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| Habitat type information |

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| Countryside SurveyCountryside Survey 2007 |

# Broadleaved woodland (Broadleaved, mixed and yew woodland)

Broadleaved woodlands are characterised by stands >5 m high when mature, with tree cover >20%. This category includes stands of both native and non-native broadleaved tree species and yew (*Taxus baccata*), where the percentage cover of these trees in the stand exceeds 20% of the total cover of the trees present. Stands of broadleaved, mixed and yew woodland may be either ancient or recent woodland, and either semi-natural arising from natural regeneration of trees, or planted. Recently felled broadleaved, mixed and yew woodland is also included in this broad habitat type where there is a clear indication that it will return to woodland.

Scrub (<5 m tall) requires cover >30% for inclusion in this Broad Habitat. This includes *Ulex europaeus* (gorse) scrub but not the dwarf gorses (*U.gallii* or *U.minor)*.

Areas of fen woodland dominated by species such as willow (*Salix* spp.), alder (*Alnus glutinosa*) or birch (*Betula* spp.) are included.

* Woodlands that are dominated by conifer trees with less than 20% of the total cover provided by broadleaved or yew trees are included in the 'Coniferous woodland' broad habitat type.
* Deciduous larch is discernible from other deciduous trees and is generally correctly included with other conifers.

# Coniferous Woodland

This broad habitat type is characterised by vegetation dominated by evergreen trees (including firs, spruces, pines, larches) that are more than 5m high when mature, which form a distinct, although sometimes open canopy which has a cover of greater than 20%. It includes semi-natural stands and plantations and includes stands of both native and non-native coniferous trees species (with the exception of yew (*Taxus baccata)*) where the percentage cover of these trees in the stand exceeds 80% of the total cover of the trees present. Recently felled coniferous woodland is included in this broad habitat type where there is a clear indication that it will return to woodland. Felled areas that are allowed to return to grass, heath or shrub are recorded in those respective categories.

* Woodlands that are made up of broadleaved, yew and conifer trees with less than 80% of the total cover provided by conifer trees are included in the 'Broadleaved, mixed and yew woodland' broad habitat type.

# Arable and Horticulture

This broad habitat type covers arable cropland (including perennial, woody crops, and intensively managed, commercial orchards), commercial horticultural land (such as nurseries, commercial vegetable plots and commercial flower growing areas), freshly-ploughed land, annual leys, rotational set-aside and fallow.

This category does not include domestic gardens and allotments as these are included in the suburban habitat type.

# Improved grassland

This broad habitat type is characterised by vegetation of low botanical quality dominated by a few fast-growing grasses on fertile, neutral soils. It is frequently characterised by an abundance of rye-grass (*Lolium* spp.) and white clover (*Trifolium repens)*. Improved grasslands are typically either managed as pasture or mown regularly for silage production or in non-agricultural contexts for recreation and amenity purposes (for example, football grounds, golf courses, playing fields); they are often periodically re-sown and are maintained by fertiliser treatment and weed control. They may also be temporary and sown as part of the rotation of arable crops but they are only included in this broad habitat type if they are more than one year old. Sown grasslands which are less than one year old are included in the 'Arable and horticultural' broad habitat type.

# Neutral grassland

This broad habitat type is characterised by vegetation dominated by grasses and herbs on a range of neutral soils usually with a pH of between 4.5 and 6.5. It includes enclosed dry hay meadows and pastures, together with a range of grasslands which are periodically inundated with water or permanently moist.

Neutral grasslands are sometimes referred to as mesotrophic grasslands. The plant species assemblages that develop on neutral soils are different from those that develop on acid soils (acid or calcifugous grassland) and calcareous soils (calcareous or calcicolous grassland). For the most part neutral grassland communities have few diagnostic indicator species but lack strong calcicoles or calcifuges characteristic of base-rich and acid soils respectively. Neutral grassland differs from improved grasslands by having a less lush sward, a greater range and higher cover of herbs, and usually less than 25% cover of perennial rye-grass (*Lolium perenne)*.

