WILLOWS, SALLOWS AND OSIERS

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Scope of the guide

Willows and their relatives form the genus *Salix*, a group of catkin-bearing trees and shrubs which comprise most of the family Salicaceae, together with *Populus*, the poplars and aspens. Both genera are characterised by bearing catkins, and almost always having separate male and female trees. When flowering or fruiting, the distinction is obvious: male trees produce pollen (yellow in most species), females bear the fruits (seeds), which have long, white fluffy plumes on them, rather like thistle-down.

Poplars generally have broad, triangular or rounded leaves, and often a long, flattened leaf-stake (which makes the leaves flap and rustle characteristically in the breeze); they also have catkins which dangle, shedding their pollen in the wind. Willows have round, oval or elongate leaves, usually short-stalked, and often more colourful, nectar-rich rigid catkins, which are insect-pollinated. In this guide, we are concerned with *Salix* only.

Salix is a large genus, with 300-500 species worldwide, with most species in the North Temperate zone and the Arctic. It is much more diverse than any other native tree genus in Britain (with the possible exception of elms, *Ulmus*), with about 23 native or well-established British species, including many ecologically important trees and shrubs. Of these, only 11 species are so far recorded in Beds, Cambs and Northants, which makes this the most specialist botanical course the Trust runs (there are, of course, single-species events on animals such as badger, otter, water vole and dormice!).

Most people will probably recognise willows, sallows and osiers in a general sense, and they are not easily confused with other trees (though there are a few species, such as the willow-leaved pear *Pyrus salicifolia*, which are rather similar). If in doubt, the one robust character which separates *Salix* species from other trees and bushes in Britain is the buds: both leafy shoots and catkins start out as a bud which is protected by a single oval scale, usually some shade of brown, like a fur-lined slipper (think of 'pussy-willow' as the catkins begin to show). All the other trees and bushes have two or more overlapping scales on each bud. There ought to be more obvious features to tell 'Is it a willow?' but I've not found any - suggestions, please!

The aim here is simply to identify most of the common species of willows in the lowlands, and particularly in Bedfordshire, Cambridgeshire and Northamptonshire.

English names and classification of *Salix*

There are English names for all the species and some of the subspecies, varieties and hybrids in the genus *Salix.* There is not a single English name for the genus, and there is a mismatch between scientific and vernacular classification. And, indeed, the vernacular varies from place to place, and between authors. The three commonly used English names can be linked to the four main subdivisions broad types:

- **Willow** (in lowlands) - subgenus *Salix* - trees and robust shrubs with narrow, pointed leaves with close-set pointed teeth on their edges. Catkins often rather long and slender, in the axils of leaves along the stems, usually as the leaves are unfurling.

- **Willow** (in uplands) - subgenus *Chamaetia* - dwarf alpine willows, with round leaves, with wavy or rounded-toothed margins. Catkins short and thick, at or near the tips of leafy shoots.

- **Sallow** - subgenus *Vitrex* - shrubs with broad, usually dull green, leaves which are downy below, often with wavy or rounded-toothed (crenate) leaves. Catkins usually short and oval, appearing before the leaves, along the stems. Note that Stace (2019), the 'standard' flora, refers to all the sallows as 'willows'.

- **Osier** - subgenus *Vitrex* - shrubs with long narrow untoothed leaves and very flexuous branches, many of them much used in basket-weaving. Catkins usually rather slender, appearing just before the leaves. Stace (2019) reserves 'osier' for *Salix* which are actually used in basket-making.

In the lowlands, we can ignore the upland dwarf willows (though some are grown in rock-gardens). It is instructive that sallows and osier, which look superficially very different (recognisable at 70 mph out of a car window) are in the same subgenus. This can be taken as a warning that they are more closely related than they seem, and that hybrids between the species in subgenus *Vitrex* will be commoner than between the subgenera.

So far, so good. Unfortunately, writers of floras often swap the names around, so one person's Great Sallow is another's Goat Willow (it's a sallow!), and one author's Purple Osier is another's Purple Willow (it's an osier!). I suspect that almost every British species will have been called 'willow' at some point in its history, which justifies the use of 'willow' in the sense of 'willows & osiers & sallows'. The latest checklists often use 'willow' for all or most species.

Ecology of willows

Nowadays, willows are our most important wetland trees. Alders may form taller forests on floodplains, and in the distant past it is thought that elms may have been an important component of floodplain forests. But we have very few riverine forests surviving here, whereas we have lots of willow/sallow/osier carr, as natural colonisation of fens, wet grassland and gravel pits, as remnants of former basket-weaving osier beds, and most recently, as close-planted biomass fuels.

Willows in the broad sense have several advantages over other trees:
- they tolerate waterlogging in winter
- they grow quickly
- they produce masses of fluffy, wind-blown seeds (so can colonise easily)
- they root very easily from broken twigs (an asset if you hang over the edge of rivers and lakes - bits which break off will root)

Thus, willows (usually alongside birches) are the first colonisers of most areas of disturbed ground. Although we think of them as wetland trees, several will thrive even in the drier parts of gravel pits, quarries and roadsides. And, as gardeners and green-sculptors know, fresh willow wood hammered into the ground will tend to spring into life. This can be a benefit - using willow spars to stabilise a river or reservoir edge can lead to a natural-looking and erosion-proof margin very quickly. In doing so, they also create important wildlife habitat.

Conservation value of willows for other wildlife

Although it is easy to think of willows as trees or bushes of lowland wetlands, they occur in almost all habitats: small woolly mountain-top bushes, large tree-forming lowland riverside willows, creeping willow in sand dunes by the sea, common sallow on dry industrial sites and chalk quarries. They remain very important trees in many natural and seminatural habitats. But 7000 years of human impacts as lessened the conspicuousness of willows. Once, 20% of lowland Britain was wetland, and much of this would have been willow and alder carr. Forest clearance started in the Neolithic, accelerated in Bronze Age, and was almost complete by the time the Romans arrived in Britain; they added land drainage to the weapons against wetlands, and so the process continued with river canalisation and building on the floodplains throughout the 1980s. So, in Britain, extensive riverine forest is almost an extinct habitat: you have to go to the Rhine or the Elbe to see its full development, with a fauna which includes night herons, golden orioles, hoopoe, lots of warblers and woodpeckers, and abundant beaver and otters.

Our neat & tidy managed lowlands may have lost the feel of wilderness, but there is still plenty of wildlife depending on willows; and at last, people are starting to put the willows back, and maybe even put back the meanders and natural vigour in a few of our lowland rivers. The diversity of willows themselves is probably important: a range of structures and chemistries which other plants and animals can exploit.

Interestingly, much of the associated wildlife living among willows seems not to be very fussy as to which species of willow it is, and many insects and fungi appear to use a wide range, though the gall-formers are generally more specific. What matters to many is structure: tree-forming willows, robust sallows, slender osiers.

White willow and crack willow often reach 20m or even 30m tall, they can dominate riverside landscapes beautifully, and provide habitat for a huge range of species. Willow carr will have many shade- and moisture-loving plants which would be absent from open fenland and grasslands. Some, like marsh-fern, are seldom seen far from willows and sallows; and in this area, many ferns, horsetails, flowering plants, mosses and liverworts do the same. Beds of sallows and osiers will also house many bird species, such as sedge warbler and grasshopper warbler especially if there are grassy or sedgy gaps between bushes, or areas of reedbeds. Even in open fens and reedbeds, a scatter of willows or sallows will enhance the habitat, and species such as Cetti's warbler generally breed in such bushes in otherwise open wetland.

The rough, often loose bark of the larger tree-forming willows provides nesting sites for small birds, such as tree-creeper and fly-catchers; the numerous rot-holes will be found by blue tits, great tits, and not surprisingly willow tits; our local willows would once have supported redstarts too, until recently. Pollarding of willows - the cutting of many of the main branches some distance above ground - provides a greater complexity of holes and crevices, and helps the trees last longer. A maiden (un-pollared) willow will be old at 80, and probably dead before it is 120 years old. Carefully and repeatedly pollarded, a tree may last for several centuries, during which time it will contain a large volume of dead wood in its crown. Whatever their management, crows will nest in the crowns of mature willows, and disused crows news may be taken up by tawny or long-eared owls, kestrels and hobbies.

