LIMESTONE LANDSCAPES
The Orton Fells

Location

The Orton Fells, to the east of the Lake District, have some of the most spectacular limestone pavements in Europe. The fells are bounded by the small villages of Orton, Great Asby, Little Asby, Crosby Ravensworth and Crosby Garret. The pavements run east west along the top of an escarpment and form the four distinct masses of (west to east) Crosby Ravensworth Fell, Orton Scar, Great Asby Scar and Little Asby Scar. This is the most extensive area of pavements in the UK outside the Ingleborough area in Yorkshire. Most of the landscape is protected by both Site of Special Scientific Interest and candidate Special Area of Conservation designations because of its international importance. The land is partly privately owned, part is common land and English Nature manages part as a National Nature Reserve. Friends of the Lake District own the extensive area of Little Asby Scar.

Access

There are bus services from Kendal, Appleby and Penrith to many of the villages surrounding the Orton Fells. For bus times and information contact Cumbria Travel Line on 0870 6082608. Using public transport links you to a network of quiet bridleways and footpaths. The map on this leaflet shows these footpaths and suggests some areas for limited car parking. Most areas of common land and downland (limestone grassland) will formally become open access from summer 2005. More information on OS Map Explorer 19.

Please look after this special area by doing the following:

- Keep mountain bikes and horses to public bridleways
- Use gates and stiles provided – don't climb walls
- Leave flowers and fossils for others to enjoy
- Take litter home
- Close gates

Take care when walking in the area as wet limestone pavements are slippery and dangerous.

For more information about the area contact:

Great Asby Scar National Nature Reserve
English Nature
Juniper House
Murley Moss
Oxenholme Road
Kendal, Cumbria
LA9 7RL

Little Asby Common
Friends of the Lake District
Murley Moss
Oxenholme Road
Kendal, Cumbria LA9 7RL

For more information about limestone pavements and nature conservation contact:

The Limestone Pavement Action Group
Cumbria Wildlife Trust
Plumgarths
Crook Road
Kendal, Cumbria, LA8 8LX
www.limestone-pavements.org.uk

RMC Environment Fund

The RMC Environment Fund has been established under the Landfill Tax Credit Scheme and is managed by The Environment Council

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Front cover pictures: Birds foot trefoil, bloody cranesbill, common spotted orchid. Main picture: male fern at Great Asby Scar.

