

OPEN MOSAIC HABITATS ON PREVIOUSLY DEVELOPED LAND

Nationally

The habitat is best defined in terms of structure and growth forms, rather than through specific vegetation communities. It comprises mosaics of bare ground with, typically, very early pioneer communities on skeletal substrates, more established open grasslands, usually dominated by fine-leaved grasses with many herbs, areas of bare ground, scrub and patches of other habitats such as heathland, swamp, ephemeral pools and inundation grasslands. High quality examples may be characterised as unmanaged flower-rich grasslands with sparsely-vegetated areas developed over many years on poor substrates



These are generally primary successions, and as such unusual in the British landscape, especially the lowlands. The vegetation can have similarities to early/pioneer communities (particularly grasslands) on more 'natural' substrates but, due to the edaphic conditions, the habitat can often persist for decades without active management or intervention. Stands of vegetation commonly comprise small patches and may vary over relatively small areas, reflecting small-scale variation in substrate and topography.

Plant assemblages are unusual, selected by propagule supply as well as site conditions. The habitat supports a range of notable vascular plant, moss and lichen species. These often include species declining in the wider countryside such as bee orchid *Ophrys apifera* and fragrant orchid *Gymnadenia conopsea* (on alkaline wastes), Young's helleborine *Epipactis youngiana* (on acid waste); the lichens *Osmunda regalis* (in acid sandstone quarries), *Peltigera rufescens* (on lime waste, Pulverised Fuel Ash), *Cladonia pocillum* (on calcareous wastes), *Diploschistes muscorum* (on Pulverised Fuel Ash); and a UK BAP priority liverwort, *Petalophyllum ralfsii*. Exotic plant species, which are well adapted to the prevailing environmental conditions, are a characteristic component of associated plant assemblages.

Invertebrate faunas can be species-rich and include many uncommon species. Between 12 and 15% of all nationally-rare and nationally-scarce insects are recorded from 'brownfield' sites, which will include many post-industrial examples. Exotic plants provide for an extended flowering season and, with the floristic and structural diversity of the habitat mosaic, contribute to the value of the habitat for invertebrates.

Some areas are important for birds that are primarily associated with previously developed or brownfield land such as little ringed plover; as well as more widespread, but UK BAP priority species, including skylark and grey partridge. The habitat provides secure breeding and feeding areas commonly absent from land under agricultural management.

Edaphic conditions for this habitat are severely limiting on plant growth. Examples are substrates with extreme pH, whether alkaline or acid; deficiency of nitrogen, or available phosphate; or water-deficient. Other typical situations where such conditions arise include disused quarries, former railway sidings, extraction pits and landfill sites.

A Defra funded project to define this habitat type identified the following criteria:

- 1) The site should be at least 0.25 ha in size.
- 2) A known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.
- 3) The site contains some vegetation. This will comprise early successional communities consisting mainly of stress tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of a) annuals or b) mosses/liverworts or c) lichens or d) ruderals or e) inundation species or f) open grassland or g) flower-rich grassland or h) heathland. Other communities or habitats might also be present e.g. scrub, reed-swamp, open water but early successional communities should comprise the majority of the area.
- 4) The site contains un-vegetated, loose bare substrate, and pools may be present.
- 5) The site shows spatial variation, forming a mosaic of one or more of the early successional communities plus bare substrate, within 0.25 ha.

The main criteria for selection of qualifying habitats of high nature conservation value are:

- Rich and/or large examples of habitats typical of the conditions concerned, which

**Extent in UK:
unknown**

demonstrate the characteristic mosaic of bare ground, pioneer communities, flower rich grassland and other habitat patches with associated structural and topographical features.

- Areas that have retained bare ground and pioneer communities over an extended period, demonstrating arrested succession.
- Threatened areas that support either the last remaining examples where the habitat was formerly widespread/ extensive, or rare/ specialised types of this habitat for example where the nature of the substrate is particularly unusual.
- Presence of UK BAP priority species or Red Data Book/List species.
- Importance for an exceptional assemblage of key species groups.

In the Peak District

As a newly identified and defined UK BAP priority habitat, little is known about the extent and nature of Open Mosaic Habitats On Previously Developed Land in the Peak District. The history of mineral extraction presents us with perhaps the greatest source of sites where this habitat can be identified. Disused quarries where minimal active restoration has occurred enable pioneer communities to develop from the surrounding seed sources. The variety of grades of waste material remaining on many inactive sites present a variety of micro-climates, with potential for a diversity of flora and fauna, often uncommon in the Peak District, to colonise. For example, one inactive quarry site in the White Peak has been heavily colonised by dark mullein a very uncommon species locally.



**Extent in PD:
unknown**

Dark mullein © Karen Shelley-Jones

Current Factors Affecting the Habitat & Habitat Condition

Little is known about this habitat, by its very nature it is ephemeral, and natural succession is probably the greatest threat to the persistence of Open Mosaic Habitats. Where significant populations of locally rare or UKBAP species have colonised a site, efforts should be made to maintain the required conditions, through intervention, typically managed disturbance.

Recent Work

No known recent work specifically to identify, survey and manage this habitat.

Associated BAP Species in the Peak District

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|---------------|--------------------------------|
| Skylark | <i>Alauda arvensis</i> |
| Small heath | <i>Coenonympha pamphilus</i> |
| Dingy skipper | <i>Erynnis tages</i> |
| Chalk carpet | <i>Scotopteryx bipunctaria</i> |
| Slow-worm | <i>Anguis fragilis</i> |

- | | |
|-----------------|-------------------------------|
| Common lizard | <i>Zootoca vivipara</i> |
| Red hemp-nettle | <i>Galeopsis angustifolia</i> |

Locally Significant Species in the Peak District

- | | |
|--------------|-------------------------|
| Dark mullein | <i>Verbascum nigrum</i> |
|--------------|-------------------------|

NVC Communities

Overall there is a poor fit to described communities although some components of the habitat are characterised by annual /open vegetation plant communities.

Grassland communities associated with this habitat complex include:

- MG1** - *Arrhenatherum elatius* grassland
- MG2** - *Arrhenatherum elatius* - *Filipendula ulmaria* tall-herb grassland
- MG9** - *Holcus lanatus* - *Deschampsia cespitosa* grassland
- MG10** - *Holcus lanatus* - *Juncus effusus* rush-pasture
- MG11** - *Festuca rubra* - *Agrostis stolonifera* - *Potentilla anserina* grassland
- MG13** - *Agrostis stolonifera* - *Alopecurus geniculatus* grassland
- CG10** - *Festuca ovina* - *Agrostis capillaris* - *Thymus praecox* grassland
- U1** - *Festuca ovina* - *Agrostis capillaris* - *Rumex acetosella* grassland
- U2** - *Deschampsia flexuosa* grassland

Scrub communities also commonly encountered are:

- W6** - *Alnus glutinosa* - *Urtica dioica* scrub
- W23** - *Ulex europaeus* - *Rubus fruticosus* scrub

Complexes and mosaics can also include a range of aquatic plant communities and swamp communities.