

Grassland Quality Survey

Survey guide *and* results forms

Introduction

At first glance grassy places in towns and cities may all look the same. But look closer and you can find plenty of variation. Are all grasslands equally valuable for wildlife?

We have put together the Grassland Quality Survey to help you assess the quality of grassland in your local area. You do not need any prior experience of identifying plants.

The survey is focused on recording positive and negative features of:

- **Habitat structure.** A grassland with a more diverse structure provides a greater range of places for different species to live.
- **Botanical quality.** A variety of plants provides food for a range of animal species.

The survey should be completed at the same time each year (June or July) to reduce bias and variation in the results.

For more detailed information visit our website at:
stnicks.org.uk/get-inspired/our-projects/grassland-quality-survey.

Equipment to take with you

- Aerial image of site
- Pencil and clipboard
- 9/10 bamboo canes
- Camera or phone



How to use this booklet

Pages 1-2 show how to prepare for your Grassland Quality Survey. Pages 3-4 have space for writing down the results for each quadrat. If you photocopy these pages onto a double-sided A4 sheet, you will be able to fit all your results on to one sheet.

Use page 5 to understand what your results mean. Page 6 is the **Basic Botany** section. This is background reading, especially if you have not identified plants before. It introduces some key terms (in **bold**) for parts of plants, that are used later for identifying the species.

Page 7 contains a key to plant families. This key leads onto pages 8-15, a fully illustrated colour identification guide to all 40 grassland plants used in this survey as positive and negative indicators of grassland quality.

Desk study

Preparation step 1 Where is the grassland?

The most important stage in the whole process! Mark the boundaries of your grassland(s) on an aerial image of the site. Within your grassland area, draw a line around any smaller areas that are not grassland so that these atypical areas can be left out. You could also take your aerial image out to the site to check the boundaries.

Preparation step 2 Time to subdivide?

Decide if you will subdivide the site into different survey areas. Only subdivide if you need to report on the different areas separately, or if there are different types of grassland that can easily be mapped. Separate patches of similar grassland habitat should be counted as one survey area. Mark the boundaries on your aerial image, then label each separate patch to show which survey area each belongs to. Each subdivision should be surveyed separately.

Preparation step 3 How many quadrats?

In this survey, grassy areas are surveyed using quadrats. A quadrat is a square of a fixed size, for collecting data in a consistent way. Decide how many quadrats are needed and where to place them. Roughly mark the quadrat locations on the aerial image. Quadrats usually measure 10m x 10m, divided into four sections of 5m x 5m.

> Small survey area (< 3000 square metres, or half a football pitch)

Divide the total survey area (in square metres) by 100 to find out roughly how many quadrats you need. Fit in as many quadrats as you can so that almost all of the survey area(s) is covered by quadrats. If there are spaces on the edges that are too narrow for a 10m x 10m quadrat, use a 5m x 20m quadrat instead. Don't worry about smaller gaps, just leave these out.

> Big survey area (> 3000 square metres, or half a football pitch)

Do 30 quadrats if the grassland is similar throughout. Do 50 quadrats if the grassland is more variable. Position quadrats at evenly spaced intervals.

In the field

Fieldwork step 1 Place your quadrats

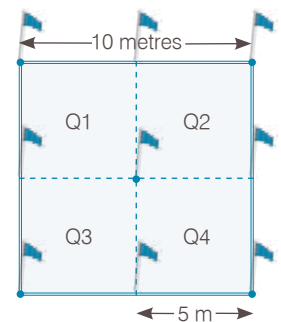
Use your plan from Preparation step 3 to find where to place the quadrats. Work out how far to walk and in what direction to get to the centre of the next quadrat.

Fieldwork step 2 Mark the quadrat centre

Walk the required distance. Stick a cane in the ground next to your boot, without looking at plants. This first cane is the centre of your quadrat.

Fieldwork step 3 Mark the four quarters

Divide each quadrat into four equal quarters (Q1, Q2, Q3 and Q4). Mark the four ends of a cross by walking away from the first (centre) cane for 7 strides (roughly 5 metres) in four directions. Stick four more canes in at the corners, lining these corners up with the canes that make up the cross.



