

OV27

Epilobium angustifolium community

Constant species

Epilobium angustifolium.

Physiognomy

The *Epilobium angustifolium* community is overwhelmingly dominated by *E. angustifolium*, the tall shoots of which can reach well over 1 m by summer. No other species is frequent throughout but the commonest associates overall are *Rubus fruticosus* agg., *Holcus lanatus*, *Pteridium aquilinum* and *Urtica dioica* with various other species reflecting the different situations in which this kind of vegetation can develop.

Sub-communities

***Holcus lanatus*-*Festuca ovina* sub-community.** In this grassy or heathy vegetation, *E. angustifolium* is accompanied by frequent *Holcus lanatus* and *Festuca ovina*, occasional *Anthoxanthum odoratum*, *Agrostis capillaris*, *Potentilla erecta*, *Galium saxatile* and *Teucrium scorodonia*, and sometimes by scattered *Calluna vulgaris*, *Erica cinerea*, *Ulex europaeus* and *U. gallii* and sparse or patchy *Pteridium*.

***Urtica dioica*-*Cirsium arvense* sub-community.** *U. dioica* is a frequent associate here, though not rivalling *E. angustifolium* in cover, and there are often scattered individuals of *Cirsium arvense* and *C. vulgare*. *Holcus lanatus* remains common but is occasionally accompanied here by *Arrhenatherum elatius*, *Dactylis glomerata*, *Holcus mollis*, *Deschampsia cespitosa* and *Poa trivialis*, with *Heracleum sphondylium* and *Galium aparine*. Patches of *Rubus fruticosus* agg. can sometimes be seen.

***Rubus fruticosus* agg.-*Dryopteris dilatata* sub-community.** *Rubus fruticosus* agg. is constant here, along with *Dryopteris dilatata*, and occasional *Pteridium aquilinum* and saplings of *Betula pendula*, *B. pubescens*, *Pinus sylvestris*, *P. nigra*, *Quercus robur* and *Q. petraea*. Bryophytes such as *Mnium hornum*, *Aulacomnium*

androgynum and *Lophocolea bidentata* s.l. are sometimes prominent on decaying wood.

***Acer pseudoplatanus*-*Sambucus nigra* sub-community.** Saplings of *Acer pseudoplatanus*, *Fraxinus excelsior* and, less commonly, *Fagus sylvatica* and *Ulmus glabra* feature prominently in this sub-community along with bushes of *Sambucus nigra* and clumps of *Rubus fruticosus* agg. Herbaceous associates include occasional *Urtica dioica*, *Circaea lutetiana*, *Brachypodium sylvaticum*, *Mercurialis perennis* and ferns like *Dryopteris filix-mas*, *D. borreii* and *D. dilatata*. In spring, there can be a patchy show of *Hyacinthoides non-scripta* or *Allium ursinum*. *Eurhynchium praelongum*, *E. striatum* and *Brachythecium rutabulum* are occasional over the soil surface and litter.

***Ammophila arenaria* sub-community.** *Ammophila arenaria*, *Festuca rubra* and *Poa pratensis* are frequent associates of *E. angustifolium* here, sometimes in abundance, and there are frequent scattered individuals of *Senecio jacobaea*, *Lotus corniculatus* and *Hypochoeris radicata*. More occasionally, *Ononis repens*, *Crepis capillaris*, *Luzula campestris* and *Sedum acre* can be seen with ephemerals like *Myosotis ramosissima*, *Carlina vulgaris*, *Valerianella locusta* and *Viola tricolor* appearing on open areas of bare sand.

Habitat

The *Epilobium angustifolium* community is characteristic of damp, fertile soils on disturbed, often burned, ground in woodlands, on heaths, road verges, tracksides, recreation areas and wasteland throughout Britain.

E. angustifolium is a circumpolar plant, widespread through Eurasia and North America and native in Britain (Hultén 1971). In its natural habitats, it is characteristic of two main groups of communities: the tall-herb and scrub vegetation of snow-protected mountain slopes and ledges (e.g. Nordhagen 1943, Dahl 1956, Ellenberg 1988) and the secondary vegetation of forests disturbed by wind-throw, fire or clearance (Tüxen 1950,

Ellenberg 1988). The *Epilobium angustifolium* community includes stands in this second kind of situation but also reflects the success of the plant in colonising more artificial habitats where a congenial combination of conditions can be found. Though the plant was recorded widely in Britain in the eighteenth and nineteenth centuries (Myerscough 1980), it was not until this century that it began to be seen abundantly, an increased prominence attributed by Salisbury (1964) to the greater availability of burned and derelict habitats.