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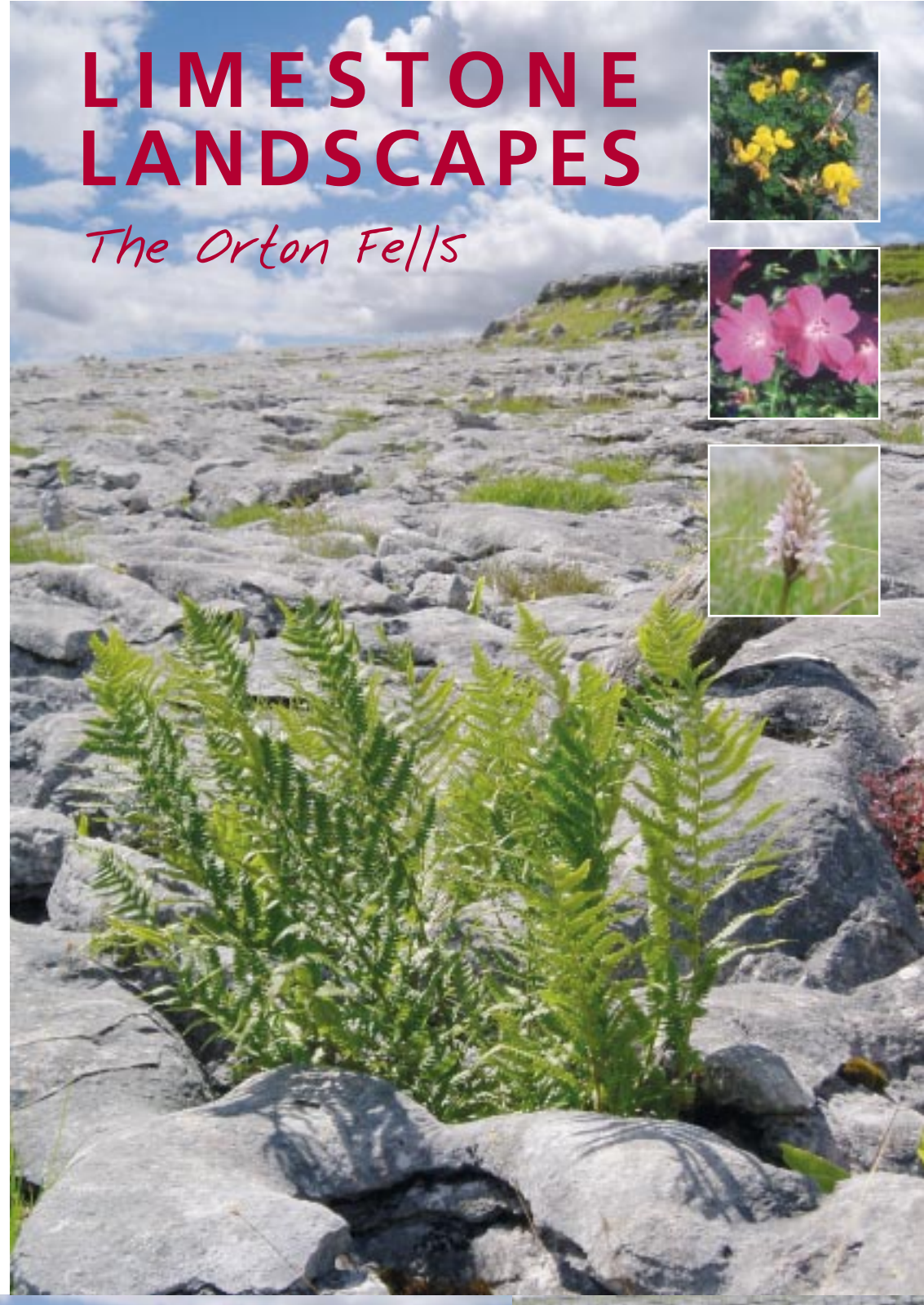

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Geology

The spectacular expanses of limestone pavement in the Orton Fells formed from limestone rock laid down underwater in a geological period called the Carboniferous some 350 million years ago. When walking across the limestone pavement you can find fossils of the ancient corals, shelly creatures and sea lilies from which the rock is made. The fossils show that the rock was deposited in a warm shallow sea. The pavements of the Orton Fells are of exceptional geological importance as they are a record of the changing nature of the earth's surface. The folded and tilted pavements of this area are of particular note, demonstrating huge forces in the crust that buckled and uplifted the limestones.

Geomorphology

During the last ice age 10 000 years ago, the limestone was covered by an ice-sheet many hundreds of metres thick. This scoured and sculpted the limestone bedrock. When the ice melted, it left sediment on top of the rock. This was colonised by trees and plants as the weather warmed. Water running through the soil found weaknesses in the rocks that were then eroded becoming deep fissures between hard upstanding blocks of limestone. The fissures are known as grikes and the blocks as clints.

The water also left channels and hollows in the rock, which were exposed as the soil was washed away over thousands of years. These runnels and pits now make up the beautiful and intricate patterns that can be seen on the Orton Fells pavements.

Wildlife

The birdlife found on the Orton Fells is typical of upland pastureland. Meadow pipits and wheatears breed on the grassland surrounding the pavements with wrens actually nesting among the limestone outcrops. Buzzards, ravens and kestrels are seen frequently, as are curlews, golden plover and lapwings. Skylarks can be heard singing during the spring and summer months.

Raven

There are few mammals found on the pavement. Rabbits are the only animals you are likely to see during the day, but foxes, stoats and moles are all known to use the area.

The pavements are home to many invertebrates, including spiders that use the grikes of the limestone pavement to string their webs across to catch insects. There are also two rare species of snails; it is possible to find their empty shells in many places on the pavement.

Eyebright

Fossil Corals

Heather

Hart's-tongue fern

Herb Paris

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Human history on the Orton Fells

The many archaeological remains on the Orton Fells show that this area has been intensively settled and farmed for thousands of years. Its current wild and empty character is in strange contrast to the busy Stone Age settlements, large Roman earthworks and hive of lime production activity.

