VEGETATED SHINGLE SURVEY PACK

Produced for Beaches At Risk by East Sussex County Council

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Partners:
Beaches At Risk is a partnership between the University of Sussex (Project Leader), East Sussex County Council, Kent Wildlife Trust, Université de Rouen, Université de Caen, Université du Littoral and SMACOPI (Syndicat Mixte pour l'Aménagement de la Côte Picarde).

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Beaches at Risk - Vegetated shingle survey - Instructions

Aim. You are going to set up a belt transect perpendicular to the shore and running inland from the seaward side of the beach. You will walk this transect twice, once up the beach and once back down, looking for plant species and features, and estimating some beach characteristics as indicated on the **recording sheet** and explained further on **How to fill in the recording sheet** overleaf.

When to do the survey? Ideally, between late May and early September.

Where to start the survey? The rough starting point for your 1st transect will **either** be:

- predefined and indicated by an **X** on a map with reference to a landmark (see **Figure 1**) **or**
- marked on a map by you with reference to a suitable (permanent) landmark.

NB. Your transects should record as good a representation of the vegetation on the beach as possible. If you feel that a transect from the given starting point would not achieve this, please change accordingly and make a record of the new starting point.

e.g. Pace out 80 large steps (or 160 small ones) from a point on the seashore in line with block of flats. Where you actually place the start of the transect will be determined by instruction **1** overleaf.

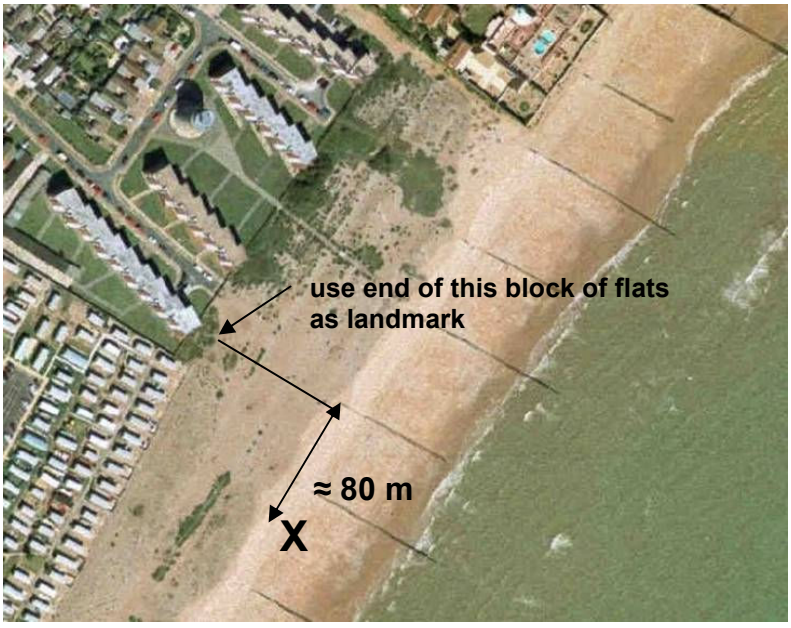

Figure 1.

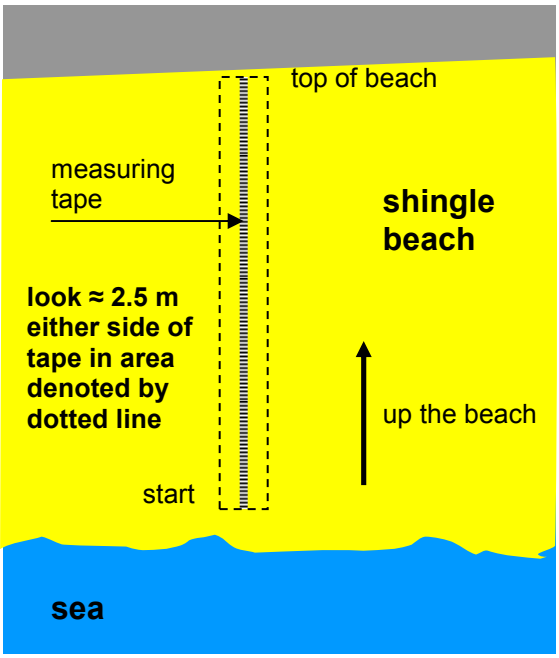

Figure 2.

Setting up the transect. Set out the measuring tape as shown in **Figure 2.** It may be useful to place large pebbles every 10 m, especially if it is windy. Use measuring tape as your central line and roughly estimate 2.5 m either side as shown by the dotted rectangle in **Figure 2** above. This is the area you are going to survey as described overleaf.