The gnarled, twisted trunks and buttresses of recumbent old willows are the classic breeding site otters. Although conservation volunteers sometimes believe that otters need well-built holts of cut timber, a well-willowed riverside will have more than enough places for them to rest up by day.

Willows probably support more species of insect than any other tree: perhaps over 500. The widespread belief, even among ecoloogists, that oaks held more is partly due to patriotism (English Oak has an important part in folklore), and partly to the more intensive surveys of insects on oaks in ancient woodlands near universities (Wytham Wood (Oxford University's ecology centre), Imperial College at Silwood Park, and Monks Wood research station - are all set in oak or oak-ash woodland and parkland). Not only are there probably more species on willows than on other trees, my guess is that a higher proportion of the willow fauna is specialists, who will not live elsewhere.

Ten minutes' beating individual trees of white willow, purple osier and common sallow produced over 50 species of invertebrate, covering all the main functional types. This shows an important feature of invertebrate ecology: there's no waste among insects in trees. The leaves are chewed by caterpillars, sawflies and beetles - despite the supposed defence mechanism of long, floppy leaves which blow in the breeze and are intended (it is argued) to dislodge insects); the sap in the leaves is drunk by a range of leafhoppers, aphids and other bugs; some fly and wasp larvae secrete chemicals which mimic growth hormones and trick the tree into producing abnormal growth - gall – such as the bean and pea galls on willow leaves caused by small sawflies, twigs may be bored by long-horn beetles and weevils, and their buds, colonised by gall-midge larvae, become rosette or carnation galls; the bark is nibbled, bored and undermined by beetles, moths and sawflies - an old trunk may have many species of beetle tunnelling through it; damaged branches, where the sap is seeping, attract many more insects including lots of flies, which breed in the sugary-yeasty dark brown tarry soup; other fly and beetle larvae are specialist predators on the larvae which drink of the sap runs; the dead and dying wood hosts even more species, and some, like musk beetle, enjoy the crowns of pollarded willows especially; many species of fungi and lichens grow on willows, and these in turn house an array of specialist insects.

Over the past 200 years, willows have taken on a greater importance for lichens. Most lichens are highly sensitive to atmospheric pollution, especially sulphur dioxide and 'acid rain'. Willows are unusual in having alkaline bark, which appears to counteract some of the effects of pollution, and so the scarcer, more sensitive species of lichens were able to survive on willows when they had disappeared from nearby oaks, birches and ash, with more acidic bark. And species which had disappeared from the Midlands, and are now recolonising following the Clean Air Acts of the 1950s=1990s, often turn up first on willows - a Crack Willow at Bainton Pits produced the first modern Northants record of *Parmotrema perlatum,* a mainly west-country lichen, in 1999. With cleaner air, other trees have gained more lichens, but willows remain particularly rich.

In winter, loose bark is a vital hiding place for many hibernating insects; as willows are often in wetlands, safe harbour for beetles climbing to avoid the flood; and the litter beneath willows supports extra species, too.

Insects on willows vary with the season. Spring is the time for most of the caterpillars: some small moths go for the new buds, others for the catkins (which can be the vital nectar source for early emerged bumblebees and hoverflies). By mid summer, the leaves have more tannin in them, and are less palatable to chewers; so the insect fauna is dominated by sap-feeders, such as the several species of *Idiocerus* leaf-hopper which feed exclusively on willows - some of these are nationally scarce, and Beds and Cambs river valleys are particularly important for them.

Hybrids - how and why?

Willows are famous, or notorious, for crossing between species - forming hybrids. There are probably several reasons for this, historical and ecological:

- There are rather weak genetic barriers between many species, suggesting that they have evolved relatively recently.
- The chromosome complement of willows is fairly uniform between species, the majority having 38 or 76 pairs of chromosomes. This means that many hybrids are likely to be fertile.
- Having wind-dispersed seeds, willows recolonised quickly at the end of the Ice Ages, leading to the re-mixing of species and incipient species which had been isolated (around the Mediterranean or in the mountains of North Africa and the Middle East).
- This excellent dispersal means that seed production is still vital, and makes willows among the most important colonising trees and bushes after disturbance.
- Disturbances, natural and man-made (e.g. erosion of river banks; gravel extraction, quarrying, creation of brownfield sites) create habitats with lower levels of competition between plants, which can weaken the ecological distinctions between species, and form conditions which are completely novel. Disturbed habitats are characterised by a high level of hyridisation in the flora.
- Most species of willow flower at about the same time in Spring, and are pollinated by a broad range of generalist flower-visiting insects, especially bumble-bees, which move promiscuously between all the different species in an area.
- There are many willow species which have rather similar ecological requirements, so that closely related willows often grow side by side.
- Having formed by accidental cross-pollination in areas of disturbed habitat, hybrids can maintain themselves, and spread, vegetatively - the rooting of broken fragments can lead to clones of one hybrid spreading widely.
- Being of wide and varied uses to humanity, willows have been grown in cultivation for centuries or millennia, and 'useful' accidental hybrids have been propagated and spread my people.
- In recent centuries, plant breeding has accelerated this by the artificial creation of multiple hybrids: by crossing hybrids with other hybrids repeatedly, plants with several parents can be produced, the record being a tree with contributions from 13 different species.

Hybrids and identification

Because of their tendency to hybridise, and for the hybrids to back-cross to one or other parent, willows may have a reputation for being difficult to identify. This is not entirely deserved, and please don't be put off by talk of hybrids: the majority of willows you see around will not be hybrids, and most trees can be comfortably be fitted into one or other of the true species. The exception is in very disturbed habitats such as gravel pits, where perhaps 10-20% of willows may be hybrids.

That said, if some hybrids are fertile, and are as successful as their 'pure' parents, and are able to back-cross with one or both parent species, it's possible that over millennia, genes have flowed between species (referred to as introgression), and a range of intermediates exist (called a 'hybrid swarm'). Indeed, several modern 'species' may owe their origins to past hybridisation. So, in addition to naming the species, it's sometimes tempting to say that a tree is 'species X but with some faint signs of species Y' even when it doesn't fit the classic description of the hybrid. In such cases it is almost a matter of personal taste whether we regard it as being within the range of species X, or a hybrid between X and Y. I cherish a quotation from a former President of the Botanical Society: "it is a sign of botanical maturity to recognise that it will not always be possible to name every specimen one finds".

Identifying local willows

The first aim is to learn to recognise the features of the commonest species, in their pure state. Hence, on a training workshop, I introduce typical specimens of each species, and let participants get

to know them thoroughly, before offering any hybrids. Once this is done, it is much less difficult to notice when a willow 'looks like X but with a hint of Y'. If you come to see a species as a set of symptoms or characteristics, it's then a matter of developing your judgment of whether it has enough symptoms to be unequivocally X, or if the symptoms of Y are strong enough to justify naming it as the hybrid.

Two versions of a similar identification key follow. The first, short key includes only the main species, and a couple of the commonest hybrids. The expanded version adds scarcer species and several more hybrids, and other hybrids are described in the illustrations which follow. The accompanying table shows which hybrids occur frequently, and which have been recorded only rarely, in the three counties. In brief, the seven species and two subspecies we need to know are:

Salix euxina	Crack willow (formerly called *fragilis*)
Salix alba	White willow
Salix triandra	Almond willow
Salix purpurea	Purple willow or osier
Salix caprea	Goat willow, Great sallow
Salix viminalis	Common osier
Salix cinerea ssp. *cinerea*	Common sallow, Grey sallow
Salix cinerea ssp. *oleifolia*	Common sallow, Rusty sallow

I have included the two subspecies of Common Sallow because they differ strikingly in the hairs on the leaves (a vital feature in identification), and in their growth form and size, and they have some ecological separation, though often growing together. Rusty Sallow is probably the commonest willow over most of Britain except in Norfolk and other parts of East Anglia, where it is largely replaced by Grey Sallow. The latter is also commoner in dry habitats including chalk and limestone quarries, and it is frequent on waste ground and roadsides.

