

Limestone Grassland (LG)

Habitat Action Plan

Doncaster Local Biodiversity Action Plan
January 2007



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1. Description

1.1 The borough's Magnesian Limestone supports some of Doncaster's richest calcareous grasslands. Oat grasses often dominate the sward, together with upright brome or, in ranker areas, tor grass. The presence of fissures and cracks in the underlying limestone means that rainwater drains quickly through the thin soil, making some areas very dry and encouraging the dominance of creeping and sheep's fescues (*Festuca spp*). Characteristic flowering herbs include fairy flax (*Linum catharticum*), bird's-foot trefoil (*Lotus corniculatus*), lady's bedstraw (*Galium verum*), restharrow (*Ononis repens*), hoary plantain (*Plantago coronopus*), yellow wort (*Blackstonia perfoliata*), salad burnet (*Sanguisorba minor*), wild basil (*Clinopodium vulgare*), common milkwort (*Polygala vulgaris*) and autumn gentian (*Gentianella amarella*). **Autumn lady's tresses** (*Spiranthes spiralis*), **squinancywort** (*Asperula cynanchica*), rockrose (*Helianthemum nummularium*), clustered bellflower (*Campanula glomerata*), thyme (*Thymus vulgaris*), small scabious (*Scabiosa columbaria*), burnet saxifrage (*Pimpinella saxifrage*) and pyramidal orchid (*Anacamptis pyramidalis*) also occur at the most diverse sites.

1.2 Other plants of lime-rich soils include musk thistle (*Carduus nutans*), carline thistle (*Carlina vulgaris*), **dwarf thistle** (*Cirsium acaule*), common spotted orchid (*Dactylorhiza fuchsia*), blue fleabane (*Erigeron acer*), dyers greenweed (*Genista tinctoria*), dropwort (*Filipendula hexapetala*), fragrant orchid (*Gymnadenia conopsea*), ploughman's spikenard (*Inula conyza*), crested hairgrass (*Koeleria macrantha*), bee orchid (*Ophrys apifera*), **pale St John's-wort** (*Hypericum montanum*), meadow oat (*Helictotrichon pratense*), **horseshoe vetch** (*Hippocrepis comosa*), marjoram (*Origanum vulgare*), early purple orchid (*Orchis mascula*), burnet rose (*Rosa pimpinellifolia*), meadow saxifrage (*Saxifraga granulata*), and, in damper areas, **greater fen sedge** (*Cladium mariscus*).

1.3 Limestone grasslands also support a diverse invertebrate fauna. The food plants of certain butterfly species, such as the marbled white (*Melannargia galathea*), occur only on Limestone Grassland sites.

1.4 Doncaster's Limestone Grasslands have strong affinities with the National Vegetation Classification (NVC)¹ community types; CG3 *Bromus erectus* grassland, CG4 *Brachypodium pinnatum* grassland, CG 5 *Bromus erectus-Brachypodium pinnatum* grassland and CG10 *Festuca ovina – Agrostis capillaris* grassland.

1.5 Scrub can also be an important transitional habitat between limestone woodland and grasslands. Scrub 'invasion' is often seen as detrimental to floristic diversity but scrub, typically hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), bramble (*Rubus spp*) and occasionally gorse (*Ulex spp*), can provide an important habitat in its own right and supports a range of invertebrates and birds. Patches of low scrub within grassland areas can also provide structural diversity and increase the range of species present.

2 National status

2.1 It is estimated that there are between 40,000 and 50 000ha of calcareous grassland in the UK², distributed from Devon to Shetland, but local climate and subtle differences in underlying rock type means that there are many different calcareous grassland types. Magnesian Limestone grassland is of very restricted extent in the British Isles, being limited to a narrow band of limestone which stretches from Ripon in the north, to Nottingham in the south. The historical clearance of woodland and subsequent grazing resulted in the development of species-rich limestone grasslands. In recent times many areas of grassland have been turned over to arable cultivation; however, pockets of grassland survive on the steeper slopes of river gorges and escarpments, on railway embankments, in old quarries, churchyards and along ancient rights of way and as road verges. Unimproved grasslands are also a feature of larger country estates.

¹ Rodwell, J.S. (1992), British Plant Communities (Volume 3) Grasslands and montane communities. Cambridge.