How many transects? Please try to do **at least two transects** per beach. If you can only manage one at a time, try and do the second within a week or so of the first. If you want to, you can do two transects at the beginning of the survey season and the same two at the end of the survey season. If the beach is very wide it would be very helpful if you could do additional transects.

When you have filled in your recording sheet. Please send them to: Patrick Fitzsimons at East Sussex County Council, Beaches at Risk, c/o Transport & Environment, County Hall, St Anne's Crescent, Lewes, East Sussex, BN7 1EU or let me know you have them so that I can arrange to pick them up. You can also reach me on 01273 482015 or 07919 227601, or by e-mail: patrick.fitzsimons@eastsussex.gov.uk

Practice transects. You should find it gets easier and quicker to fill in the recording sheet after the first few attempts. Please send the practice sessions in with your final forms – write "**practice session**" on them. They will allow me to assess how easy the method is to do.

P.T.O.

This project is part-financed by the European Regional Development Fund (ERDF).
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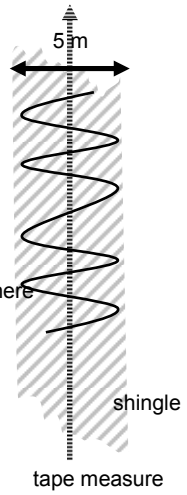
How to fill in recording sheet

1. Wherever possible, start your transects from the highest strandline (**HS**) (a line of seaweed and/or detritus left by the sea). This will not necessarily 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 appropriate box or **describe** where you start if you cannot fit the criteria above. If the odd plant occurs on the seaward side of where you start record the distance as a **negative value**. If you start from **SL**, also record where the top of **HR** begins.

2. Run your transects perpendicular to the shore. Line up your 1st transect relative to the start point supplied, or, if you are doing your own survey, estimate and record the start position in relation to permanent landmarks or features. Run measuring tape along the ground (take a picture from either end of your transect if you can).

3. If possible, do up to **100m transect lengths at a time** – if the beach is longer than 100 m, start another transect from the end of the 1st and record on a 2nd recording sheet, marking it in the "Sheet no". **Do not go beyond 200 m.** It's up to you when you do your transects. **Try to do at least 2 transects per session**, and try to keep sessions per beach as close together as possible (e.g. weekly).

4. You are going to walk the length of the transect twice, once up the beach and once down the beach, recording the following:



4.1 - **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 filled.

e.g.

Transects (W to E or S to N, seaward to landward)		1					
Record whether you start transect at highest strandline **SL**, or highest ridge **HR**							
% bare shingle at distance up beach		%	L	M	H	Es	S
Estimate **% bare shingle** over 10 m sections and record against distance up beach in first column.	up to 10 m	95	5				
	20 m	75	10	10		5	
	30 m						

Between 10 and 20 m from sea, there was 75% bare shingle; the vegetated part was made up of 10% cropped/prostrate vegetation and 10% up to waist. There was 5% exposed shingle in soil/sand.

4.2 - **Record the presence of only the species listed on the recording sheet** within ≈2.5 m either side of the measuring tape. Measure 1st and last occurrence of each species from the seaward side to the nearest metre (e.g. Yellow Horned-poppy, 1st = 11 m, last = 65 m). **Also, record** within which "10 m sections" they also appear in the appropriate right-hand columns with a tick (see below). (**NB**. you are highly unlikely to find all the species on the sheet on any one beach)

e.g.

Only look for these species (record 1st and last occurrence along transect to nearest metre)	1st nearest m	last m	1st m	last m	Tick for each "10 m se Transect 1									
					10	20	30	40	50	60	70	80	90	
Orache species* - *Atriplex* spp.														
Sea-kale - *Crambe maritima*														
Yellow Horned-poppy - *Glaucium flavum*	11	65					✓	✓	✓	✓				

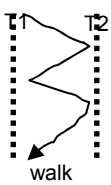
Yellow Horned-poppy was found between 11 and 65 m from sea and was also in every 10 m section between those two extremes.

4.3 - **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.

4.4 - **Record presence or evidence for** any vehicular activity, fire damage, trampling etc. Record distance up beach where these features are found.

5. **You have now finished the 1st transect**. To locate the start of the **2nd transect**, measure ≈100m along the beach (parallel to shore) from the 1st 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. **Do 6 then repeat 1 - 5.**

6. Make a **V or W-shaped walk** (depending on length of transects) between transects and record any of the preselected 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).



7. **Repeat 1 - 6** until predetermined number of transects completed.

8. **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.

9. Add as much or as little detail as you want in last two sections.

Beaches at Risk - Vegetated shingle plant guide

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.