? What should I do if my quadrat lands somewhere that is not grassland?

If it happens early on in the survey, stop surveying and start the whole process again from Preparation step 1. But if it happens later in the survey, just omit that quadrat from the survey.

? What should I do if a 10m x 10m quadrat won't fit?

Mark out a 5m x 20m quadrat (four 5m x 5m sections in a row) instead if this will fit. But if four 5m x 5m sections in a row don't fit, just leave these awkward areas out.

Habitat structure

Work out the **habitat structure** score for each quarter by ticking each **positive feature** and **negative feature**. Add up the scores (+1 or -1) to calculate the total **habitat structure** score for the quarter. Then add up the **habitat structure** scores for all 4 quarters to work out the total **habitat structure** for the whole quadrat.

Quadrat number

Quarters of a single quadrat →		Example	Quarter 1	Quarter 2	Quarter 3	Quarter 4
POSITIVE FEATURES	Grass cover	+1	✓			
	Short turf	+1	✓			
	Bare ground	+1	✓			
	Scrub	+1				
	Slopes	+1				
	Flowers or seeds	+1	✓			
	Tussocks	+1				
	Wet feature	+1	✓			
	Dung	+1	✓			
	Anthills	+1				
TOTAL POSITIVE		+6				
NEGATIVE FEATURES	Grass cover	-1				
	Short turf	-1				
	Bare ground	-1				
	Scrub	-1				
	Invasive weeds	-1	✓			
	Arisings	-1	✓			
	Artificial features	-1				
TOTAL NEGATIVE		-2				
Habitat structure for quarter		+4				

HABITAT STRUCTURE for quadrat

Feature	Score +1 if...	Guidance	
POSITIVE FEATURES	Grass cover	Grasses < 50% total vegetation cover	Compare grass cover to the cover of other plants
	Short turf	20%-50% cover of short turf	Short turf is less than 3cm tall
	Bare ground	At least 3 patches of bare ground AND total cover of bare ground < 20%	Only count patches at least 10cm × 10cm
	Scrub	Scrub present AND total cover of scrub < 20%	Any woody plant, including bramble
	Slopes	Slopes occupy at least 10% of the quarter	Only count slopes of at least 30° steepness
	Flowers or seeds	At least 30 flower or seed heads present	For flower heads made up of many small flowers, count each flower head as one
	Tussocks	At least 3 tussocks present	A thick clump of grass (or rush) with a dense base. If you stand on the tussock, your foot will be at least 5cm above the ground level on either side
	Wet feature	At least one wet feature present	Unpolluted, natural spring, pond, pool, stream or flush
	Dung	At least one patch of cattle / horse dung present	Don't count any other types of dung
	Anthills	At least one anthill present	At least 10cm high
Feature	Score -1 if...	Guidance	
NEGATIVE FEATURES	Grass cover	Grasses > 80% of the vegetation cover	Compare grass cover to the cover of other plants
	Short turf	> 80% cover of short turf	Short turf is less than 3cm tall
	Bare ground	Bare ground cover > 20%	Only count patches at least 10cm x 10cm
	Scrub	Scrub cover > 50%	Any woody plant, including bramble
	Invasive weeds	Invasive weed cover > 10%	Only weeds that form dense, single-species patches
	Arisings	Any arisings present	Arisings are uncollected grass cuttings from mowing
	Artificial features	Any artificial features present	Concrete/tarmac paths or other types of infrastructure

Botanical quality

Work out the **botanical quality** score for each quarter by ticking each plant which is present. Use the Identification Guide section of this booklet to help. Add up the scores to calculate the total **botanical quality** score for the quarter. Then add up the **botanical quality** scores for all 4 quarters to work out the total **botanical quality** for the whole quadrat.