Unimproved or species-rich neutral grasslands are usually managed traditionally as hay-meadows and pastures, including lowland hay meadows (grass species and clover are usually less than 50%, typically rich in forb species with frequent indicators including meadow vetchling (*Lathyrus pratensis),* bird's-foot trefoil *(Lotus corniculatus), o*x-eye daisy *(Leucanthemum vulgare),* lady's bedstraw *(Galium verum),* cowslip *(Primula veris),* Common knapweed *(Centaurea nigra),* rough hawkbit *(Leontodon hispidus),* Bulbous buttercup *(Ranunculus bulbosus*)) or on flood meadows (some ofmarsh-marigold *(Caltha palustris),* great burnet *(Sanguisorba officinalis),* meadowsweet *(Filipendula ulmaria)* andmeadow foxtail *(Alopecurus pratensis)).* Upland hay meadows are characterised by a dense growth of grasses and herbaceous dicotyledons up to 60 - 80 cm high (NVC community MG3, Anthoxanthum odoratum - Geranium sylvaticum grassland).

Semi-improved neutral grasslands are also included in this broad habitat type and these grasslands are usually managed for pasture, or for silage or hay. These include recently sown neutral grass (mixtures of fine-leaved grasses such as sweet vernal grass (*Anthoxanthum*), smooth meadowgrass (*Poa pratensis*), red fescue (*Festuca rubra*), crested dog's-tail grass (*Cynosurus*) and oatgrass (*Trisetum*), 50-100% grass cover, herb species rare or absent, often on sown field margins) and semi-improved neutral grassland (including all semi-improved and unimproved grassland occurring on circum-neutral soils, enclosed and managed grassland such as pastures, a range of grasslands which are inundated with water periodically, permanently moist or even waterlogged grassland, where the vegetation is dominated by grasses, and tall and unmanaged grassland (long-lived perennials with little or no open ground - vegetation with over 50% grass cover, false oat grass (*Arrhenatherum),* cock’s foot *(Dactylis)* andcouch *(Elymus repens)* usually dominate but scattered shrubs and tall herbs may be present (e.*g.* mugwort *(Artemisia vulgaris),* creeping thistle *(Cirsium arvense*), spear thistle *(Cirsium vulgare),* common foxglove *(Digitalis purpurea),* hogweed *(Heracleum sphondylium),* Rosebay willowherb (*Chamaenerion angustifolium*)).

Also includes perennial tall herb/grass (vegetation containing some annual weeds but consisting mainly of long lived perennials with grass cover less than <50% cover. Species include common nettle (*Urtica dioica*), cleavers/goose grass *(Galium aparine*), rosebay willowherb (*Chamaenerion angustifolium*), creeping thistle *(Cirsium arvense*), barren brome (*Bromus sterilis*) and rough-stalked meadow-grass (*Poa trivialis*). Includes stands dominated by invasive aliens such as Japanese knotweed (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzanium*).

The National Vegetation Classification describes 12 types of unimproved and semi-improved neutral grassland (Rodwell 1992).