In the literature, there are large numbers of named varieties and forms in many of the commoner species. I am ignoring these, expect to say that they provide a means of describing the range of variation (especially in growth form, size, twig colour and texture - features vital to professional growers and users of willows) within species. But I think the profusion of varietal names serves more to confuse than to clarify, and I will seldom mention any, unless they are very striking trees whose identification as a single species is difficult without mentioning the varieties.

A further five species have been recorded only rarely in the three counties:

Salix aurita	Eared sallow
Salix myrsinifolia (=nigricans)	Dark-leaved willow
Salix pentandra	Bay willow
Salix repens	Creeping willow
Salix eriocephala	Heart-leaved willow (rare introduction)

The most frequently recorded hybrids, which it is worth bearing in mind if a tree or bush is particularly difficult to place in one of the above, are:

S. alba x euxina (= S. x fragilis, formerly x *rubens)*
S. cinerea x viminalis (= S. x holosericea)
S. caprea x cinerea x viminalis (S. x calodendron)
S. caprea x cinerea (= S. x reichardtii)
S. caprea x viminalis (= S. x smithiana)

The names in brackets are the name given to the hybrid, and these may be used on their own, though I generally prefer to name the hybrid by listing its presumed parents in alphabetical order. This has become more important in the last decade when the name '*Salix x smithiana*' has transferred from *S. cinerea x viminalis* to *S. caprea x viminalis,* so unless you specify what you mean by the name, that is now ambiguous. I say 'presumed parents' because the origins of some distinctive willows is not certain. Of the fairly frequent ones, *Salix x calodendron* shows 'symptoms' of the three species listed: it has leaves too long and pointed to have come from anything but Common Osier, rather dense fur on the undersides (a sign of Goat willow), and raised ridged under its bark (which are most likely to have come from Grey Sallow). As we walk around looking at willows, you'll probably slip into using English hybrid names too, such as 'Goaty Osier'.

The accompanying table lists all the other hybrids of which I have been able to find records in the three counties. Most are extremely rare. There are also two weeping willows which are commonly grown in gardens, and occasionally established in the countryside: *S. alba x babylonica (= S.x sepulchralis)* and *S. babylonica x euxina (= S. x pendulina);* older and simpler books may refer to 'weeping willow' as '*Salix babylonica'* but this is not thought to be frost-hardy, so few if any of the local weeping willows will actually be the species.

Avoiding identification problems

Even more than with most plant identification, willow identification is made very much less difficult if you have appropriate and representative specimens. This is less easy with willows than might be imagined. Some of the older standard floras provided three separate keys: male trees with catkins, female trees with catkins, and trees with mature foliage. In my view, learning willows is much easier if you avoid identification in the Spring, and to wait for mature leaves. This also means ignoring catkins at first - only one species, Almond Willow, produces catkins throughout summer, and late catkins are a useful identification feature for that species. So, the main trick for a novice seeking reliable identification is: at least at first, **do not try to identify willows <u>except</u> between July and October.**

Apart from waiting till the appropriate season, there are other considerations when trying to identify a willow, and particularly, when collecting a specimen for someone else to attempt to identify it:

Ignore immature leaves: that includes leaves early in the season (usually, before July), and any regrowth after damage (cutting, late frost, drought or fire), which usually has larger, broader, softer and differently hairy leaves from normal growth. (In species which are hairless when mature, some hairs will probably be present; in Rusty Sallow, the orange hairs on the underside of the leaves often do not appear till July).

Ignore suckers and recent coppice or pollard growth: any growth from very vigorous stems, or from recent pollarding or coppicing (if in doubt, look for second-year wood). Again, the leaves tend to be larger, often thicker and wider, and sometimes much hairier than 'normal' leaves from the same bush,

Avoid specimens in dense shade: these tend to be longer and thinner in all their parts, and may differ in the hairiness of the leaves. The leaves may also be larger and softer than usual. Species which usually have the upper surface darker than the lower may become uniformly green when shaded. They tend also to have larger stipules (the pair of leafy scales present at the base of the leaf-stalk in some species).

Beware of bushes growing in impoverished, droughted or very exposed conditions: otherwise tall and upright trees and bushes may be low and sprawling when stressed, and often with much smaller leaves than usual.

Learn the species first! This is almost impossible if learning on your own, as you are faced with whatever willows you encounter in your area. There are no features which mark hybrids as such. On a training workshop, you can become thoroughly familiar with typical examples of each species ***before*** you start looking at hybrids or strange varieties.
With experience, it is possible to identify most species even when these ideal conditions do not prevail; but the keys generally will not work. e.g. White and Crack Willow are separable simply on the size of teeth on the leaves (small and regular in White, much larger and somewhat irregular in Crack), but are keyed, and can be recognised at half a mile or more, because of the white or bluish sheen which the coating of silver hairs gives the foliage of White but not Crack. Examine Crack Willow in May, and you may find a moderate covering of long silky hairs remaining, especially on the underside of the leaves.

Further reading: The essential text is **Meikle, R.D.** 1984. *Willows and poplars of Great Britain and Ireland.* BSBI Handbook No. 4 which is comprehensive, and includes excellent illustrations of all species and most hybrids. See below. The standard floras also include keys to species. Clapham, Tutin & Moore (1987) has fairly workable keys; Stace (2019) and Sell & Murrell (2018) have more difficult keys, but useful photographs or drawings of typical leaves of each species.

LITERATURE ON WILLOWS, SALLOWS AND OSIERS

This guide aims to list and give a quick impression of many of the more useful books which include British willows. So many books on wild flowers and trees are published each year, but very few of them include the range of willow species, and many are inaccurate in both text and illustrations. So, especially among the colour guides to commoner flowers, this list is highly selective, including personal favourites rather than trying to be comprehensive.

Books about willows

Meikle, R.D. 1984. *Willows and poplars of Great Britain and Ireland.* BSBI Handbook No. 4
This essential text incudes excellent drawings of all species and most of the less rare hybrids. One possible drawback is the lengthy treatment it gives to named varieties of many species, almost to the extent of obscuring the species distinctions. It is also over 40 years old, during which time some of the names have changed.

Newsholme, C., 2002. *Willows: the genus Salix.* London: Batsford.
A readable and attractive guide to the willows of the world, written mainly for gardeners, and giving as much information about aesthetic and practical appeal as about identification. An interesting read, depicting the full range of willows globally, but not always easy to use to name trees.

Books about trees

Mitchell, A., 1996. *Alan Mitchell's Trees of Britain.* London: Collins.
A quirky and personal guide to British trees from an author who wrote many books on trees but who seems not to like willows very much. Omits many species, and is more a social history than an identification guide.

More, D., and White, J., 2003. *Trees of Britain and northern Europe.* London: Cassell.
The largest (almost A4 size and 800 pages), most comprehensive and probably most expensive popular modern tree book. Very good illustrations of the species included, and has whole-tree pictures and silhouettes which are accurate. Unfortunately, omits many of the smaller species.

Phillips, R., 1978. *Trees in Britain, Europe and North America.* London: Macmillan.
Rather too wide geographic cover to be really useful, a photographic guide showing catkins and unrecognisable young leaves of many species, and a leaf-identification chart with all the non-willow trees with similar leaf shapes too, which I find confusing.

Rushforth, K., 1999. *A photographic guide to the trees of Britain and Europe. (Collins Wildlife Trust Guide: Trees).* London: Collins.
A small-format, 1300-page book with a week binding, it has photographs of most of the wild and cultivated tree-forming willows, with detailed and accurate descriptions, which don't focus enough on the identification features to be really useful.

Sterry, P., 2007. *Collins Complete British Trees.* London: Collins.
A good photographic guide which includes almost all native species, and with good, clear descriptions. Rather let down by the need to photograph catkins as well as leaves in limited space, so many illustrations show freshly-opened, immature leaves which are not characteristic of the species.

White, J., White., J. and Walters, S.M. 2005. *Trees: a field guide to the trees of Britain and northern Europe.* Oxford: Oxford University Press.
A very good photographic field guide, depicting mature foliage and with short, accurate descriptions. An irritation for willow enthusiasts is that, because of the book's approach to identification, willows are separated in several different parts of the book.

