County: North Yorkshire **Site Name: Malham-Arncliffe**

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act, 1981, as amended.

Local Planning Authority: Yorkshire Dales National Park, Craven District Council

National Grid Reference: SD 920676 **Area:** 4933.9 (ha) 12191.7 (ac)

Ordnance Survey Sheet 1:50,000: 98 **1:25,000:** SD 86, 96, 87, 97

First Notified: 1955* Extended: 1975* **Date of Revision:** 1988

Other Information:
1. This site, which is in part of international significance, is listed in 'A Nature Conservation Review', edited by D. A. Ratcliffe (1977). Cambridge University Press.

2. Parts of the site are identified as of national significance in the Geological Conservation Review.

3. During the 1988 revision the boundary has been amended by both extensions and deletions to the site as notified previously.*

4. Part of the site is managed as a nature reserve by the National Trust and is much used for educational purposes by the Field Studies Council.

5. Part of the site is proposed for designation as a wetland of international importance under the 'Ramsar' Convention.

*Under Section 23 of the National Parks and Access to the Countryside Act, 1949.

Description
This extensive site is of outstanding geological and biological interest. Carboniferous Great Scar Limestone underlies the majority of the area and within these rock strata are developed nationally important karst features and cave systems. There are freshwater systems of international significance and nationally important calcareous grassland, limestone pavement, fen and mire habitats. Soils derived from glacial drift overlie the limestone in places and often support neutral and acidic grasslands.

This is one of the key areas in Britain for demonstrating the wide variety of landforms which characterise limestone uplands and is therefore of considerable educational importance. It is particularly noted for the spectacular cliffs of Malham Cove and Gordale Scar, with their associated dry valleys, tufa deposits and the classic limestone plateau at High Mark, unique in the Pennines with its internally draining karst depressions ('dolines'). The site includes the ancient, possibly pre-glacial, cave system comprising Dowkabottom and Sleet's Gill caves. The peat deposit of Tarn Moss contains a continuous pollen record from the late Glacial period to the present day which is of exceptional value in the study of vegetation history and environmental change in the surrounding limestone country.

The vegetation of Malham-Arncliffe is predominantly grassland created and maintained by livestock farming with sheep and cattle with additional grazing by rabbits which is locally

intensive. Large areas of lime-rich soils support the nationally scarce blue moor-grass *Sesleria albicans* often with sheep's-fescue *Festuca ovina* and herbs such as limestone bedstraw *Galium sterneri*, wild thyme *Thymus praecox*, small scabious *Scabiosa columbaria*, salad burnet *Sanguisorba minor* and common rock-rose *Helianthemum nummularium*. Where grazing is less intense, bloody crane's-bill *Geranium sanguineum* and the nationally rare Jacob's-ladder *Polemonium caeruleum* may occur. A characteristic species of the Craven limestone, bird's-eye primrose *Primula farinosa* is widespread within the site and is locally abundant on damp, calcareous soils often associated with butterwort *Pinguicula vulgaris* and grass-of-Parnassus *Parnassia palustris*. Areas of calcareous flushing also support a number of uncommon bryophytes including *Catoscopium nigritum* and *Meesia uliginosa* with *Orthothecium rufescens* on damp limestone cliffs. The limestone grasslands also support several mountain and northern species, including alpine cinquefoil *Potentilla crantzii*, mountain avens *Dryas octopetala* and mountain everlasting *Antennaria dioica*. Neutral grassland occurs extensively, with fescues *Festuca* spp., and bent *Agrostis* spp., grasses, wild thyme, harebell *Campanula rotundifolia* and, locally, mountain pansy *Viola lutea*. A characteristic of the Malham-Arncliffe area is the often intimate mixture of calcareous, neutral and acidic grassland types; the latter typically include mat-grass *Nardus stricta*, wavy hair-grass *Deschampsia flexuosa*, heath bedstraw *Galium saxatile* and tormentil *Potentilla erecta* sometimes with heath rush *Juncus squarrosus* and occasionally a sparse covering of heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus*. The limestone is in places rich in metals (lead, zinc) which was mined by numerous small-scale workings in the past. These areas, and particularly the spoil that remains, support two uncommon species, alpine penny-cress *Thlaspi alpestre* and spring sandwort *Minuartia verna*.