Quadrat number

Quarters of a single quadrat →		Example	Quarter 1	Quarter 2	Quarter 3	Quarter 4
SHEET A	Wild/Barren Strawberry	+1	✓			
	Tormentil	+1	✓			
	Agrimony/Fragrant Agrimony	+1				
	Meadow Crane's-bill	+1				
	Rosebay Willowherb	-2				
SHEET B	Yellow-wort	+1				
	Common Centaury	+1				
	Cowslip	+2				
	Ragged-Robin	+2	✓			
	St John's-wort	+1				
SHEET C	Any Vetch or Tare species	+1	✓			
	Common/Great Bird's-foot-trefoil or Meadow Vetchling	+2	✓			
	Common/Spiny Restharrow	+2				
	Himalayan Balsam	-1				
	Any Orchid species	+2				
SHEET D	Eyebright	+2	✓			
	Yellow-rattle	+2				
	Red Bartsia	+1				
	Garden Yellow Archangel	-2				
	Selfheal	+1	✓			
SHEET E	Zigzag/Red Clover	+1	✓			
	White Clover	-1	✓			
	Hare's-foot Clover	+2				
	Curled/Broad-leaved Dock	-2	✓			
	Common Nettle	-2	✓			
SHEET F	Japanese/Giant Knotweed	-2				
	Meadowsweet	+1				
	Lady's-bedstraw	+2				
	Any Scabious species	+2				
	Salad/Great Burnet	+2				
SHEET G	Pignut/Burnet-saxifrage	+2				
	Pepper-saxifrage	+2				
	Cow Parsley	-1	✓			
	Ground-elder	-2				
	Hogweed/Giant Hogweed	-1				
SHEET H	Common Ragwort	-1				
	Common Fleabane	+2				
	Oxeye Daisy	+1				
	Creeping Thistle	-2	✓			
	Common/Greater Knapweed	+2	✓			
Botanical quality for quarter		+5				

Your results

Recording information for your area

1. Site name: _____

2. Date: _____ 3. Time: _____

4. What is the weather like today? Tick (✓) sunny cloudy fog/mist raining windy

5. Record the location of your site _____
(postcode / OS grid reference / GPS / marked on map)

6. Please describe your survey area. Tick (✓) nature reserve park orchard cycle path other

7. Is the grassland you are surveying often wet and holding water? Tick (✓)
(e.g. does standing water remain for a long period?) yes no

What do your results mean?

Working out the site scores

Each quadrat will have a separate total score for habitat structure and botanical quality. You can now work out your site (or survey area) scores for both habitat structure and botanical quality by calculating an average for each.

If you subdivided your site into different survey areas, you will need to calculate separate average scores for each survey area.

- Add together the habitat structure or botanical quality index total scores from each quadrat to work out your site (or survey area) totals
- Divide by the number of quadrats to work out the average. The adjacent table can be used as a guide to show what your scores mean in terms of your site's value as a wildlife habitat.

It is not unusual to have scores of two different ratings e.g. 'average' for habitat structure and 'good' for botanical quality. You could repeat the survey at around the same time, every year in order to obtain comparable data about the condition of your grassland. Visit stnicks.org.uk/get-inspired/our-projects/grassland-quality-survey for information on analysing survey data including using statistics.

Example

The following habitat quality scores were recorded:

8, -4, -2, 3, 0, 5, 5, -2, -3, -1, -3, 7, 10, 3, 3, 7, 8, 7, 0, 3

- Total Habitat quality score = 54
- Average = $54 \div 20 = 2.7$

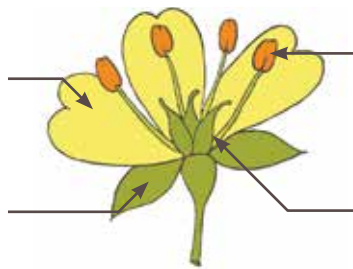
What do your results mean?	
Site score	What it means
Under 1	Poor
1-10	Average
11-20	Good
21 or more	Excellent

Parts of a flower

A 'typical' flower has sepals, petals, stamens and carpels. Not every flower has all four of these structures.

Petals occur inside the sepals. Usually brightly coloured. The **corolla** is the name for all of the petals together on a flower.

Sepals are on the outside of the flower. Often green, but sometimes brightly coloured like petals. The **calyx** is the name all of the sepals together on a flower.

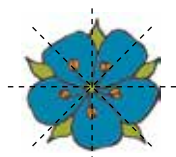


Stamens occur inside the petals. These are the **male** parts of the flower. They consist of a thin stalk, with a wider bit at the top producing pollen, often brightly coloured.