² Selman, Dodd & Bayes, 1999, A Biodiversity Audit of Yorkshire & The Humber

3. Local status

3.1 This type of habitat is represented in the Doncaster Borough as a part of a Biological Site of Special Scientific Interest (SSSI), Sprotbrough Gorge, and in over 10 Sites of Scientific interest (SSIs)³. Particularly diverse Limestone Grassland sites include old quarries and old railway cuttings in the Cadeby and Conisbrough areas, the Don Gorge from Conisbrough to Hexthorpe, Nursery Lane Quarry (SSI 6.61) and Boat Farm Quarry (SSI 6.60) in Sprotbrough, Firbeck Junction (SSI 4.16) near Tickhill and limestone escarpments at Clifton Beacon, Skelbrooke Rein and Harry Wood (SSI 6.15), Brodsworth, Barnburgh, High Melton, Clifton and Micklebring. The lawns and extensive grasslands of several former country estates and historic sites include fragments of unimproved calcareous grassland e.g. Cusworth Hall (SSI 3.10), Conisbrough Castle (SSI 5.9), Hickleton Park (SSI 6.34), Crookhill Park and Plantation (SSI 4.2), Wilsic Hall (SSI 4.12), Burghwallis Grange Bank (SSI 7.4), Skelbrooke Park (SSI 6.17) and Chapel Hole (SSI 4.7) near Stainton. Exceptionally diverse short-sward CG10 type grasslands are found on the lawns of Brodsworth Park (SSI 6.24) (presumably due to its cut lawn management) and on the site of a former limestone quarry at Marr – Marr Hills and Holes (SSI 6.38).

3.2 A calcareous flora is also associated with Lindholme Hall (SSI 9.40b), an isolated moraine of glacial debris now surrounded by acid peat bog.

3.3 Areas of bare limestone spoil associated with limestone quarrying and limekilns can also support populations of the Red Data Book **flamingo moss** (*Tortula cernua*).

4. Legal status

4.1 Sites identified as Sites of Special Scientific Interest (SSSIs) and Sites of Scientific Interest (SSIs) have a presumption against developments that would have an adverse effect on the conservation value of such sites.

³ DMBC, Re-survey of Sites of Scientific Interest in the Doncaster Metropolitan Borough 1996/97, Volumes 1-9

4.2 The Defra Environmental Impact Assessment Regulations apply to the conversion of uncultivated land or semi-natural areas for intensive agricultural purposes and therefore could apply to limestone grassland habitats should any site be subject to change of land use to intensive agriculture. However, the interpretation of the application of EIA to the conversion of uncultivated land is currently subject to legal challenge, which may provide a legal case on which the interpretation of the legislation may be based.

5. Links to associated habitats & species

5.1 The Limestone Grassland Habitat Action Plan is linked to the following Habitat Action Plans:

- Parkland, Wood Pasture and Veteran Trees (PWV)
- Limestone Woodland (LW)
- Post Industrial and Brownfield Land (PIB)
- Neutral and Wet Grassland (NWG)
- Ancient and Species Rich Hedgerows (ASH)
- Arable Field Margins (AFM)
- Craggs, Caves and Tunnels (CCT)
- Greenways (GW)
- Urban Greenspace (UG)

5.2 '**A Species Audit of Doncaster Borough**' has been produced as part of the Doncaster Local Biodiversity Action Plan. Species highlighted in bold within the Habitat Action Plans are identified within Doncaster's Species Audit and are conservation priorities. The Audit identifies **70** species associated with Limestone Grassland.

6. Current factors causing loss or decline

6.1 There is a lack of traditional grazing management on many sites leading to reversion to rank grassland and scrub. Lack of sympathetic management can be a particular problem at visitor attractions (such as Conisbrough Castle (SSI 5.9)) where mowing is not practical on steeper slopes but where grazing would conflict with public access. This can lead to extensive invasion by ruderals and scrub.

6.2 In the absence of agricultural grazing, rabbit grazing is the main form of management for grassland habitats. This makes grasslands vulnerable to periodic fluctuations in populations induced by disease outbreaks (Myxomatosis) resulting in changes in vegetation caused by the reduced grazing pressure.

