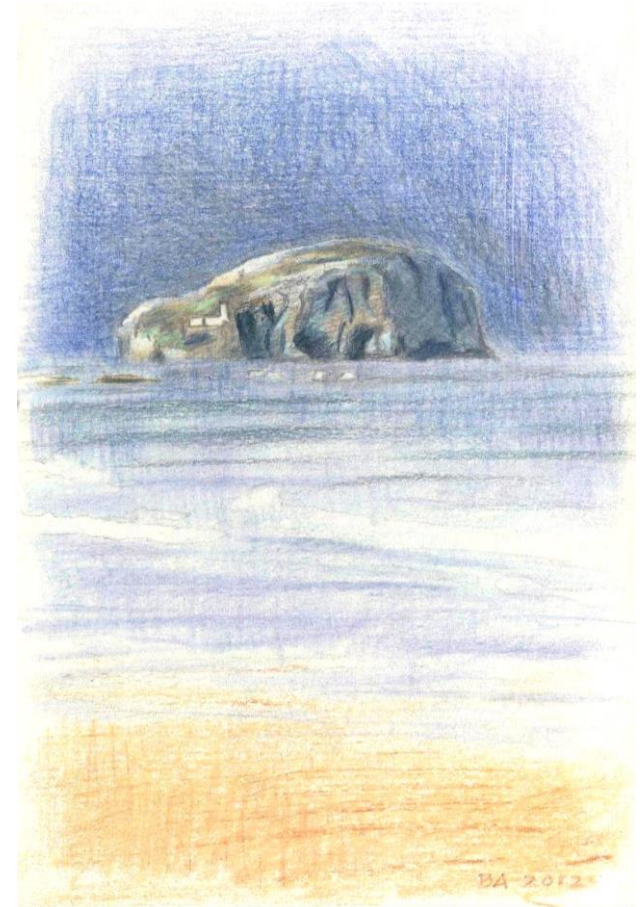


An introduction to UK National Plant Monitoring Scheme broad habitat type

# COASTAL HABITATS



**Produced by Ben Averis for the NPMS in March 2021** Text, photos and artwork by Ben Averis (ben.averis@gmail.com)

The **NPMS COASTAL BROAD HABITAT** is divided into five NPMS fine-scale habitats:

**COASTAL SALTMARSH**

In and just above the intertidal zone.



**COASTAL SAND DUNES**

On sand varying from loose to quite well consolidated; includes wet dune hollows.



**MARITIME CLIFF TOPS AND SLOPES**

Coastal cliffs and other slopes (but not including slopes of sand dunes).



**COASTAL VEGETATED SHINGLE**

Partly vegetated stony (or stony + sandy) ground just above the High Water Mark.



**MACHAIR**

On wind-deposited sand, containing shell fragments, in W Scotland and Ireland.



We'll go through these in more detail, with close-ups of species, landscape views, etc, one fine-scale habitat at a time.

**BUT FIRST,**

IN RECOGNITION OF ITS **SIGNIFICANCE** IN **ALL COASTAL HABITATS,**



## RED FESCUE *FESTUCA RUBRA*

Yes, you read that right: **red fescue**. This most ordinary of grasses grows in all sorts of habitats throughout Britain and Ireland, and is actually one of the very commonest plant species in coastal habitats, so it shouldn't be ignored here, even though it isn't on any of the NPMS coastal habitat lists. With its very thin, wiry basal leaves (<1 mm wide) it can look like sheep's fescue *F. ovina* (leaf to 20 cm long; up to 40 cm in red fescue), wavy hair-grass *Deschampsia flexuosa* (ligule to 3 mm long; <1 mm in red fescue) and mat grass *Nardus stricta* (leaf stiffer, with blade sticking out abruptly at a wide angle from the sheath/stem). The flowering stems grow taller (to >30 cm) than in sheep's fescue (<30 cm) with a bigger and more openly branched flower head. The leaves on the stems are shorter but wider (to 3 mm; <1 mm wide in sheep's fescue, wavy hair-grass and mat grass). Red fescue grows on shallow to deep mildly acid to calcareous soils (sheep's fescue mostly on thin soils; wavy hair-grass and mat grass mostly on acid soils). If you see an abundance of wiry-leaved grass in coastal saltmarsh, dune, shingle, machair or seacliff habitat, it is most likely to be red fescue.



OK – let’s start working through the fine-scale habitats now, starting with **COASTAL SALTMARSH**

Actually, have you ever seen **non-coastal** saltmarsh? Me neither. Apparently it does exist in Britain. Well, sort of, but only in a very few places, so for NPMS purposes I think we can allow ourselves the beautifully simple luxury of thinking of this fine-scale habitat in single word terms: **saltmarsh**.

The saltmarsh habitat is flat, muddy ground with vegetation varying from short and sparse to tall and thick, much of it with a lot of grass or rush and at least the lower parts of it covered by seawater at high tide each day. It’s not all 100% flat. It can be cut across by creeks with steep sides. Saltmarsh can cover large areas, as in the photo on the right (East Lothian), which also shows some narrow creeks, but it can also occur as small patches among rocky or stony shores, as seen in the photo below (Outer Hebrides – saltmarsh patches outlined in white).



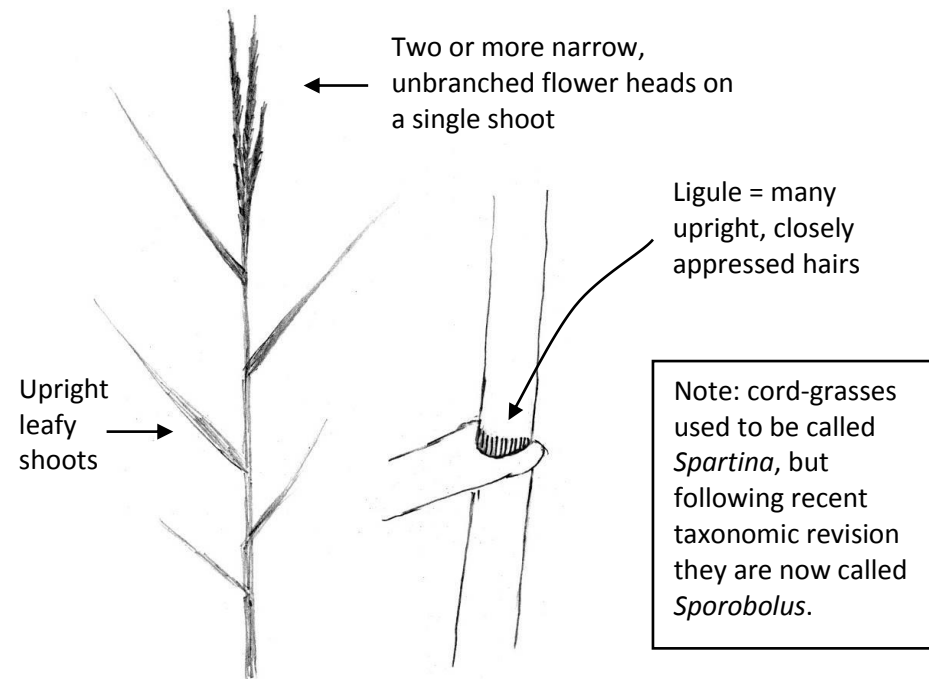
Here in Sutherland this short, grazed grassy saltmarsh vegetation in the foreground occupies a zone in between the stony and seaweedy lower shore and a grassy roadside bank above the high water line. It is at least as common for saltmarsh to grade seawards into open unvegetated mudflats.



The NPMS guidance says to do the recording in the upper and more thickly vegetated zone of the saltmarsh, where submergence by high tide is of a lower frequency and duration than in the lower and more open, muddy zone where (together with open muddy pans/creeks elsewhere) recording should not be done. That's just as well, because (1) you surely wouldn't want to step out onto that horrid wet mud anyway, and (2) even if you were so foolish, you wouldn't find much there except glasswort or cord-grass – and I suppose we'd better check those two out:



**Glassworts *Salicornia* species.** Short, branched plants with green to reddish, fleshy, overlapping scale-like leaves. Many species – not easy to tell apart. Flowers tiny, hidden by the leaves. Fl 8-9. Edible (very salty!).



**Cord-grasses *Sporobolus* species.** Leafy stems (leaves not just on lower parts of stems) to over 1 m tall. Leaf to 1.5 cm wide. Ligule: closely appressed hairs. Two or more narrow unbranched flower heads per stem. Forms tufts or patches.

By far the commonest cord-grass is **common cord-grass *Sporobolus anglicus***, whose ligule is longer (1.5-3 mm) than in the other species (<2 mm). It's actually a hybrid: an amphidiploid derivative of Townsend's cord-grass *S. x townsendii* (ligule 1-2 mm) which itself is a hybrid of small cord-grass *S. maritimus* (native, in SE England but now rare; plant to 50 cm tall and ligule <1 mm long) and smooth cord-grass *S. alterniflorus* (non-native; ligule 1-2 mm). Common cord-grass is widespread around British and Irish coasts but rare and very southern in Scotland. It has been planted in many places because its creeping underground rhizomes can help stabilize open muddy shores. Planted and naturalised occurrences are not reliably separable. It is a NPMS negative indicator in saltmarshes.