Colour illustrated guides to wild flowers

There are numerous popular illustrated guides, but many omit trees. Sadly, **Garrard, I., and Streeter, D.**, 1998, *The wild flowers of the British Isles.* London: Midsummer Books, probably the best illustrated modern flora, includes only Creeping Willow, as it does not cover trees. Likewise, **Sterry, P.,** 2006. *Complete Guide to British Wild Flowers.* London: Collins, my favourite photographic flora, omits trees because Paul Sterry has produced a companion volume on trees (below).

Harrap, S., 2025. *Harrap's Wild Flowers: a field guide to the wild flowers of Britain and Ireland.* 2nd edition. London: Bloomsbury.
Probably the best photographic guide to British plants, thorough and accurate, omitting only the rarest species (and with a helpful bias toward eastern England) and critical microspecies. It has clear illustrations of important features including leaf close-ups, catkins of most willow species, and whole-tree photographs of a selection.
Fitter, R.S., Fitter, A. & Blamey, M. 1974. *The wild flowers of Britain and northern Europe.* London: Collins.
A popular starting point; o.k., includes most common willows, illustrations ok if rather blue-green and overly bright, descriptions brief.
Blamey, M. & Gray-Wilson, C. 1989. *The illustrated flora of Britain and northern Europe.* London: Hodder & Stoughton.
Larger and more detailed than the above, includes almost all species, and the illustrations of leaves and catkins are better. Whole-tree paintings are misleading, and descriptions are a bit generalised.
Rose, F. & O'Reilly, C. 2nd ed. 2006. *The wild flower key.* London: Warne.

A well illustrated guide with keys to most groups of flowering plants, helpful descriptions and summaries of which features to look for in many groups. Disappointing for willows, with a key which is too short to be reliable, and illustrations of only a few species, which are not really recognisable as willows.

Keble-Martin, W. 1965 etc. *The concise British flora in colour.* London: Michael Joseph.
The first fairly comprehensive single-volume set of colour pictures, now looking very old-fashioned and often printed with odd yellow-greens. Rather stylised, and text very brief. Includes most willow species, but would be difficult to use to identify them.

Comprehensive technical floras

There are two authoritative single volume 'floras' for the more experienced botanist:

Clapham, A.R., Tutin, T.G. & Moore, D.M. (1987) *Flora of the British Isles.* Cambridge: Cambridge University Press. (earlier editions: **Clapham, A.R., Tutin, T.G. & Warburg, E.F.,** 1952, 1962).

Stace, C.A. 2019. *New flora of the British Isles*. 4th edition. Leicester: C & M Floristics.

For willows, each has its strengths and weaknesses. Both have detailed keys, with Clapham *et al.* having separate keys to male, female and trees in leaf. Neither has any colour pictures. 'CTM' (alias 'CTW') has no illustrations of willows. Stace has black-and-white photos of the leaves of each species. Stace is more up-to-date (indeed, it has become the standard source for plant names); he is never afraid to use small features (even requiring a microscope) if these are the most reliable. 'CTM' (alias 'CTW') provide much more thorough descriptions, which can be very handy if parts of a plant (e.g. flowers, fruits) are missing. Their keys often use easier characters, and are more comfortably laid out. For non-native plants, Stace has to be used, because he includes over a thousand extra species, mainly casuals from food, gardens etc., and is far more reliable on the distribution and origins of aliens.

If the size or price of either of the above is daunting, both of the volumes above are available as pocket versions, without the descriptions or illustrations:

Clapham, A.R., Tutin, T.G. & Warburg, E.F. 1986. *Excursion flora of the British Isles.* Cambridge: Cambridge University Press.
This is a good compromise, including most species, and with the same keys as the larger volume, but with briefer descriptions (and no descriptions for the rarest species).

Stace, C.A. 1999. *Field Flora of the British Isles.* Cambridge: Cambridge University Press.
Almost entirely composed of keys and missing even the short descriptions of the larger volume. An essential field guide for the experienced botanist who has the full version at home.

There is also a comprehensive 5-volume flora published from 1997-2018, the last volume of which (volume 1) includes the willows:

Sell, P.D. & Murrell, G. *Flora of Great Britain and Ireland Vol.1* 2018*.* Cambridge: Cambridge University Press.
It includes a lengthy key which includes most of the recorded hybrids, two pages of line drawings of leaves of the native species, and detailed technical descriptions of every species and hybrid. It also described many subspecies and varieties of native willows which are ignored by most other books.

Stace, C.A., van der Meijden, R. & de Kort, I. (Eds.). 2004. *Interactive Flora of the British Isles.* ETI Information Services Ltd. 2004.

This multimedia DVD combines a new and extended version of Stace's *New Flora of the British Isles* 2nd Ed., detailed distribution data from New Atlas of the British & Irish Flora and some 8500 illustrations (mainly photographs), amongst other items. [about £30]

Specialist technical books

Once you have grown used to Stace, CTM, or Sell & Murrell (or if you get fed up with struggling with certain parts), there are three 'trouble-shooting' books available:

Rich, T.C.G., Jermy, A.C. & Carey, J.L. 1998, reprinted 2006. *Plant Crib 1998.* London: BSBI.
These together tackle most of the more tricky groups of vascular plants. Includes only some general comments on willows, and a set of illustrations of sallow hybrids.

Poland, J., and Clement, E., 2009. *The vegetative key to the British flora.* 526 pp. London: BSBI
This set of keys should enable one to identify almost any British flowering plant or fern, including trees and shrubs, based solely on leaves and stems. Like the big standard floras, the language is rather technical, and although there are lots of illustrations, it's not a book to flick through in the hope of spotting your plant. But if you know roughly what sort of plant you've got, this can be extremely useful in distinguishing between several similar species. It includes a detailed and painstaking key to willows, and includes quite a few garden escapes.

Stace, C.A. 1974. *Hybridization and the flora of the British Isles*. London: Academic Press.
This book assumes a good knowledge of the parent species, and access to the standard floras. It has no illustrations, but within those limitations, it is an excellent work, describing all known and suspected hybrids in Britain, with great insights into ecology and likely distribution. Often very useful in clarifying the difference between the parent plants too, it covers willows thoroughly (the chapter is written by R D Meikle).

Cullen, J., Knees, S.G. and Cubey, H.S. 2011. *The European Garden Flora, volume II.* 2nd edition. Cambridge: Cambridge University Press.
A comprehensive guide to plants, shrubs and trees which are grown in British and European gardens. This volume covers the willows, and can be useful in identifying garden escapes. Note that many montane and arctic willows are grown on rockeries in the lowlands.

Species distribution and ecology

Stroh, PA., Walker, K.J., Humphrey T.A., Pescott, O.L and Burkmar, R.J. 2023. *Plant Atlas 2020: mapping changes in the distribution of the British and Irish Flora.* 2 volumes. Oxford: Princeton University Press.
Up to date distribution maps of all native and naturalised species at 10km resolution, also summarising the ecology and habitats of each species, and any changes in range or frequency in the past century.

Stace, C.A., Preston, C.D. and Pearman, D.A. 2015. *Hybrid flora of the British Isles.* London: BSBI. 510pp.
A massive and thorough review of all the 909 hybrids known to grow wild or naturalised in Britain at the time of writing. Each species has a distribution map, a detailed description and discussion of its distribution and origins, with notes on identification and references to published literature. Many species are also illustrated with colour photographs.

A SIMPLE KEY TO THE COMMONEST LOWLAND WILLOWS, SALLOWS AND OSIERS

Brian Eversham **v. 2.0** **August 2025**

This key Includes only the commonest species and a couple of very common hybrids. It should 'work' for the majority of typical specimens, with mature and largely undamaged leaves, collected in lowland England in July-October. Leaf shapes, ratios and measurements should be based on examining a range from around the tree or bush, to make sure they are representative. On almost every twig, you will find the occasional leaf which is too long, short, wide or narrow to fit the key.

An expanded version of the key follows, which includes the commoner non-native species, and allows you to key out most of the commoner hybrids directly. Note that some species key out in more than one place, e.g. the two species which form large trees key on tree size, then key again for smaller individuals.