*NVC types included in the 'Neutral grassland' broad habitat type*

*MG1 Arrhenatherum elatius grassland*

*MG2 Arrhenatherum elatius-Filipendula ulmaria tall-herb grassland*

*MG3 Anthoxanthum odoratum-Geranium sylvaticum grassland*

*MG4 Alopecurus pratensis-Sanguisorba officinalis grassland*

*MG5 Cynosurus cristatus-Centaurea nigra grassland*

*MG6 Lolium perenne-Cynosurus cristatus grassland (part only)*

*MG8 Cynosurus cristatus-Caltha palustris grassland*

*MG9 Holcus lanatus-Deschampsia cespitosa grassland*

*MG10 Holcus lanatus-Juncus effusus rush pasture*

MG11 Festuca rubra-Agrostis stolonifera-Potentilla anserina grassland

MG12 Festuca arundinacea grassland

MG13 Agrostis stolonifera-Alopecurus geniculatus grassland

# Acid grassland

This broad habitat type is characterised by vegetation dominated by grasses and herbs on a range of lime-deficient soils which have been derived from acidic bedrock or from superficial deposits such as sands and gravels. Such soils usually have a low base status, with a pH of less than 5.5. This habitat type includes a range of types from open communities of very dry sandy soils in the lowlands, which may contain many annual species, through closed pastures on red brown earths, to damp acidic grasslands typically found on gleys and shallow peats (usually dominated by mat grass (*Nardus)* or purple moor grass (*Molinia)* but often with significant amounts of wavy hair grass (*Deschampsia flexuosa)* and heath rush (*Juncus squarrosus)*.

Acid grasslands are also referred to as calcifugous swards. The plant species assemblages that develop on acid soils are different from those that develop on neutral soils (neutral or mesotrophic grassland) and calcareous soils (calcareous or calcicolous grassland) and are characterised by the presence of a combination of calcifuge species. Typical species may include bristle bent (*Agrostis curtisii),* sheep’s fescue *(Festuca ovina)* and sweet vernal grass (*Anthoxanthum odoratum)*. Acid indicators present might include Heath bedstraw (*Galium saxatile),* tormentil *(Potentilla erecta),* red-stemmed feather-moss *(Pleurozium schreberi)* andsheep's sorrel *(Rumex acetosella*), *Sphagnum* species may be present but if so, associated with sweet vernal grass (*Anthoxanthum odoratum)* and/or *Juncus* species. Dwarf shrubs and peatland species may be frequent but are usually less than 25% cover and are never dominant).

The National Vegetation Classification describes six types of acid grassland (Rodwell 1992). This habitat type also includes inland (not coastal) sand dune communities (Rodwell 2000) characterised by a range of plant species such as heath bedstraw (*Galium saxatile), s*heep’s fescue *(Festuca ovina),* common bent *(Agrostis capillaris),* sheep's sorrel *(Rumex acetosella*)*,* sand sedge *(Carex arenaria),* wavy hair grass (*Deschampsia flexuosa),* bristle bent (*Agrostis curtisii)* and *t*ormentil *(Potentilla erecta)*.

NVC types included in the 'Acid grassland' broad habitat type

U1 Festuca ovina-Agrostis capillaris-Rumex acetosella grassland

U2 Deschampsia flexuosa grassland

U3 Agrostis curtisii grassland

U4 Festuca ovina-Agrostis capillaris-Galium saxatile grassland

U5 Nardus stricta-Galium saxatile grassland

U6 Juncus squarrosus-Festuca ovina grassland

SD10 Carex arenaria dune (inland sub-communities only)

SD11 Carex arenaria-Cornicularia aculeata dune (inland sub-communities only)

* The bracken broad habitat is included in this category (bracken (*Pteridium aquilinum) >95%*). This does not include areas of bracken under forest or woodland canopy which are included in either the 'Broadleaved and yew woodland' or the 'Coniferous woodland' habitat types.
* Acid grassland types found on shingle habitats are included in the 'Supralittoral sediment' broad habitat type.

# Calcareous grassland

This broad habitat type is characterised by vegetation dominated by grasses and herbs on shallow, well-drained soils which are rich in bases (principally calcium carbonate) formed by the weathering of chalk and other types of limestone or base-rich rock. Although the base status of such soils is usually high, with a pH of above 6, it may also be more moderate and calcareous grassland communities can occur on soils with a pH as low as 5.

Calcareous grasslands are also called calcicolous grasslands and are sometimes referred to as chalk or limestone grasslands. The plant species assemblages that develop on calcareous soils are different from those that occur on neutral soils (neutral or mesotrophic grassland) and acid soils (acid or calcifugous grassland), and characteristically include a range of strict calcicoles. Indicators include upright brome *(Bromopsis erecta), b*ird’s foot trefoil *(Lotus corniculatus),* fairy flax *(Linum catharticum),* salad burnet *(Sanguisorba minor),* carline thistle *(Carlina vulgaris),* blue moor-grass *(Sesleria albicans), c*ommon rockrose *(Helianthemum nummularium),* dwarf thistle *(Cirsium acaule)*. These vary from mostly coastal grasslands through to upland and mountain grasslands rich in arctic alpines. The National Vegetation Classification describes 14 types of calcareous grassland (Rodwell 1992).