**Thrift and sea plantain.** These two species are very common in saltmarshes, where they are classed as NPMS positive indicators. The reason why I'm giving them such special status as to be brought in at this early stage is because they're also common on coastal cliffs and in some coastal grasslands (though much less so on sand dunes and coastal shingle). So, for the Maritime cliff top and slope fine-scale habitat we don't want to have to go through this all over again – let's look at them here with both saltmarshes and coastal cliffs/slopes in mind. Another reason for putting them together on the same page is that they show similarities to each other in having low tufts or clumps of very narrow leaves. Yes, if you've got flowers, thrift is easy to tell (pink!) and the plantain has those strange narrow, dense, firm-textured green heads. But – sorry to break this to you – they don't always have flowers. That's why I'm telling you that thrift's leaf is only 1-3 mm wide and has a distinct narrow groove running all the way along its upper surface, and that sea plantain's leaf is wider (3-8 mm), thicker and more fleshy. The middle of sea plantain's upper surface can be 'sunken' compared with the slightly raised leaf margins, but a cross section across the leaf would show the equivalent of a rather wide valley floor with gradual slopes rising on each side, instead of thrift's narrower and more sharply defined valley/channel bordered by narrow, abruptly raised sides.



**Thrift *Armeria maritima*** (left = flowering plants on cliff; right = close-up of leaves)

**Sea plantain *Plantago maritima*** (plant in flower)



The three species on this page grow mainly in saltmarshes, where they are very common and are classed as NPMS positive indicators.



**Sea arrow-grass *Triglochin maritimum*.** Having just seen sea plantain on the previous page, it makes sense to look now at sea arrow-grass, which has similarly narrow and rather fleshy-textured leaves (though its flowering/fruitle spikes are very distinct) but with a ligule (small pale projection) at the leaf base, as shown in the close-up photo.



**Saltmarsh rush *Juncus gerardii*.** With its branched flower head at the stem tip it looks like jointed and sharp-flowered rushes but is more slender; its leaves lack their internal cross-walls (which you can feel from the outside). Height up to 30 cm.  
**Sea rush *J. maritimus*:** similar but much bigger, stiffer and densely tufted; grows to 1 m tall; fl 7-8; in saltmarshes but scarce in N + E Scotland and NE England.



**Sea milkwort *Glaux maritima*.** Very short, with small oval untoothed and slightly fleshy-textured leaves that are mostly in opposite pairs and can turn yellowish in autumn. The small, pale pink flowers grow among the leaves. Also found in some dune slacks and damp sand and shingle strandline habitats.  
It looks a bit like sea sandwort *Honckenya peploides*, which has thicker stems with thicker leaves (like a green plastic toy plant!), small white flowers at the shoot tips, and grows mainly on drier sand and shingle.

As well as red fescue, these two grasses are very common in saltmarshes. Common saltmarsh-grass is a NPMS positive indicator in saltmarshes.



**Creeping bent *Agrostis stolonifera*.** Stems are creeping. Leaves are up to 8 mm wide. Ligule to 6 mm long (longer than in common bent *A. capillaris*) and generally wider than in velvet and brown bents *A. canina* and *A. vinealis* (whose ligules are narrow). Flower head with whorls of branches bearing many tiny 1-flowered spikelets (as in other *Agrostis* species). On saltmarshes mainly in the upper (less frequently flooded) zone. Also common on neutral soils inland.



**Common saltmarsh-grass *Puccinellia maritima*.** Low grown, with creeping to slightly ascending shoots. Leaf blades to 3 mm wide but commonly with their sides folded up and looking narrower. Leaf sheaths wide; shoots can look thick. Branched but narrow and rather inconspicuous flower head. Commonest in the middle and lower saltmarsh zones.

Two herbs found mainly in the lower to middle zones of the saltmarsh. Both are NPMS positive indicators in saltmarshes.



**Sea aster *Aster tripolium*.** Leaves quite similar in shape to those of devil's-bit scabious *Succisa pratensis* (narrowly oval, the lower leaves on long stalks) but of a thick, fleshy texture. Flowers distinctive: pale purple-blue and yellow (or with just the central yellow part). Fl 7-10.



**Annual sea-blite *Suaeda maritima*.** Low (<30 cm tall) and branched, with narrow, parallel-sided fleshy leaves that are semi-circular in section and have pointed tips. General colour greyish-green to purplish. Small inconspicuous flowers in the leaf axils. Fl 7-8.

Two more NPMS positive indicator plants in saltmarshes. I don't have any photos of them, so I've done some quick drawings instead...



**Sea purslane *Atriplex portulacoides*.** Leaves grey-green, fleshy, narrow oval and untoothed, rather like those of sea aster but the plant is bushy and branched, up to 80 cm tall, with the lower parts of the stems quite woody. Many of the leaves are in opposite pairs. The flowers are small and yellowish, in narrow spikes at the shoot tips. Scattered around the coasts of Britain and Ireland but in Scotland only along the Solway coast. It grows mainly in the middle to upper saltmarsh zones. Fl 7-9.

**Sea lavenders *Limonium* species.** These also have oval, untoothed leaves, but all leaves are at the base of the plant. The stems are up to about 40 cm tall and very branched, with clusters of small 5-petalled pale purple flowers. Several species, collectively widespread around British and Irish coasts but in Scotland only in the far south. Fl 6-10.

Three more herbs of saltmarshes. All of them are NPMS positive indicators in this habitat.

Common scurvygrass



Common scurvygrass  
*Cochlearia officinalis*  
(fl 5-8)



English scurvygrass  
*Cochlearia anglica*  
(fl 4-7)



Danish scurvygrass  
*Cochlearia danica*  
(fl 1-6)

**Scurvygrasses *Cochlearia* species.** Low-grown herbs with slightly fleshy-textured leaves and heads of small 4-petalled white flowers. Common scurvygrass grows in various coastal habitats and also inland in the hills. English scurvygrass is mostly in the upper parts of saltmarshes. Danish scurvygrass, which is smaller and whose flowers can be pale pink, prefers drier (e.g. rocky or sandy) coastal habitats and also grows inland along salt-treated roads.



Fl 6-8

**Marsh pennywort *Hydrocotyle vulgaris*.**

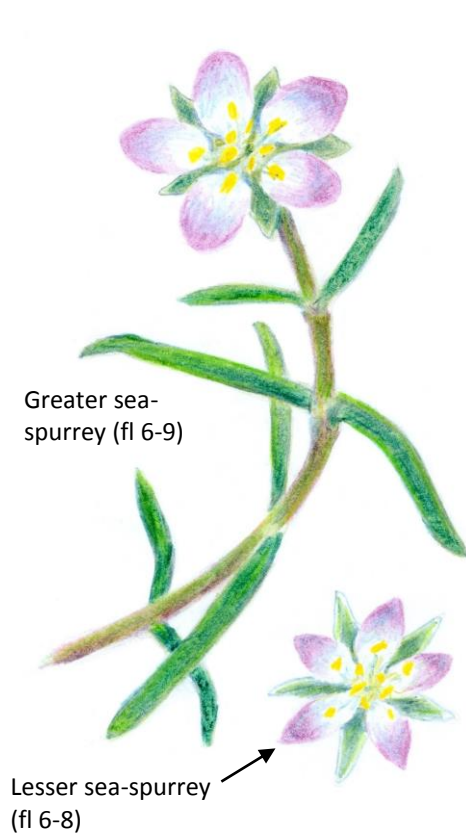
Unmistakeable because of its round leaves. Navelwort *Umbilicus rupestris* has leaves of a similar shape but thicker, and it grows on and among rocks. Marsh pennywort is found mainly in inland and coastal wetlands that appear (from their vegetation) to be on more or less neutral soils. On saltmarshes it is very much in the uppermost zone.



Fl 6-8

**Silverweed *Potentilla anserina*.** Low and creeping. The leaves are divided into many leaflets with toothed edges and pale, silvery undersides. The flowers are yellow, with five petals. Silverweed's habitats are mostly on more or less neutral soils and include strandlines, the upper saltmarsh edge, dune slacks and periodically flooded places inland.

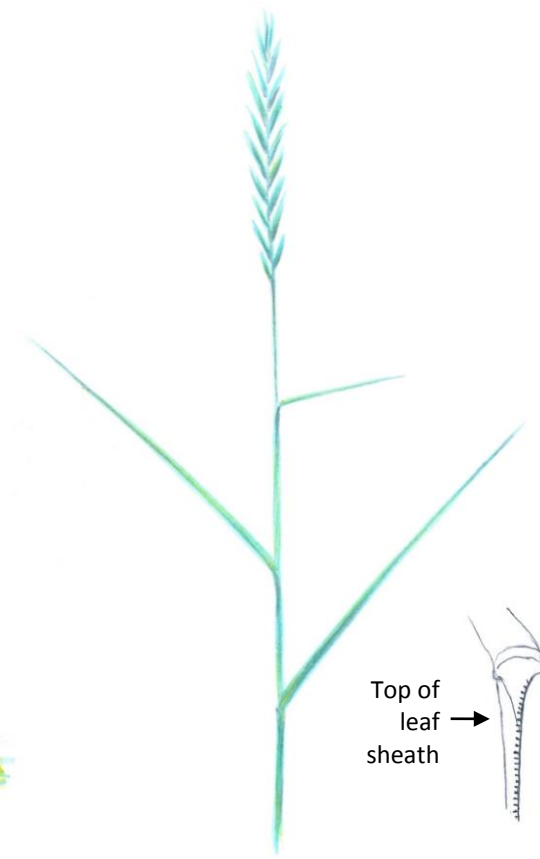
Another three NPMS positive indicators in this saltmarsh habitat. Again illustrated with quick sketches because I don't have photos.