1 Large, broad-crowned tree, at least 10m tall, trunk over 40cm diameter. **2**

1a Smaller in all respects (young specimens of big trees key here too). **3**

2a **THREE choices**

Mature leaves glossy green and almost hairless. Margins of leaves with coarse, irregular teeth. Leaves usually large, 5-15 x 1.5-3cm. Twigs snap off easily at base. Tree appears green, not silvery, from a distance. A broad-crowned tree, with branches wide-spreading, often at an angle of more than 45° from the vertical.

Eastern Crack Willow *Salix euxina* (formerly *S. fragilis*)

2b Mature leaves dull green with some silky white hairs on upper surface, and dense, long silky appressed hairs on underside. Leaves with very fine, regular teeth. Leaves usually smaller, 5-10 x 0.5-2cm. Twigs less easily detached. Tree appears silvery from a distance. A narrower, more upright tree, with branches usually ascending, forming an angle of less than 45° to the vertical. **White Willow *Salix alba***

2c **I**ntermediate in leaf size and in size and regularity of toothing of leaf edges, with some persistent silky hairs but not appearing silvery from a distance.

Hybrid Crack Willow *S. alba x euxina = S x fragilis* (formerly *S. x rubens*)

***Salix euxina* (left) and *S. alba* (right)**

3 Underside of leaves hairless or with only a few hairs. **4**

3a Leaves with hairs on underside, either densely downy (very short more or less upright hairs), or silky (longer hairs which appear stuck down to the leaf surface), or with a dense felted mat of pale hairs - if in doubt, fold the leaf and look along the fold. **7**

4 Leaves mostly less than 3.5 times as long as broad. Twigs hairless, very glossy, as if varnished, yellow-brown to reddish. Leaves smooth, glossy mid green above, bright paler green beneath, with regular fine pointed teeth along margins. Leaves pointed, elliptical, 5-12 x 2-5cm, remaining green when damaged or dried. Broad-crowned tree, often 7m, sometimes to 17m. **Bay Willow *Salix pentandra***

4a Leaves mostly more than 3.5 times as long as broad. Twigs and leaves less glossy. **5**

***Salix pentandra* (left), *S. purpurea* (middle and right)**

5 Many leaves with straight sides in lower three-quarters, and tapered rather abruptly in upper fifth, 2-8 x 0.5-3cm. Some leaves and branches in opposite pairs along the twigs. Mature leaves dull or silk-finish dark green above, sometimes pale bluish green below (eucalyptus coloration). Leaves turning black when damaged or dried. Underside of peeled bark of twigs brilliant yellow.

Purple Willow *Salix purpurea*

5a Leaves almost evenly convex at sides, more gradually tapering in upper half. All leaves arranged alternately along twigs. Inside of bark pale or dark greenish, not bright. **6**

6 Twigs smell/taste of rose-water when thoroughly crushed or chewed. Twigs hard to snap off. Tends to produce a few catkins throughout summer. Bark not deeply fissured, flaking off (like London Plane) to reveal reddish-brown patches. Leaves mostly gently tapering at apex to an acute point, but not prolonged. Leaf bases also tapered. Never more than 10m, and often less than 4m. **Almond Willow *Salix triandra***

6a Twigs have a 'greenish' smell, with no hint of roses. Twigs snap off easily. Catkins all in spring, not later. Leaves often very gradually tapering at apex to a long, slender point. Leaf bases also tapered. Grows into a large tree, up to 15m or more, with a thick trunk and rough, fissured bark. **Eastern Crack Willow *Salix euxina* (formerly *S. fragilis*)**

***Salix triandra,* leaves and peeling bark - for *S. euxina* see couplet 2**

7 Most leaves at least 5 times as long as broad, with downy, silky or felted hairs. **8**

7a Leaves not more than 4 times as long as broad, with downy hairs. **10**

8 Grows into tall tree up to 30m, with large trunks and fissured bark. Leaves 5-10 x 0.5-1.5cm, seldom more than 10 times as long as broad. Leaf surface smooth and flat, veins hardly noticeable. Upper and lower surfaces with long silky white hairs, stuck down against leaf surface. Edges of leaves finely and evenly serrated. Illustration: couplet 2.

White Willow *Salix alba*

If as above, but with larger leaves, with rather sparse silky hairs, and more coarse-toothed leaf margins, consider **Hybrid Crack Willow *S. alba x euxina* (= *S. x fragilis*)**

8a At most a tall shrub, up to 6m. Leaf surface wrinkled, the veins more deeply marked. Upper surface dull dark green, sometimes with a few hairs sticking up from surface. Underside of leaves with dense white downy or felted hairs (fold the leaf over, underside upwards, and the hairs stick out at right-angles from the fold). Edges of leaves slightly wavy or obscurely toothed, sometimes with the edges rolled down. **9**

9 Leaves very long and narrow, 10-15 x 0.5-1.5cm, generally (8-)10-20 times as long as wide, tapering gradually at tip and at base. Leaf surface wrinkled, the veins more deeply marked. Upper surface dull dark green, with a few hairs, underside felted white with very short matted hairs. Edges of leaves slightly wavy, usually with the edges rolled down. Tall shrub, up to 6m, with long, straight, flexible twigs. **Osier, Common Osier *Salix viminalis***

9a Leaves broader, mostly 6-12cm x 1.3-3cm, generally 3-8 times as long as wide, more abruptly tapering to an acute tip. Veins prominent, often net-like. Underside downy or velvety. Sometimes with long flexible branches, sometimes more branched and twiggy.

Hybrids of Common Osier *Salix viminalis* and Sallows

Salix viminalis **(above)**

A typical Sallow-Osier hybrid, *Salix caprea x viminalis* (above)

10 Twigs completely smooth on wood under stripped bark, rather thick and knobbly. Leaves broad and large, 5-12cm x 2.5-8cm, densely and softly white-downy beneath, with wavy margins. **Goat Willow, Great Sallow *Salix caprea***

10a **R**aised ridges running along twigs on wood under stripped bark, which are more slender. Leaves less densely and not so softly hairy on underside, often with a scatter of rust-coloured hairs, especially along veins. **11**

***Salix caprea* (above)**

11 Leaves evenly elliptical, broadest near the middle, tapering to an acute point, often more than 3 times as long as broad, sometimes with margins slightly down-rolled.

Hybrids of Common Sallow *Salix cinerea* and Common Osier *Salix viminalis*

11a Leaves oval or obovate (broadest in the upper half), usually with a rather blunt tip, seldom more than 3 times as long as broad, margins not down-rolled.

Grey Willow, Common Sallow *Salix cinerea* **12**

12 Underside of leaves with a scatter of orange hairs, giving a rusty appearance to the naked eye, especially on the veins of older leaves. Twigs almost smooth and lacking hairs. Wood of twigs, when bark is stripped, usually with only faint ridges. Leaves usually quite narrow, broadest in upper half, with smooth edges. Tree-forming or almost so, up to 10 or even 15m tall. **Rusty Sallow *Salix cinerea* ssp. *oleifolia***

12a Underside of leaves densely grey-downy (less soft than Goat Willow), with no rusty hairs. Twigs usually with short downy hairs, the wood (after bark is stripped) strongly ridged throughout. Leaves often broadly oval and with rather wavy edges. Usually a spreading large shrub 4-6m tall. **Grey Willow, Common or Grey Sallow *Salix cinerea* ssp. *cinerea***

***Salix cinerea subsp. oleifolia* (left), *S. cinerea subsp. cinerea* (right)**

AN EXPANDED KEY TO LOWLAND WILLOWS, SALLOWS AND OSIERS

Brian Eversham **v. 3.1** **August 2025**

This key is intended to be used on normal specimens, with mature and largely undamaged leaves, collected in lowland England in July-October. Leaf shapes, ratios and measurements should be based on examining a range from around the tree or bush, to make sure they are representative. On almost every twig, you will find the occasional leaf which is too long, short, wide or narrow to fit the key. This expanded key includes a few scarcer species and some non-native species, and should key out most of the commoner hybrids directly. Note that some species key out in more than one place, e.g. the two species which form large trees key on tree size, then key again for smaller individuals.