NVC types included in the 'Calcareous grassland' broad habitat type

CG1 Festuca ovina-Carlina vulgaris grassland

CG2 Festuca ovina-Avenula pratensis grassland

CG3 Bromus erectus grassland

CG4 Brachypodium pinnatum grassland

CG5 Bromus erectus-Brachypodium pinnatum grassland

CG6 Avenula pubescens grassland

CG7 Festuca ovina-Hieracium pilosella-Thymus praecox/pulegioides grassland

CG8 Sesleria albicans-Scabiosa columbaria grassland

CG9 Sesleria albicans-Galium sterneri grassland

CG10 Festuca ovina-Agrostis capillaris-Thymus praecox grassland

CG11 Festuca ovina-Agrostis capillaris-Alchemilla alpina grass-heath

CG12 Festuca ovina-Alchemilla alpina-Silene acaulis dwarf-herb community

CG13 Dryas octopetala-Carex flacca heath

CG14 Dryas octopetala-Silene acaulis ledge community

# Heather (Dwarf shrub heath)

This category is characterised by vegetation that is >80% plant species from the heath family (ericoids) heather, or the dwarf gorses, *Ulex minor* and *Ulex gallii*. It generally occurs on well-drained, nutrient-poor, acid soils. Heaths do occur on more basic soils but these are more limited in extent and can be recognised by the presence of herbs characteristic of calcareous grassland. Dwarf shrub heath includes both dry and wet heath types and occurs in the lowlands and the uplands.

* This habitat type does not include dwarf shrub dominated vegetation in which species characteristic of peat-forming vegetation such as cotton-grass (*Eriophorum* spp.) and peat-building *sphagna* are abundant, or that occurs on deep peat (greater than 0.5 m) as these are included in the 'Bog' broad habitat type.
* Heath types on sand dunes or shingle are included in the 'Supra-littoral sediment' broad habitat type.
* Heath types on maritime cliffs and slopes that are influenced by salt spray are included in the ‘Supra-littoral rock’ broad habitat type.

# Heather grassland (Dwarf shrub heath)

This category is characterised by vegetation that has a greater than 25% but less than 80% cover of plant species from the heath family (ericoids) heather, or the dwarf gorses *Ulex minor* and *Ulex gallii*; it will be mixed with grasses.

* This habitat type does not include dwarf shrub dominated vegetation in which species characteristic of peat-forming vegetation such as cotton-grass (*Eriophorum* spp.) and peat-building *sphagna* are abundant, or that occurs on deep peat (greater than 0.5 m) as these are included in the 'Bog' broad habitat type.
* Heath types on sand dunes or shingle are included in the 'Supra-littoral sediment' broad habitat type.
* Heath types on maritime cliffs and slopes that are influenced by salt spray are included in the ‘Supra-littoral rock’ broad habitat type.

# Fen, Marsh and Swamp

This broad habitat type is characterised by a variety of vegetation types that are found on minerotrophic (groundwater-fed), permanently, seasonally or periodically waterlogged peat, peaty soils, or mineral soils. This includes fen, flushes, springs, fen meadows, rush pasture, swamp and reedbed.

Fens are peatlands which receive water and nutrients from groundwater and surface run-off, as well as from rainfall (Species include greater tussock-sedge (*Carex paniculata*), lesser pond-sedge (*C. acutiformis*), bottle sedge (*C.rostrata*), tufted sedge (*C.elata*), greater pond sedge (*C.riparia*), flag iris (*Iris pseudacorus*), meadowsweet  (*Filipendula ulmaria*), common reed (*Phragmites australis*) (but not virtually pure stands), water horsetail (*Equisetum fluviatile*), hemp-agrimony (*Eupatorium cannabinum*), loosestrife (*Lythrum salicaria*) and great willowherb (*Epilobium hirsutum*).