6.3 A lack of agreed ecological guidance on the management of roadside verges and salting of roads causes loss of species diversity and changes in habitat type.

6.4 There are fewer mixed farms and therefore fewer grazing herds available. Modern breeds tend to be poorly suited to the poor grazing provided by unimproved grasslands.

6.5 Fragmentation and loss caused by development such as quarrying, restoration of old quarries, landfill, road construction, built development and conversion to other land uses (mainly arable agriculture) or by agricultural intensification in the form of fertiliser use, herbicide application, ploughing and re-seeding). Conversely, quarrying and restoration of sites provides excellent opportunities for Limestone Grassland creation, and can therefore contribute to habitat creation targets.

6.6 Uncontrolled access and inappropriate recreational use is a particular problem (including the use of air rifles and motor cycles), leading to excessive erosion, littering, fires, pollution, vandalism and disturbance to wildlife. This problem is most severe in the Cadeby and Conisbrough areas where large urban areas are in close proximity to Limestone Grassland areas.

7. Current local action

Research & Monitoring

7.1 Natural England (formerly English Nature) has compiled an inventory of the larger grassland sites in South Yorkshire and is currently reviewing this process.

7.2 Funding from the Big Lottery's Transforming Your Space initiative has enabled the further development of the Biological Records Centre at Doncaster Museum. The biological data collected as part of the project, particularly botanical information for local sites, species and habitats has enhanced the modern dataset. Historical biological information has also been transferred to the database.

7.3 The borough has a diverse series of Sites of Scientific Interest (SSIs), illustrating the variety of species and habitats that are represented on sites throughout Doncaster. All SSIs were surveyed in 1996/1997 and again in 2004/2005, when additional candidate sites were also identified. Many known semi-improved Magnesian Limestone Grassland sites have been identified as SSIs or as candidate SSIs.

7.4 The Doncaster Naturalists' Society holds regular field meetings and has carried out detailed surveys of many of the borough's limestone grassland sites. The Society routinely submit biological records to the Local Record Centre at Doncaster Museum.

Safeguarding & Management

7.5 Funding from the Big Lottery's Transforming Your Space initiative has enabled the development of a range of biodiversity initiatives, including the resurvey of the Borough's SSI's, research projects, production of site management plans and the provision of resources (equipment, educational, activity and promotional materials) to help raise awareness and encourage participation in the management and enhancement of local biodiversity. A number of management plans have been produced, including two for Limestone Grassland sites in the Don Gorge, Sprotbrough.

7.6 An area of semi-natural, Magnesian Limestone grassland is designated as an SSSI and managed as a nature reserve by the Yorkshire Wildlife Trust (Sprotbrough Flash). Conisbrough North Cliff (SSI 5.8) (also known as The Craggs) is an extensive area of grassland and scrub in Local Authority ownership, which extends to the west of Northcliffe Quarry Local Nature Reserve. Windgate Pasture (SSI 4.4) is an area of species-rich limestone grassland also under Local Authority control. This wooded site would require considerable work to return to grassland. West Doncaster Linear Park (now part of the Trans Pennine Trail) includes old railway embankments and cuttings with limestone grasslands and scrub (including Sprotbrough Junction Grassland and Quarry, SSI 3.11a+b). This site is also owned and managed by the Local Authority. Crookhill Golf Course is a municipal golf course that includes small areas of limestone grassland. The herb-rich lawns of Brodsworth Park (SSI 6.24) are owned and managed by English Heritage. Some other important Magnesian Limestone grassland sites are in sympathetic private ownership.

Communications & Publicity

7.7 The Local Authority provides interpretive leaflets, and runs practical management events aimed at involving local people in care of local limestone areas. The Craggs (Conisbrough North Cliff SSI 5.8) is an area of public open space at Denaby, which includes Northcliffe Quarry, a Local Nature Reserve.

Funding & Resources

7.8 The new Environmental Stewardship Scheme provides funding for the maintenance of field boundary features such as hedges (stock-proof boundaries may enable reinstatement of traditional grazing management). The higher-level scheme also targets the creation of new habitats on land adjacent to, buffering or linking SSSIs or UK BAP habitats. It also targets the maintenance and restoration of habitats in Sites of Importance for Nature Conservation, known locally as SSIs.