The extensive areas of limestone pavements are a habitat for several species, usually confined to woodlands, such as dog's mercury *Mercurialis perennis*, wood anemone *Anemone nemorosa* and ramsons *Allium ursinum*. Baneberry *Actaea spicata*, angular Solomon's-seal *Polygonatum odoratum* and downy currant *Ribes spicatum* are rare species confined here to limestone pavement. The grikes also provide suitably damp conditions for ferns, most notably limestone fern *Gymnocarpium robertianum*, rigid buckler-fern *Dryopteris villarii* and holly fern *Polystichum lonchitis*. The latter is at its southern limit in England at this site.

Around Malham Tarn is a range of wetland vegetation associated with calcicolous fen, willow carr, acidophilous raised mire and soligenous mire that is unique in Britain. Species of note within the fen and carr include fibrous tussock-sedge *Carex appropinquata* and the dark-leaved willow *Salix myrsinifolia*. Bog-rosemary *Andromeda polifolia* occurs on Tarn Moss raised mire. The soligenous mires and peripheral grasslands are particularly rich in uncommon species including broad-leaved cottongrass *Eriophorum latifolium*, hair sedge *Carex capillaris*, alpine bartsia *Bartsia alpina*, spring cinquefoil *Potentilla tabernaemontani*, dwarf milkwort *Polygala amara* and the bryophytes *Camptothecium nitens* and *Cynclidium stygium*.

Malham Tarn, the highest marl lake in Britain at 380 m above sea level, is rich in submerged plants most abundantly the alga *Chara globularis* with spiked water-milfoil *Myriophyllum spicatum*, shining pondweed *Potamogeton lucens*, Canadian waterweed *Elodea canadensis* and willow moss *Fontinalis antipyretica*. The six fish species occurring here include an isolated population of perch thought to have been a mediaeval introduction. A population of European crayfish *Austropotamobius pallipes* also occurs here towards the northern edge of its range in Britain. Malham Tarn outflow, Gordale and Cowside Becks are three outstanding upland streams of high water quality which provide a range of aquatic conditions and associated flora and fauna.

The Malham-Arncliffe site as a whole and in particular the wetland and aquatic habitats around Malham Tarn support a large number of notable invertebrates including insects, molluscs and spiders. Of especial interest is the caddis *Agrynia crassicornis* which is confined in Britain to Malham Tarn.

There are four main wooded areas; the largely ash *Fraxinus excelsior* dominated Wedber Wood and Field House Wood, mixed plantations at Malham Tarn House and a variety of woodland and wood pasture in the south eastern part of the site. The latter area supports downy birch *Betula pubescens* together with ash, hawthorn *Crataegus monogyna* and often abundant hazel *Corylus avellana*. Field House Wood supports small populations of the local whitebeam *Sorbus rupicola* and dark-red helleborine *Epipactis atrorubens*. The latter species also occurs in Tarn House Wood. Wedber Wood supports a diverse mollusc fauna including the snails *Claucilia dubia* and *Vitrea subrimata*. Ash, hawthorn, rowan *Sorbus aucuparia* and sycamore *Acer pseudoplatanus* occur throughout the site as scattered individuals on grassland and limestone pavement and more commonly together with yew *Taxus baccata* on steep slopes and cliffs such as Yew Cogar Scar.

Malham-Arncliffe supports a number of bird species. In particular the grassland and mire habitats are much used by waders, most frequently curlew and lapwing and more locally redshank and snipe. There are house martin colonies on the limestone cliffs of Malham Cove, Gordale Scar and Kilnsey Crag. Malham Tarn is of importance for wildfowl such as coot, tufted duck and great crested grebe.