**Sea-spurreys *Spergularia media* and *S. marina*.** Small, low and fleshy-textured. **Greater sea-spurrey *S. media*** has flowers up to 12 mm across with sepals almost as long as the petals. **Lesser s-s *S. marina*** has flowers up to 8 mm across and sepals a bit longer than the petals. Both are widespread on saltmarshes in Britain and Ireland.



**Sea beet *Beta vulgaris ssp. maritima*.** Looks like dock, goosefoot or orache (closely related to the last two). Branched. Leaves shiny and thick, the lower ones long-stalked. Stems and leaves can be red-tinged. Grows along the upper saltmarsh edge, and also on shingle, sand and seacliffs. Widespread in Britain/Ireland but scarce in Scotland. Fl 7-9.



**Sea couch *Elytrigia atherica*.** A tall (to 1 m or more), stiff, grass. Looks like common couch *E. repens* but bluer/greyer and with tiny hairs along one side of the edge of the leaf sheath (see small drawing). Grows in the upper saltmarsh zone in England, Wales, S/E Ireland and extreme S Scotland. Fl 6-8.

Before we leave the saltmarsh fine-scale habitat, let's see some upper saltmarsh (with dunes just behind/inland) with a sward of a species that isn't mentioned in the NPMS guidance but can be abundant or locally dominant in parts of the upper saltmarsh zone around the coast of Scotland and the northern half of Ireland, and less commonly in England and Wales south to the Gower and Lincolnshire: **Saltmarsh flat-sedge** *Blysmus rufus*. It has narrow, rush-like leaves (at the base and up the stems) and flattened dark brown flower/fruit heads at the stem tips. It is mostly <40 cm tall.



Fl 6-7; fruits 8-9

## COASTAL SAND DUNES

We all know what sand dunes are, but for NPMS purposes we should not count the following:

- mobile dunes with incomplete vegetation cover, of species such as marram grass and oraches (presumably excluded because they're too unstable and changing, regardless of treatment/condition).
- dune heath (heather, bell heather, crowberry, etc – in NPMS terms they are in the Heathland habitat type).
- woodland or scrub such as sea buckthorn scrub (to be included in the NPMS Broadleaved woodland habitat).

The NPMS sand dune habitat therefore consists of relatively stable or “fixed” dunes with good vegetation cover including species such as red fescue and various herbs, mosses and lichens (but not dwarf shrub heath, woodland or scrub) and dune slack vegetation in the wetter depressions among the dune “hills”.

Here is an example of sand dune grassland. It's in Northern Ireland. The dunes become less stable and more mobile to the right (toward the shore) and more stable to the left (heading inland). The more distant dunes at the right are of the more mobile type that's not to be included in the NPMS recording.





Here's a closer view of some very mobile dune habitat at the seaward edge of a dune system in East Lothian:



Marram *Ammophila arenaria*

Lyme grass *Leymus arenarius*

Sand couch *Elytrigia juncea*

Here's a view of some dune heath (= NPMS heathland) with abundant heather, also in East Lothian. Dune heath isn't a very common habitat. Always good to see it.



And here's some sea buckthorn dune scrub. It's classed as NPMS woodland/scrub, not NPMS sand dune. Why did I photograph it from outside? For the same reason that you might choose not to do any NPMS recording in it. I'm sure you'd prefer to find some other habitat you can get into a bit more easily. What? You really want to stick rigidly to your exact random grid reference and suffer the physical discomfort of getting in there to do some NPMS woodland recording? Heck! Now you're making other folks feel guilty! Let's change the subject. See the foreground vegetation? That is valid NPMS dune habitat. We can do NPMS dune recording in it. And – I shouldn't really say this because lichens are not strictly part of NPMS – you might like to make a wee note of at least the rough extent of those pale-coloured *Cladonia* lichens (lower right) because lichen-rich dune is an interesting type of vegetation and it might be worth seeing if the lichen cover changes over time.



Sea buckthorn *Hippophae rhamnoides*. Common on sandy coastal ground; native in E England; introduced elsewhere and seen as an invasive problem in some places. Fl (inconspicuous) 5-9. Orange berries very obvious.

OK – so this is a good extent of NPMS dune habitat, with a rich flora too. East Lothian again, by the way. The pale grass tussocks are marram *Ammophila arenaria*. The pink is thyme *Thymus polytrichus*.



The seaward edge of this area of marram-dominated dune in East Lothian is of the more mobile type with little growing among the marram tussocks (i.e. not for NPMS recording), but the rest of it has a better-developed lower layer reflecting more stable conditions and is OK for NPMS work.



In this relatively stable/fixed dune in Northern Ireland marram is joined by false oat-grass *Arrhenatherum elatius*, red fescue *Festuca rubra* and scattered blackthorn and burnet rose. Not a place to walk through barefoot.



Here is dune slack vegetation with abundant silverweed *Potentilla anserina* in a damp, periodically flooded sandy hollow near the East Lothian coast.



The vegetation in this periodically flooded dune slack in Northern Ireland is short and species-rich.





Again in Northern Ireland, this dune slack appears to be not quite as frequently flooded, and its vegetation is taller and more grassy with abundant creeping willow *Salix repens* and Yorkshire fog *Holcus lanatus*.



OK – time for closer views of some sand dune species. This one’s not listed as a NPMS positive indicator in sand dunes but it’s still probably the first species we should recognize in this habitat because it’s so common here and is ecologically important as a sand binder and stabilizer. So, ladies and gentlemen (is it still OK to say that in 2021?), I present to you: **marram *Ammophila arenaria***. Tall and tussocky, with long greyish-green leaves whose edges are inrolled (making them look thinner) and whose pointed tips are quite sharp to the touch (mind your eyes!). The flowering heads are long, narrow and unbranched. The ligule (small projection at base of leaf blade/top of leaf sheath) is extraordinarily long for a British grass: up to 3 cm. Marram is very common in all sorts of dunes from young mobile ones to older, more fixed and stable ones. Young and mobile vs old and fixed: is it OK to say *that* in 2021?



Let us not forget the **lyme grass** *Leymus arenarius*, because even though it grows mostly outside NPMS recording territory (i.e. near the seaward edges of the younger, more mobile dunes) it's just such a fantastic-looking no-nonsense sort of grass with its big size and its wide, stiff leaves of a zappy bluish green colour. Just the thing to get you all revved up about the dune habitat (in case you were like "Oh well – s'pose *someone's* gotta look at these dunes-s-s-z-z-z-zzzzz").



Next in line for a close up photo shoot is **sand sedge *Carex arenaria***. Again not a NPMS positive indicator but a very common species of a wide range of sand dune plant communities, and with its creeping underground rhizomes it is another stabilizer of loose sand. The flower head looks rather like that of brown sedge *C. disticha*, but that's a wetland species with wider leaves and taller, more leafy stems. Sand sedge is pretty unmistakable.



Fl 6-7; fruits 7-8



These two grasses can be very common companions to marram in many of the older fixed dunes. **False oat-grass** *Arrhenatherum elatius* is tall and tussocky with broad leaves and a long, branched flower head in which the branches are mostly held quite close to the main stem (keeping the flower head quite narrow) and bearing long shiny spikelets with hair-like projections called awns. This grass is also very common inland on roadside verges, along field margins and in other places where there isn't much grazing. **Cocksfoot** *Dactylis glomerata* grows in a similar range of habitats but is stiffer, with a denser, more 'blobby' flower head, greayer-green leaves and with the leaf sheath flattened to give a keeled ridge running up the middle; the leaf blade can be rather folded too, with something of a V-shaped profile in cross section.



Don't you just love clovers? Well, you can love these four even more 'cos they're NPMS positive indicators in sand dunes.



**White clover *Trifolium repens*.** Broad rounded leaflets with a pale mark in the middle of each one. White flowers. Low grown: leaves can carpet the ground. Also common in inland grasslands, especially 'improved' ones that have been subjected to agricultural treatments (fertiliser, etc, increasing nutrient status).



**Red clover *Trifolium repens*.** Leaflets more pointed than in white clover; flower head pink; can grow taller and more branched. Common inland too, especially in unimproved neutral grassland. Zigzag clover *T. medium* is similar but has darker flowers and narrower leaflets commonly lacking pale blotches.



**Strawberry clover *Trifolium fragiferum*.** Leaflets as in white clover but no pale markings; side veins curve back slightly toward leaflet margin (straight in white clover). Flowers whitish-pink; strawberry-like in fruit. Mainly in S Britain. On coasts mostly in damp grassy vegetation at upper edges of saltmarshes, but also in dune slacks.



**Black medick *Medicago lupulina*.** Different name and genus, but still in the pea family and related to clovers. Leaflets broad and blunt-tipped with a small projection at the extreme tip. Flower heads small and yellow. Lesser yellow trefoil *Trifolium dubium* looks similar but is smaller and its leaflets lack the terminal projection.

Four more sand dune NPMS positive indicator herbs:



**Carlina thistle *Carlina vulgaris*.** Spiny and thistle-like but rather short and with pale yellowish-brown flowers. Leaves cottony white beneath. On dry calcareous soils in the lowlands. Mainly in S half of Britain and central Ireland.



**Bloody crane's-bill *Geranium sanguineum*.** Leaves cut into many lobes in a star-like pattern. Overall leaf shape more rounded and lobe tips blunter than in meadow buttercup (next page). Flowers large and pink. Mainly on dry basic soils, esp. near coasts of N Wales, N Engl. and Scotland.



