

## Appendix A - Shingle survey instructions

1. Wherever possible, start transects from the highest strandline (HS) (indicated by a line of seaweed and/or detritus left by the sea). This may not be the newest strandline, especially later in the season. If you cannot determine HS, use the top of the highest ridge (HR) along the shore, seaward of the majority of the vegetation. Record where you start in the appropriate box or describe where you start if you cannot fit the criteria above. If the odd plant occurs on the seaward side of your starting point record the distance as a negative value. If you start from HS, record where the top of HR begins.
2. Run transects perpendicular to the shore, estimate and record the start position in relation to permanent landmarks or features (see figure A1.1 below). Run a measuring tape along the ground (Note: take a picture from either end of each transect if you can).

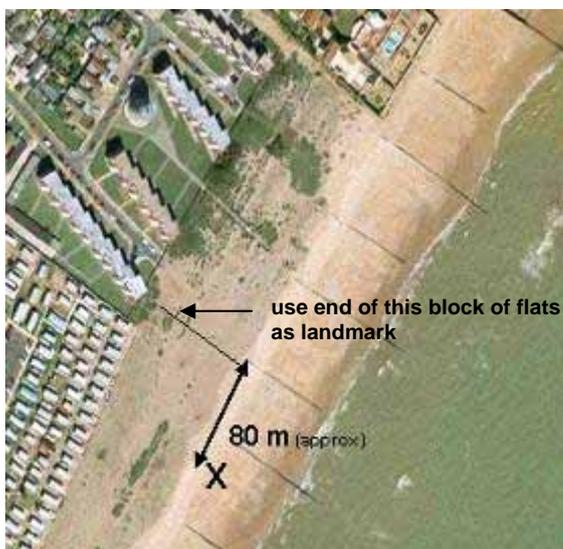


Figure A1.1

3. Set out the measuring tape as shown (see figure A1.2) placing large pebbles at 10m intervals to create a visual representation of the 10m sections required. Use the measuring tape as your central line and roughly estimate 2.5 m either side as shown by the dotted rectangle in figure 7 below.

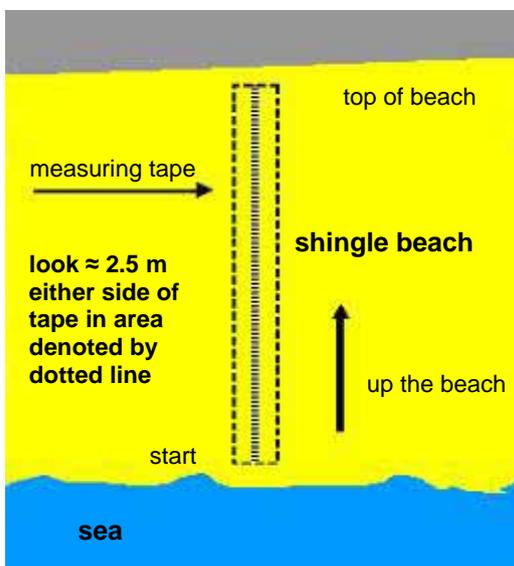


Figure A1.2

4. If possible, complete transects up to 100m, if the beach is longer than 100 m, start a second transect from the end of the first and record on the second recording sheet, marking it in the "Sheet no". Do not go beyond 200 m. Try to complete two transects per session, and keep sessions per beach as close together as possible (e.g. weekly).
5. Walk the length of the transect twice, once up the beach and once down the beach, recording the following:
  - 5.1 - Estimate % of bare shingle over 10 m sections and record against distance up beach in first column. Then, estimate height of vegetation and % cover in each height category: L = (low) cropped and/or prostrate, M = (medium) up to waist high, H = (high) above the waist. Use Es = exposed shingle in soil/sand and S = bare soil/sand. Put value in appropriate column. Total should = 100%. Not every box needs to be completed.
  - 5.2 - Record the presence of only the species listed on the recording sheet within  $\approx 2.5$  m either side of the measuring tape. Measure 1<sup>st</sup> and last occurrence of each species from the seaward side to the nearest metre (e.g. Yellow Horned-poppy, first = 11 m, last = 65 m). Also, record within which "10 m sections" they appear in the appropriate right-hand columns with a tick. (NB. you are highly unlikely to find all the species on the sheet on any one beach)
  - 5.3 - Fill in shingle characteristics. Roughly estimate to nearest 5%, percentage of shingle fitting into each category at the start, middle and the end of transect.
  - 5.4 - Record presence or evidence for any vehicular activity, fire damage, trampling etc. Record the distance at which these features are found.
6. The first transect is now complete. To locate the start of the second transect, measure  $\approx 100$ m along the beach (parallel to shore) from the first transect. If the beach is not wide enough for this, or 100m falls somewhere unsuitable, use a shorter distance and record this on the sheet and the map. Complete step 6 then repeat 1 - 5.
7. Make a V or W-shaped walk (depending on length of transects) between transects and record any of the pre-selected species not already found in transects in the appropriate column on the recording sheet. Put a cross on the recording sheet between the relevant transects where you found them – these records can remain even if the species are subsequently found in a transect (walk at normal walking pace).