Carpels occur in the centre of the flower. These are the **female** parts. They come in a variety of shapes. When fertilised by pollen, the carpels produce fruits containing seeds.

Flower symmetry

Flowers with **bilateral** symmetry can only be divided into two identical halves through one line of symmetry down the middle.



Flowers with **radial** symmetry are round in outline. They can be divided into two almost identical halves through several different lines of symmetry at different angles.

Inflorescences

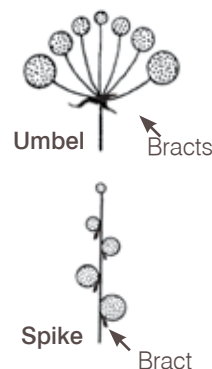
There is all the flowers, their stalks and the branches they sit on. Some plants, like daisies and dandelions, have a head made up of many tiny, densely packed flowers.

In other plants the flowers are more obviously separated. There are several different types of inflorescence, depending on what order the flowers develop in and how they are attached to the plant.

An **umbel** is where the flower stalks are attached to the same point at the end of the stem, just like in an umbrella. In a compound umbel, each umbel stalk has a smaller umbel near the top on which the flowers are placed.

A **spike** is where flowers are attached directly to a long section of branch or stem. Flowers at the top of the spike usually develop after those lower down.

A **bract** is a leaf-like, or scale-like structure that sits just below a flower, or just below a branch on the inflorescence.



Leaves

Leaves are useful for identification. Most plants whose leaves have parallel veins (like orchids) belong to the **monocot** group of plants.

Some plants have **stipules** at the base of the leaf stalks. Stipules come in various shapes and sizes, from narrow and scale-like, to larger and leaf-like. Stipules:

- always occur in pairs
- are always attached to the stem on either side of the base of the leaf stalk

A **simple leaf** is one that is not divided into separate leaflets. Some simple leaves have lobes or teeth on the edges, but a leaf is only described as a **compound leaf** if these lobes are not joined to each other at all at the base.



Opposite

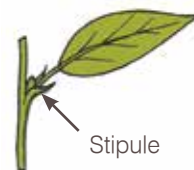


Alternate



Whorled

- If leaves are attached in opposite pairs at the same points on the stem, the leaf arrangement is **opposite**
- If leaves arise singly at different points along the stem, the leaf arrangement is **alternate**
- If more than two leaves arise at the same point on the stem, the leaf arrangement is **whorled**



Stipule

Identifying species and families

Scientific (Latin) names have two parts: the **genus** name (first letter in capitals), followed by the **species** name. They are printed in italics. E.g. *Vicia cracca* (Tufted Vetch) is a species in the genus *Vicia*. There are several other *Vicia* species in Britain. Species in the same genus are very closely related to each other. The genus *Vicia* lies within the plant family FABACEAE (Pea family), with several other related genera (plural of genus). Plant family names are often printed in capitals. They always end with the letters ACEAE. *Trifolium* (Clovers) and *Lotus* (Bird's-foot-trefoils) species are also in FABACEAE. The genera within a family are more closely related to each other than to genera from other families. Sometimes the names of plants are changed. Different books use different names for the same species. Here we have used up-to-date names for 2021, with some **synonyms** (alternative names) in brackets. Many common wild plants come from a small number of families, so recognising plant family characteristics can be a useful short cut.