E. angustifolium produces seed in phenomenal quantities – perhaps over 50000 per flowering shoot (Salisbury 1964, Myerscough 1980) – and this is very widely dispersed by wind. The seed remains viable for only about 18 months or so but readily germinates and establishes up to this age if light, moisture and at least moderate amounts of major nutrients are available (Reinikainen 1964, Myerscough & Whitehead 1967). Cleared and burned areas in woodlands thus provide a very suitable habitat. Felling or fire opens up the ground to high light levels and disturbance or burning encourages mineralisation of humus or provides nutrient-rich ash. Removal of the trees which would otherwise draw water from the soil, shelter from drying winds by surrounding vegetation and the opening up of the soil surface to wetting rains also all help create a substrate that is moist, at least in the early stages of recolonisation.

In this process, *E. angustifolium* also gains a considerable advantage from its rapid growth following establishment. Most seedlings probably appear initially in late summer and autumn and they can gain weight rapidly before overwintering as small rosettes. Subsequent growth is by horizontally spreading roots which bear shoot buds (Moss 1936) even on very young plants (Myerscough & Whitehead 1967). Flowering can take place within the first year and occurs every year thereafter, but vegetative reproduction takes priority for consolidating established colonies and in terms of resource allocation (van Andel & Vera 1977). This strategy is also important because the favourable conditions in clearings and burned areas persist only for a short time, with the initial mobilised supply of nutrients being used up within two or three years (Ellenberg 1988). Essentially, the mature plant is a geophyte.

Once well established, plants of *E. angustifolium* often overtop any lower growing associates by late spring or early summer (Myerscough 1980) and go on increasing in above-ground biomass for a number of years. Associates through the community are therefore generally few, comprising bulkier potential competitors that sprang up with the willow-herb or subsequently overtook it or which are survivors from pre-existing vegetation that persist patchily in more open places. The diversity of these companions reflects the variety of situations in which the community can develop.

The commonest associates overall are *Pteridium aquilinum* and *Rubus fruticosus* agg., especially in woodland habitats, with mosses like *Brachythecium rutabulum* and *Eurhynchium praelongum* occasional in various sub-communities. Very frequently, as in the *Rubus-Dryopteris* type, sprawls of bramble grow up among and around the *E. angustifolium* with scattered fronds or patches of bracken. Both these associates can spring up again after burning, putting up new shoots from underground stems. Scattered *D. dilatata* and young saplings of birch and pine are also typical of this vegetation which is widespread on acidic soils in cleared or burned oak-birch and coniferous woodland (e.g. Hill & Jones 1978). The *Acer-Sambucus* sub-community where bramble and bracken remain quite frequent, but where the usual young woody species are *Acer pseudoplatanus*, *Fraxinus excelsior*, *Fagus sylvatica*, *Ulmus glabra* and *Sambucus nigra*, is a more local type of *E. angustifolium* vegetation developing around old bonfire sites in more mesophytic and calcicolous woodlands. It is also common on railway embankments and derelict land, particularly where trackside fires have occurred or old buildings have been gutted and burned.

Also widespread on road verges, railway embankments, in recreation areas and on wasteland, is the *Urtica-Cirsium* sub-community. Gross disturbance and fires from picnics or carelessly discarded cigarettes commonly destroy the vegetation of such habitats providing an opportunity for *E. angustifolium* to establish, along with other nutrient-demanding weeds and coarse ephemerals. Perennial grasses like *Arrhenatherum elatius*, *Dactylis*, *Deschampsia cespitosa* and *Holcus mollis* can survive light burns and also seed in from sources nearby.

Fires are also a common feature of heaths and the *Holcus-Festuca* sub-community includes stands of *E. angustifolium* vegetation developed among burned areas, with a patchy persistence, regrowth from stools or seeding in of sub-shrubs, and a discontinuous sward of grasses and herbs characteristic of acidic soils or, as with *H. lanatus*, reflecting temporary nutrient enrichment.

Finally, the *Ammophila* sub-community comprises *E. angustifolium* vegetation from burned stable dune systems.

Zonation and succession

Very commonly, stands of *E. angustifolium* vegetation are sharply marked off from their surrounds by the highly localised disturbance that has resulted in their development.