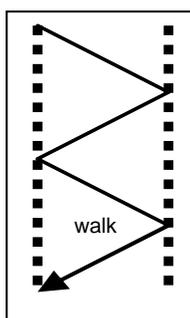


Figure A1.3

8. Repeat 1 - 6 until predetermined number of transects completed.
9. Remember to fill in other details on the recording sheet, the site, your name, the date, the time taken and a brief description of the beach.
10. Add as much or as little detail as you want in last two sections.

Site		Recorder(s)										Sheet no.	sketch of beach profile here													
Start point - put X on map or take GPS reading for each transect		Date										Time to complete														
Transects (W to E or S to N, seaward to landward)		1					2					Record where top of HR is if you start from HS, plus any comments you want to make														
Record whether you start transect at highest strandline HS, or highest ridge HR												Transect 1		Transect 2												
% bare shingle at distance up beach		%	L	M	H	Es	S	%	L	M	H	Es	S													
Estimate % bare shingle over 10 m sections and record against distance up beach in first column. Then, estimate height of vegetation and estimate % cover : L = low - cropped and/or prostrate, M = medium - up to waist high, H = high - above the waist, Es = exposed shingle in soil/sand, S = bare soil/sand. Put value in appropriate column. Total should = 100%. Not every box needs to be filled.	up to 10 m																									
	20 m																									
	30 m																									
	40 m																									
	50 m																									
	60 m																									
	70 m																									
80 m																										
90 m																										
100 m																										
length of transect (estimate extent of beach beyond end of your transect)																										
Only look for these species (record 1st and last occurrence along transect to nearest metre)		1 <sup>st</sup> nearest m	last m	1 <sup>st</sup> m	last m	Tick each "10 m section" species also found in												on site but not found in transects								
Orache species* - <i>Atriplex</i> spp.						10	20	30	40	50	60	70	80	90	100	10	20	30	40	50	60	70	80	90	100	
Sea-kale - <i>Coarctata maritima</i>																										
Yellow Horned-poppy - <i>Glaucium flavum</i>																										
Curled Dock - <i>Rumex crispus</i> ssp. <i>Ribrosus</i>																										
Bittersweet - <i>Solanum dulcamara</i> var. <i>maritimum</i>																										
Buck's-horn Plantain - <i>Plantago coronopus</i>																										
Common Nettle - <i>Urtica dioica</i>																										
Herb Robert - <i>Geranium robertianum</i> ssp. <i>maritimum</i>																										
Least Lettuce - <i>Lactuca scariola</i>																										
Lichens* (black, powdery)																										
Lichens* (yellow)																										
Prickly Saltwort - <i>Salsola kali</i>																										
Red Hemp-nettle <sup>†</sup> - <i>Galeopsis angustifolia</i>																										
Red Valerian - <i>Centranthus ruber</i>																										
Rock Samphire - <i>Crithmum maritimum</i>																										
Sea Beet - <i>Beta vulgaris</i> ssp. <i>maritima</i>																										
Sea Bindweed - <i>Calyptostegia solanifolia</i>																										
Sea Campion - <i>Silene uniflora</i>																										
Sea Clover - <i>Trifolium aquaticum</i>																										
Sea Knotgrass - <i>Polygonum maritimum</i>																										
Sea Mayweed - <i>Tripleurospermum maritimum</i>																										
Sea Pea - <i>Lathyrus japonicus</i>																										
Sea Purslane - <i>Atriplex portulacastris</i>																										
Sea Radish - <i>Raphanus raphanistrum</i> ssp. <i>maritimum</i>																										
Sea Rocket - <i>Cakile maritima</i>																										
Sea Sandwort - <i>Honckenya peploides</i>																										
Sea Spurge - <i>Euphorbia paralias</i>																										
Sea-bitte - <i>Suaeda</i> spp.																										
Sea-heath - <i>Frankenia laevis</i>																										
Sea-holly - <i>Eryngium maritimum</i>																										
Sea-lavender species* - <i>Linum</i> spp.																										
Sheep's Sorrel - <i>Rumex acetosella</i>																										
Silver Ragwort - <i>Senecio cineraria</i>																										
Snow-in-summer - <i>Cerastium tomentosum</i>																										
Sticky Groundsel - <i>Senecio viscosus</i>																										
Stonewort species* - <i>Sedum</i> spp.																										
Thrift - <i>Armeria maritima</i>																										
Toadflax species <sup>†</sup> - <i>Linaria</i> spp.																										
Tree Mallow - <i>Lavatera arborea</i>																										
Viper's-bugloss <sup>†</sup> - <i>Echium vulgare</i>																										
Wild Cabbage - <i>Brassica oleracea</i>																										
Wood Sage - <i>Teucrium scorodonia</i>																										
Grasses* (cropped)																										
Grasses* (tussocks)																										
Lichens* (greyish greenish, bushy)																										
Mosses*																										
* - if you know which particular species you have found make a note																										
† - if you find these species have a quick look for presence of host-specific invertebrates as highlighted on "Invert species to look for"																										
Please fold over for scrub and additional observations/comments that need to be entered																										