**Mouse-ear hawkweed *Pilosella officinarum*.** Oval untoothed leaves with whitish undersides and very long hairs on the uppersides + edges. Creeping runners are common. Flowers are rather like those of dandelion but paler and on hairy stems.



**Cornsalad *Valerianella locusta*.** Small and short, with oval untoothed or slightly toothed leaves and clusters of pale blue flowers. Stems branched. On thin or sandy soils in various habitats including disturbed ground.

A page of **BUTTERCUPS**. Two of these three – meadow buttercup and creeping buttercup – are NPMS positive indicators in sand dunes. The third one – bulbous buttercup – could also qualify on ecological grounds for such elevated status, but I guess they can't just dish out these 'awards' to more than a certain number of species in total. Otherwise, where would you draw the line? But actually it could be argued that bulbous buttercup is a better indicator than creeping buttercup of a good state of sand dune. Creeping buttercup is commonly associated with high nutrient levels that can lead to a few species (also including stinging nettle and goosegrass) taking over at the expense of others. Bulbous buttercup would never do that. So, my personal choice of 'good' buttercups in this habitat would be meadow and bulbous. Anyway, here are all three:



**Meadow buttercup** *Ranunculus acris* has leaves cut into lobes in a star-like pattern, and can be very branched with many flowers. **Creeping buttercup** *R. repens* has leaves divided into lobed leaflets, the end one stalked and with pale blotches on the upper surfaces, and has creeping runners. **Bulbous buttercup** *R. bulbosus* – the least common of the three – is like creeping buttercup but without creeping runners and its flowers, unlike those of the other two species, have the sepals turned downwards.



Three more NPMS positive indicator herbs in this sand dune habitat:



**Creeping willow *Salix repens*.** A low shrub with narrow oval leaves whose uppersides are dull or greyish green and their undersides paler, silvery and hairy. Found in a wide range of dry to wet grasslands and heaths, and in dune slacks. Fl (catkins) 4-5.



**Creeping cinquefoil *Potentilla reptans*.** Long creeping shoots bear leaves with five toothed leaflets and 5-petaled yellow flowers 1.5-2.5 cm across. In grasslands, dunes (dry dunes and wetter dune slacks) and on disturbed ground. Fl 6-9.



**Buck's-horn plantain *Plantago coronopus*.** Low rosettes of narrow hairy leaves with distinct side lobes. Dull brownish flower heads. In various coastal habitats, esp. in short or open vegetation. Fl 5-7.

These three species are characteristic of sand dunes but are not listed as NPMS positive indicators in this habitat:



**Common bird's-foot trefoil *Lotus corniculatus*.** Greyish-green leaves divided into three leaflets as in clovers but with two small leaflet-like stipules at base of leaf stalk. Yellow pea-like flowers. In neutral to calcareous grasslands and in dunes (esp. older/stable dunes).



**Lady's bedstraw *Galium verum*.** A bedstraw with very narrow leaves in whorls of 8 to 12, and branched clusters of tiny yellow flowers at the shoot tips. In neutral to calcareous grasslands and in sand dunes (esp. the older and more stable/fixed dunes).



**Sea holly *Eryngium maritimum*.** Thick, branched stems and tough, prickly, blue-grey leaves. Dense flower heads (flowers pale blue when out). Mostly in the younger dunes, on sand that is relatively loose and only partly vegetated. Also on coastal shingle.

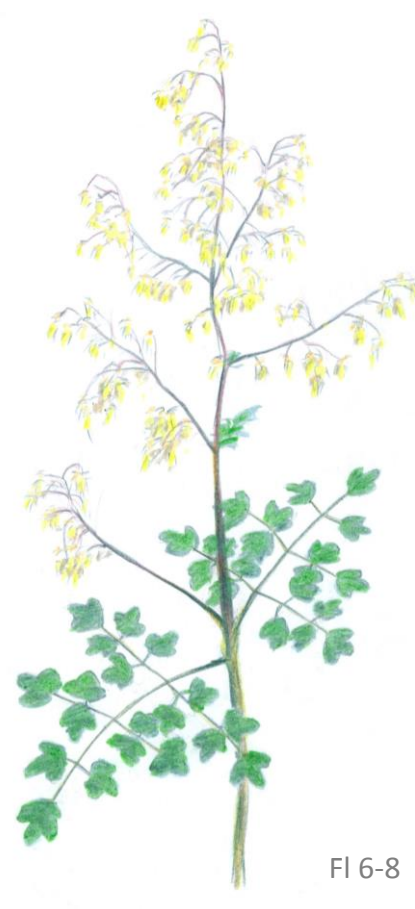
All of these species except for common sedge are NPMS positive indicators in sand dunes.



**Glaucous sedge *Carex flacca*.** Leaves mid green on upper side and paler grey-green below, 2-3 mm wide and widely spreading. 2-3 male spikes at stem tip. On neutral-basic dry to wet soils in grasslands/wetlands including dune grasslands and dune slacks.



**Common sedge *Carex nigra*.** Leaves mid grey-green, 1-3 mm wide and pointing up (not widely spreading). In damp/wet acid to neutral habitats including dune slacks.



**Lesser meadow-rue *Thalictrum minus*.** Leaves divided into many small lobed leaflets and sub-leaflets, in a rather fern-like style. Multi-branched heads of many tiny yellowish flowers. On neutral to basic soils in dunes and dune grasslands; also on cliffs.



**Tufted vetch *Vicia cracca*.** Leaves with many pairs of small leaflets. Spikes of many small purple flowers. Scrambles among other plants in grassland and wetlands; habitats include dunes.

Here are some other species that aren't classed as NPMS positive indicators in sand dunes but which are common in the dune slack vegetation of wet depressions in dune systems:



**Ragged robin *Silene flos-cuculi*.** Narrow oval leaves in opposite pairs. Pink flowers with 'ragged' petals.



**Marsh pennywort *Hydrocotyle vulgaris*.** Easily told by its round leaves with shallowly/bluntly toothed ('crenulated') edges.



**Yellow flag *Iris pseudacorus*.** Laterally-flattened tufts of tall leaves + big yellow flowers.



**Meadowsweet *Filipendula ulmaria*.** Reddish stems. Creamy-coloured flowers. Leaves with pairs of toothed leaflets along reddish central leaf stalk.

A second page of herbs that can be found in dune slacks (again, not classed as NPMS positive indicators here):



**Common valerian *Valeriana officinalis*.** Tall, with pinnately-divided leaves (leaflets with smooth or slightly toothed edges) and clusters of whitish or pale pink flowers.

**Angelica *Angelica sylvestris*.** A tall, hairless umbellifer with a purple tinge to the stems and the junctions of branches within the leaf. Bases of leaf stalks and flower stalks very wide and sheathing.

**Marsh bedstraw *Galium palustre*.** Leaves in whorls of 4-6. Stems and leaves rough-textured because of tiny outward-pointing hairs.

**Fen bedstraw *Galium uliginosum*.** Similar to marsh bedstraw but is more rough-textured, has 6-8 leaves per whorl and the leaf tips are sharply pointed. To show a photo here focusing on the flowers would be doing an injustice to the beauty of the leaves.

Dune slacks can have a lot in common floristically with inland NPMS Marsh and Fen wetlands with herbs, sedges and grasses on neutral or base-enriched soils. Here is an example of such a dune slack; this example, in East Lothian, has a very rich flora.



Let's now leave the sand dunes and move on to the **COASTAL VEGETATED SHINGLE** fine-scale NPMS habitat

Most coastal shingle that is at least partly vegetated looks like this – an untidy habitat of mixed stones, sand and a patchy cover of rather weedy-looking plants, all of it occupying a narrow zone along the High Water Mark.



But the NPMS guidance says that “pioneer (strandline) communities should be avoided” and “NPMS plots should be placed in the intermediate stage (shingle specialists) where characteristic plants include Yellow Horned-poppy, Sea-holly, Sea-kale and Curled Dock”. Oh dear. That photo of a narrow strandline zone of shingle/sand/vegetation on the previous page doesn’t count. Unless I stretch it wider, maybe?



Hey – this actually looks a lot more convincing than I expected! But it’s cheating. So let’s go exploring on Google Street View to find some proper coastal vegetated shingle habitat...



Here we are: coastal vegetated shingle habitat! It's at Shoreham-by-Sea in Sussex. I found a decent-looking view and then drew it in coloured pencil. As you can see there's a wide expanse of partly vegetated shingle here. By the way, if, during NPMS work, you find areas of grassland, heath, scrub or woodland vegetation on coastal shingle, they should be classed as NPMS lowland grassland, heathland and broadleaved woodland habitat types.



Let's check out some of the characteristic plant species of this coastal shingle habitat. These three are NPMS positive indicators here. We saw them earlier in the sections about saltmarshes (silverweed) and dunes (marram and buck's-horn plantain), but these photos are different ones:



**Oraches *Atriplex* species.** These look quite weedy and are dull or greyish-green, with small clusters of green or red-tinged flowers (mostly July-September). Stems green to reddish (or, in frosted orache, red to yellowish). Growth form varies from low and creeping to upright. Four species are common in this habitat. They can be hard to tell apart, but for NPMS purposes '*Atriplex* species' is OK and counts as a positive indicator here, but note that these do not include sea purslane *A. portulacoides* which is very different and is a saltmarsh plant (as seen earlier in the saltmarsh section).



