

## Grassland Quality Survey - More detailed information on the habitat structure and botanical quality surveys

### Habitat Structure Survey

#### Why are some features listed as both positive and negative?

**Grass cover, short turf, bare ground** and **scrub** appear on both the positive and negative features lists. This is because moderate amounts of all of these features provide positive habitat benefits, but excessive amounts would mean the habitat was less valuable for wildlife.

#### Each feature is assessed in one of three ways:

1. **% Cover**: Estimate what percentage of each quarter covered by the feature.
2. **Count**: Count how many examples there are of the feature in the quarter.
3. **Present?**: Search the quarter to see if at least one example of the feature is present.

#### Rationale for habitat structure positive features

**Grass cover** – Vegetation that is not dominated by grasses, is more likely to be rich in plant species. This will provide more variety of food plants and niches for a variety of invertebrates and other animals.

**Flowers/seeds** – If the grassland plants are allowed to mature, flower and seed, this will provide nectar, pollen and seed food sources, as well as additional habitat structures for invertebrates. A species-rich grassland that is regularly mown would not earn any points for this feature, even though it is species-rich.

**Short turf** – The ideal grassland structure would have some areas of short grass, some of medium-length, some of long grass and some tussocks, as this would provide more variety of habitat structure for invertebrates and other animals. It would be too complicated to devise a feature that took account of all four types of structure. The two types of structure that are most likely to be under-represented in urban grasslands are short turf and tussocks, so we have just included those two as features. Moderate amounts of short turf next to areas of longer grass make the habitat suitable for chicks of ground-nesting birds. Short turf is essential for several specialist grassland fungi that indicate high quality grasslands. Many urban grasslands have no areas of short turf because the management is too infrequent. In the long-run this leads to a decline in diversity of plant species and habitat structure, so the having some areas of short turf is usually a sign that the site is being managed well.

**Tussocks** – See rationale for ‘short turf’ above. Because of the density of vegetation at the tussock base, tussocks provide valuable over-wintering niches for invertebrates and other animals which are not provided by swards of long grass that don’t have tussocks. During the growing season at times when most of the grass is short, tussocks may be the only feature providing any structural diversity for invertebrates.

**Bare ground** – Bare ground is essential for a range of specialist invertebrates. Also, small amounts of bare ground often indicate that the site is being managed well, i.e. it is not being neglected and becoming overgrown.

**Slopes** – Natural slopes provide niches that suit particular plants and animals. This encourages additional species to those found in the flatter areas. Different species occur on north-facing and south-facing slopes. Slopes often have a thinner soil compared to flat areas, which leads to a different type (and often more flower-rich) of vegetation compared to flatter areas. This added plant diversity supports a wider range of invertebrates. The score for slopes is unlikely to change from one year to the next on any one site, so this feature may be most useful for comparing different sites.

**Scrub** – Moderate amounts of scrub introduces an extra type of habitat structure in the grassland, providing additional hiding places, basking places, food sources and over-wintering sites.

**Wet features** – Natural wet features support different plant and animal species compared to dry areas, so having a combination of both gives more diversity. The wet features also provide additional niches for animals, including the water itself and areas of soft soil on the edges. Polluted wet features provide less benefit for wildlife, so they do not earn any points.

**Dung** – Cattle or horse dung provides habitat for a range of specialist dung invertebrates and fungi. The localised patterns of natural fertilizer provided by the dunging encourages differences in the plant species composition within the vegetation, which in turn leads to more variety of habitat structure during the next growing season.

**Anthills** – Anthill are an indication that the grassland is suitable for grassland ants, which is in itself an uncommon positive feature. The ants also provide food for other animals. The anthills themselves provide additional habitat structure, with many of the benefits discussed above in relation to bare ground and slopes.

## **Rationale for habitat structure negative features**

**Grass cover** – A very high proportion of grasses in the vegetation indicates low species diversity. These conditions suit only a small number of very common invertebrate species. Very high cover of grasses may be due to past agricultural improvement, especially over use of artificial fertilizers. Or in urban areas, it may be because the grassland was seeded relatively recently and has not had a chance to become more diverse yet.

**Invasive weeds** – Some perennial weeds that spread by stolons or rhizomes can dominate vegetation if left unchecked. This leads to dense single-species patches of the individual weed species which only benefits those particular invertebrate species that can use that plant. If one of these species becomes plentiful it can become a very difficult management problem to keep it under control. There is no shortage of patches of weeds in the wider environment, but there is a shortage of species-rich, well-managed grassland.

**Short turf** – Although moderate amounts of short turf are a positive feature, areas that are dominated by short turf provide little structural diversity and fewer flowers and seeds. These are usually areas that are mown too frequently or are too heavily grazed.

**Bare ground** – Too much bare ground is a sign of a management problem. If the area of bare ground is large, there will be less vegetation and less variety of habitat structure, providing less favourable conditions for invertebrates and other animals. Too much bare ground could be caused by having too many grazing animals, too much trampling by people, or damage from motorbikes or other machinery.

**Scrub** – Although a moderate amount of scrub is a positive feature, in grasslands that are not managed frequently enough, scrub will eventually take over. When scrub becomes too dominant, any positive grassland features that were present decrease or eventually disappear and the benefits of the habitat to wildlife are greatly diminished.

**Arisings** – The most diverse grasslands are usually those whose soils are relatively nutrient-poor. If grass cuttings are not removed, the nutrients in the cut vegetation will go back into the soil. This will limit how diverse the grassland can become. Clumps of cuttings also smother growing vegetation, further reducing the habitat value for invertebrates. Grasslands that are well managed for wildlife always have the arising removed.