	Question	Go to	
1	Individual flowers very small (less than 4mm and often smaller); packed together in dense flower heads that each have more than 20 flowers, usually with few (or no) gaps between the flowers	2	
1	Individual flowers larger (more than 4mm and usually more than 8mm); the flowers are either separate from each other, or at least have obvious gaps between them	9	
2	Leaves with 3 leaflets, like a typical clover leaf; individual flowers with bilateral symmetry, like miniature pea flowers	FABACEAE	E
2	Leaves simple (not divided into leaflets) OR many leaflets; individual flowers with radial symmetry	3	
3	Leaves in whorls of 8 to 12 very narrow leaflets	RUBIACEAE	F
3	Leaves opposite or alternate, not in whorls	4	
4	Flowers in long, narrow spikes	5	
4	Flower-heads wider and/or shorter, flowers not in long, narrow spikes	6	
5	Leaves opposite; leaves with large teeth on the edges	URTICACEAE	E
5	Leaves alternate; leaves may have wavy edges, but do not have large teeth	POLYGONACEAE	E F
6	Leaves with stipules at base of leaf stalk	ROSACEAE	F
6	Leaves with no stipules	7	
7	Flowers in umbels	APIACEAE	G
7	Flowers in dense heads, but not in umbels	8	
8	Leaves alternate; flowers minute, in dense flower heads like a daisy, dandelion or thistle; stamens either hidden within flower, or stick out very slightly	ASTERACEAE	H
8	Leaves opposite; flowers small, round/flat flower heads; stamens stick out obviously from flowers	DIPSACACEAE	F
9	Flowers with radial symmetry	10	
9	Flowers with bilateral symmetry	16	
10	Leaves all basal (i.e. no leaves attached to stem except at the very base); leaves strongly wrinkled	PRIMULACEAE	B
10	At least some leaves attached to stem above the base; leaves not wrinkled	11	
11	Leaves alternate	12	
11	Leaves opposite	14	
12	Leaves divided into leaves or leaflets; leaves with stipules at the base of leaf stalks	13	
12	Leaves not divided into lobes or leaflets; leaves with no stipules	ONAGRACEAE	A
13	Petals blue or purple; fruits with a long beak	GERANIACEAE	A
13	Petals yellow or white; fruits with no long beak	ROSACEAE	A
14	Stamens numerous, many more than 10 per flower	HYPERICACEAE	B
14	Stamens 10 or fewer per flower	15	
15	5 petals per flower, each petal divided into narrow lobes; leaves more than 3 times as long as wide	CARYOPHYLLACEAE	B
15	5 petals per flower, but petals not divided into separate lobes; leaves less than twice as long as wide	GENTIANACEAE	B
16	Leaves in whorls of 3; flowers very large (more than 2.5cm across)	BALSAMINACEAE	C
16	Leaves basal, alternate or opposite; flowers small to medium-sized (less than 1.5cm across)	17	
17	Leaves with more or less parallel veins	ORCHIDACEAE	C
17	Leaves with veins in a network pattern	18	
18	Leaves alternate, but divided into 3 to many leaflets, the leaflets mostly in opposite pairs	FABACEAE	C
18	Leaves opposite, but not divided into leaflets	19	
19	Calyx fused below, with 5 teeth at the top; leaves with leaf stalk (petiole) at least 5mm long	LAMIACEAE	D
19	Calyx fused below, with 4 teeth at the top; leaves attached directly to stem, no leaf stalk	OROBANCHACEAE	D

A

Flowers with radial symmetry

Not in dense flower-heads; leaves alternate

ROSACEAE (Rose) family is large and variable. Flowers usually have 5 (sometimes 4) petals, but normally have more stamens than the Pink or Crane's-bill families. Leaves are alternate and have stipules.

1. Tormentil *Potentilla erecta*. A trailing plant, with yellow flowers that usually have 4 petals.
2. Barren Strawberry (pictured) or Wild Strawberry *Fragaria/Potentilla* species. Wild Strawberry *Fragaria vesca* has similar flowers and small strawberry fruits.
3. Agrimony (pictured) or Fragrant Agrimony *Agrimonia* species. Tall (over 1m) plants with long spikes of yellow flowers at the top of the stem.

GERANIACEAE (Geranium or Crane's-bill) family flowers have 5 petals and 5 or 10 stamens. Leaves are alternate, lobed and have stipules. Fruits have 5 chambers and a long narrow beak.

4. Meadow Crane's-bill *Geranium pratense*. A large, bushy plant with large (4-5cm across), blue flowers.

ONAGRACEAE (Willowherb) family flowers have 2 or 4 petals and 2, 4 or 8 stamens. Many species have long narrow fruits. Leaves variable.

5. Rosebay Willowherb *Chamaenerion angustifolium*. Tall plant (up to 2m or more). Spikes of pink flowers and long, narrow leaves below.