Links to other Strategies & Plans

7.9 The Don Gorge Strategic Management Plan has been produced on behalf of the Don Gorge Strategic Partnership, a body of key organisations and stakeholders active in the Don Gorge. The Plan includes a series of time framed action plans for key issues including; visitor management, access and recreation; geological, biological, archaeological and heritage interest; management of the river and banks; and species and habitat management.

Advisory

7.10 DMBC has introduced a programme of continuous professional development based on planning related issues, including 'Protected species' and 'Trees and Hedgerows'. The Environmental Planning Team has produced a suite of Supplementary Planning Documents, providing guidance on: Planning for Trees and Hedgerows, Nature, Sustainable Construction and Landscape Planning on Development Sites in Doncaster.

8. Objectives, targets & proposed actions

Please refer also to the Generic Actions in the LBAP Introduction & Overview document.

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|--|-------------|-----|--|----------------------------|-------------|---|
| 1) To ensure the protection and maintenance of existing Magnesian Limestone Grassland sites. | Continuous. | 1.1 | <p>Prevent depletion of Limestone Grassland resulting from development and/ or the delivery of statutory functions by:</p> <p>1) Having regard to the protection and enhancement of habitats when considering the allocation of sites, in line with the approach set out in PPS9 and the priorities set out in the LBAP.</p> <p>2) Having regard to the assessment, retention and enhancement of habitat types when formulating and making Development Control Policies and decisions, in line with the approach set out in PPS9 and the priorities set out in the LBAP.</p> | DMBC, Natural England (NE) | Staff costs | Advisory/ Safeguarding & Management |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|--------|-----|---|---------------|-------|----------|
| | | | <p>3) Providing advice to Development Control and Developers on appropriate types of survey i.e. ecological and/or hydrological, the interpretation of survey results and methods of incorporating habitat retention and enhancement into development proposals (for both designated sites and non-designated features of biodiversity value, as identified in the LBAP).</p> <p>4) Having regard to the priorities set out in the BAP in the interpretation of UDP/LDF policies (and any supporting SPGs/SPDs).</p> <p>5) Providing technical advice on the severity, implications and nature of suspected breaches in planning control (either conditions or unauthorised development).</p> | | | |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|-------------|-----|--|--|---|------------------------------|
| | | | <p>6) Awarding appropriate site protection through designation, based upon routine environmental monitoring and assessment.</p> <p>7) Ensuring that all Partners and relevant landowners, service providers and operational contractors are informed of the existence and importance of Limestone Grasslands (both designated and non-designated sites).</p> | | | |
| | Continuous. | 1.2 | Continue to collect and maintain up-to-date, standardised, biological data using the Museum's Local Record Centre. Promote and initiate appropriate management, monitoring and the exchange of environmental data, to ensure the maximum level of site protection is awarded and habitat condition is maintained. | DMBC, NE, Doncaster Naturalists' Society (DNS), Yorkshire Wildlife Trust (YWT), Don Gorge Strategic Partnership (DGSP) | Staff costs and volunteer time. Other costs to be evaluated | Future Research & Monitoring |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|--|--|-----|---|-----------------|-----------------------------------|---------------------------|
| | By 2008. | 1.3 | Expand DMBC's Environmental Planning protected species protocol to include LBAP habitats and species. | DMBC | Staff costs | Advisory |
| 2) To restore degraded sites and ensure appropriate management of Magnesian Limestone Grassland. | Equip 2 sites with management plans by 2008. | 2.1 | Develop and implement grassland management plans for grassland in public ownership. Review existing plans to ensure compatibility with HAPs and SAPs. | DMBC | £1000 per management plan = £2000 | Safeguarding & Management |
| | 2 sites by 2008 and 1 further site by 2009. | 2.2 | Bring DMBC owned Magnesian Limestone grassland sites into favourable management. | DMBC, YWT, DGSP | To be evaluated | Safeguarding & Management |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|---|-----|--|---|---|---------------------------|
| | <p>2 sites with favourable management by 2010.</p> <p>(Lowland Calcareous grassland is a 5-point target in the Southern Magnesian Limestone Joint Character Area, the classification, on which HLS is based.)</p> | 2.3 | <p>Identify landowners of existing SSI Magnesian Limestone Grasslands.</p> <p>Provide assistance to owners seeking funding and/or assistance for appropriate nature conservation and grassland management operations, including:</p> <ul style="list-style-type: none"> ● Reintroduction of grazing or mowing management (where appropriate). ● Removal of invasive scrub considered to be detrimental to the preservation of grassland species diversity. ● Cessation or reduction of fertiliser and herbicide input. <p>Monitor the effectiveness of the management, by regular assessment of critical habitat features and selected key or indicator species, and review the management regime as necessary.</p> | <p>DMBC, NE (ESS), Farming and Wildlife Advisory Group (FWAG)</p> <p>NE is reliant upon landowners with limestone grassland coming forward for HLS.</p> <p>NE may be able to identify owners where land has been registered on the Rural Land Register, with Rural Payments Agency Approval</p> | <p>£225 per site x 2 sites = £450</p> <p>Management costs to be evaluated</p> | Safeguarding & Management |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|------------------|-----|--|--|-----------------|---------------------------------|
