S. porrigentiformis</i>
9	Teeth unequally uniserrate	<i>S. lancastriensis</i>

### *S. aria* aggregate descriptions (mainly after Warburg 1962)

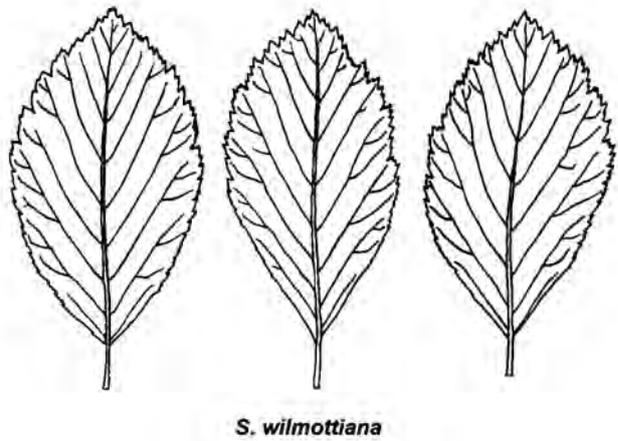
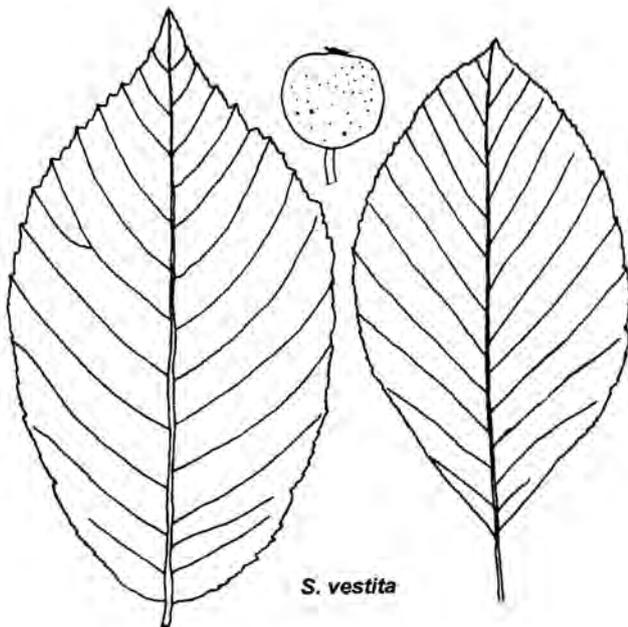
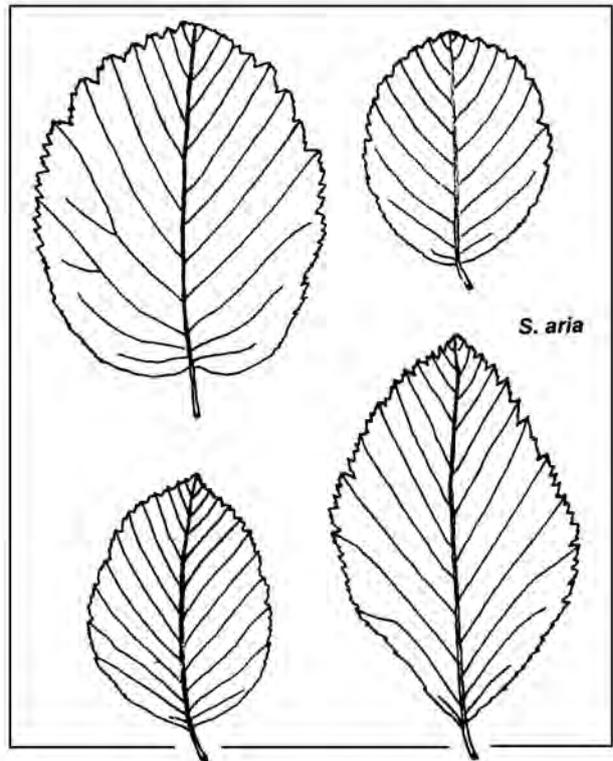
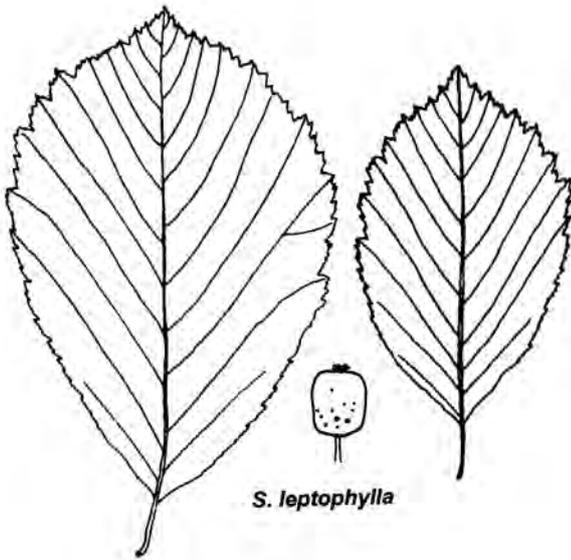
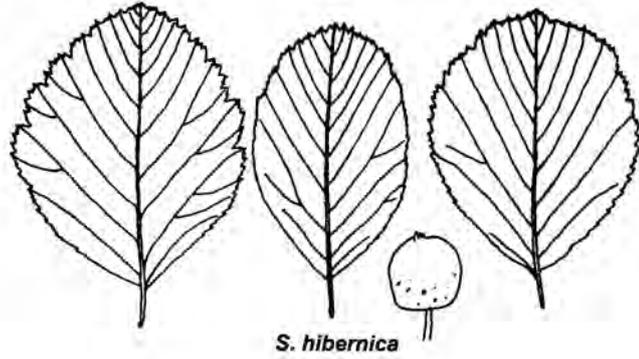
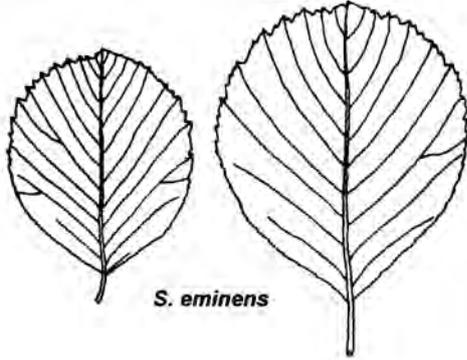
*S. aria* (L.) Crantz.: Leaves ovate, elliptic or sub-rhombic (rarely orbicular or obovate), length 1.1-1.6 (-2.5) times width, base cordate to rounded, veins (9-)10-14(-15) pairs, sometime shallowly lobed, teeth uniserrate to biserrate. Ripe fruits 8-15 mm, usually longer than broad (rarely a little broader than long), lenticels usually numerous, small, scattered over most of fruit. Widespread throughout Britain and Ireland. *S. aria* is very variable. Adjacent specimens can often look so different that they may be thought to be different species. Any plant not agreeing with the other species in this group probably belongs here.