B

Flowers with radial symmetry

Not in dense flower-heads; leaves opposite or basal

GENTIANACEAE (Gentian) family has flowers with 4, 5 or 8 petals fused into a tube below and the same number of stamens as the petals. The leaves are simple, opposite and have no stipules.

6. Yellow-wort *Blackstonia perfoliata*. The flowers have 8 yellow petals and 8 stamens. The opposite leaves are joined at their base.
7. Common Centaury *Centaureum erythraea*. The flowers have 5 pink petals and 5 stamens.

PRIMULACEAE (Primrose) family is variable, but all species have petals fused together into a tube for at least some of their length.

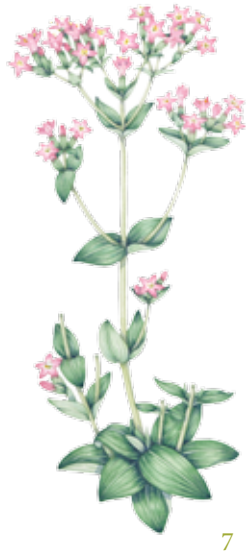
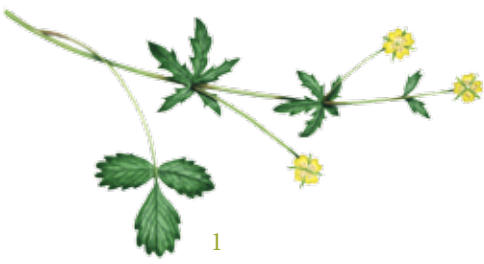
8. Cowslip *Primula veris*. A bunch of yellow tubular flowers drooping from top of the stem. The leaves are all basal and quite wrinkled. Some garden 'Polyanthus' plants look similar.

CARYOPHYLLACEAE (Pink or Campion) family flowers have 4 or 5 petals, with twice as many stamens as petals. Most species have white petals, a few are pink. Leaves are mostly opposite, with no stipules.

9. Ragged-Robin *Silene flos-cuculi*. A medium-sized plant with narrow, opposite leaves. Flowers with long, lobed pink petals.

HYPERICACEAE (St John's-wort) family flowers always have five yellow petals, and numerous stamens that are grouped into bundles. Leaves are opposite, with no stipules.

10. Any St John's-wort species (pictured is Slender St John's-wort). *Hypericum* species. All St John's-wort species have similar flowers and any St John's-wort species can be counted for the grassland quality survey.



C

Flowers with bilateral symmetry**Not in dense flower-heads; leaves alternate or whorled**

FABACEAE (LEGUMINOSAE) (Pea) family have distinctive Pea-like flowers, with a large upper petal, 2 free petals on the sides (the 'wings') and 2 petals in between these that are fused into a 'keel' shape (like the keel of a boat). The stamens and carpels are hidden inside the keel. Most species have similar fruits to pea pods.

11. Any Tare or Vetch species *Ervilla/Ervum/Vicia* species (pictured is Tufted Vetch). All Tares *Ervilla/Ervum* species or Vetches *Vicia* species have leaves with many opposite pairs of leaflets and usually have tendrils at the end of the leaf. Flowers are in clusters or spikes and are red, pink, purple or blue.
12. Common or Greater Bird's-foot-trefoil, or Meadow Vetchling *Lotus/Lathyrus* species. Yellow flowers and leaves with five leaflets. Meadow Vetchling *Lathyrus pratensis* has similar flowers, but the leaves have tendrils and longer, narrower leaflets.
13. Common or Spiny Restharrow *Ononis* species. Trailing plants with large pink flowers and leaves with 1 or 3 leaflets.

BALSAMINACEAE (Balsam) family has large flowers with sepals coloured like the petals and 5 stamens joined together near the top. The lowest sepal forms a spur at the base of the flower.

14. Himalayan (Indian) Balsam *Impatiens glandulifera*. A tall (to 2m or more) plant with very large pink flowers. Leaves usually in whorls of 3, but sometimes opposite.

ORCHIDACEAE (Orchid) family flowers have 3 petals and 3 coloured sepals. The lower petal (often called the 'lip') is usually large and often lobed.