Beaches at Risk - Vegetated shingle plant guide
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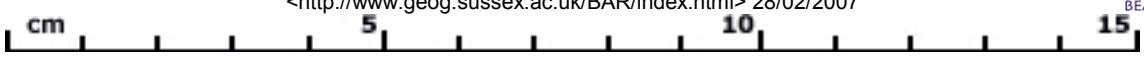
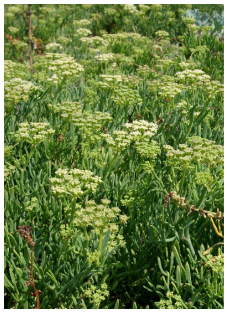




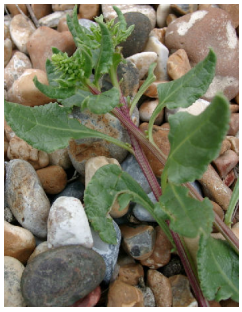
Oraches (*Atriplex* spp.) – found along shingle shoreline, flowering plant growing closest to the high water mark. Forms a low mat of pale green plants in splash zone where previous winter storms scattered seed into spaces between stones. Plants will be very small and harder to find earlier in the year.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

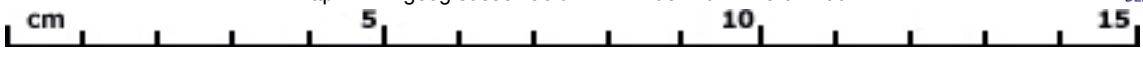


Sea Campion (*Silene uniflora*) – forms mat with prostrate unbranched stems to 30cm. Fleshy, stiff, narrow leaves in opposite pairs. Erect flowers 20-25mm, 5 petals deeply notched, often solitary per stem with yellowish, purplish oblong calyx-tubes† 17-20mm long. Flowers March-October.


Sea Mayweed (*Tripleurospermum maritimum*) - perennial plant, woody at base. Leaves blunt, somewhat fleshy, linear segments. Daisy-like flowers (20-45mm); as flower matures, receptacle† 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 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† 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† clusters (8-12mm) (June-August).

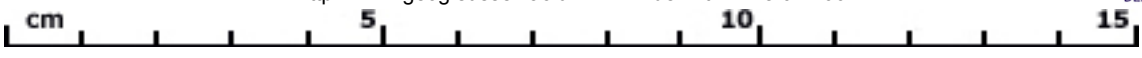
Sticky Groundsel (*Senecio viscosus*) – glandular hairs on stem, which makes it feel very sticky. Flowers (≈8mm) July-September – bracts† around flower green-tipped (not black).

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† 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† 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)



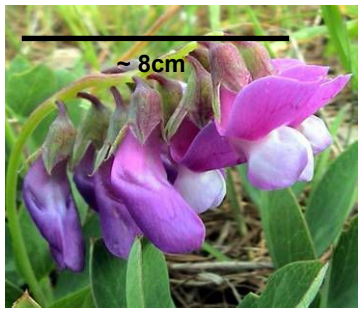
Lichens† **& mosses** – look for crustose lichens on bare shingle, may look like a dusting of black powder to naked eye. Look for foliose and fruticose lichens in vegetation covered sections, often in closely cropped turf, on landward side of beach. Varied shades of grey, green, blue-green and may feel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

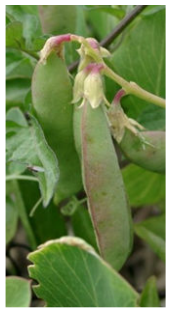

Viper's-bugloss (*Echium vulgaris*) - rough hairy leaves and tall (up to 90cm) flower spike bearing dozens of flowers. Funnel-shaped flowers (15-20mm) (May-September) start pink and turn vivid blue - in a branched spike, with all stamens† protruding. Stamens remain red. Nectar good source of food for 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** (*Spartinum 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† spread outward, star-like. Mainly on brackish mud. **NS.**

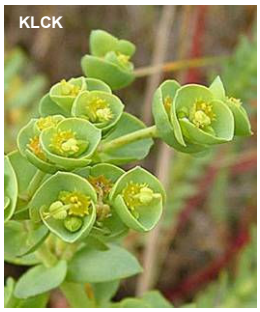





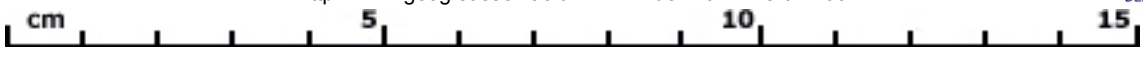
Sea Pea (*Lathyrus japonicus*) – bluish-green, fleshy leaves with 2-5 oval leaflet pairs. Flowers (15-25mm), 2-10 in short stalked spike (June-August). Pods green-becoming brown with 5-8 peas (like garden peas). Does not generally flower before its third year, but a well-established plant may have 40-50 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†, 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† of powder blue flowers between July and September, after which seed is set and plant dies back.