**Artificial features** – Artificial features of concrete or tarmac can support a specialist invertebrate fauna. However, a grassland that had a lot of artificial features in it is not as valuable as a more semi-natural grassland, as there is less room for natural features. Artificial features also attract human activity, leading to more trampling in the grassland next to the features. Areas without artificial features are more likely to include some areas that are less disturbed by humans.

## **Botanical Quality Survey**

### **Rationale for botanical quality indicator species (positive and negative)**

Some grassland plant species (like daisy or ribwort plantain) grow in a wide variety of different types of grasslands managed in different ways. Other grassland plant species only grow in certain types of grasslands. For example, wild thyme only grows in grasslands on lime-rich or chalk-rich soils and meadowsweet only grows in damp or wet areas.

Some species are associated with particular types of management. For example, yellow rattle is more common in grasslands that are cut for hay, rather than in grasslands managed as pasture throughout the growing season.

Plants that grow only or mainly, in certain types of grassland, or under certain conditions are known as 'indicator' species because their presence tells us (indicates) something useful about the grassland

The species we have chosen in this guide as indicator species are a subset of all of the species we could have chosen. We have not included species that require advanced identification skills. We hope this will make the survey accessible to a wider range of people.

We have also included some groups of similar-looking species, provided that each of the species in the group is more or less equally useful as an indicator species. An example of one of these species groups is '**pignut or burnet-saxifrage**'. These are closely related species with similar-looking leaves and flower heads. Both species grow mainly in species-rich grasslands, so both are equally useful as positive indicator species.

In this survey, the surveyor just needs to tick if she spots one of these species and she does not need to identify which one of the two it is. If the surveyor is more experienced at plant identification and identifies that both species are present, then she still awards just one point for the species group. This is so that the results of surveys done by surveyors with different levels of experience will be comparable.

The positive indicator species are species that grow mainly in species-rich grasslands that are managed well for wildlife. The negative indicator species are species that grow in less interesting grasslands that are not managed well for wildlife. Many common species are neither positive nor negative, but can grow in a variety of conditions. Those species do not indicate anything particularly useful, so they have not been included as indicator species in this guide.

### **Rationale for botanical quality positive indicator species**

The positive indicator species are species that grow mainly in species-rich grasslands that are managed well for wildlife. Grasslands that are diverse in plant species are better for wildlife compared to grasslands with fewer plant species for several reasons.

Plant species-richness is an important element of biodiversity in itself. Species-rich habitats usually include plant species that are uncommon in the wider countryside. Without these habitats there would be nowhere for these less common species to grow. A very high proportion of all of the formerly species-rich grasslands have been lost over the past one hundred years or so. This loss is even more pronounced in grasslands compared to other habitats like woodland or heath.

Grasslands rich in plant species provide habitat resources for a wider range of invertebrates and other animals. Many of our less common invertebrates are dependent on particular plants species for part of their life-cycle, including several of the uncommon grassland plant species. Invertebrates use parts of plants as food (leaves, pollen, nectar, seeds, roots), shelter (dense vegetation, tussocks, hollow stems, broad leaves) and basking/mating sites. The shapes and sizes of the leaves and other structures of different plants vary, so the more plant species there are, the more variety of habitat structures for invertebrates there will be.

All of the positive indicator species (or species groups) that we have included grow only, or mainly, in grasslands of at least moderate to good quality for wildlife. Some are more common than others and some tend to grow in even better quality grasslands than others. The list includes species that grow both in grasslands cut for hay and in grasslands managed as pasture. It includes species that prefer damp grasslands, as well as species that prefer dry grasslands.

The list is limited to species that grow in grasslands on neutral soils, i.e. soils that are neither acidic, nor calcareous, but in-between. Similar surveys of grasslands on either acidic or calcareous soils would only work if a different set of positive indicator species were used.

### **Rationale for botanical quality negative indicator species**

The negative indicator species are species that grow in less interesting grasslands that are not managed well for wildlife. This includes neglected or unmanaged grasslands and grasslands that are managed too intensively.

Many urban grasslands suffer from management neglect which is usually detrimental to their wildlife interest. As most people nowadays have little contact with the wild environment, many people are not aware that most of our wildlife habitats are reliant on

some form of ongoing management such as grazing or regular cutting. This is particularly the case with grassland habitats.

Many of the more interesting grassland plants are low-growing, light-demanding species that do not compete well with other plants when conditions become overgrown. When a grassland is left unmanaged for a number of years, it soon becomes dominated by a only small number of species that are suited to those conditions.

Such grasslands also lose much of their structural diversity, as everywhere becomes similarly densely overgrown. The same process occurs when grasslands are cut just once per year and left unmanaged otherwise.

Hogweed can become particularly abundant when a grassland becomes overgrown, but creeping thistle, common nettle and docks can also be common in these conditions depending on how the site was managed previously.

Many of our formerly species-rich grasslands were lost to 'agricultural improvement' which involved adding large quantities of artificial fertiliser or farmyard manure to the habitat. High amounts of fertiliser radically alter the chemical and biological processes in the soil, which in turn impacts on the plant species that can grow in these conditions. A small number of common plant species grow vigorously in highly fertile soils, but most of the more interesting grassland plants soon disappear. In the past grassland were also negatively impacted by overgrazing (i.e. too many grazing animals) although this happens less frequently now.

Creeping thistle, common nettle and docks can be particularly abundant in fields that have a history of both high levels of fertiliser and overgrazing. When white clover is abundant it often indicates field that were ploughed, fertilised and re-sown with agricultural grasses at some point in the past.