| | 2 sites by 2010. | 2.4 | Identify all grassland sites where Priority Species are present and implement appropriate specialist management schemes to benefit these species. | DMBC, NE, FWAG, DGSP, private landowners | To be evaluated | Species Management & Protection |
| | Continuous. | 2.5 | Investigate the acquisition (where necessary, and feasible) of Limestone Grasslands of local significance, in order to ensure their future management for the benefit of biodiversity. | YWT, DMBC, local Trusts | £5000 per ha | Safeguarding & Management |
| | By 2008. | 2.6 | Develop and implement sympathetic grassland management for species-rich verges. Review existing plans/maintenance regimes to ensure compatibility with HAPs and SAPs. | DMBC, Highways Agency (HA) | £727 per annum | Safeguarding & Management |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|--|-----|--|---------------------------|-----------------|---------------------------|
| | 2 SSI limestone grassland sites by 2010. | 2.7 | Prevent disturbance to the wildlife of grasslands by the control of recreational access and prevention of inappropriate and damaging activities. Produce action plans in conjunction with SY Police where necessary. | NE, DGSP, DMBC, SY Police | To be evaluated | Safeguarding & Management |
| | By 2008. | 2.8 | Research the requirements, practicalities, costs and potential participants for a local mowing scheme which identifies local contractors with smaller farm machinery able to gain access to, and work within, small and awkward sites. Making small bales of hay may provide a marketable premium product and provide income to support such a scheme. | NE, DMBC, FWAG, YWT, DGSP | Staff costs | Safeguarding & Management |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|--|--|-----|---|---|-------------|--|
| 3) To create 1 ha of limestone grassland linked to existing grasslands, woodland and scrub habitats within the Magnesian Limestone Natural Area. | 1 site planned, with costs prepared by 2010. | 3.1 | Work with landowners to find sites where new grassland can be created without loss of other priority habitats. Promote reinstatement of grassland from scrub habitat in carefully selected sites, where scrub clearance can be undertaken in a sensitive and targeted manner, preventing weed infestation on bare ground. | DMBC, NE (ESS), YWT, Private Landowners Defra is reliant upon landowners with calcareous grassland creation proposals coming forward for HLS | Staff costs | Advisory/ Habitat Creation & Restoration |
| | Continuous. | 3.2 | Promote the inclusion of species-rich grassland in the restoration of limestone quarries and specify the use of seed from local grassland sites, where possible. Use plant plugs grown on from seed gathered from local grasslands to augment diversity of species-poor previously restored sites. | DMBC | Staff costs | Advisory/ Habitat Creation & Restoration |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|-------------|-----|---|--|----------------------|--|
| | By 2010. | 3.3 | Use new grassland to link existing woodland, grassland and scrub habitats. | DMBC, NE (ESS) FWAG, Private landowners NE is reliant upon landowners with habitat creation proposals coming forward for HLS | £3000 to create 1 ha | Safeguarding & Management/ Habitat Creation & Restoration |
| | Continuous. | 3.4 | Incorporate areas for limestone grassland creation in new semi-urban and rural planting schemes in the Magnesian Limestone Natural Area. Promote the creation of species-rich grasslands (on nutrient poor substrates) in suitable low-maintenance areas. | DMBC | Staff costs | Advisory/ Policy & Legislation |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|---|-----------------------------|-----|--|--|-----------------|--|
| | Continuous. | 3.4 | Research the establishment and running costs and operational requirements of a native seed project with existing nurseries to grow on seed gathered from local grasslands. Pursue opportunities to implement feasible initiatives. | DMBC, YWT, DNS, NE, British Trust for Conservation Volunteers (BTCV) | To be evaluated | Habitat Creation & Restoration / Species Management & Protection |
| 4) Raise public awareness of the importance and special characteristics of Limestone Grassland. | Continuous. | 4.1 | Continue to provide interpretive leaflets, organise walks, and run practical grassland management events. | DMBC, NE, BTCV, YWT, DGSP | To be evaluated | Communications & publicity |
| | 1 per year. | 4.2 | Run species survey and identification workshops open to the general public. | DNS, DGSP | £256 | Communications & publicity |
| | Leaflet for 1 site by 2008. | 4.3 | Provide an interpretive leaflet to explain the special value of Magnesian Limestone Grassland and include a map showing the location of more accessible sites. | DMBC, NE, DGSP | £1000 | Communications & publicity |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|--------------------------|-----|--|--|-------|--|
| | 1 demonstration by 2008. | 4.4 | Promote good practice through the use of demonstration sites and workshops. | DMBC, NE, Linking the Environment And Farming (LEAF), DGSP, YWT, BTCV | £2640 | Advisory/ Communications & Publicity |
| | By 2010. | 4.5 | Offer support for Undergraduate/ Post Graduate research project to review historic land use maps, old (WWII) aerial photographic coverage to compare with present day land-use surveys. Initial project to compare Tickhill area with Fishlake/Sykehouse, to illustrate the rush to arable on the Magnesian Limestone and the loss of field boundaries (hedges). | DMBC, Yorkshire Naturalists' Union (YNU) Doncaster College, Local Universities (Nottingham/ Sheffield) | £640 | Future Research & Monitoring |