1 Large, broad-crowned tree, at least 10m tall, trunk more than 40cm diameter at breast height. **2**

1a Smaller in all respects: less than 10m tall, less than 40cm trunk diameter. (Small specimens of big trees key here too). **3**

2 **THREE choices**

Mature leaves glossy green and almost hairless on both upper and lower sides. Margins of leaves with coarse, irregular teeth. Leaves usually large, 5-15 x 1.5-3cm. Twigs snap off easily at base. Tree appears green, not silvery, from a distance. A broad-crowned tree, with branches wide-spreading, often at an angle of more than 45° from the vertical.

Eastern Crack Willow *Salix euxina* (formerly *S. fragilis*)

2a Mature leaves dull green with some silky white hairs on upper surface, and dense, long silky appressed hairs on underside. Leaves with very fine, regular teeth. Leaves usually smaller, 5-10 x 0.5-2cm. Twigs less easily detached. Tree appears silvery from a distance. A narrower, more upright tree, with branches usually ascending, forming an angle of less than 45° to the vertical. **White Willow *Salix alba***

2b **I**ntermediate in leaf size and in size and regularity of toothing of leaf edges, with some persistent silky hairs but not appearing silvery from a distance.

Hybrid Crack Willow *S. alba x euxina = S x fragilis* (formerly *S. x rubens*)

***Salix euxina* (left) and *S. alba* (right)**

3 Underside of leaves hairless or with only a few hairs from an early age. **4**

3a Leaves with some persistent hairs on underside, either densely downy (very short more or less upright hairs), or silky (longer hairs which appear stuck down to the leaf surface), or with a dense felted mat of pale hairs - if in doubt, fold the leaf and look along the fold. **8**

4 Leaves mostly less than 3.5 times as long as broad. **5**

4a Leaves mostly more than 3.5 times as long as broad. **6**

[If leaves are variable 3-4 times as long as broad, try both 5 and 6]

5 THREE choices, all scarce or planted

5a Twigs hairless, very glossy, as if varnished, yellow-brown to reddish. Leaves with small, sticky, resin-scented warty glands (often like a tiny bunch of grapes) at apex of stalk and along sides of leaf blade where it joins the stalk. Leaves smooth, glossy, dark shining green above, bright paler green beneath, tough and leathery, with regular fine pointed teeth along margins. Leaves pointed, elliptical, 5-12 x 2-5cm, remaining green when damaged or dried. Stipules tiny, falling off early in summer, buds small and yellowish. Broad-crowned tree, often 7m, sometimes to 17m. **Bay Willow *Salix pentandra***

5b Twigs hairless, dark reddish-brown, fairly glossy, when young coated with white or pale grey waxy bloom (wears off, but often persists below the buds). Leaves without resinous warty glands, smooth, dark shining green above, pale blue-green below. Leaves pointed-elliptical, mostly 7-12cm x 2-3cm, remaining green when damaged or dried, with regular glandular teeth along the margins. Stipules often long and narrow, up to 12 x 5mm, usually closely attached to the sides of the large, flattened, pointed, dark crimson buds. A large shrub or small tree 6-12m high. **Violet Willow *Salix daphnoides***

5c Twigs dull brown or greenish, at first densely downy, and not losing the last traces of down till over a year old. Leaves without glands. Leaves, with more prominent veins, dull dark green above, pale grey- or blue-green below. Leaves smaller and more rounded, 2-6.5 x 1-3.5cm, rather thin and papery, turning black when damaged or dried. Leaves broad oval with wavy or crenate-toothed margins. Stipules large, broad and persistent, not attaching to buds; buds small , greenish or pink-tipped. An open or sprawling bush to 3-4m.

Dark-leaved Willow *Salix myrsinifolia*

***Salix pentandra* (left), *S. daphnoides* (middle), *S. myrsinifolia* (right)**

6 Many leaves with straight sides in lower three-quarters, and tapered rather abruptly in upper fifth, 2-8 x 0.5-3cm. Some leaves and branches in opposite pairs along the twigs. Mature leaves dull or silk-finish dark green above, pale bluish green below (eucalyptus coloration), young leaves at tips of branches often orange- or copper-tinged. Leaves turning black when damaged or dried. Underside of peeled bark of twigs brilliant yellow.

Purple Willow *Salix purpurea*

6a Leaves almost evenly convex at sides, and more gradually tapering in upper half. All leaves arranged alternately along twigs. Inside of bark pale or dark greenish, not bright. **7**

If leaves like Purple Osier or slightly broader, but leaves seen from above with deep net-like veins, and below, either totally hairless and pale blue-green, or with downy hairs along the veins, consider ***Salix cinerea x purpurea = S. x pontederiana,*** formerly *S. x sordida*

***Salix purpurea* (leaves and catkins)**

7 **THREE choices**

7a Twigs smell/taste of rose-water when thoroughly crushed or chewed. Twigs hard to snap off. Tends to produce a few catkins throughout summer. . Leaves mostly gently tapering at apex to an acute point, but not prolonged. Leaf bases also tapered. Bark not deeply fissured, flaking off (like London Plane) to reveal reddish-brown patchesNever more than 10m, and common form (var. *hoffmaniana*) rarely exceeds 4m. **Almond Willow *Salix triandra***

7b Twigs have a 'greenish' smell, with no hint of roses. Twigs snap off easily. Catkins all in spring, not later. Leaves often very gradually tapering at apex to a long, slender point. Leaf bases also tapered. Grows into a large tree, up to 15m or more, with a thick trunk and rough, fissured bark. **Eastern Crack Willow *Salix euxina* (formerly *S. fragilis*)**

7c Twigs have a 'greenish' smell, with no hint of roses. Twigs hard to snap off. Catkins all in spring, not later. Leaves rather abruptly tapered at apex, and bases either truncate or even cordate (heart-shaped). New leaves often tinged purple or coppery. Bark usually smooth or

only slightly rough. A spreading scrambling-suckering shrub no more than 2.5m tall, not forming a single distinct trunk. An uncommon North American introduction, occasionally planted. **Heart-leaved Willow *Salix eriocephala***

***Salix triandra,* leaves and peeling bark - for *S. euxina* see couplet 2**

8 Creeping and suckering low shrub, seldom over 1m tall, forming low patches or thickets. No branches more than 1cm thick. Leaves often very small, 1-3.5cm x 0.4-2.5cm, the margins rolled down, and without, or with a few obscure and uneven, teeth. Leafstalk less than 4mm long, stipules absent or small (less than 3mm long). Leaves blackening when dried. Very variable in leaf hairiness, from thinly silky to thickly silvery-white (var. *argentea*, the latter mainly on sand dunes). Scarce, found mainly in fens, wet heaths and wetter parts of sand dunes. **Creeping Willow *Salix repens***

8a Shrub or small tree with upright trunks, usually several cm thick. Leaves often larger, with more regular rounded teeth or wavy edges. Leafstalk usually 5-15mm, stipules variable but often larger, especially if leafstalk is less than 5mm. Leaves remaining green when dried. Common in many habitats. **9**

***Salix repens,* typical form (left) and var. *argentea* (right)**

9 Most leaves at least 5 times as long as broad, with downy hairs, or long silky appressed hairs, or a mat of felted hairs. **10**

9a Leaves not more than 4 times as long as broad, with downy hairs. **13**

10 Grows into tall tree up to 30m, with large trunks and fissured bark. Leaves 5-10 x 0.5-1.5cm, seldom more than 10 times as long as broad. Leaf surface smooth and flat, veins hardly noticeable. Upper and lower surfaces with long silky white hairs, stuck down against leaf surface. Edges of leaves finely and evenly serrated. Illustration: couplet 2.

White Willow *Salix alba*

If as above, but with larger leaves, with rather sparse silky hairs, and more coarse-toothed leaf margins, consider **Hybrid Crack Willow *S. alba x euxina* (*= S. x fragilis*)**

10a At most a tall shrub, up to 6m. Leaf surface wrinkled, the veins more deeply marked. Upper surface dull dark green, sometimes with a few hairs sticking up from surface. Underside of leaves with dense white downy or felted hairs (fold the leaf over, underside upwards, and the hairs stick out at right-angles from the fold). Edges of leaves slightly wavy or obscurely toothed, sometimes with the edges rolled down. **11**

11 Leaves very long and narrow, 10-15 x 0.5-1.5cm, generally (8-)10-20 times as long as wide, tapering gradually at tip and at base. Leaf surface wrinkled, the veins more deeply marked. Upper surface dull dark green, with a few hairs, underside densely felted white with very short matted hairs (may not look like hairs without a x10 lens). Edges of leaves slightly wavy, usually with the edges rolled down. Tall shrub, up to 6m, with long, straight, flexible twigs.