Figure A1.4 - Shingle survey recording sheet, page one.



## Appendix B - Shingle species identification guide

Appendix B provides a useful shingle species identification guide. The guide displays common floral species found within the vegetated shingle communities of East Sussex.



**Yellow Horned-poppy** (*Glaucium flavum*) – typical colonising plant of bare shingle. Each individual plant produces one to several rosettes with a single flower stalk emerging from each. Flowering starts in mid-May and may last well into October, but yellow flowers (6-9cm across) generally only last a day. After flower has dropped, a very long and curved seed-pod develops (up to 30cm long) which eventually splits lengthways to reveal 100s of small seeds. Waxy leaves are greyish-green (glaucous) and covered with fine short hairs. Each rosette of leaves and its flowering stem dies in autumn and plant overwinters as a rosette whose leaves are smaller and hairier than normal. Overwintering rosettes and new plants may well be mistaken for a different species by casual observer.



**Sea-kale** (*Crambe maritima*) – long-lived perennial plant. Leaves have a thick waxy covering (may be > 50cm in old plants; established individuals can be several meters across). First flowering generally when plant at least 5 years old. Flowering branches covered with small white flowers (May- August). Fruit ripens a few months after flowering and whole flowering branch, including fruit, dries out and generally break off from plant, hastened by strong winds. Average plant produces 5-10,000 seeds (corky, ≈15mm) a year. At end of growing season, above ground parts die back, underground parts alone survive winter. Each spring, previous year's flowering branch produces a succession of cabbage-like leaves. First leaves are a deep vivid crimson-purple, successive leaves becoming greener.



**Curled Dock** (*Rumex crispus* ssp. *littoreus*) is a pioneer species on shingle. Stem can reach a height of 3ft. Slightly fleshy leaves with wavy margins. Tiny green or reddish flowers (May-August). Fruit is roughly triangular, with usually, three swollen seeds. Thin membrane surrounding seeds is smooth.

**Bittersweet** (*Solanum dulcamara* var. *marinum*) or Woody Nightshade grows low to ground. Leaves pointed oval, often 1 or more pairs of narrow lobes at base. Has red berries (deadly nightshade has black) and distinctive purple and yellow flowers (10-15mm) (May-November). This plant is poisonous if eaten. Leaves give strong scent when rubbed.



**Buck's-horn Plantain** (*Plantago coronopus*) – often very small and prostrate, flat rosette of deeply lobed leaves usually downy, one-veined. Flowers on 20-40mm spikes, brownish with yellow anthers (May-October)

**Herb-Robert** (*Geranium robertianum*) – may be subspecies *maritimum* on coast. Generally prostrate and hairless on shingle, stems and leaves often reddish. Has strong smell. Deep pink flowers (≈13mm – 5 petals) (May-September). Fruits with long beak.