Flushes are associated with lateral water movement, and springs with localised upwelling of water (Calcareous flushes are dominated by species such as fairy flax (*Linum catharticum*), tawny sedge (*Carex hostiana*) and dioecious sedge (*C. dioica*), yellow star moss (*Campyllium stellatum*) and grass of Parnassus (*Parnassia palustris*). Non calcareous flushes are usually dominated by Soft rush (*Juncus effusus*), jointed/sharp-flowered rushes (*Juncus artic./acutiflorus*) and star sedge (*Carex echinata*), often with *Sphagnum*. Usually found on peaty gley soils).

Marsh is refers to nutrient-rich wetland on predominantly inorganic soil dominated by rushes or sedges. Commonly found indicative species are jointed/sharp-flowered rushes (*Juncus artic./acutiflorus*) and soft rush (*J. effusus*). Carnation sedge (*Carex panicea*), Common Yellow-sedge (*C. demissa*), common sedge (*C. nigra*), glaucous Sedge (*C. flacca*) and tawny sedge (*C. hostiana*); Flag iris (*Iris pseudacorus*) frequently present, particularly in west. Found on wet, mineral soils. Does not include fertile grassland, with soft rush (*J. effusus*) and no wetland indicators.

Purple moor grass and rush pastures occur on poorly drained, usually acidic soils in lowland areas of high rainfall in Western Europe. Purple moor grass (*Molinia caerulea*), and rushes, especially sharp-flowered rush (*Juncus acutiflorus*), are usually abundant. Key species associated with purple moor grass and rush pastures include: wavy St. John's-wort *(Hypericum undulatum),* whorled caraway *(Carum verticillatum),* meadow thistle *(Cirsium dissectum),* marsh hawk's-beard *(Crepis paludosa),* greater butterfly-orchid *(Platanthera chlorantha),* common marsh bedstraw *(Galium palustre), M*arsh thistle (*Cirsium palustre),* Lesser spearwort *(Ranunculus flammula),* brown bent *(Agrostis canina),* water mint *(Mentha aquatic), s*neezewort *(Achillea ptarmica),* marsh horsetail *(Equisetum palustre), c*uckooflower *(Cardamine pratensis),* marsh willowherb *(Epilobium palustre),* Blunt-flowered rush *(Juncus subnodulosus),* flea sedge *(Carex pulicaris), tawny sedge (C.hostiana),* marsh helleborine *(Epipactis palustris),* water avens *(Geum rivale),* fragrant orchid *(Gymnadenea conopsea), s*aw-wort *(Serratula tinctoria)* and *w*ild angelica *(Angelica sylvestris).*

Swamps are characterised by tall emergent vegetation (e.g. meadowsweet (*Filipendula ulmaria*), great willowherb (*Epilobium hirsutum*), common nettle (*Urtica dioica*), common reed (*Phragmites*), (not including non-wetland tall herb species).

Reedbeds (i.e. swamps dominated by stands of common reed (*Phragmites australis*)) are also included in this type.

• This habitat type does not include neutral and improved grasslands on floodplains and grazing marshes which are included in the 'Neutral grassland' and 'Improved grassland' broad habitat types respectively

• Nor ombrotrophic mires (blanket, raised and intermediate bogs) as these are included in the 'Bog' broad habitat type.

• It also does not include areas of carr (fen woodland dominated by species such as willow (*Salix spp.*), alder (*Alnus glutinosa*) or birch (*Betula spp*.)) as these are covered in the 'Broadleaved, mixed and yew woodland' broad habitat type unless cover is less than 30%.

• Soil data is of limited use in assisting as it shows the historical land cover, so large swathes of East Anglia have a peaty, fen soil, but subsequent drainage and management have changed them to arable.

# Bog

This broad habitat type covers wetlands that support vegetation that is usually peat-forming and which receive mineral nutrients principally from precipitation rather than ground water. This is referred to as ombrotrophic (rain-fed) mire. Two major bog types are identified, namely raised bog and blanket bog. These two types are for the most part fairly distinctive but they are extremes of what can be considered an ecological continuum and intermediate (or mixed) types occur.