**Spear-leaved Orache *Atriplex prostrata*** = creeping or upright; angle formed by L & R sides of leaf base mostly  $>90^\circ$ . **Babington's Orache *A. glabriuscula*** = similar but all creeping and with larger flowers (bracteoles 4-10 mm long instead of 2-6 mm in spear-leaved orache). **Grass-leaved Orache *A. littoralis*** = upright; leaves v. narrow; angle formed by L & R sides of leaf base  $<90^\circ$ . **Frosted Orache *A. laciniata*** = creeping; stem red to yellowish; leaves very pale and silvery; angle formed by L & R sides of leaf base c.  $90^\circ$ .

Some more weedy plants that are NPMS positive indicators in coastal vegetated shingle.



Fl 7-10

Perennial  
sow-thistle



Prickly sow-thistle (fl 6-8)



Perennial  
sow-thistle



Curled  
dock

Fl 6-10

**Perennial sow-thistle *Sonchus arvensis* and Prickly sow-thistle *S. asper*.** Medium height to tall plants with yellow dandelion-like flowers on branched, leafy stems (dandelion = single flower at top of unbranched leafless stem). The oblong leaves are lobed along left and right sides. Perennial sow-thistle has stems hairy in their upper parts and flowers 4 cm across. Prickly sow-thistle is hairless; its shiny green leaves clasp the stems with rounded lobes bearing long teeth; the flowers are 2-3 cm across. There's also **smooth sow-thistle *S. oleraceus*** (not a NPMS indicator here) which is like prickly sow-thistle but the lobes at the base of the dull grey-green leaf are pointed, not rounded. Sow-thistles grow in a wide range of open and disturbed habitats including coastal shingle/strandlines and upper saltmarsh edges.

**Curled dock *Rumex crispus*.** A typical dock with tough hairless leaves and tall stems bearing the usual green to reddish (turning brown) dock flowers between June and October. Distinct from other common docks in the leaves being long and narrow with wavy edges. Common in various open and disturbed habitats including coastal shingle/strandlines. Broad-leaved dock *R. obtusifolius* is similar and also very common, with much overlap in habitat with curled dock, but it has broader leaves whose margins aren't distinctly wavy, and its leaf blade widens more abruptly at the base.

Three easily identifiable coastal plants that are NPMS positive indicators in the coastal vegetated shingle habitat:



**Sea sandwort *Honkenya peploides*.** The short but thick, tough leaves in opposite pairs densely packed on the short thick stems make this plant of coastal sand and shingle unmistakable.



**Sea rocket *Cakile maritima*.** A branched, sprawling plant of coastal sand and shingle, with a fleshy texture, leaves deeply divided into very narrow lobes, and 4-petaled flowers whose pale mauve, pink or white looks good against the greyish-green of the rest of the plant.



**Sea saltwort *Salsola kali*.** A low grown plant of coastal sand and shingle, easily identified by its short, thick leaves ending in sharp points. The stems are relatively thick and the flowers inconspicuous.

Three species that are classed as NPMS positive indicators in sand dunes but are more common in other habitats:



**Ragwort *Senecio jacobea*.** A robust plant with crinkly-edged lower leaves, narrow-lobed upper leaves and many yellow flowers. Toxic to grazing animals and to people. Can be common in many types of grassland and in disturbed habitats; also in sand dunes and coastal shingle. Classed as a negative indicator in some NPMS habitats, but a positive one in coastal shingle.



**Bittersweet *Solanum dulcamara*.** A climbing and scrambling species with triangular to heart-shaped leaves that can have lobes at their bases, and hanging clusters of purple and yellow flowers later becoming red berries. In woods, hedges and fens; also on coastal shingle and in dunes.



**Herb Robert *Geranium robertianum*.** The leaves are very deeply divided and in spring have a pleasant scent. Stems and leaf stalks are hairy and commonly red-tinged. Flowers with 5 pink petals. Mainly in woods on neutral to basic soils, but also in various other habitats.

The most visually exciting page of botanical photography you've ever seen? Actually, to be fair, there's always something worthy about everything in nature, and if it helps raise their appreciation status for you I can add that these four species are also NPMS positive indicators in sand dunes.



**Common cat's-ear *Hypochaeris radicata*.** Low rosettes of tough-textured, rough-surfaced hairy leaves with 'wobbly' lobed edges. Leaves held flat against the ground. Yellow dandelion-like flowers on branched stems. In various dry grassy habitats including dunes.



**Ribwort plantain *Plantago lanceolata*.** Low rosettes of narrow hairy dull green leaves whose veins all run parallel. Small dense dark flower clusters (with pale stamens) at tips of rather stiff stems. In a wide range of dry habitats, especially neutral to calcareous grasslands, as well as in sand dunes.

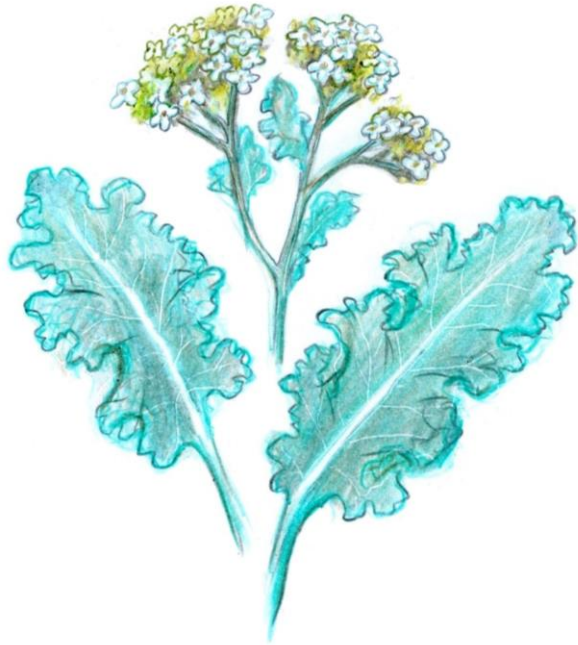


**Yorkshire fog *Holcus lanatus*.** Leaves softly hairy and up to 10 mm wide. Ligule up to 4 mm long. Lower leaf sheaths commonly striped pink-purple. Branched, softly hairy flower head. Very common in grasslands (esp. neutral).



**Common mouse-ear *Cerastium fontanum*.** Mostly low grown. Small hairy leaves in opposite pairs on hairy stems. Small white flowers (5 petals with notched tips). Mainly in grassland.

Three distinctive-looking NPMS positive indicators in this shingle habitat:



**Sea kale *Crambe maritima*.** Bluish-greyish-green leaves like those of kale, and edible too (so no need to bring a packed lunch on your NPMS coastal shingle days!). Dense clusters of small 4-petalled white flowers; yellow-green in bud before they open out. Rather bushy growth form. On shingle beaches and seacliffs. Mainly SW-S-SE England, Irish sea coasts + S Ireland. Fl 6-8.



**Bristly oxtongue *Helminthotheca echioides*.** Previously called *Picris echioides*. Leaves rough and bristly. Flowers like those of dandelion but on taller hairy branched stems (dandelion = on a hairless, leafless unbranched stem). Non-native. Inland and coastal, mainly in dry open or disturbed habitats and mostly south of a line from N Lancashire NE to Co. Durham. Fl 6-10.



**Yellow horned-poppies *Glaucium flavum*.** Bluish-greyish-green leaves, branched growth form and big yellow flowers developing into long 'horns'. Mainly on shingle on coasts of S. Britain N to Solway and S + E Ireland. Fl 6-8.

Very rarely further north  
Around the Firths of Clyde and Forth  
Isle of Man and Scillies too  
Here is one that I just drew



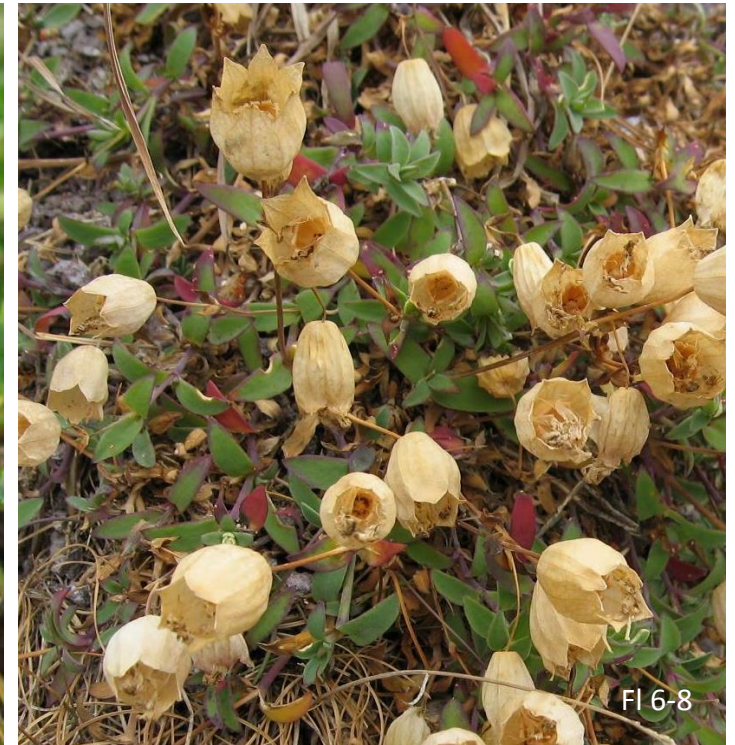
Three herbs found in coastal habitats including shingle. The first two are not NPMS indicators here; the third one is.