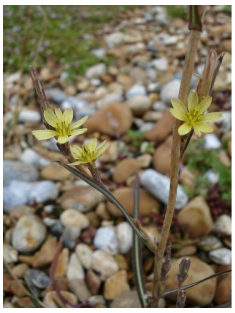



Sea-lavenders (*Limonium* spp.) – simple leaves most of which produced in a dense basal rosette, with flowering stems bearing only small brown bracts†. Flowers produced on a panicle†, small pink/purple flowers (4-10 mm), 5-petals. Some species **SAP.**

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.**



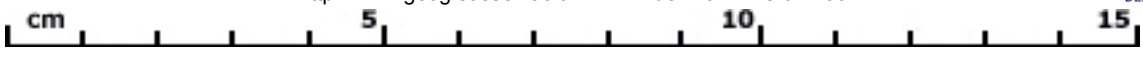
Wood Sage (*Teucrium scorodonia*) – downy perennial. Stem square and hairy. Flowers (July-September) pale greenish-yellow, prominent stamens† and purple anthers†, borne in pairs towards tips of stems. Often found on old established shingle in East Sussex & Kent.




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†.


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† - 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) (S*ambucus 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.

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

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† see below for definitions

anther = upper part of the stamen where the pollen is produced.

bract = a leaf or scale, usu. small, growing below the calyx of a plant.

calyx = a whorl of leaves (sepals), forming the outer case of a bud or the envelope of a flower.

lichens: crustose - crustlike, growing tight against the substrate. **foliose** - leaflike, with flat sheets of tissue. **fruticose** - free-standing branching tubes.

panicle = a cluster of flowers in which the central axis branches and rebranches.

receptacle = A fleshy structure at the tip of a stem that serves as a support for one or more attached flowers or flowering parts.

sepal = each of the divisions of the calyx of a flower (esp. when separate and not united into a tube), typically green and leaflike.

stamen = male reproductive organ of a flower, usu. consisting of an anther and a filament

umbel = flat-topped or rounded flower cluster with the flowers on stalks (pedicels) arising from a common point, like the ribs of an umbrella

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FP = used with the kind permission of Fabrizio Puccini, Gruppo Micologico Livornese www.webalice.it/fabriziopucc/polygonum_maritimum.htm (2006)

IF = Interactive Flora of NW Europe < http://ip30.eti.uva.nl/bis/flora.php?selected=beschrijving&menuentry=soorten&id=2378> (2006)

HV = used with kind permission of Herbari virtual de les Illes Balears http://herbarivirtual.uib.es/eng/index.html (2006)

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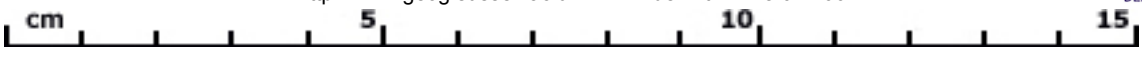
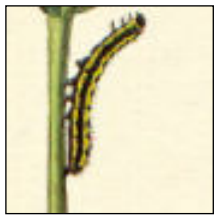


Beaches at Risk – insect species to look for



Toadflax Brocade Moth (*Calophasia lunula*) - wingspan 26-32mm. Restricted to the south-east and central southern coasts of England, where it frequents mainly shingle beaches. Two generations, sometimes overlapping, from May-August. Caterpillars feed on mainly **Toadflax species**. **NR, SAP.**

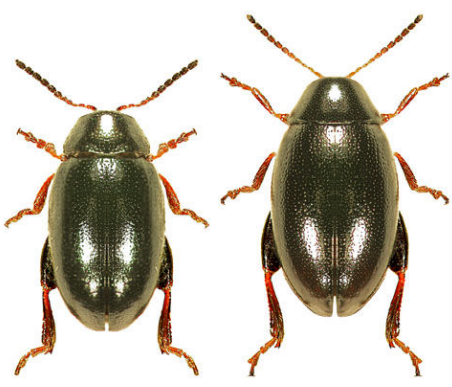




Viper's-bugloss Moths 1. ***Ethmia bipunctella*** - wingspan 19-28mm. Restricted to a few areas of coastal shingle in the south-east. Main flight period is May-June, but there is also a partial second generation in the autumn. Both flowers and leaves of **Viper's-bugloss** consumed by caterpillars. May pupate in dead stem. **VU, NR.**