| Objective | Target | Ref | Action | Lead Partners | Costs | Category |
|-----------|----------|-----|---|---|-------|------------------------------|
| | By 2010. | 4.6 | Offer support for Student/ Undergraduate research project to use historic maps and old (WWII) and recent aerial photographic coverage to review grassland/scrub/woodland transition zones pre and post Myxomatosis. | DMBC, Doncaster Museum, Doncaster College | £640 | Future Research & Monitoring |
| | By 2010. | 4.7 | Offer support for Student/ Undergraduate research project to investigate limestone influences on the flora and fauna of Lindholme island, Hatfield Moors. | DMBC, Doncaster Museum, Doncaster College | £640 | Future Research & Monitoring |

9. Indicative Habitat distribution & Opportunities map

The distribution of Limestone Grassland has been indicated by mapping species considered to be local indicators for this habitat, as selected by local experts. Certain species that may be considered to be typical indicators of the habitat have not been used, due to them being abundant throughout the Borough, or unrepresentative of a local habitat peculiarity.

The indicator species for this habitat are:

Anacamptis pyramidalis, Anthyllis vulneria, Campanula glomerata, Centaurea scabiosa, Clinopodium vulgare, Euphrasia (*all species*), Gentianelle amarelle, Helianthemum nummularium, Helioctotrichon pubescens, Linum catharticum, Ononis repens, Origanum vulgare, Plantago media, Polygala vulgaris, Scabiosa columbaria, Thymus polytrichus.

The species records have been compiled based on 1km grid squares of the Borough. The resulting score is based on how many of the different species are found within a particular square, reflecting a degree of match to the species assemblage, and not the number of records of a specific species.