Osier, Common Osier *Salix viminalis*

Leaves broader, mostly 6-12cm x 1.3-3cm, generally 3-8 times as long as wide, more abruptly tapering to an acute tip. Veins prominent, often net-like. Underside with downy hairs sticking up from surface, sometimes thickly and softly downy or velvety. Variable shrubs, sometimes with long flexible branches, sometimes more branched and twiggy.

[Hybrids of Common Osier *Salix viminalis*] **12**

***Salix viminalis* (above)**

12 **THREE choices:** ***these are osier-sallow hybrids. One parent is Common Osier,*** **Salix viminalis*****, the other parent(s) are likely to be one or both of Common Sallow and Goat Willow. Hybrids involving Eared Sallow also occur, but are rare in lowland England. As a group they are distinctive in having leaves too narrow and pointed for 'pure' sallows, and too short and broad for 'pure' Common Osier. The upper surface of the leaves is the wrinkly dark green of a sallow. They occur naturally, especially on disturbed sites such as scrubbed-over gravel workings. Some are also grown for basket-making or as biomass crops.***

12a No longitudinal raised lines under bark of twigs. Leaves usually thickly and softly downy on underside. Leaves often large 6-13 x 1.3-3cm. Veins prominently net-like. Leaves often rounded at base. Leafstalk 10-15mm. Stipules usually small, narrowly ear-shaped, and falling early. Twigs pale reddish or yellowish, at first with dense white down, but this quickly lost. Either male or female, fertile. Tall shrub, up to 6m, with long, straight, slender flexible twigs.

'Goaty osier', Broad-leaved Osier ***Salix caprea x viminalis = S. x smithiana,*** formerly known as *S. x. sericans*

12b Longitudinal raised lines under bark of twigs. Leaves thickly downy, usually with long and persistent down, on underside. Leaves 10 (-15) x 3 (-5) cm, with a rounded or broadly-tapering base. Leafstalk 10-15mm. Stipules usually large, 6-15 x 5-7mm, conspicuous and persistent. Twigs dull grey-brown, with dense grey down which persists into the second year. Always female, never forming healthy capsules or setting viable seed. Large shrub or small tree, up to 10m, usually with some of main branches fallen, or bent with cracked bark. Sometimes forming large stands, as each branch falls and roots and spreads.

Holme Willow, *Salix x calodendron* (probably *S. caprea x cinerea x viminalis*)

12c Longitudinal raised lines under bark of twigs. Leaves thinly downy on underside, often rather rough to touch. Leaves 6-11 x 0.8-2.5cm, often rather small, gradually tapering to an acute angle at base. Leafstalk 5-13mm. Stipules usually large, semicircular or ear-shaped, tapering to a narrow point, conspicuous and persistent, sometimes with additional small leafy appendages at their bases. Twigs usually reddish brown, densely downy for their first year, usually losing the fur in their first winter. Either male or female, fertile. Tall shrub, to 6m, with long, straight, slender flexible twigs.

Grey Willow (aka Common Sallow) x Common Osier ***S. cinerea x viminalis = S. x holosericea*** formerly known as *S. x smithiana*

[Illustrations on next page]

Salix caprea x viminalis **(top left)**

S. caprea x cinerea x viminalis **(above)**

S. cinerea x viminalis **(left)**

13 Upper surface of leaves dull grey-green and wrinkled, with deepset veins. Apices of leaves usually twisted. Branches usually diverge widely, sometimes almost at a right angle.. Bush usually less than 2.5m tall. Leaves usually rather small, up to 5cm long. Always with strong raised lines under bark of twigs, and twigs very slender.

Eared Willow, Eared Sallow ***Salix aurita***

13a Upper surface of leaves fairly smooth and usually somewhat shining. Apices of leaves twisted or flat. Branches usually less diverging. Bush and leaves often larger. With or without raised lines under bark, twigs more stout. **14**

Salix aurita **(above)**

14 Twigs without raised ridges on wood under stripped bark, rather thick and knobbly. Leaves broad and large, 5-12cm x 2.5-8cm, densely and softly white-downy beneath, with wavy margins. **Goat Willow, Great Sallow *Salix caprea***

14a Twigs with raised ridges on wood under stripped bark, usually starting at leaf scars and running along twigs, which are more slender. Leaves less densely and not so softly hairy on underside, often with a scatter of rust-coloured hairs, especially along veins. **15**

***Salix caprea* (above)**

15 Leaves evenly elliptical, broadest near the middle, tapering to an acute point, often more than 3 times as long as broad, sometimes with margins slightly down rolled. **12**

15a Leaves oval or obovate (broadest un the upper half), usually with a rather blunt tip, seldom more than 3 times as long as broad, margins not down-rolled.
Grey Willow, Common Sallow *Salix cinerea* **16**

16 Underside of leaves with a scatter of orange hairs, giving a rusty appearance to the naked eye, especially on the veins of older leaves. Upper surface of leaves usually a slightly shiny dark green. Twigs almost smooth and lacking hairs. Wood of twigs, when bark is stripped, usually only faintly and intermittently ridged. Leaves usually quite narrow, broadest in upper half, with smooth edges. Tree-forming or almost so, up to 10 or even 15m tall.
Rusty Sallow *Salix cinerea* ssp. *oleifolia*

16a Underside of leaves densely grey-downy (less soft than Goat Willow), with no rusty hairs. Upper surface of leaves dull grey-green. Twigs usually with short downy hairs, the wood (after bark is stripped) strongly ridged throughout. Leaves often broadly oval and with rather wavy edges. Usually a spreading large shrub 4-6m tall.
Grey Willow, Common or Grey Sallow *Salix cinerea* ssp. *cinerea*

***Salix cinerea subsp. oleifolia* (left), *S. cinerea subsp. cinerea* (right)**

ILLUSTRATIONS OF LOWLAND WILLOWS, SALLOWS AND OSIERS

Brian Eversham ***v. 1.1*** ***August 2025***

The following illustrations are scans of fresh specimens of the commoner species, reduced from A3 to A4 size. They generally include large leaves from vigorous or suckering shoots, as well as pieces of shorter, more typical shoots, and mostly show both upper (darker) and lower (paler) surfaces of leaves. As the samples were collected in August, in most cases it is not possible to include catkins.

Salix pentandra	Bay Willow
Salix euxina	Eastern Crack Willow
Salix alba	White Willow
Salix alba x euxina = S. x fragilis	Hybrid Crack Willow
Salix alba x pentandra = S. x erhartii	Ehrhart's Willow
Salix triandra	Almond Willow
Salix eriocephala	Heart-leaved Willow
Salix purpurea	Purple Willow
Salix viminalis	Osier, Common Osier
Salix x calodendron	Holme WIllow
Salix caprea	Goat Willow
Salix caprea x cinerea = S. x reichardtii	
Salix cinerea cinerea	Grey Willow
Salix cinerea oleifolia	Rusty Willow
Salix cinerea x viminalis =S. x holosericea	Silky-leaved Osier
Salix aurita	Eared Willow
Salix aurita x cinerea = S. x multinervis	
Salix repens	Creeping Willow

Salix pentandra Bay Willow

Broad-crowned tree, often 7m, sometimes to 17m. Twigs hairless, very glossy, as if varnished, yellow-brown to reddish. Leaves with small, sticky, resin-scented warty glands (often like a tiny bunch of grapes) at apex of stalk and along sides of leaf blade where it joins the stalk. Leaves smooth, glossy, dark shining green above, bright paler green beneath, tough and leathery, with regular fine pointed teeth along margins. Leaves pointed, elliptical, 5-12 x 2-5cm, remaining green when damaged or dried. Stipules tiny, falling off early in summer, buds small and yellowish.