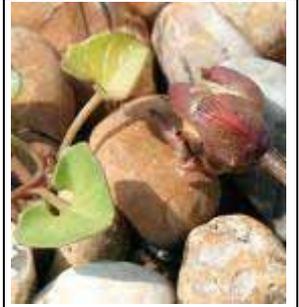
**Oraches** (*Atriplex* spp.) – found along shingle shoreline, flowering plant growing closest to the high water mark. Forms a low mat of pale green plants in splash zone where previous winter storms scattered seed into spaces between stones. Plants will be very small and harder to find earlier in the year. Tiny green flowers in slender open leafy spikes (July-September). Fruit, one seed between pair of fleshy, often bumpy bracts<sup>†</sup>. In autumn green stripe along beach turns yellow.

**Prickly Saltwort** (*Salsola kali*) – stems 20-40cm, often pink-striped. Leaves 10-40mm, fleshy, rounded, spine-tipped. Tiny white or tinged pink flowers (July-August) usually singly in tuft of leaf-like bracts<sup>†</sup> at base of leaves. **VU**.



**Rock Samphire** (*Crithmum maritimum*) – bushy, grey-green perennial. Fleshy leaves strong-smelling when crushed. Flowers yellowish-green (30-60mm umbels<sup>†</sup>) (July –September). Unlikely to be confused with any other plant.

**Sea Beet** (*Beta vulgaris* ssp. *maritima*) forms sprawling clumps on shingle beaches and cliffs and other coastal habitats. Leathery leaves dark green and glossy; stems often reddish. Long and wavy flower spikes appear from July-September. Tiny stalkless flowers have no petals, but yellow stamens are visible when plant is in full flower. Fruit enclosed in a corky structure.



**Sea Bindweed** (*Calystegia soldanella*) – trailing plant, hairless, fleshy kidney-shaped leaves. Milky sap. Pink flowers with white stripes 25-40mm across. Flowers June-August. Fruit is spherical 1-celled capsule.

**Sea Campion** (*Silene uniflora*) – forms mat with prostrate unbranched stems to 30cm. Fleshy, stiff, narrow leaves in opposite pairs. Erect flowers 20-25mm, 5 petals deeply notched, often solitary per stem with yellowish, purplish oblong calyx-tubes<sup>†</sup> 17-20mm long. Flowers March-October.



**Sea Mayweed** (*Tripleurospermum maritimum*) - perennial plant, woody at base. Leaves blunt, somewhat fleshy, linear segments. Daisy-like flowers (20-45mm); as flower matures, receptacle<sup>†</sup> swells up.



**Sea Radish** (*Raphanus raphanistrum* ssp. *maritimus*) – up to 1.5m high, yellow flowers – 4 petals (≈25mm) (June-August), beaked pods, 1-5 bead-like joints which do not readily break apart when ripe.



Sea-kale leaves in background



**Sea Rocket** (*Cakile maritima*) – leaves fleshy, shiny and hairless. Flowers white or pale to darker lilac, 4 petals (6-12mm) (June-August). Usually on drift-line and above on sand, rarely on shingle.



**Sea Sandwort** (*Honckenya peploides*) – Flowers (6-10mm) (May-August) greenish-white, 5 petals. Narrow petals ≈ sepals<sup>†</sup> in male flowers, shorter in female flowers. Fruits yellow-green.



**Sheep's Sorrel** (*Rumex acetosella*) - leaves have basal lobes pointing sideways or forwards. All leaves stalked. Stems often red. Red flowers (2mm) emerge from upright stem (10-20cm) (April-July). Fruits no warts.



**Silver Ragwort** (*Senecio cineraria*) – silver-grey, white-felted stiff leaves, may be green on top. Yellow flowers in Umbel-like<sup>†</sup> clusters (8-12mm) (June-August).



**Sticky Groundsel** (*Senecio viscosus*) – glandular hairs on stem, which makes it feel very sticky. Flowers (≈8mm) July-September – bracts<sup>†</sup> around flower green-tipped (not black).



**Biting Stonecrop** (*Sedum acre*) – low (2-10cm) mat-forming, fleshy egg-shaped yellow-green leaves (3-5mm), pressed close to and lying flat along stem, with peppery taste (taste very little). Yellow flowers (12mm) (July-August).