**Kidney vetch *Anthyllis vulneraria*.** Low grown. The grey-green leaves are divided into smooth-edged leaflets with very pale undersides and edges; the terminal leaflet can be largest. Small yellow pea-like flowers grouped into dense roundish clusters. Not a NPMS positive indicator in this habitat, but found on coastal shingle and cliffs (and grasslands and rocky habitats inland).



**Common stork's-bill *Erodium cicutarium*.** Another short plant. The pale pink flowers are a bit like those of Herb Robert but the leaves are divided in a pinnate fashion (toothed leaflets along left and right sides of leaf stalk) instead of palmate (radiating out from a central point). Not a NPMS positive indicator in this habitat, but common in coastal sand and shingle (and also other low altitude sandy or rocky ground inland).



**Sea campion *Silene uniflora*.** Low grown, branched and hairless, with narrowly oval greyish-green untoothed leaves in opposite pairs, white flowers up to 2.5 cm across with 5 broad petals with a narrow but deep notch cut down from the tip of each petal. Calyx (just below petals) very inflated and especially conspicuous after the petals have gone (as in photo). On coastal shingle and cliffs. NPMS positive indicator in coastal shingle.

## MACHAIR!

I'm so excited to get to this section because I can show you some of the photos I took of machair on the Outer Hebrides last summer! Before then I had only one photo of machair, and it's not really a very machair-ish one in that it could equally be unimproved neutral grassland as found in other parts of the UK too. See what I mean? →

It's on the west coast of Sutherland and it's decent herb-rich grassland, but as it looks in this photo it could equally well be here where I live in East Lothian, or just outside Basingstoke, or in a field among ex-industrial wastelands near Glasgow... But it's actually machair.

So – what actually *is* machair? It's a herb-rich grassland habitat in which sand containing shell fragments has been blown inshore, in coastal areas of NW Scotland and W Ireland with a cool, wet oceanic climate. Here (below) is a better photo of machair, in the Outer Hebrides.



Here's some more machair, again in the Outer Hebrides:



Some of it gets flooded for some of the time, especially in winter. In these wetter places the vegetation has at least something of a neutral wetland or wet grassland flora, as in this example which contains abundant silverweed:



Here's a wetter example with species including silverweed, meadowsweet and ragged robin:



Here is some wetland within a machair landscape. Species include sedges, rushes, angelica, ragged robin, sea arrow-grass, water horsetail and, beyond, common reed:



Much of the machair is grazed. Some of is cultivated, as here with a crop of oats in the Outer Hebrides:



The NPMS guidance says *“please only survey the grasslands, not the cultivated areas or associated wetlands/marshlands”*. See – that’s the NPMS looking after you! They obviously don’t want you to either (a) get into trouble for trampling through someone’s crops, or (b) get too wet. So the oat crop on the previous page is an example of somewhere to be avoided. The habitat in the photograph below (Outer Hebridean machair again) has probably had some agricultural treatment in the past but is clearly grassland and can be counted as machair for NPMS:





In this example in the Outer Hebrides the foreground part is to be avoided because it's a meadowsweet-dominated wetland, but the drier grassland behind is appropriate for NPMS machair recording.



The list of NPMS positive indicator species in the machair habitat has a lot of overlap with the species shown earlier in the sand dune section. Here are small (mainly cropped) copies of those pictures, just as a reminder for anyone who wasn't paying proper attention through those sand dune pages. No, not *you!* Yes, I know – you *were* paying attention...

Hey – just had an idea! I'll put the pictures on this page *without* the names. So *you* can name them! Answers on the next page.



Here they are with their names added:



White clover



Red clover



Black medick



Mouse-ear hawkweed



Bulbous buttercup



Common bird's-foot trefoil



Creeping willow



Lady's bedstraw



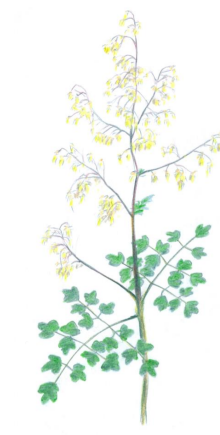
Angelica



Ribwort plantain



Common mouse-ear



Lesser meadow-rue



Sand sedge

On the next few pages we'll have photos of species that are listed as NPMS positive indicators in machair habitat but haven't appeared yet in this document.

Three white-flowered NPMS positive indicators in machair:



**Yarrow *Achillea millefolium*.** Leaves divided into small leaflets that are themselves deeply divided into narrow lobes. White flowers in dense branched clusters at tips of stiff stems. Flowers mostly white but can be pale pink. Mainly in more or less neutral grasslands.

**Daisy *Bellis perennis*.** Low rosettes of oval, sparsely toothed leaves that have a firm texture. Unmistakeable daisy flowers borne singly on short upright stalks. Found in a wide range of habitats, especially short neutral to calcareous grassland.

**Oxe-eye daisy *Leucanthemum vulgare*.** Flower like daisy but much bigger. Whole plant much taller. Lower leaves with blunt lobes / large teeth (toward the shape of some oak leaves). Mainly in neutral grassland.

Four pink- or purple-flowered opposite-leaved NPMS positive indicators in machair:



Fl 8-10

**Autumn gentian *Gentianella amarella*.** Leaves oval-oblong. Stem relatively thick. Whole plant short. Flowers 4-5-petalled with 'tube' of 4-5 equal-sized lobes beneath (field gentian *G. campestris* has 4 unequal lobes and 4 petals). In more or less calcareous grasslands.



Fl 6-9

**Self-heal *Prunella vulgaris*.** Stem square-sectioned. Leaves untoothed and widest in basal half. Plant sparsely hairy and mostly short. Mainly in neutral grassland.



Fl 6-8

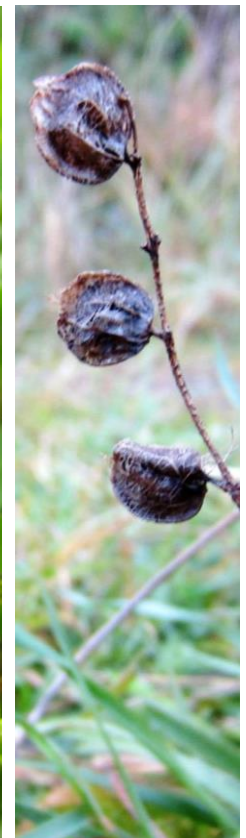
**Red bartsia *Odontites vernus*.** Thin branched stems. Small leaves (+ a few teeth on leaf edges). Narrow spikes of dull pink-red flowers. In short grassland, barish ground, etc.



Fl 5-8

**Thyme *Thymus polytrichus*.** A low sub-shrub (stems thin but woody). Small oblong-oval leaves. Small clusters of pink flowers. Mainly in calcareous grasslands.

Three assorted NPMS positive indicators in machair. All have leaves in opposite pairs.



**Fairy flax *Linum catharticum*.** A small hairless plant with very thin, delicate stems, very small oblong-oval leaves and small 5-petalled white flowers. Mainly in calcareous grasslands.

**Devil's-bit scabious *Succisa pratensis*.** Short to quite tall, with long oval leaves which are hairy and have a finely net-veined pattern on the underside. Distinctive round dense heads of pale blue flowers. Grows in a wide range of habitats including acid to neutral grasslands and various wetlands. Leaf shape similar to that of knapweed (see next page).

**Yellow rattle *Rhinanthus minor*.** Leaves narrow, widest in basal half and with small but prominent marginal teeth. Plants mostly short. Flowers yellow; calyx (lower part) pale green, later turning pale brown and then dark by late autumn. Mostly in neutral grassland. Semi-parasitic on other plants.

Two rather dull-looking NPMS positive indicators in the machair habitat, followed by the more colourful knapweed which is not a NPMS positive indicator but can be very common and prominent in machair.



**Sheep's sorrel *Rumex acetosella*.** size varied; can be very small. Leaves rather greyish-green; easily identified by two basal lobes that point outwards. Common sorrel *R. acetosa* is larger with brighter green leaves with basal lobes pointing backwards. Leaves of both species are edible (acid taste). Sheep's sorrel is mostly in short or patchy grassland on thin, dry acid soils. Common sorrel in short to taller vegetation on thin to deeper acid to neutral soils.



**Field horsetail *Equisetum arvense*.** Stem with 6-18 shallow longitudinal grooves. Whorls of thin 4-angled branches. Related to ferns. In a wide range of dry to damp habitats.



**Knapweed *Centaurea nigra*.** Rather coarse (hairy and rough-textured, with stiff stems up to 80 cm tall). Leaf shape like devil's-bit scabious (see previous page) but coarser-textured and lacking fine net-veined pattern on underside. Leaves not in opposite pairs (opposite in the scabious). Mostly in neutral grasslands.

They're not NPMS indicators in machair but orchids and yellow flag can be conspicuous, especially where the soils are damp.



Heath spotted-orchid *Dactylorhiza maculata*



Common spotted-orchid *D. fuchsii*



Early marsh-orchid *D. incarnata*



Fragrant orchid *Gymnadaenia* spp.



Northern marsh-orchid *D. purpurella*





# ***STOP PRESS! STOP PRESS! STOP PRESS! STOP PRESS! STOP...***

We were just about to move on to maritime cliffs or whatever that fine scale habitat is called exactly (s'pose I'd better go and check... hang on a minute... ah yes, "Maritime cliff tops and slopes" – good to get that bit of detail right before we actually go there) but my wife Alison just said she thought she might have taken a few photos at that machair site in Sutherland! Turns out she had indeed. Photos of orchids:



Clockwise from top left: frog orchid *Coeloglossum viride*; fragrant orchid *Gymnadaenia* sp.; common twayblade *Neottia ovata*; common spotted-orchid *Dactylorhiza fuchsii*.