Salix euxina (formerly *S. fragilis*) Eastern Crack Willow

Mature leaves glossy green and hairless on both upper and lower sides. Margins of leaves with coarse, irregular teeth. Leaves usually large, 5-15 x 1.5-3cm. Twigs snap off easily at base. Tree appears green, not silvery, from a distance. A broad-crowned tree, with branches wide-spreading, often at an angle of more than 45° from the vertical.

Salix alba White Willow

A tall, graceful tree up to 25m tall, appearing silvery from a distance. A narrower, more upright tree, than *S. euxina,* with branches usually ascending, forming an angle of less than 45° to the vertical. Mature leaves dull green with some silky white hairs on upper surface, and dense, long silky appressed hairs on underside. Leaves with very fine, regular teeth. Leaves usually smaller, 5-10 x 0.5-2cm. Twigs less easily detached than *euxina*.

Salix alba x euxina = S x fragilis (formerly *S. x rubens*)
Hybrid Crack Willow

A large tree up to 25m tall, intermediate between its two parents. Leaves with a few persistent silky hairs but lackng the silvery appearance of *S. alba.* Teeth coarser than *alba* but less coarse and less irregular than *euxina.*

S. alba x pentandra = S. x ehrhartii (formerly *S. x rubens*)
Ehrhart's Willow

A small tree up to 10-15m tall, intermediate between its two parents. Leaves with a few persistent silky hairs but shiny and soon hairless, 6-10 x 1.3-2.5cm, finely and regularly toothed, the individual teeth less protruding and flatter than in *S. euxina* and its hybrids.

Salix eriocephala Heart-leaved Willow

A sprawling suckering shrub 2-2.5m tall, somewhat resembling *S. triandra* but with leaves truncate (abruptly cut off) or even cordate (heart-shaped) at the base unlike other British willows. and twigs. Rarely produces catkins during summer, and does not smell of rose-water. Rare introduction from N. America.

Salix triandra Almond Willow

Never more than 10m, and common form (var. *hoffmaniana*) rarely exceeds 4m. Bark not deeply fissured, flaking off (like London Plane) to reveal reddish-brown patches. Stipules large and often persisting through summer. Leaves mostly gently tapering to an acute point, but not prolonged. Tends to produce a few catkins throughout summer. Twigs hard to snap off. Twigs smell/taste of rose-water when thoroughly crushed or chewed.

Salix purpurea Purple Willow, Purple Osier

A shrub or small tree, to 5m tall, with slender, rather upright twigs. Leaves with straight sides in lower three-quarters, and tapered rather abruptly in upper fifth, 2-8 x 0.5-3cm. Some leaves (and branches) in opposite pairs along the twigs (alternate in other species). Mature leaves dull or silk-finish dark green above, pale bluish green below (eucalyptus coloration), young leaves at tips of branches often orange- or copper-tinged. Leaves turning black when damaged or dried. Bark of twigs brilliant yellow inside. Called 'Purple' from colour of the anthers!

Salix viminalis Osier, Common Osier

Leaves very long and narrow, 10-15 x 0.5-1.5cm, generally (8-)10-20 times as long as wide, tapering gradually at tip and at base. Leaf surface wrinkled, the veins more deeply marked. Upper surface dull or shiny dark green, with a few hairs, underside densely felty-downy white with very short hairs. Edges of leaves often slightly wavy, usually with the edges rolled down. Tall shrub, up to 6m, with long, straight, slender flexible twigs.

Salix caprea Goat Willow, Great Sallow

A large shrub or small tree up to 10m tall. Leaves broad and large, 5-12cm x 2.5-8cm, densely and softly white-downy beneath, often with wavy margins and a slightly twisted apex to the leaf. Twigs completely smooth and without raised ridges on wood under stripped bark, usually less slender than in *S. cinerea* or *S. aurita,* often rather thick and knobbly.

Salix caprea x cinerea = S. x reichardtii

A large shrub or small tree up to 10m tall, generally similar to *S. caprea.* Leaves tend to be narrower and more acutely pointed than in *caprea,* but proportionately broader than in *cinerea:* leaf shape can vary considerably on a single twig. Although they can be more downy underneath than *cinerea*, they are rarely as densely and softly furry as *caprea*. Twigs have at least some faint raised ridges on wood under stripped bark, and are usually less thick than in pure *caprea.*

Salix cinerea ssp. *cinerea* Grey Willow, Common Sallow

Usually a spreading large shrub 4-6m tall, less tree-forming that ssp. o*leifolia.* Underside of leaves densely grey-downy (less soft than Goat Willow), with no rusty hairs. Upper surface of leaves dull grey-green. Twigs usually with short downy hairs, the wood (after bark is stripped) strongly ridged throughout, the ridges usually longer but shallower than in *aurita*. Leaves often a little broader than in ssp. *oleifolia*.

Salix cinerea ssp. *oleifolia* Rusty Willow, Rusty Sallow

Tree-forming or almost so, up to 10 or even 15m tall. Underside of leaves with a scatter of orange hairs, giving a rusty appearance to the naked eye, especially on the veins of older leaves: much more obvious in autumn than in early summer. Upper surface of leaves usually a slightly shiny dark green. Twigs almost smooth and lacking hairs. Wood of twigs, when bark is stripped, usually only faintly and intermittently ridged: ridges longer but shallower than in *aurita*. Leaves usually quite narrow, broadest in upper half, with smooth edges. Sometimes called *Salix atrocinerea.*

Salix cinerea x viminalis = S. x holosericea Silky-leaved Osier

Tall shrub, to 6m, with long, straight, slender flexible twigs Raised lines under bark of twigs indicate *cinerea* as a parent. Leaves thinly downy on underside, often rather rough to touch, less soft than *caprea* hybrids. Leaves 6-11 x 0.8-2.5cm, often rather small, gradually tapering to an acute angle at base. Leafstalk 5-13mm. Stipules usually large, semicircular or ear-shaped, tapering to a narrow point, often conspicuous and persistent, sometimes with additional small leafy appendages at their bases. Twigs usually reddish brown, densely downy for their first year, usually losing the fur in their first winter. Either male or female, fertile.

Salix x calodendron (probably *S. caprea x cinerea x viminalis*) Holme Willow

Large shrub or small tree, up to 10m, usually with some of main branches fallen, or bent with cracked bark. Sometimes forming large stands, as each branch falls and roots and spreads. Raised lines under bark of twigs. Leaves thickly downy, usually with long and persistent down, on underside. Leaves 10 (-15) x 3 (-5) cm, with a rounded or broadly-tapering base. Leafstalk 10-15mm. Stipules usually large, 6-15 x 5-7mm, conspicuous and persistent. Twigs dull grey-brown, with dense grey down which persists into the second year. Always female, never forming healthy capsules or setting viable seed.

Salix aurita Eared Willow, Eared Sallow

A richly-branched bush usually less than 2.5m tall. Branches usually diverge widely, sometimes almost at a right angle. Upper surface of leaves dull grey-green and wrinkled, with deep-set veins. Apices of leaves usually twisted. Leaves usually rather small, up to 5cm long. Always with strong raised lines, often rather short but steep, under bark of twigs, and twigs very slender.

Salix aurita x cinerea = S. multinervis Eared Willow, Eared Sallow

A richly-branched bush usually less than 5m tall. Branches usually diverge widely, twigs rather slender though less than in *S. aurita*. Upper surface of leaves showing some of the wrinkled surface and deep-set veins veins of *S. aurita,* and usually with smaller leaves than typical *S. cinerea*. Raised lines under bark of twigs rather stronger bur shorter than *cinerea.*

Salix repens Creeping Willow

Creeping and suckering low shrub, seldom over 1m tall, forming thickets. No branches more than 1cm thick. Leaves 1-3.5cm x 0.4-2.5cm, the margins rolled down, and without, or with a few obscure and uneven, teeth. Leafstalk less than 4mm long, stipules absent or small (less than 3mm long). Leaves blackening when dried. Very variable in leaf hairiness, from thinly silky to thickly silvery-white (var. *argentea*, the latter mainly on sand dunes). Scarce, found mainly in fens, wet heaths and wetter parts of sand dunes.