**English Stonecrop** (*S. anglicum*) – low (2-5cm) mat-forming, evergreen, fleshy egg-shaped waxy-grey, usually red-tinged, alternate leaves (3-5mm). Little-branched clusters of few white flowers, pink-tinged on back (12mm) (June-September).



**White Stonecrop** (*S. album*) – taller (7-15cm), shiny green to red-tinged cylindrical-oblong, blunt leaves 6-12mm). Flowers in branched umbel-like<sup>†</sup> clusters, white or pink-tinged (6-9mm) (June-August).



**Thrift** (*Armeria maritima*) – cushion-forming evergreen, narrow (1-2mm) linear and fleshy leaves. Several pink flowers (8mm-5 petals) in tight roundish heads (1.5-2.5cm) above small brown papery bracts<sup>†</sup> on 5-30cm long downy, leafless stalks (April-October). Usually on cliffs and saltmarsh.





**Toadflax species** (*Linaria* spp.) **Common Toadflax** (*L. vulgaris*) Yellow flowers, orange bulge, long straight spur in spikes (June-October) (18-35mm). Erect with very narrow grey-greenish leaves. **Purple Toadflax** (*L. purpurea*) – much smaller purple flowers. **aSAP** (see insects to look for).

**Tree Mallow** (*Lavatera arborea*) – erect, shrub-like up to 3m, woody stems. Leaves (to 8cm) softly downy. Flowers (3-5cm) purplish-pink and purple-veined, 2 or more at each node (June-September). Nutlets wrinkled.



**Grasses** – try to distinguish between discrete clumps/tufts of up to knee-high grasses and areas of dense and close-cropped turf (often with evidence of rabbits)

**Lichens<sup>†</sup> & mosses** – look for crustose lichens on bare shingle, may look like a dusting of black powder to naked eye. Look for foliose and fruticose lichens in vegetation covered sections, often in closely cropped turf, on landward side of beach. Varied shades of grey, green, blue-green and may feel crunchy underfoot.



**Viper's-bugloss** (*Echium vulgare*) - rough hairy leaves and tall (up to 90cm) flower spike bearing dozens of flowers. Funnel-shaped flowers (15-20mm) (May-September) start pink and turn vivid blue - in a branched spike, with all stamens<sup>†</sup> protruding. Stamens remain red. Nectar good source of food for moths, butterflies and bees – host plant for several rare moths (see insects to look for).

**Broom** (*Cytisus scoparius*) - almost hairless, small leaves and very green 5-ridged stems. Flowers (15-20mm), rich yellow, scattered up the stem (April-June). Pods flattened black, hairy edges. **Hairy-fruited Broom** (*C. striatus*) – 10-ridged stems. **Spanish Broom** (*Spartium junceum*) – no ridges on stems.

**Gorse** (*Ulex europaeus*) – impenetrable thicket-forming, spiny shrub. Spines furrowed, downy when young. Flowers (15-20mm), rich yellow, almond/coconut scented, throughout year but best April-June. Pods hairy, black, popping loudly on hot days. **Dwarf Gorse** (*U. minor*) – smaller weaker spines, more prostrate, smaller pale yellow flowers (8-15mm) (July-October).



**Sea Clover** (*Trifolium squamosum*) – narrow trefoil leaves (3-leaved). Erect & downy. Pale pink flowers in short-stalked egg-shaped heads (10-20mm) with two pairs of trefoil leaves closely beneath flower heads (June-August). In fruit teeth of joined sepals<sup>†</sup> spread outward, star-like. Mainly on brackish mud. **NS**.

**Sea Pea** (*Lathyrus japonicus*) – bluish-green, fleshy leaves with 2-5 oval leaflet pairs. Flowers (15-25mm), 2-10 in short stalked spike (June-August). Pods green-becoming brown with 5-8 peas (like garden peas). Does not generally flower before its third year, but a well-established plant may have 40-50 inflorescences each bearing 7-9 flowers. Forms green, low growing mats on bare shingle. Dies back in winter. **NS**.



**Sea Spurge** (*Euphorbia paralias*) - an erect perennial, up to 1m tall, with close-packed green, fleshy leaves up to 15 mm long, often tinged with red. Yellowish flowers, which lack petals and sepals<sup>†</sup>, appear June-October. Tends to be found in sand or sandy shingle.