Salmon (1930) gives notes on the varieties of *S. aria* s.s., though it is unlikely that most merit recognition, with the possible exception of var. *longifolia* Pers., which has very narrow leaves; this variety thus is sometimes mistaken for *S. rupicola* although it is very different in all other characters.

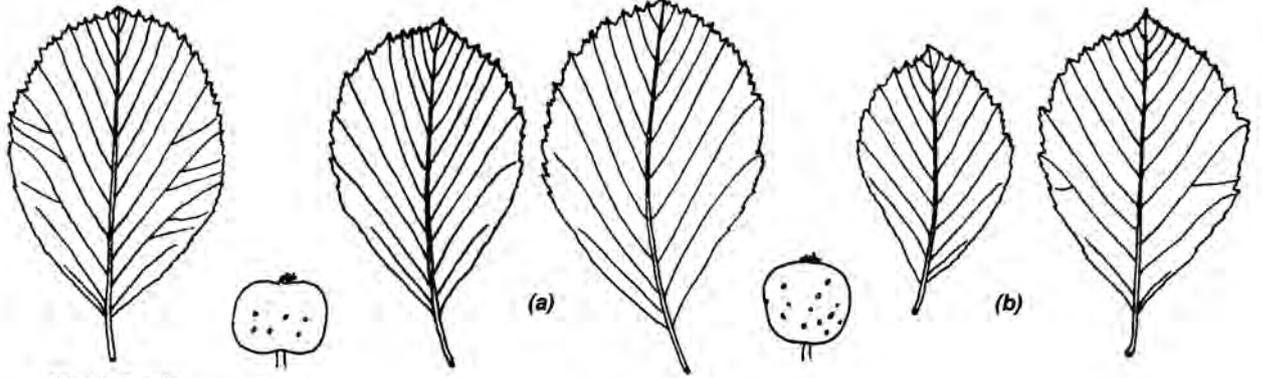
*S. aria*-like plants in Galway, W. Ireland with very small leaves and few veins are similar to plants in the Pyrenees (?var. *obtusifolia*), and may be a distinct taxon (further investigation required). Small leaved plants also occur in the Avon Gorge.