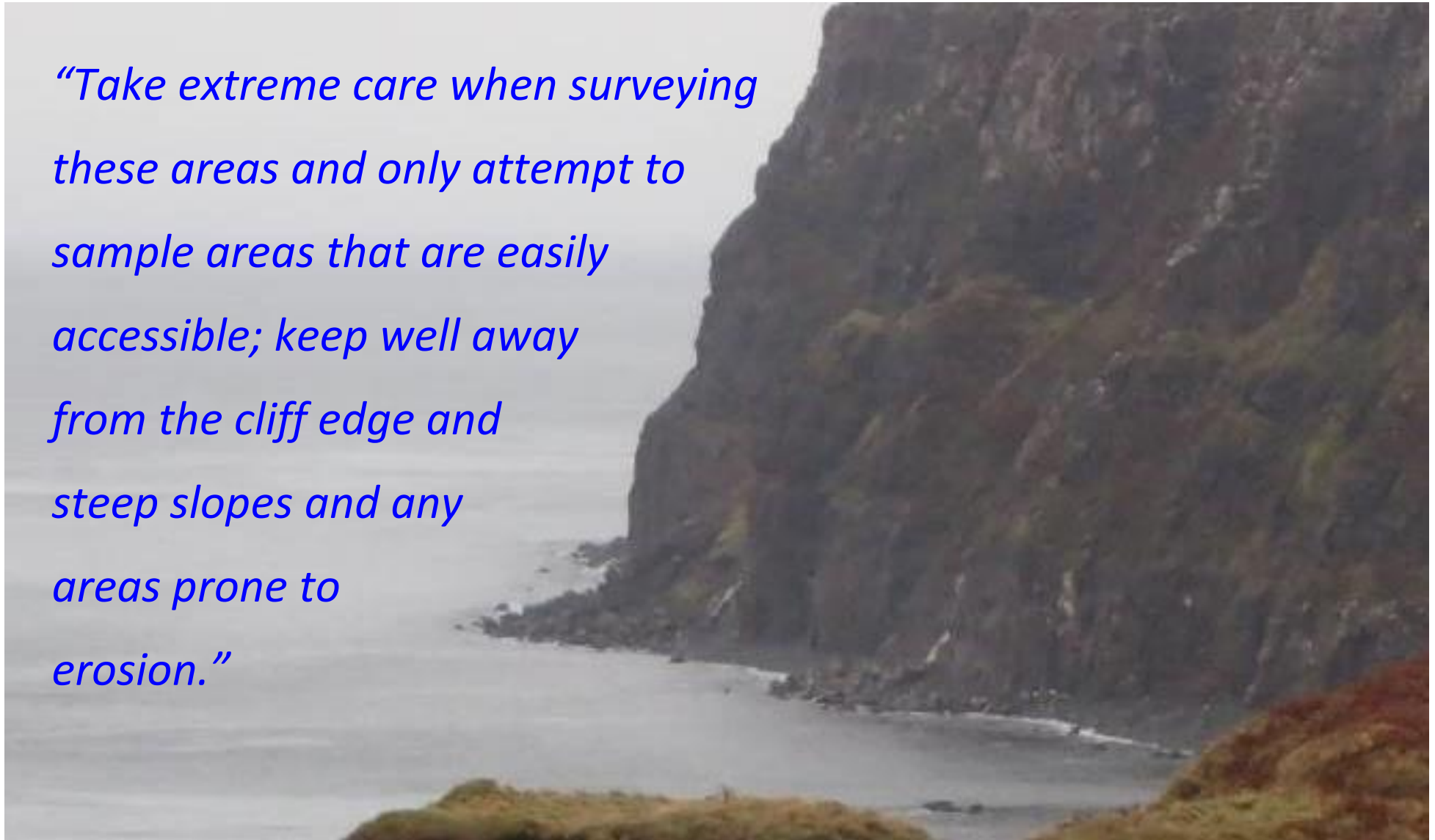
## MARITIME CLIFF TOPS AND SLOPES

So, after that long haul through saltmarshes, dunes, shingle and machair we've made it to the **fifth and final NPMS fine-scale coastal habitat type!**



**WARNING!** Just repeating the NPMS guidance on safety in this habitat:

*“Take extreme care when surveying these areas and only attempt to sample areas that are easily accessible; keep well away from the cliff edge and steep slopes and any areas prone to erosion.”*



The NPMS guidance says that the vegetation here **“can range from scattered plants in rock crevices on vertical cliffs to closed maritime grassland and heath communities on slopes and cliff tops”**, and that it includes **“grassland or heath on coastal slopes or between the cliff top and managed agricultural fields or residential properties inland”**. It’s all “subject to constant exposure and salt spray (especially during storms)” and varies depending on soil/rock acidity, and the gradient and aspect of the slope. The guidance also says that the vegetation on **vertical sea cliffs should be ignored** (for obvious safety reasons). Not just absolutely vertical. Steeply sloping too, as in much of the coastal terrain in this photo:



Here near St Abb's Head on the coast of SE Scotland we see a lot of grassland among and just above the cliffs. The zone of cliff top maritime grassland is quite wide in places.



Likewise in this view on the north Devon coast: mainly grassland and rock.



Seacliffs with lush grassland with abundant false oat-grass in Co. Durham (left) and with a sparser cover of grasses and herbs in East Lothian (right).



Maritime dwarf shrub heath occupies much of the clifftop zone in this scene in Orkney. Where dwarf shrub heath occurs among sand dunes or coastal shingle it is to be classed in the NPMS Heathland habitat type. Likewise, heath on other coastal ground is best classed as NPMS Heathland where the habitat is not very steeply sloping or is not on cliff tops, but heath on or along the tops of seacliffs and other steep coastal slopes can be counted here in the Maritime cliff top and slope coastal habitat. It is commonly closely associated with grassland, as in this photo (grassland just below the heath in the centre of the photo). Maritime clifftop/slope examples of heath typically have abundant heather or bell heather and a sparse scatter of maritime species such as thrift or sea plantain. Further inland they can grade into NPMS Heathland habitat, and in some places the transition can be gradual and poorly defined.





Woodland and scrub form much of the vegetation on these seacliffs at Culzean Castle in Ayrshire.



Here in W Sutherland we see some interesting clifftop grassland (upper photo) and grassland and heath among landslips (lower photo).



The rare liverwort *Acrobolbus wilsonii* grows among these rocks!

What's the vegetation on these seacliffs? I don't know. They were too scary to go to the edge of (top) or too distant (bottom – seen from boat).



Time now to get down and look closer at plant species, beginning with some of the commonest ones in this habitat:

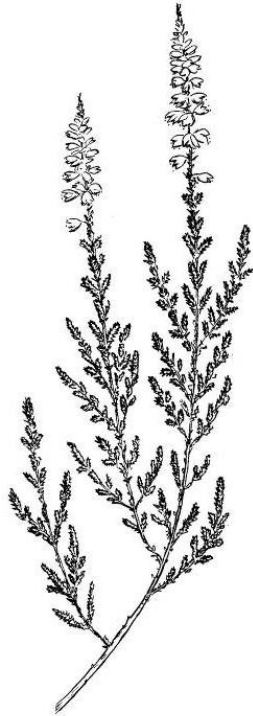


Thrift, sea plantain and sea campion are NPMS positive indicators in this habitat.

As well as thrift, sea plantain and sea campion (all illustrated on previous page) five more NPMS positive indicators in this clifftop/slope habitat have also been illustrated earlier in this document because of their occurrences in other coastal habitats:

**Yarrow** *Achillea millefolium* | **Carlina thistle** *Carlina vulgaris* | **Common bird's-foot trefoil** *Lotus corniculatus* | **Mouse-ear hawkweed** *Pilosella officinarum* | **Bulbous buttercup** *Ranunculus bulbosus*

I'll not illustrate them again because that would be too repetitious. And probably disrespectful of your ability to remember them! So, on to NPMS maritime clifftop/slope positive indicators that are new to this document, beginning with the main dwarf shrubs in maritime clifftop/slope heaths.



**Heather** *Calluna vulgaris*. Leaves tiny and not in whorls. Very small pale pink flowers. Overall the most widespread and common dwarf shrub in coastal heath. Fl 7-9.



**Bell heather** *Erica cinerea*. Leaves in whorls of 3. Bright mid pink-purple flowers. Very common in many coastal heaths. Fl 7-9.



Mainly in northern Britain

**Crowberry** *Empetrum nigrum*. Leaves in whorls or not; quite thick + white stripe up underside. Fl 5-6.

→ Actually, this species is NOT a NPMS positive indicator here\*

Four NPMS positive indicators in this maritime cliff top and slope habitat:



**Yellow-wort *Blackstonia perfoliata*.** Unmistakeable with the extraordinary leaf shape combined with the distinctly greyish-green colour.



**Greater knapweed *Centaurea scabiosa*.** Similar to common knapweed *C. nigra* but the flowers have those spreading rays and the leaves are more deeply pinnately lobed.



**Bluebell *Hyacinthoides non-scripta*.** Mainly in woods. On seacliffs = in sheltered habitats in the west. Native/Spanish bluebell hybrid *H. x massartiana* has various differences including wider leaves (to 3.5 cm instead of <1.5 cm).