2. ***Ethmia terminella*** - wingspan 17-19mm - small black and white moth. Caterpillars feed on flowers and unripe seeds of **Viper's-bugloss**. Only reliably recorded from Kent and Sussex, on areas of coastal shingle. **VU.**

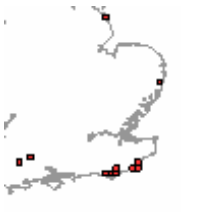

3. ***Cynaeda dentalis*** **-** wingspan 22-28mm - highly distinctive moth. Restricted in Britain to a few coastal localities in the south-east of England. Single generation flies in July, and is attracted by light. Caterpillar's foodplant is **Viper's-bugloss**. **NR.**

4. ***Tinagma balteolella*** **-** micro-moth associated with **Viper's-bugloss**. Only known from Kent and East Sussex where it is found in a very few coastal localities. The picture shows a similar but more common species.

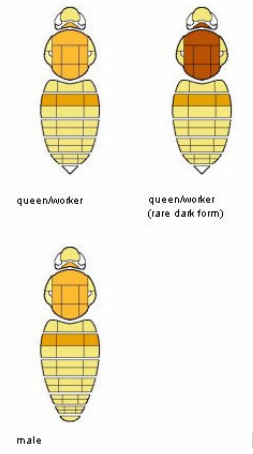
***Dibolia cynoglossi* –** small (2-3mm) flea beetle associated with various plant species, including **Red Hemp-nettle**. Very rare; scattered old records in southern Britain. **EN.**

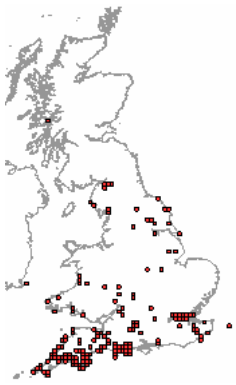





Calophasia lunula ***Ethmia terminella*** ***Ethmia bipunctella*** ***Cynaeda dentalis*** ***Tinagma balteolella*** ***Dibolia cynoglossi***

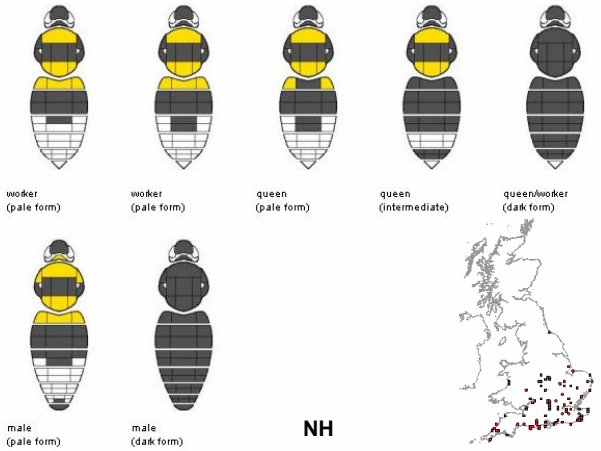
Bumblebees. Five out of 25 UK species restricted to relatively few localities, primarily in the south of Britain, three of which have **SAP**s. May be the most abundant species at a few sites and are often likely to occur together at the same sites. However, most bees encountered will not belong to this group. Unless you are an expert, bumblebees are difficult to tell apart – if you want to record any bumble bee seen, make notes and take a photo if possible.





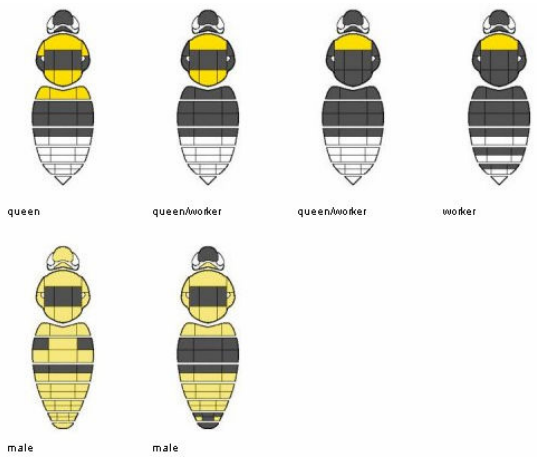
NH

Brown-banded Carder Bee (*Bombus humilis*) - queen length: 16-18mm, worker: 10-15mm. Tawny coloured with characteristic brown band on the upper surface of abdomen - rare dark form has many black hairs intermixed with orange hairs on thorax to appear dark red-brown.– queens, workers & males broadly similar in appearance, but males lack stings and have longer antennae than females. Emerges late spring, nest on the surface of the ground at base of long vegetation, often under accumulated plant litter. **SAP**.