*S. vestita* Wall. (*S. cuspidata*): Leaves elliptic to obovate, large 15-20 cm, often cuspidate at apex, sparsely toothed. A garden plant from the Himalayas, possibly sometimes naturalising.

# Plant Crib

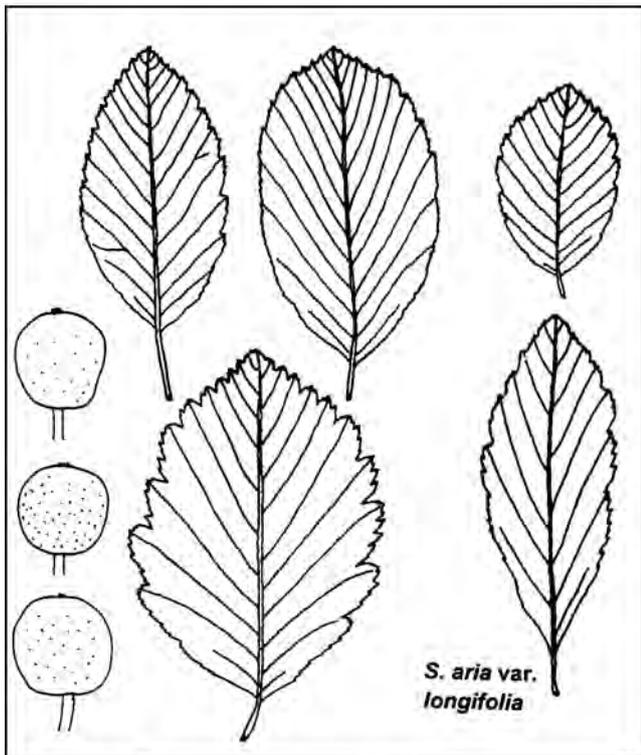


# Plant Crib

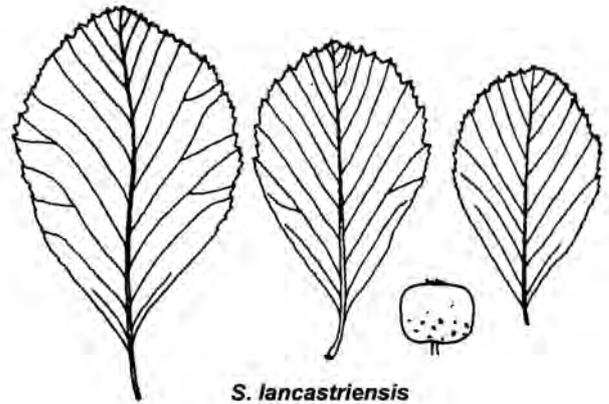


Menai Straits

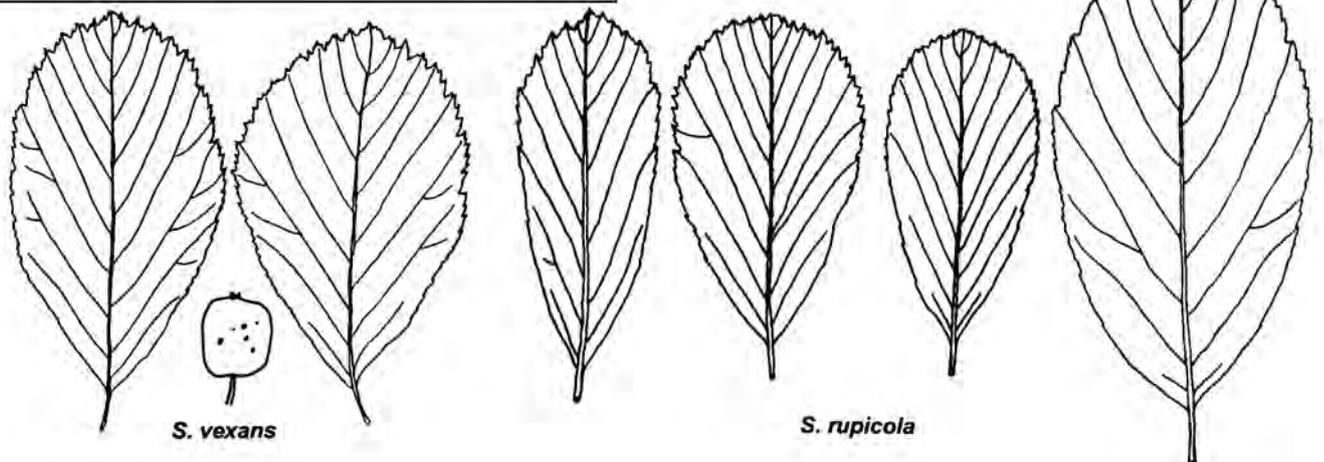
*S. porrigentiformis*



*S. aria* var.  
*longifolia*



*S. lancastriensis*



*S. vexans*

*S. rupicola*

## Group 6. *Sorbus aria* aggregate

# Plant Crib

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- S. eminens* E. F. Warb.: Leaves ovate-orbicular, obovate-orbicular or sub-rhombic, length 1.1-1.4(-1.7) times width, base broadly cuneate or curving outwards, veins (9-)10-11(-12) pairs, teeth biserrate. Ripe fruits ?12-14.2 × ?13.4-16.5 mm, broader than long, lenticels moderate, small or large, over most of fruit. Rare (V.c. 6, 34, 35, 36). Differing slightly between sites. The leaves are often almost circular (like tennis ball in size and shape), and the leaf base often arches outwards. Proctor & Groenhof (1992) have pointed out the close relationship between *S. eminens*, *S. hibernica* and a population from the Menai Straits, N. Wales.
- S. hibernica* E. F. Warb.: Leaves ovate to obovate, length (1.1-)1.2-1.5(-1.8) times width, base broadly cuneate or rounded, veins (9-)10-11(-12) pairs, teeth biserrate. Ripe fruits ?(9-)12-14 × ?(10-)13-15 mm, broader than long, lenticels moderate, few, mainly at base of fruit. Widespread but very local in Ireland.
- S. lancastriensis* E. F. Warb.: Leaves obovate, length (1.3-)1.4-1.75(-1.9) times width, base cuneate, veins (6.5-)8-10(-11) pairs, teeth unequally serrate. Ripe fruits ?11-12 × ?13-15 mm, broader than long, lenticels medium, over most of fruit. Rare (V.c. 69, 70; see Rich & Baecker 1986).
- S. leptophylla* E. F. Warb.: Leaves obovate, length (1.3-)1.5-1.7(-1.9 or 2.5 on some shoots) times width, base cuneate, veins (9-)11-12(-13) pairs, teeth prominently biserrate. Ripe fruits ?c. 20 mm, longer than broad, lenticels large, few mainly at base of fruit. Rare (V.c. 42, probably also 47). Typically forming a shrub with pendulous branches sprawling against cliff faces, but plastic in habit and leaf size (often distinct when large).