15. Any Orchid species (pictured is Common Spotted-orchid) can be counted for the survey. The flowers may be pink, white, green or purple.

D

Flowers with bilateral symmetry**Not in dense flower-heads; leaves opposite**

OROBANCHACEAE (Broomrape) family. All of the species in this family are either fully or partly parasitic on other plants. The petals form a tube with upper and lower lips at the top. The lower lip has 3 lobes. The flowers have 4 stamens.

16. Any Eyebright species *Euphrasia* species. White flowers, with yellow and purple in centre. Leaves with teeth on edges.
17. Yellow-rattle *Rhinanthus minor*. Yellow flowers produce big seeds that rattle in seed pod when fully mature.
18. Red Bartsia *Odontites vernus*. Similar to Yellow-rattle, but more sprawling and with narrower, pink flowers.

LAMIACEAE (LABIATAE) (Dead-nettle or Mint) family flowers have petals grouped into upper and lower lobes, sometimes subdivided. Further. Flowers have 4 stamens. Stems are square in section, with simple opposite leaves and no stipules.

19. Variegated (Garden) Yellow Archangel. *Lamium galeobdolon* subspecies *argentatum*. One of the few species in this family with yellow flowers. There are usually lots of plants growing together.
20. Selfheal. *Prunella vulgaris*. A low-growing (usually less than 20cm) plant. The blue/purple flowers are clustered at the top of the stem.



E

Flowers in dense heads or spikes

Flowers with bilateral symmetry or inconspicuous

FABACEAE (LEGUMINOSAE) (Pea) family (see page 10). Species included here are all Clovers with small flowers in dense heads.

21. Red Clover (pictured) or Zigzag Clover *Trifolium medium/pratense*. Zigzag Clover *Trifolium medium* looks similar. Both have pink (sometimes white) flowers and leaves on the stem, unlike White Clover.
22. White Clover *Trifolium repens*. White flower heads on long, leafless stems. This is a creeping plant, often forming dense patches.
23. Hare's-foot Clover *Trifolium arvense*. The flower heads are pale pink and longer and narrower than most other Clovers. The leaflets are also narrow.

POLYGONACEAE (Knotweed or Dock) family has similar petals and sepals that are green, brown, white or pink. It also has stipules fused together to form short tubes around the stem.

24. Broad-leaved Dock (pictured) or Curled Dock *Rumex* species. Both have large, entire leaves and lots of tiny, green or brown, three-sided flowers/fruits in spikes. You can record any large dock species, but **do not record** Common Sorrel *Rumex acetosa* or Sheep's Sorrel *Rumex acetosella* here. Both of these have pointed lobes at their leaf bases.

URTICACEAE (Nettle) family has inconspicuous flowers that are either male or female, but not both.

25. Common Nettle *Urtica dioica*. The familiar 'stinging nettle', with spikes of inconspicuous flowers towards the top of the plant.

F

Flowers in dense heads or spikes

Flowers with radial symmetry

POLYGONACEAE (Knotweed or Dock) family (see above).

26. Japanese Knotweed (pictured) or Giant Knotweed *Reynoutria (Fallopia)* species. Giant Knotweed *Reynoutria sachalinensis* looks similar, but has larger leaves. Both are tall (often over 2m) plants with large, broad leaves and lots of spikes of small white flowers.

ROSACEAE (Rose) family (see page 8).

27. Meadowsweet *Filipendula ulmaria*. A tall plant (often over 1m), with lots of small white flowers clustered at the top of the stem. Sometimes the inflorescence looks a bit like a Carrot family plant, but the branches do not all arise from the same place on the stem, so it is not an umbel.
28. Salad Burnet (pictured) or Giant Burnet *Sanguisorba/Poterium* species. Salad Burnet *Poterium sanguisorba (Sanguisorba minor)* is a short (usually less than 20cm) plant. Great Burnet *Sanguisorba officinalis* is much taller (over 50cm) and has dark red flower heads in late summer.

RUBIACEAE (Bedstraw) family has tiny flowers and whorled leaves in most species.