In oak-birch woodlands, for example, stands of the *Rubus-Dryopteris* sub-community often occupy much of small open areas created by clearance of fire, or those places where burning of brashings or coppice waste has been concentrated, surrounded by surviving areas of

Quercus-Pteridium-Rubus, *Quercus-Betula-Oxalis*, or *Quercus-Betula-Deschampsia* woodlands or coniferised replacements. Sometimes, *Rubus-Pteridium* or *Rubus-Holcus* underscrubs also occur with the willow-herb where bramble or bracken have gained ascendancy or else patches of *Festuca-Agrostis-Rumex* grassland on parched or grazed areas. Heathy woodlands where burning has occurred sometimes have both the *Rubus-Dryopteris* and the *Holcus-Festuca* sub-communities. On unwooded heaths, the latter type of *E. angustifolium* vegetation usually marks out old burns among *Calluna-Festuca*, *Calluna-Ulex minor*, *Calluna-Ulex gallii* and *Calluna-Erica cinerea* heaths. *Ulex-Rubus* scrub can also develop around disturbed and burned areas and, on grazed heaths, *Festuca-Agrostis-Rumex* and *Festuca-Agrostis-Galium* grasslands can also form part of the patchwork. The *Acer-Sambucus* sub-community is also commonly seen in woodlands, in this case the *Fraxinus-Acer-Mercurialis* or *Fagus-Mercurialis* types, marking out old bonfire sites. In larger clearings where trees and shrubs are slower to re-establish themselves, *Deschampsia-Holcus* grassland is a common associate, with *Crataegus-Hedera* scrub where shrub colonisation is occurring.

The *Urtica-Cirsium* sub-community is often seen among disturbed or burned stretches of *Arrhenatheretum* or *Deschampsia-Holcus* grassland, often with stands of *Urtica-Galium* and *Urtica-Cirsium* vegetation. The *Ammophila* sub-community occurs locally among *Ammophila-Festuca*, *Festuca-Galium* and *Ammophila-Arrhenatherum* grasslands where dunes have been burned and disturbed. Sometimes, *Hippophae* scrub also occurs in such situations.

E. angustifolium is a formidable competitor to smaller herbs and seedling trees and shrubs but woody plants can eventually overtop the willow-herb where they have established in more open places or where they resprout from substantial cut stools. The particular kind of woodland succeeding the *E. angustifolium* vegetation will depend on the local soil and climatic conditions and the availability of colonisers, but the range of communities noted above may all eventually replace stands of willow-herb according to particular circumstances. On more mesotrophic or calcareous soils, *Crataegus-Hedera* or *Prunus* scrub may supervene. On sandy soils, resump-

tion of judicious burning or grazing may reinstate some kind of heath rather than acidophilous oak-birch woodland.

Distribution

The *Epilobium angustifolium* community is very widely distributed in suitable habitats throughout the British lowlands.

Affinities

Elsewhere in Europe, can be seen vegetation dominated by *Epilobium angustifolium* in association with such herbs as *Fragaria vesca*, *Senecio sylvaticus*, *Galeopsis speciosa* and *Myosotis sylvatica* and colonising shrubs like *Rubus idaeus*, *Sambucus nigra* and *Salix caprea* (e.g. Westhoff & den Held 1969, Oberdorfer 1978, White & Doyle 1982, Matuszkiewicz 1981, Pott 1992, Mucina *et al.* 1993). The associations most commonly recognised have been the *Digitali-Epilobietum* Schwickerath 1944, where *Digitalis purpurea*, *Holcus mollis* and *Teucrium scorodonia* are characteristic and the *Senecioni sylvatici-Epilobietum* R.Tx. 1937 with *S. sylvaticus* and *Deschampsia flexuosa*. Both communities can be found in clearances and burned areas within acidophilous Quercion, Fagion and coniferous woodlands and the ecological differences between them are not always clear: the former is perhaps more characteristic of better-quality brown soils with moder or mull. Sometimes, other assemblages including *E. angustifolium* have been characterised from scrubby regrowth with *Rubus idaeus*. The scarcity of *Digitalis* among the samples available to us is striking and inexplicable: certainly vegetation resembling the *Digitali-Epilobietum* is widespread in Britain. In Birse's (1984) survey of Scottish vegetation, he characterised the *Senecioni-Epilobietum*. For the moment, it seems better to retain a single, diverse and rather ill-defined assemblage.