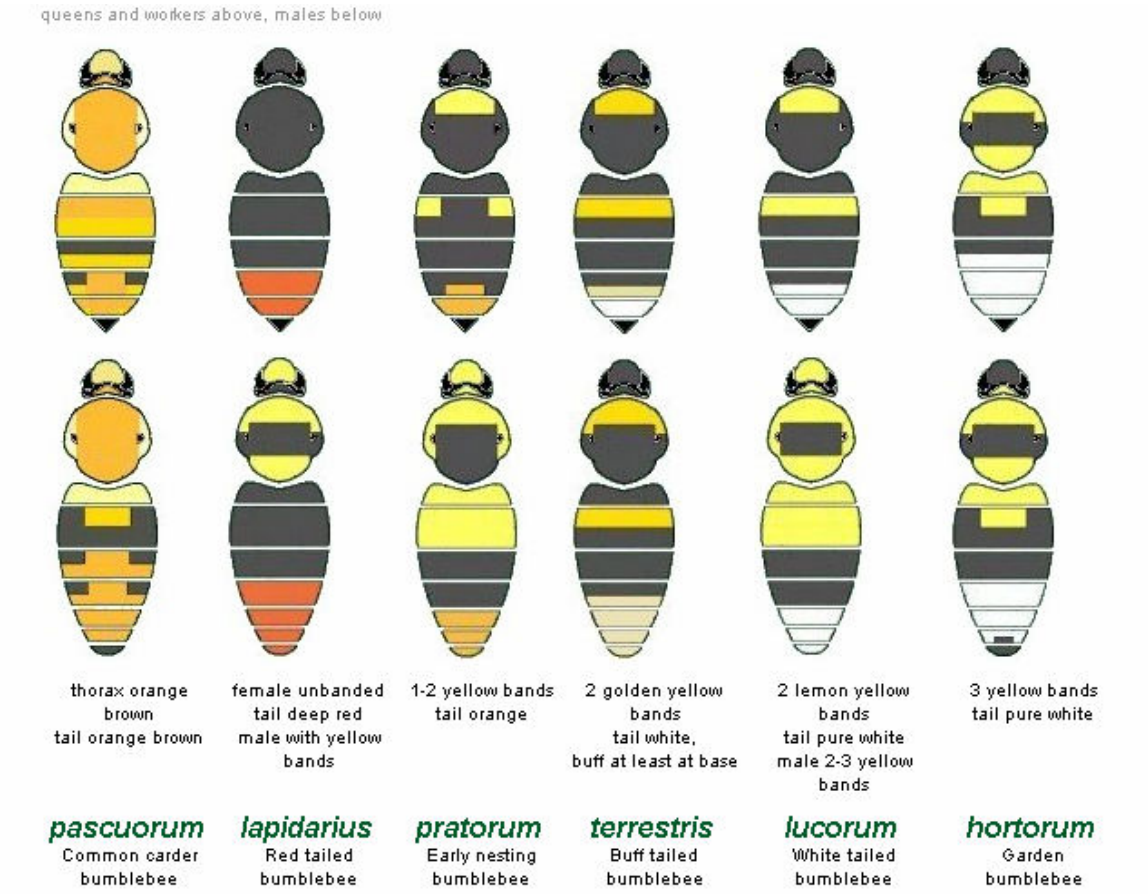
NH

Large Garden Bumblebee *(Bombus ruderatus)* – male length: 15-16mm, queen: 21-23mm, worker: 11mm –large species (especially queens) with a long tongue, long face. Black, with two yellow bands on the thorax, a single yellow band on the abdomen and a white tail. In Britain, a totally black form known as variety *harrisellus* may arise. Very difficult species to separate from *B. hortorum*, except variety *harrisellus*. Number of workers per nest often particularly high. Emerges late spring, nest below the surface of ground. May contain both yellow-banded or all black. **NS, SAP.**



NH

Short-haired Bumblebee (*Bombus subterraneus*) – considered extinct in the wild. Nests underground, emerging late spring. Although queens and workers of this species are fairly readily distinguished from *B. distinguendus*, the males of the two species are extremely difficult to separate. **NS, SAP.**



Six most common UK bumblebees.