Lowland raised bogs are a particular feature of cool, rather humid regions such as the north-west lowlands of England, the central and north-east lowlands of Scotland, Wales and Northern Ireland, but remnants also occur in some southern and eastern localities. Plant communities that are typical of natural raised bogs include the bog pool communities M1 to M3 and M18 Erica tetralix -Sphagnum papillosum raised and blanket mire. In addition, a number of communities, including M15 Scirpus cespitosus - Erica tetralix wet heath, M19 Calluna vulgaris - Eriophorum vaginatum blanket mire, M20 Eriophorum vaginatum blanket and raised mire, M25 Molinia caerulea - Potentilla erecta mire. Peatland species predominate (e.g. deer grass (*Trichophorum*), common cottongrass (*Eriophorum* *angustifolium*), *Sphagnum* spp., bog cranberry (*Vaccinium oxycoccus*) and bog rosemary (*Andromeda polifolia*). Often in lowland areas in unimproved/unafforested areas of flood plains. A good indicator is the location of the bog on level ground with a gently domed structure and an absence of calcicolous and mesotrophic wetland species.

The term blanket 'bog' strictly applies only to that portion of a blanket 'mire' which is exclusively rain-fed. Peat depth is very variable, with an average of 0.5-3 m being fairly typical but depths in excess of 5 m not unusual. The principal vegetation (NVC) types covered are M1, M2, M3, M15, M17, M18, M19, M20 and M25, together with their intermediates. Dominant species include Common heather (*Calluna vulgaris*), cross-leaved heath (*Erica* *tetralix)*, deergrass  (*Trichophorum* *caespitosum)*, hare's tail cottongrass (*Eriophorum* *vaginatum)* and *Sphagnum* species, cloudberry *Rubus* *chamaemorus* is typically, although not exclusively, confined to high altitude bogs, Alpine bearberry (*Arctostaphylos* *alpinus*) to northern bogs, and black bog-rush (*Schoenus* *nigricans)*, as an ombrotrophic species, to western bogs.

Other bogs include all vegetation (other than blanket bog) that is dominated by peatland species and should be identified by the plants present. The category includes raised bogs and valley bogs. *Calluna* may be up to 50% cover but usually less. *Molinia* and *Sphagnum* species are usually present, often over 25%. *Tricophorum* is also often present as a significant cover species. Other species which may be locally dominant include bog myrtle (*Myrica gale*), common cottongrass (*Eriophorum* *angustifolium)* and mat grass (*Nardus* *stricta*). Indicative species include bog asphodel (*Narthecium* *ossifragum)*, sundews (*Drosera* spp.), and lousewort (*Pedicularis* ssp).

This habitat type also includes modified bog vegetation that essentially resembles wet or dry dwarf shrub heath but occurs on deep acid peat which would have once supported peat-forming vegetation. Modified bog also includes impoverished vegetation dominated by purple moor-grass (*Molinia* *caerulea)* or hare's-tail cotton-grass (*Eriophorum* *vaginatum)*. Although there is no agreed minimum depth of peat that can support ombrotrophic vegetation, unmodified bog can be identified floristically by the presence of characteristic species such as cotton-grass (*Eriophorum* spp.) and peat-forming *sphagna*. Peat depth, although somewhat arbitrary, is used as the primary criterion to separate types of modified bog vegetation from the 'Dwarf shrub heath' broad habitat type and certain types of 'Fen, marsh and swamp' broad habitat type. Therefore vegetation dominated by dwarf-shrubs, cotton-grass (*Eriophorum* spp.), or purple moor-grass (*Molinia* *caerulea)* vegetation on peat greater than 0.5 m deep is classified as bog for the purposes of the Broad Habitat Classification.

• In lowland areas with predominantly acid substrata there are examples of valley and basin mires that receive acid surface seepage, which gives rise to vegetation similar to that of bogs. However, these types are covered in the 'Fen, marsh and swamp' broad habitat type.