29. Lady's Bedstraw *Galium verum*. A short, sprawling plant with very narrow, whorled leaves and clusters of tiny yellow flowers.

DIPSACACEAE (Teasel or Scabious) family has dense flower heads a bit like Daisy family plants, but in the Teasel family the stamens stick out obviously from the flowers and are free from each other.

30. Any Scabious species *Knautia/Scabiosa/Succisa* species. Small Scabious (pictured) *Scabiosa columbaria*, Field Scabious *Knautia arvensis* and Devil's-bit Scabious *Succisa pratensis* are included. All have similar flower heads, but the shapes of their leaves differ.



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Flowers in umbels (Carrot family)

APIACEAE (UMBELLIFERAE) (Carrot) family is large with many similar-looking species. The small (often white) flowers are arranged in compound umbels. The shapes of the leaves and the fruits are often useful for identifying the species.

31. Pignut (pictured) or Burnet-saxifrage *Conopodium/Pimpinella* species. Short plants (under 25cm). Pignut *Conopodium majus* has very narrow leaf lobes. Burnet-saxifrage *Pimpinella saxifraga* is similar, but has two types of leaves: upper leaves like Pignut; the lower like Salad Burnet.
32. Pepper-saxifrage *Silaum silaus*. Looks similar to Pignut and Burnet-saxifrage, with very narrow leaf lobes, but it has creamy or yellow flowers with whorls of small bracts at the base of the umbel branches.
33. Cow Parsley *Anthriscus sylvestris*. The leaves are fern-like and large. It flowers from April to June. It can grow quite tall (over 1m).
34. Ground-elder. *Aegopodium podagraria*. The leaf lobes are much broader than the other Carrot family plants here apart from Hogweed. The leaves grow low to the ground, often forming dense patches, but the flower head stems can grow to almost 1m.
35. Hogweed (pictured) or Giant Hogweed *Heracleum* species. Hogweed *Heracleum sphondylium* is a tall plant (up to 2m) with a thick stem and very large leaves. The leaves have lobes, but unlike the other Carrot family plants here, they are not completely divided into separate leaflets. Giant Hogweed *Heracleum mantegazzianum* is even bigger with more sharply-pointed leaf lobes.



Flower heads like Daisies or Thistles (Daisy family)

ASTERACEAE (COMPOSITAE) (Daisy) family has dense flower heads like daisy, dandelion or thistle flower heads. These can have two types of flower, tube-shaped and strap-shaped. In Daisy-like flowers they are tube shaped in the central disc and strap shaped in the outer rays. In Dandelion-like flower heads the flowers are all strap shaped, and in Thistle-like flowers, all tube shaped. This is a very large family.

36. Common Ragwort *Jacobaea vulgaris* (*Senecio jacobaea*). Daisy-like flower heads, but both the tube-shaped and strap-shaped flowers are yellow. Flower heads are about 1.5 to 2cm across. Lobed leaves
37. Common Fleabane *Pulicaria dysenterica*. The flower heads are similar to Common Ragwort, but usually bigger (often over 3cm across). The leaves are not lobed.
38. Oxeye Daisy *Leucanthemum vulgare*. An upright plant with large, Daisy-like flower heads. Differs from the common Daisy *Bellis perennis* in being bigger and having leaves on the stem. A similar species is grown in gardens, which has leaves with fewer lobes. The garden plants should not be recorded in the grassland quality survey.
39. Creeping Thistle *Cirsium arvense*. Pale pink (and sweet-smelling) flower heads and sharply-spiny leaves. It often grows in patches.
40. Common Knapweed (pictured) or Greater Knapweed *Centaurea* species. Both species look similar. Flower heads are like thistles with dark pink flowers, but leaves are not spiny. Both the leaves and petals may be lobed or not lobed.



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The Grassland Quality Survey has been developed by John O'Reilly (Ptyxis Ecology); Howard Cambridge, Alison Dyke, Sarah West and Christine Gemmell (SEI, University of York); Simon Norman (Field Studies Council); Jonathan Dent and Eithne Phillips (St Nicks). Colour illustrations of plants are © Lizzie Harper 2021. Text and concept © St Nicks 2021. All rights reserved.