- S. porrigentiformis* E. F. Warb.: Leaves obovate, length 1.3-1.7 times width, base cuneate, veins (7-)8-10(-11) pairs, teeth strongly biserrate. Ripe fruits ?9-12.4 × ?11-13.8 mm, broader than long, lenticels medium, over most of fruit. Widespread in S Wales and SW England but very local (V.c. 3, 6, 34, 35, 36, 41, 42, 43, 44; plants on the Menai Straits, N Wales were ascribed to *S. porrigentiformis* by Warburg, but are almost certainly not that taxon).  
*S. porrigentiformis* has two distinct forms (Proctor & Groenhof 1992): (a) twiggy shrub with obovate leaves; fruits crimson, broad 9-10.8 × 11-13.8 mm; widespread in England and Wales. (b) oblong, biserrate leaves; fruits scarlet, subglobose, larger, 11-12.4 × 12-13.7 mm; S Wales.
- S. rupicola* (Syme) Hedl.: Leaves elliptic to obovate-elliptic, length (1.4-)1.6-2.5 times width, base cuneate, veins (5-)6-9(-10) pairs, teeth usually uniserrate, often curving towards apex. Ripe fruits ?10.5-13 × ?11.7-15 mm, broader than long, lenticels medium, over most of fruit. Widespread.
- S. wilmottiana* E. F. Warb.: Leaves elliptic to obovate-elliptic, length 1.6-2.0(-2.7) times width, base cuneate, veins 8-9(-10) pairs, teeth usually biserrate; fruits 10-13(-14) mm long × (9-)10-12(-13.5) mm wide, ± as long as or longer than broad, lenticels few, large, mostly at base of fruit. Rare (V.c. 6, 34).
- S. vexans* E. F. Warb.: Leaves obovate, length (1.4-)1.5-1.9(-2) times width, base cuneate, veins (5-)6-9(-10) pairs, teeth usually unequally biserrate. Ripe fruits ?12-15 mm, longer than broad, lenticels few, moderate, mainly at base of fruit. Rare (V.c. 4, 5). *S. vexans* includes two distinct forms which are best separated in fruit (leaf differences minor) (Proctor, Proctor & Groenhof 1989). (a) *vexans* s.s. (b) Taxon "D" with broader, deep red fruits.

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