NH

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Images from ESCC and:

A = Arkive <www.arkive.org/> (2006)

BL = Buglife <www.buglife.org.uk/index.htm> (2006)

NH = Natural History Museum <www.nhm.ac.uk/research-curation/projects/bombus/bumblebeeid.html> (2006)

Vegetated shingle features - examples

Bare shingle = 80%
M = 20%

L = 80
M = 15
Es = 5

Typical example of cropped vegetation with mosses, and shingle exposed in soil

Colour	orangey	95
	greyish	5
Size - size range in brackets	Cobbles (fist-head)	
	Pebbles (50p - fist)	5
	Gravel (pea - 50p)	90
	Sand	5
Shape	very rounded	5
	inbetween	90
	very angular	5

Colour	orangey	5
	greyish	95
Size - size range in brackets	Cobbles (fist-head)	
	Pebbles (50p - fist)	95
	Gravel (pea - 50p)	5
	Sand	
Shape	very rounded	35
	inbetween	65
	very angular	

General Health Information for BAR volunteers

General Welfare Remember to bring plenty to eat and drink, a waterproof coat (and waterproof trousers if you have them) and wear clothes that you don't mind getting dirty.

The Weather

The Sun The dangers of exposure to the sun are well known. Most of us have been sun-burnt at some point in our lives, and know that as well as being very sore there is a danger of long term damage to the skin. While out on site in hot weather, wear a hat and loose, long-sleeved clothing and work in the shade if possible. Please use high factor sun cream and re-apply it whenever necessary - remember that you may sweat it off!

Dehydration Even on cold days, and particularly on hot ones, it is possible to become dehydrated. It is important that you bring plenty to drink with you, and drink regularly. On cold days a flask of hot drink is a very good idea! Bring more liquids than you think you will need as you will lose a lot of water doing physical work outdoors! Signs of dehydration include a headache and feeling thirsty.

Heat Exhaustion Keeping your temperature regulated while you are working can be difficult and suffering from heat exhaustion is not limited to hot, sunny days. It is caused by the loss of salts and water from excessive sweating and can be induced by hard physical work and dehydration. Symptoms include: feeling dizzy and sick, confusion, headache, pale sweaty skin and cramps in the limbs or abdomen. If heat exhaustion is suspected move to a cool place and replace lost fluids and salts.

Heat Stroke Heatstroke is where the body overheats rapidly and dangerously. It can follow on from heat exhaustion when sweating ceases and the body cannot be cooled by evaporation. It can cause headaches, dizziness and discomfort and skin will be hot, flushed and dry. If heatstroke is suspected, move to a cool place, and use water to cool the body down – dampen clothing and use a fan.

Hypothermia This condition develops when the body temperature falls below 35°C and can be caused by prolonged exposure to the cold and often wet conditions. Moving air has a much greater effect than still air, and a high 'wind-chill factor' can therefore substantially increase the risk of hypothermia setting in. It is always important to bring the correct clothing with you for your volunteer day, and it is wise never to underestimate the changeability of the British weather. Always plan for the worst, and hope for the best – a waterproof coat is essential! Symptoms include pale, dry skin, blueing around the lips and nails, and disorientation. A warm drink and high energy foods can quickly help you to feel better.

Plants and Animals

Adders These beautiful reptiles are our only venomous snake, although to a healthy adult, their bite is normally no more dangerous than a bee sting. Try to avoid these animals, especially early in the morning when they may be slower to avoid contact with people. If you are bitten, try to remain calm and seek medical attention. Do not apply a tourniquet, slash the wound with a knife or suck out the venom.

Animals and Livestock It is best not to approach or touch animals (wild or domestic) unless it is absolutely necessary to do so. If you do have contact with animals during the course of your work, always make sure that you wash your hands afterwards. Be aware that injured animals or animals with young can be particularly aggressive.

Bees and Wasps While stings from these animals rarely present major problems, it is important to be aware of the risk of anaphylactic shock, which is a major allergic reaction and needs immediate medical attention. If you know that you are allergic to bee or wasp stings and you carry an epipen (to counter the effects of the sting) please ensure that you bring this with you when out on site and tell the supervisor or fellow volunteers.

Brown Tail Moth caterpillars These hairy caterpillars live on the shrub Sea Buckthorn, blackthorn, hawthorn and privet and will also feed on bracken. They hatch in September and can cause a nasty rash if they come into contact with your skin, can cause respiratory problems if the hairs are inhaled, and can cause temporary blindness / conjunctivitis if the hairs are rubbed into the eyes. The toxin can remain in the hairs for up to four years, so old nests and dried skins can still cause a hazard. Mild symptoms can be treated with antihistamines, but if irritation is severe or if the eyes are affected, medical help should be sought.