**Sea-heath** (*Frankenia laevis*) – prostrate, often matted heath-like woody perennial. Leaves short, fleshy, opposite, with inrolled margins. Pink flowers (5-petals) (July-August). **NT, NS.**

**Sea-holly** (*Eryngium maritimum*) - perennial with spiny holly-like blue-green and white-veined leaves. Globular umbels<sup>†</sup> of powder blue flowers between July and September, after which seed is set and plant dies back.



**Sea-lavenders** (*Limonium* spp.) – simple leaves most of which produced in a dense basal rosette, with flowering stems bearing only small brown bracts<sup>†</sup>. Flowers produced on a panicle<sup>†</sup>, small pink/purple flowers (4-10 mm), 5-petals. Some species **SAP**.



**Wild Cabbage** (*Brassica oleracea*) – stout stem to 60cm and woody at base, with old leaf scars. Leaves wavy bluish-grey, upper clasping stem. Flowers yellow, 30-40mm in long spike well overtopped by buds (April-September). **NS.**

**Wood Sage** (*Teucrium scorodonia*) – downy perennial. Stem square and hairy. Flowers (July-September) pale greenish-yellow, prominent stamens<sup>†</sup> and purple anthers<sup>†</sup>, borne in pairs towards tips of stems. Often found on old established shingle in East Sussex & Kent.



**Least lettuce** (*Lactuca saligna*) has long green leaves with a very pale mid-rib. Flowering from late July-late August. Flowers 9-11mm and close by mid-day. Plants can be tiny and often show rabbit damage. **W&C, EN, NR.**

**Red Hemp-nettle** (*Galeopsis angustifolia*) - Flowers from July-October, setting seed late. Softly hairy, weakly-toothed narrow leaves in opposite pairs on stem, nodes not swollen. Produces small rosy-purple flowers (14-25mm), white spots on bottom petal in small whorls around stem. Plants can be tiny and often show rabbit damage. **CR, NS, SAP** (see inverts to look for).

**Sea Knotgrass** (*Polygonum maritimum*) – prostrate with stem woody at base, leaves 2-5cm long, waxy, grey-green, with edges rolled-back underneath, long silvery sheaths. Flowers, 1-4 together, pinkish-white (July-September). **W&C, VU, NR.**



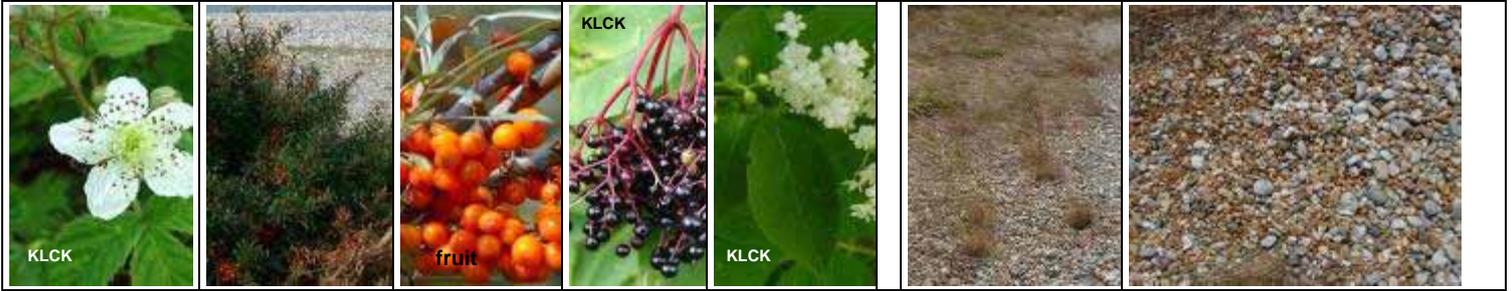
**Common Nettle** (*Urtica dioica*) – leaves in opposite pairs, toothed with stinging hairs. Tiny greenish flowers (May-September) in drooping catkin-like structures with yellow anthers<sup>†</sup>.



**Red Valerian** (*Centranthus ruber*) – bushy to 80cm high. Leaves pale grey-green, pointed oval, lowest stalked. Fragrant red, pink or white flowers (4-6mm) in loose panicles<sup>†</sup> - 5 petals on slender tube with pointed spur (April-October).



**Snow-in-summer** (*Cerastium tomentosum*) – mat-forming, almost white with short woolly hairs. White flowers-5 petals, deeply notched (up to 30mm) (May-August).