• ‘Bog’ forms part of an ecological continuum covering ‘Acid Grassland’, ‘Dwarf Shrub Heath’ and some types of ‘Fen, Marsh and Swamp’ and the separation of these habitats can be difficult, as the surface vegetation (i.e. land cover) maybe very similar and the division rests on the depth of peat.

• The Bog Broad Habitat includes ericaceous, herbaceous and mossy swards in areas with a peat depth >0.5m. Rodding is the best way to determine peat depth >0.5 m.

# Freshwater

This category describes two freshwater broad habitats (‘Standing Open Water and Canals’ and ‘Rivers and Streams’), as they cannot be reliably separated from each other using the methods and data used for production of the land cover maps. In many cases small and/or narrow waterbodies fall below the minimum mapping unit. Water bodies > 0.5 ha are readily mapped, as are very wide rivers (>50 m).

Standing Open Water and Canals includes natural systems such as lakes, meres and pools, as well as man-made waters such as reservoirs, canals, ponds and gravel pits.

The 'Rivers and Streams' Broad Habitat type covers rivers and streams from bank top to bank top, or where there are no distinctive banks or banks are never overtopped, it includes the extent of the mean annual flood.

# Supra-littoral Sediment

This class includes sediment above the high water line in areas influenced by wave splash and sea-spray and includes sand-dunes, shingle and machair. Deposits of shingle lying at or above the mean high-water spring tides. Dunes include embryo dunes which are created by the aggregation of wind-blown sand trapped by debris and vegetation along the strandline. Mobile (‘white’ or ‘yellow’) dunes are unstable dunes where there is active sand movement. Fixed (‘grey’) dunes occur widely around the coasts of the UK and are a major component of many sand dune systems. They are not replenished with fresh sand so that the sand is no longer accumulating. They support a greater diversity of plants that will contribute to stabilising the dunes. They develop landwards of the white dunes. Dune slacks which are low-lying areas within dune systems that are seasonally flooded and where nutrient levels are low. Dunes with Juniper comprise occurrences of common juniper (*Juniperus communis)* scrub on coastal sand dunes in a variety of situations. In the UK, dunes with Juniper only occur in Scotland. Dunes with Sea buckthorn comprise scrub vegetation on more-or-less stable sand dunes in which sea buckthorn (*Hippophaë rhamnoides*) is abundant. In the UK, the native distribution of *Hippophaë* is considered to be ranging patchily from Dunbar on the east coast of Scotland down to Dungeness/Camber in Sussex. Machair which is a distinctive sand dune formation formed when sand with a high shell content is blown onshore onto a low-lying coastal plain, accommodating a herb-rich sward. Machair is found nowhere else in the world but the north and west of Scotland and western Ireland.

# Littoral sediment

Areas of littoral sediment are widespread around the UK forming features such as beaches, sand banks, and intertidal mudflats. A large proportion of this habitat occurs in estuaries and inlets where it can cover extensive areas. Although saltmarsh is included in the littoral sediment broad habitat, it can be identified and mapped separately (see ‘Saltmarsh’), thus is excluded from this class.

The littoral sediment category includes sand, mud and shingle below the high water line, for example, sandy beaches and tidal mud flats.

**Saltmarsh (Littoral sediment)**

Pioneer saltmarsh colonises intertidal mud and sandflats in areas protected from strong wave action. It develops at the lower reaches of saltmarshes where the vegetation (mainly pioneer glasswort (*Salicornia)* species and small cordgrass *(Spartina maritima*)) is frequently flooded by the tide, and can also colonise open creek sides, depressions or pans within saltmarshes, as well as disturbed areas of upper saltmarshes.

Lower saltmarsh is inundated at least once a day due to tidal action and so supports plant communities that are more salt tolerant that those found in the upper marsh.