The earliest recorded archaeological sites are dated as Mesolithic, which is between 6000 to 8000 years ago. Flints and stone axes have been found from this era. There is also a Bronze Age (6000 years ago) stone circle on Crosby Ravensworth Fell that consists of 11 fallen granite boulders in a circle and a number of outlying stones. This is an important indication that prehistoric people were using the Orton Fells pavements for both work and religious purposes.

One of the most important Romano-British sites at Orton Fells is the Castle Folds Settlement. This site, which was heavily fortified, can be found on top of one of the limestone scars which would have made it all but inaccessible to people trying to attack it. The walls (which are still in existence) were up to 3m high and there are the ruins of a number of stone huts inside it. There are also the remains of a number of other Roman settlements and earthworks on the Orton Fells.

The many deserted settlements on the Orton Fells pavements indicate that people have been settled in the area for thousands of years. There is evidence of copper mining along a mineral vein in the Potts Valley and also on Winderwath Common, right in the centre of the pavement area.

There are 23 small quarries and 20 lime kilns recorded in the local area. Most of these were used over the course of the last 500 years for processing lime for agricultural and domestic use.

In the eighteenth and nineteenth centuries lime was one of the most widespread non-food manufactured products. Although used in many different manufacturing processes, the principal use was for agriculture. In agriculture lime was used as a treatment for heavy soils to improve drainage and to make the land more easily worked. Lime is an essential plant food and its presence is crucial in fair quantities to produce good crops.

Lime has been used in building works since Roman times. Mortar for laying masonry was made by mixing lime with sand, and to make concrete the lime was mixed with materials such as crushed stone. Plasterwork also used lime. Lime white, a mixture of lime and water, was used for painting walls, the traditional "whitewash". The material from which lime is derived is calcium carbonate ($CaCO_3$) that occurs naturally as limestone.

Limestone Fern

Thyme

Angular Solomon's-seal

Rigid-buckler fern

Current use

Most of the Orton Fells pavements are now used for agriculture, with grazing of sheep being the most common use. Much of the area is common land meaning that some local people have 'commoners' rights' to use the area for a certain number of sheep or cattle. There is still some small-scale limestone extraction but limestone pavement is not under threat from these operations.

Damage to the Pavements

In the last 50 years, a large area of limestone pavement on Gaythorn Plain (part of Orton Scar) was removed for the rock garden, building and landscaping markets. This stripping has left a mass of rubble where previously there were clints and grikes. It is a sad example of the total devastation of limestone pavements caused by commercial extraction in the recent past. Only 3% of limestone pavements in the UK now remain undamaged, and although this is an extreme case of damage, it does demonstrate that the protection of limestone pavements by law is necessary. All of the Orton Fells pavement is now protected by Limestone Pavement Orders which make extraction or damage a criminal offence.

Plants

The grikes are home to a number of very interesting plants. Considering that nowadays the Orton Fells are a mosaic of windswept grasslands and pavement with very little woodland, the plants found in the grikes are unusual as many of them are woodland species. This is the remains of the forest that covered the area until humans colonised it in prehistoric times.

Deep in the grikes, protected from grazing animals and the drying effect of the wind can be found plants such as honeysuckle, hart's-tongue fern, wood anemone, herb Paris, lesser meadow rue and dog's-mercury along with the nationally scarce species rigid-buckler fern, limestone fern and angular Solomon's-seal.

Also found in the grikes are small ash, hawthorn and hazel trees. In the areas of the Scar that are grazed, these trees are kept in the protective grikes where they form twisted miniature bonsais. However, on Great Asby Scar National Nature Reserve, the grazing pressure on the pavement has been reduced or removed. In these areas the trees have been able to grow above the top of the grikes and some of them are now two or three metres in height. This increases the biodiversity value of the pavement and allows plants and ferns to flower and thrive.

Much of the pavement is surrounded by species rich limestone grassland. Interesting species include blue moor grass, bird's-foot trefoil, fairy flax, limestone bedstraw, thyme and eyebright. The grassland also contains flowers such as horseshoe vetch, autumn gentian, common rockrose and a number of orchid species. There are also areas of heathland on deeper soil with ling heather, bell heather and bilberry.