**Scrub** – this vegetation category may include following: **Bramble species** (1) (*Rubus* spp) – very prickly, prostrate to clambering. Leaves 3-5 broad toothed leaflets. Flowers white or pink (20-32mm) (May-November). Fruit blackberry. **Sea-buckthorn** (2&3) (*Hippophae rhamnoides*) – thorny shrub with silvery leaves. Leaves narrow, untoothed, brown below, silvery when young. Flowers tiny, green, petalless, up the stems (April-June) before leaves. Fruit an orange berry. **Elder** (4&5) (*Sambucus nigra*) – strong smelling shrub or small tree. Leaves dark green with 5 leaflets. Flowers white, fragrant (May-August). Fruit, clusters of smooth black berries. (see **Broom** and **Gorse** also)

**Ancient shingle ridges** – look for series of parallel ridges and troughs with smooth slopes; ridges often vegetated while troughs remain bare. **Often accompanied by Shingle sorting** – smaller on top of ridge often with vegetation, larger in troughs and often bare.

**W&C** = Plants specifically listed on Schedule 8 of The Wildlife and Countryside Act, 1981 (Schedule 8 plants) which have special protection against picking, uprooting, destruction and sale (all other wild plants also protected against uprooting without landowner's permission. Even non-vascular plants, which have no roots, are protected, because uprooting is defined as removal from the site. Reviewed every five years.

**CR** = Critically endangered, **EN** = Endangered, **VU** = Vulnerable, **NT** = Near threatened, **DD** = Data deficient. The Vascular Plant Red Data List for Great Britain, Cheffings & Farrell (2005) - IUCN criteria used to assess the threat status (IUCN, 2001). The CR, EN and VU categories are considered to be threatened categories. Near threatened species should be close to qualifying for one of these categories. Data deficient is not a threatened category, but indicates a need for more information in order to determine the appropriate category.

**NR** = Nationally rare - occurring in 15 or fewer hectads in UK, **NS** = Nationally scarce - occurring in 16-100 hectads in UK.

**SAP** = Species with its own Action Plan, **aSAP** = Species with associated SAP species.

**† see below for definitions**

<b>anther</b> = upper part of the stamen where the pollen is produced.
<b>bract</b> = a leaf or scale, usu. small, growing below the calyx of a plant.
<b>calyx</b> = a whorl of leaves (sepals), forming the outer case of a bud or the envelope of a flower.
<b>lichens: crustose</b> - crustlike, growing tight against the substrate. <b>foliose</b> - leaflike, with flat sheets of tissue. <b>fruticose</b> - free-standing branching tubes.
<b>panicle</b> = a cluster of flowers in which the central axis branches and rebranches.
<b>receptacle</b> = A fleshy structure at the tip of a stem that serves as a support for one or more attached flowers or flowering parts.
<b>sepal</b> = each of the divisions of the calyx of a flower (esp. when separate and not united into a tube), typically green and leaflike.
<b>stamen</b> = male reproductive organ of a flower, usu. consisting of an anther and a filament
<b>umbel</b> = flat-topped or rounded flower cluster with the flowers on stalks (pedicels) arising from a common point, like the ribs of an umbrella
<b>All images by East Sussex County Council unless labelled.</b>
<b>FP</b> = used with the kind permission of Fabrizio Puccini, Gruppo Micologico Livornese <a href="http://www.webalice.it/fabriziopucc/polygonum_maritimum.htm">www.webalice.it/fabriziopucc/polygonum_maritimum.htm</a> (2006)
<b>IF</b> = Interactive Flora of NW Europe < <a href="http://ip30.eti.uva.nl/bis/flora.php?selected=beschrijving&amp;menuentry=soorten&amp;id=2378">http://ip30.eti.uva.nl/bis/flora.php?selected=beschrijving&amp;menuentry=soorten&amp;id=2378</a> > (2006)
<b>HV</b> = used with kind permission of Herbari virtual de les Illes Balears <a href="http://herbarivirtual.uib.es/eng/index.html">http://herbarivirtual.uib.es/eng/index.html</a> (2006)
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<b>UL</b> = image used with the kind permission of Ulf Liedén at Flora.cyberia < <a href="http://www.floracyberia.net/">www.floracyberia.net/</a> > (2006)