Whatever associations have been distinguished, authorities agree on grouping *E. angustifolium* vegetation in a distinct alliance, the Epilobion angustifoli Soó *emend.* R.Tx. 1950 or the Carici piliferae-Epilobion R.Tx. 1950, characteristic of more base-poor soils, within a special class, the Epilobieta angustifolii R.Tx. & Preising in R.Tx. 1950 of various vegetation types in cleared, thinned, burned and disturbed woodlands.

Floristic table OV27

	a	b	c	d	e	27
<i>Epilobium angustifolium</i>	V (5–10)	V (5–10)	V (5–9)	V (5–8)	V (5–8)	V (5–10)
<i>Holcus lanatus</i>	V (1–5)	III (1–6)	II (4–6)		III (4–6)	III (1–6)
<i>Festuca ovina</i>	III (3–5)					I (3–5)
<i>Anthoxanthum odoratum</i>	II (2–3)	I (4)	I (2)			I (2–4)
<i>Potentilla erecta</i>	II (2–5)	I (4)				I (1–5)
<i>Teucrium scorodonia</i>	II (3–6)	I (1)		I (5)		I (1–6)
<i>Erica cinerea</i>	II (3–4)					I (3–4)
<i>Calluna vulgaris</i>	II (2–4)					I (2–4)
<i>Galium saxatile</i>	II (2–6)		I (4)			I (2–6)
<i>Ulex europaeus</i>	II (3–7)					I (3–7)
<i>Nardus stricta</i>	I (4)					I (4)
<i>Ulex gallii</i>	I (7)					I (7)
<i>Cytisus scoparius</i>	I (5)					I (5)
<i>Urtica dioica</i>		IV (2–6)	II (3–6)	II (4–5)		II (2–6)
<i>Cirsium arvense</i>	I (1–3)	III (1–5)		I (2)	II (3)	I (1–5)
<i>Galium aparine</i>		II (1–4)	I (3–4)	I (1–3)		I (1–4)
<i>Arrhenatherum elatius</i>	I (2–4)	II (2–8)		I (1)		I (1–8)
<i>Dactylis glomerata</i>	I (4)	II (1–4)				I (1–4)
<i>Heracleum sphondylium</i>		II (1–4)		I (1)		I (1–4)
<i>Deschampsia cespitosa</i>		II (2–5)	I (3)	I (4)		I (2–5)
<i>Holcus mollis</i>		II (1–6)	I (4)			I (1–6)
<i>Poa trivialis</i>		II (1–4)		I (2–4)		I (1–4)
<i>Cirsium vulgare</i>	I (2)	II (1–5)			I (1)	I (1–5)
<i>Solanum dulcamara</i>		II (1–4)				I (1–4)
<i>Elymus repens</i>		I (3–6)				I (3–6)
<i>Anthriscus sylvestris</i>		I (3–4)				I (3–4)
<i>Calystegia sepium</i>		I (3)				I (3)
<i>Epilobium hirsutum</i>		I (2–3)				I (2–3)
<i>Rubus fruticosus</i> agg.	II (3–5)	III (2–7)	IV (2–6)	III (2–7)	I (6)	III (2–7)
<i>Dryopteris dilatata</i>		I (2–3)	IV (1–7)	II (1–7)		I (1–7)
<i>Betula pubescens</i> sapling			II (7)			I (7)