Giant Hogweed This plant can grow up to 5m tall and has blotched purple stems. Contact with this plant, combined with the sun's ultra violet rays can cause rashes and in severe cases, blisters. Do not touch this plant. If you inadvertently come into contact with it, wash the skin with cold water as soon as possible, and cover the affected area to prevent exposure to sunlight. If blisters appear or the eyes are affected, seek medical assistance.

Ragwort Always wear gloves when handling ragwort, as the toxins in the plant can cause liver problems.

Ticks These small invertebrates are found on vegetation between spring and autumn and attach themselves to passing animals and humans to feed on blood. The current advice is not to try to remove the tick, as the head may be left attached to the skin. Instead visit your GP. Ticks can pass on an infection called Lyme disease – see later section, so it is important to be aware of the symptoms so that medical attention can be sought without delay.

Dead, sick or injured animals Please do not touch any dead, sick or injured animals. If you find a sick or injured animal you may want to inform the RSPCA, your local vet or a local animal rescue centre who have the expertise to help and advise you.

Diseases

Lyme Disease This is a rare bacterial infection, generally occurring in summer or early autumn and is transmitted from animals to humans by the bite of a sheep or deer tick. It is characterised by a patch on the skin steadily increasing in size and gradually clearing in the centre to form a series of concentric rings – known as a target lesion. It is treatable at this stage by appropriate antibiotics. Later stages of the disease are much more difficult to treat and quite diverse in their nature, affecting various systems of the body. If you have been bitten by a tick or suspect that you may have contracted the disease, seek medical treatment immediately.

Tetanus This is a very prolonged and extremely unpleasant illness which is invariably fatal. It can be contracted through contact with soil via cuts, abrasions or puncture wounds made by splinters or thorns. Most people have some level of immunisation whilst at school. Boosters are not usually required as tetanus injections are given automatically if a serious wound occurs. Chat to your GP for advice about this.

Toxicara Canis This is a micro-organism that is found in dog faeces, which can cause blindness in children, although the risk to adults is not considered great. If dog faeces comes into contact with skin or clothes, wash off immediately with soap and water / antibacterial handwash.

Leptospirosis (Weils Disease) Leptospirosis is a rare bacterial infection carried in the urine of rats, foxes and domestic animals, which can contaminate water and wet banks. Infection usually occurs through cuts, abrasions and the lining of the nose, eyes and mouth. An incubation period of one to two weeks is followed by feverish flu-like symptoms, usually characterised by redness of the eyes. The illness will usually last 4-9 days. In rare cases where people are jaundiced, a second phase can develop, known as Weils disease, with sometimes severe results.

When working in or near potentially contaminated water, cuts should be covered with waterproof plasters, and contact with water should be avoided. Exposed skin should be covered and waterproof gloves worn whenever possible. Hands should be washed before eating, drinking or smoking. If symptoms appear seek prompt medical attention from your GP and tell them that you have been working near water.

Additional information

Security It is a good idea not to bring valuables to site with you. If you do bring items such as mobile phones, cameras and wallets with you, please keep them in your possession at all times. Do not leave valuables in bags while out on site. We cannot take any responsibility for lost or damaged items.

SAFE WORKING PRACTICES

GENERAL	
Hazard (potential for harm)	**Standard precautions**
Illness/ disease	Wash hands thoroughly before eating. Ensure any open wounds are covered with waterproof dressing. Be aware of any allergies. Keep Tetanus and Hepatitis inoculations up to date. Be aware of diseases such as Weils disease and Lyme disease. Avoid unnecessary contact with animals.
Hazardous plants and animals	Where hazardous plants are identified notify others. Be aware of areas where adders may be basking and avoid if possible. Do not touch dead, sick or injured animals.
Extreme weather	Ensure recognition of sunburn, hypothermia etc. Use sun block and sun hats. Take regular breaks in shade/shelter where possible. Wear warm, waterproof clothing. Have access to hot/cold drinks. If weather is too extreme cease task and return to base.
SURVEYING	
Contact with soil-borne micro organisms	Wash hands before eating, drinking and smoking. Participants should be advised to have a Tetanus inoculation. Cover any broken skin before work. Any cut received must be promptly washed and covered.
Contact with micro-organisms eg: Lepto-spirosis	Advise people to have Tetanus and Hepatitis B inoculations. Do not drink stream or pond water. Wash hands thoroughly before eating, drinking or smoking. Advise of the risks of Weil's disease. Avoid contact with dead animals.
Slips, trips and falls	Sturdy footwear with firm grip must be worn. Do not rush.
LONE WORKING	
Physical attack	Carry a mobile phone at all times. If approached, stay calm, avoid aggressive language and body posture.
General safety	Inform someone of where you are going and what time you are expected to return.