Upper saltmarsh is found where salt tolerant (halophytic) vegetation colonises soft intertidal sediments of mud and sand in areas protected from strong wave action. Tidal inundation can still occur but with decreasing frequency and duration compared to lower areas in the saltmarsh. Grazing by domestic livestock is particularly significant in determining the structure and species composition of the habitat type and in determining its relative value for plants, invertebrates and wintering or breeding waterfowl. This habitat occurs all around our coasts, but most of the sites where it is found are in England.

**Supra-littoral Rock**

This broad habitat consists of coastal cliffs and slopes where the lower (seaward) edge runs along the high water mark. It includes vertical rock, boulders, gullies, cliffs, gullies, ledges and pools rising above high tide and exposed to the splash and spray of sea waves. The substrate is rock, with or without a layer of bedrock-derived mineral soil. These are mainly the steepest parts of cliffs that are too steep for soil accumulation and rocks closest to the high water mark where frequent sea spray limits soil accumulation. However, even in these places there can be some cover of lichens such as *Ramalina* spp. and *Xanthoria* spp., and bryophytes such as the strictly coastal moss, *Schistidium maritimum*. Crevices among these rock exposures can have other bryophytes and lichens as well as vascular plants such as thrift (*Armeria maritima)*.

Typical plants in such areas include common scurvy-grass *(Cochleria officinalis),* sea plantain (*Plantago maritima),* sea mayweed (*Tripleurospermum maritimum), r*oseroot *(Sedum rosea),* Scots lovage *(Ligusticum scoticum),* sea campion *(Silene maritima),* thrift (*Armeria maritima),* samphire *(Crithmum maritimum),* buck's horn plantain *(Plantago coronopus)* and, in some rich areas, Arctic species such as purple saxifrage (*Saxifraga oppositifolia)* andmoss campion (*Silene acaulis)*.

**Littoral Rock**

The geology and wave exposure of the shore influence the form of littoral rock habitats, which can be as varied as vertical rock, shore platforms, boulder shores, or rocky reefs surrounded by areas of sediment. In general, littoral rock tends to be colonised by algae in wave-sheltered conditions, and by limpets, barnacles and mussels as wave-exposure increases.

Littoral rock contains rockpools, ephemeral algae and caves in the intertidal zone (the area of the shore between high and low tides). These features are present throughout the littoral rock zone from the upper limit at the top of the lichen zone and the lower limit by the top of the laminarian kelp zone. These features can be found on most rocky shores regardless of wave exposure. Rockpools occur where the topography of the shore allows seawater to be retained within depressions in the bedrock. Ephemeral seaweeds occur on disturbed littoral rock in the lower to upper shore, and rock with barnacles, limpets and mussels are often present.

**Urban (Built-up Areas and Gardens)**

‘Urban’ includes dense urban, such as town and city centres, where there is typically little vegetation. ‘Urban’ also includes areas such as dock sides, car parks, industrial estates retail parks, waste and derelict ground.

**Suburban (Built-up Areas and Gardens)**

Suburban includes suburban and rural settlements, domestic gardens and allotments, farm buildings, caravan parks and other man-made built structures such as urban parkland that have a mix of vegetation and infrastructure.

This type does not include amenity grassland which should be included in the 'Improved grassland' broad habitat type.

**Inland Rock**

This broad habitat type covers both natural and artificial exposed rock surfaces which are greater than 0.25ha, such as inland cliffs, caves, and screes and limestone pavements, as well as various forms of excavations and waste tips such as quarries and quarry waste.

It also includes Calaminarian grassland (found on soils that have levels of heavy metals, such as lead, zinc chromium and copper) where the vegetation is normally open, species-poor and slow-growing. Characteristic plants include spring sandwort (*Minuartia verna*) and alpine penny-cress (*Thlaspi caerulescens*), along with bird’s-foot trefoil (*Lotus corniculatus*), common bent grass (*Agrostis capillaris*), fairy flax (*Linum catharticum*), harebell (*Campanula rotundifolia*), sheep’s fescue (*Festuca ovina*), sheep sorrel (*Rumex acetosella*), and wild thyme (*Thymus polytrichus*).