<i>Aulacomnium androgynum</i>			II (1–4)			I (1–4)
<i>Mnium hornum</i>			II (1–3)	I (2)		I (1–3)
<i>Lophocolea cuspidata</i>	I (2)		II (1–5)			I (1–5)
<i>Pinus nigra</i> sapling			II (6)			I (6)
<i>Acer pseudoplatanus</i> sapling				V (3–6)		I (3–6)
<i>Fraxinus excelsior</i> sapling		I (6)		IV (1–6)		I (1–6)
<i>Sambucus nigra</i>		I (1–8)		IV (1–4)		I (1–8)
<i>Circaea lutetiana</i>		I (3)		III (1–3)		I (1–3)
<i>Fagus sylvatica</i> sapling				III (5)		I (5)
<i>Ulmus glabra</i> sapling				III (4–5)		I (4–5)
<i>Eurhynchium striatum</i>				II (1–4)		I (1–4)
<i>Allium ursinum</i>				II (1)		I (1)
<i>Brachypodium sylvaticum</i>				I (1–3)		I (1–3)
<i>Ammophila arenaria</i>					V (4–8)	I (4–8)
<i>Festuca rubra</i>					V (4–9)	I (4–9)
<i>Senecio jacobaea</i>	II (2–3)	I (2–3)	I (2)		IV (1–3)	I (1–3)
<i>Poa pratensis</i>		I (3–6)			IV (2–7)	I (2–7)
<i>Lotus corniculatus</i>			I (2)		III (2–4)	I (2–4)
<i>Hypochoeris radicata</i>	I (3)				III (2–4)	I (2–4)
<i>Ononis repens</i>					II (2–5)	I (2–5)
<i>Crepis capillaris</i>					II (2–3)	I (2–3)
<i>Luzula campestris</i>					II (2)	I (2)
<i>Myosotis ramosissima</i>					II (2)	I (2)
<i>Valerianella locusta</i>					II (1–2)	I (1–2)
<i>Carlina vulgaris</i>					II (1–3)	I (1–3)
<i>Sedum acre</i>					II (1–2)	I (1–2)
<i>Viola tricolor</i>					II (1)	I (1)
<i>Agrostis capillaris</i>	II (3–5)	II (1–6)	I (2)	I (1–4)	I (2)	I (1–6)
<i>Pteridium aquilinum</i>	II (3–5)	II (1–8)	II (5–8)	I (5)		I (1–8)
<i>Brachythecium rutabulum</i>	I (2)	II (2–6)	I (1)	II (2–4)	I (3–4)	I (1–6)
<i>Eurhynchium praelongum</i>		II (3–6)	II (1–3)	II (2–5)		I (1–6)
<i>Epilobium montanum</i>		I (3)	I (2–3)	I (1–3)	I (1)	I (1–3)
<i>Cerastium fontanum</i>	I (2–3)	I (1)	I (1)		I (2–3)	I (1–3)
<i>Juncus effusus</i>	I (5–9)	I (1–4)	I (3)	I (1)		I (1–9)

Floristic table OV27 (cont.)

	a	b	c	d	e	27
<i>Dicranum scoparium</i>		I (1)	I (3–4)	I (4)	I (6)	I (1–6)
<i>Rubus caesius</i>		I (3)	I (1–5)	I (2–3)	I (3–5)	I (1–5)
<i>Lathyrus pratensis</i>	I (3)	I (1–3)		I (3)		I (1–3)
<i>Cirsium palustre</i>	I (3)	I (3)		I (1–3)		I (1–3)
<i>Mercurialis perennis</i>		I (4)	I (5)	I (5–6)		I (4–6)
<i>Silene dioica</i>		I (1)	I (3)	I (2–5)		I (1–5)
<i>Rumex obtusifolius</i>		I (3)	I (1)	I (1–3)		I (1–3)
<i>Athyrium filix-femina</i>		I (2)	I (3)	I (1–2)		I (1–3)
<i>Dryopteris filix-mas</i>		I (3–5)	I (3)	I (1–3)		I (1–5)
<i>Hyacinthoides non-scripta</i>		I (8)	I (3–5)	I (3–4)		I (3–8)
<i>Hypnum cupressiforme</i>			I (4–6)	I (2–4)	I (3–5)	I (2–6)
<i>Hedera helix</i>		I (3–4)		I (3–5)		I (3–5)
<i>Achillea millefolium</i>	I (5)	I (4)				I (4–5)
<i>Juncus conglomeratus</i>	I (3)	I (3–5)				I (3–5)
<i>Rumex acetosa</i>	I (3)	I (1–4)				I (1–4)
<i>Digitalis purpurea</i>		I (6)	I (1)			I (1–6)
<i>Rubus idaeus</i>			I (4–7)	I (1–6)		I (1–7)
<i>Rumex sanguineus</i>		I (2)		I (1–2)		I (1–2)
<i>Plagiomnium undulatum</i>		I (1)		I (1–3)		I (1–3)
<i>Glechoma hederacea</i>		I (2–5)		I (1–2)		I (1–5)
<i>Stachys sylvatica</i>		I (2–4)		I (2)		I (2–4)
Number of samples	12	43	14	8	8	85
Number of species/sample	13 (5–45)	11 (4–29)	10 (4–14)	26 (11–41)	15 (5–22)	13 (4–45)

a *Holcus lanatus*-*Festuca ovina* sub-communityb *Urtica dioica*-*Cirsium arvense* sub-communityc *Rubus fruticosus* agg.-*Dryopteris dilatata* sub-communityd *Acer pseudoplatanus*-*Sambucus nigra* sub-communitye *Ammophila arenaria* sub-community27 *Epilobium angustifolium* community (total)