To indicate how good a match each grid square is to the habitat a graduated colour has been applied, based on how many species are recorded in that square as a percentage of the highest number of matches. The higher percentage shows a better species match and therefore is a better indicator that the species assemblage exists, or could exist in that area. The percentages are split down as follows:

- 0% No matches in a grid square – these are left blank
- 1-25%  1-3 Species
- 26-50%  4-6 Species
- 51-75%  7-9 Species
- 76-100%  10-12 Species

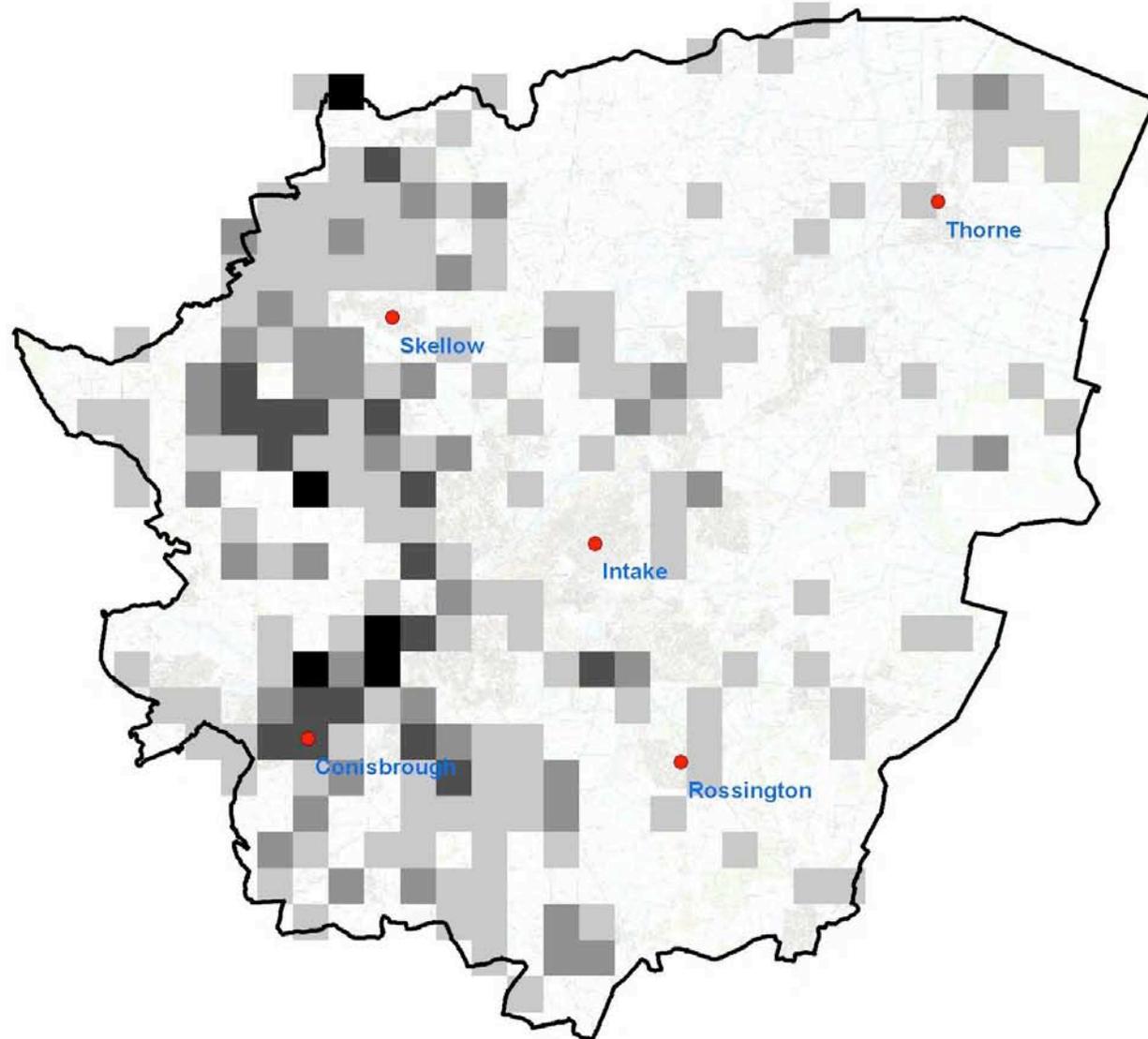
Limestone Grassland

DATE: January 2007
 SCALE: 1:160,000
 DRAWING NO: HAP/1/LG



LEGEND

- Doncaster Borough Boundary
- Village
- 1-25%
- 26-50%
- 51-75%
- 76-100%



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