**Tormentil *Potentilla erecta*.** 4-petalled yellow flowers. Leaves with 3 leaflets + 2 stipules at leaf stalk base. In many habitats, e.g. grassland, heath and woods; esp. (but not only) on acid soils.

Three more NPMS positive indicators in this maritime cliff top and slope habitat:



**Scots lovage *Ligusticum scoticum*.** An umbellifer with leaves like those of angelica but smaller, brighter green and stiffer. Stems commonly reddish. Doesn't grow as tall as angelica, and stems thinner too. In rocks and sandy coastal habitats in Scotland and N + NE coasts of Ireland.



**Roseroot *Sedum rosea*.** Unmistakeable with its thick greyish-green leaves sticking out widely in all directions from the thick stems. Flowers yellow, in dense clusters at stem tips. Mainly in steep, rocky habitats in uplands in NW Britain + Ireland. Also on seacliffs.



**Rockrose *Helianthemum nummularium*.** A low sub-shrub (stems thin but woody) of grasslands and other habitats on dry neutral to calcareous soils. Like thyme but larger, with yellow flowers and leaves very pale below + two tiny leaf-like stipules at leaf bases.

Another four NPMS positive indicators in this maritime cliff top and slope habitat:



Fl 5-7



**Knotted clover *Trifolium striatum*.** Short and softly hairy. Leaves a bit like those of white clover but hairy and without pale blotches. Small pale pink flower heads held close to the stems and leaves. On thin dry soils in grasslands and on rocky slopes.



Photo: common milkwort (Fl 5-9)  
(Heath milkwort Fl 4-9)

**Milkworts *Polygala* species.** Low grown with small narrow oval-oblong leaves and blue (less commonly pink to white) flowers. Mainly in grasslands.  
**Heath milkwort *P. serpyllifolia*** (lower leaves in opposite pairs) mainly in upland acid places; **common milkwort *P. vulgaris*** (all leaves non-opposite) mainly in lowland calcareous habitats.



Fl 5-7

**Soft brome *Bromus hordeaceus*.** Leaves quite wide and hairy, but flower head more distinctive with large, shortly hairy spikelets with longer 'hairs' (awns) projecting at their tips. Mainly on dry neutral soils in grasslands and open or disturbed habitats (e.g. roadsides and waster ground).



Fl 5-6 (fruits 6-7)

**Flea sedge *Carex pulicaris*.** Leaves thin and wiry and easily missed, but flower heads more noticeable, esp. in summer when ripe with down-turned fruits. In damp base-enriched habitats incl. damp seacliffs.



The list goes on! Here are two more NPMS positive indicators in this maritime cliff top and slope habitat:



Left = **Sheep's bit** *Jasione montana*. A hairy plant, mostly quite short, with narrowly oval leaves (mostly at the base of the plant) and upright stems topped with small clusters of pale blue flowers. Leaves untoothed but their margins can be wavy. Flower heads rather like those of devil's-bit scabrous but the whole plant is smaller and the leaves much smaller and not in opposite pairs. On dry acid soils. Mostly in the west but not NW Scotland, though found throughout Shetland. Fl 5-8.

Right = **Salad burnet** *Poterium sanguisorba*. Leaves hairless to slightly hairy and divided into many leaflets in opposite pairs along the leaf stalk. Leaflets short-stalked and with toothed edges. Small dense green clusters of flowers at stem tips. Mainly in calcareous grassland. Also in rocky habitats. Widespread in England and Wales. Rare and markedly southern in Scotland. Scarce in Ireland. Fl 5-8.



**Wild clary *Salvia verbenaca***

A rather tall, hairy, branched herb with square-sectioned stems and leaves with large teeth or small lobes around their margins. Leaves in opposite pairs. The purple flowers are borne in long spikes. Fl 5-8.

Found on dry soils in grassland, dunes, coastal slopes and disturbed habitats. Mainly in the S half of England; rare and mainly coastal further north.

Wild clary is a NPMS positive indicator in the maritime clifftop and slope habitat.

This drawing is based on a photo I took when I found it at one of its northernmost British sites, on a sunny south-facing slope in Fife.

### **Dyer's greenweed *Genista tinctoria***

This low sub-shrub looks like broom *Cytisus scoparius* but is much smaller (up to about 70 cm tall) and instead of having leaves divided into 3 leaflets as they are in broom they are just a simple narrow oval shape. The yellow flowers are quite broom-like. The green stems have longitudinal ridges running down them, just as in broom (and also bilberry *Vaccinium myrtillus*). Fl 7-9.

It grows in grasslands, heaths, roadsides and on cliffs in England, Wales and the southernmost parts of Scotland. The subspecies *littoralis* grows on steep, rocky coasts in Cornwall and is shorter with broader leaves.

Dyer's greenweed is a NPMS positive indicator in the maritime clifftop and slope habitat. It could be confused with petty whin *G. anglica*, which grows in a broadly similar range of habitats but is shorter and has spines. The geographical range of petty whin extends further north too: it is common in many upland heaths in eastern Scotland.



**Rock samphire *Crithmum maritimum***

Another NPMS positive indicator in the maritime clifftop and slope habitat, this species is easily identified by its greyish-green thick-textured fleshy leaves divided into narrow segments, and the umbels of whitish flowers. It grows mainly on cliffs and shingle around the coasts of Britain from SW Scotland south through W England, Wales and S England to Suffolk, and also the Isle of Man and Ireland. Fl 6-8.



I haven't mentioned **primrose** *Primula vulgaris* yet, and the NPMS guidance does mention it.

So here it is.

What? You already know this species?

Oh well. I tried. But if you already know it there's obviously no point in me going on about it now and telling you that the leaf has a kind of wrinkled upper surface texture and a more gradually tapering base than in cowslip or that the flower is pale yellow with a darker middle and five petals with notched tips or that it's one of the earliest spring flowers or that it grows best in shady or sheltered places on soils that are neutral or a bit acid or a bit calcareous and...

OK, OK, I'll stop. But not before I add another primrose photo – ha! No, you're not gonna stop me! Ain't Nothing You Can Do About It. And I bet you've never been anywhere with SO MUCH PRIMROSE that you can see the stuff from miles away, eh? Well, **I HAVE!** Yep. Check this out!



## NPMS NEGATIVE INDICATORS IN COASTAL HABITATS – PAGE 1 OF 2



Japanese rose *Rosa rugosa*. Dense and bushy. Flowers big, bright pink or white. Leaves bright or dark green + finely wrinkled upperside. Big red rose hips, wider than long. Fl 6-7.



Hottentot fig *Carprobrotus edulus*. Creeping. Rubbery-textured. Leaves thick, 3-angled, 7-10 cm long, in opposite pairs. Flowers pink or yellow (all yellow-centred), short-stalked, held just above the leaves. On coastal cliffs, dunes and walls in SW Britain, esp. SW Eng. Fl 5-7.

All native in Britain and Ireland except hottentot fig (from S Africa) and Japanese rose (from E Asia). Common cord-grass is a hybrid between a native species and an alien species.

## NPMS NEGATIVE INDICATORS IN COASTAL HABITATS – PAGE 2 OF 2

This table summarizes the potential downsides to these negative indicator species and (with red cell colouring) the fine-scale habitats in which each one is classed as a negative indicator.

Interestingly, two of these species – curled dock and ragwort – are classed as NPMS positive indicators in the coastal vegetated shingle fine-scale habitat but as negative indicators in dunes (ragwort) and maritime cliff tops and slopes (curled/broad-leaved dock). Hence the two green cells in the table. The shingle habitat is probably a more natural one for them and the nature of the substrate there might limit the extent of their cover, keeping them in check.

Negative indicator species	Potential problem with this species	Salt-marsh	Sand dune	Shingle	Machair	Maritime cliff tops & slopes
Hottentot fig <i>Carprobotus edulus</i>	Potentially invasive (could dominate and reduce biodiversity value)					✘
Creeping thistle <i>Cirsium arvense</i>	Associated with eutrophication and ground disturbance (vehicles, trampling by livestock, etc)		✘	✘	✘	
Goosegrass <i>Galium aparine</i>	Associated with eutrophication and unnaturally high nutrient levels that could lead to reduced biodiversity value			✘		
Blackthorn <i>Prunus spinose</i>	Potentially invasive (could dominate and reduce biodiversity value)					✘
Japanese rose <i>Rosa rugosa</i>	Potentially invasive (could dominate and reduce biodiversity value)		✘	✘	✘	
Bramble <i>Rubus fruticosus</i>	Potentially invasive (could dominate and reduce biodiversity value)		✘	✘	✘	✘
Broad-leaved/curled dock <i>Rumex obtusifolius/crispus</i>	Associated with eutrophication and ground disturbance (vehicles, trampling by livestock, etc)			✓ Curled dock only		✘
Ragwort <i>Senecio jacobea</i>	Toxic when eaten or touched, and also associated with ground disturbance (e.g. trampling by livestock)		✘	✓		
Common cord-grass <i>Sporobolus anglicus</i>	Potentially invasive (could dominate and reduce biodiversity value)	✘				
Gorse <i>Ulex europaeus</i>	Potentially invasive (could dominate and reduce biodiversity value)					✘
Stinging nettle <i>Urtica dioica</i>	Associated with eutrophication and unnaturally high nutrient levels that could lead to reduced biodiversity value		✘	✘	✘	

Well, that brings us to the end of this quick tour of coastal habitats and their vegetation.

I hope you've enjoyed it and found it useful and informative, and I hope you have wonderful and productive times studying the plants of these coastal places.

