SECTION 3:

AROUND US TODAY: CLEADON'S NATURAL ENVIRONMENT

by Ivan Dunn

INTRODUCTION

The Durham Magnesian Limestone Natural Area extends from the mouth of the River Tyne down the North East coast to Hartlepool and inland as far as Bishop Auckland in the west. It covers an extent of over 44,000 ha.

Plate 179: *Cleadon Hills, looking towards Penshaw Monument.*

The landscape is characterised by the steeper escarpement slope to the west, leading to gently rolling contours on the plateau itself, which slopes towards the North Sea in the east leading to impressive cliff faces at the coast. Glacial deposits are also found within the region resulting in more neutral grassland area where this has accumulated.

The underlying geology heavily influences the soil and vegetation types of the area. Steeper slopes and exposed cliff faces, including man-made features such as quarries, show the best examples of magnesian limestone flora.

Cleadon is situated near the sea, roughly half way between the mouths of the River Tyne and the River Wear. Being on the watershed means that major water resources are not available and the underlying geology compounds the situation, as the majority of rainwater will soak into the Magnesian Limestone

beneath. On the whole this has led to a dry landscape more conducive to grassland and arable farming than woodland or wetland features.

Plate 180: *Birds-foot Trefoil and Thyme can grow with only the bare minimum of soil.*

Plate 181: *Magnesian Limestone is important for both plants and invertebrates.*

There are, however, a few water features within the area, mainly in the form of small ponds, while Bolden Flats, the lowest point within the parish, often floods in winter and does hold some water during the summer. There are also ponds found where the boulder clay on the surface is impermeable enough to hold rainwater. The most notable of these is in the centre of the village.

The area is dominated by a rocky outcrop at Cleadon Hills. This is the most important ecological area within the parish and has been designated a Site of Special Scientific Interest (SSSI). These are the country's very best wildlife and geological sites that include some of Britain's most spectacular and beautiful habitats. There are over 4,100 SSSIs in England, covering around 7% of the country's land area.[24]

The Cleadon Hills outcrop stands out from the surrounding farmland, but wildlife corridors from Marsden Old Quarry do provide some routes by which species may colonise the area. This is especially significant as the other important Magnesian Limestone grassland species are found on the cliff tops around Souter and Whitburn.

To collect data we carried out simple, visual surveys, walking the sites until we found no new records. Quadrats were used to demonstrate the more 'scientific' approach and to help concentrate the view on a limited area, but as we were recording fauna as well as flora it was simpler and more effective to be mobile. Looking down at quadrats meant that we were missing birds, bees and butterflies flying overhead.

We'd like to thank all the volunteers and residents who helped with the surveys. The school children were particularly helpful, looking in all the nooks and crannies that other volunteers might not have had the energy or willingness to crawl into.

The following is a break-down by local sites where surveys where carried out.

CLEADON HILLS

Cleadon Hills has been designated as a Site of Special Scientific Interest due to the importance of the Magnesian Limestone grassland in the area. The site has a number of regionally and nationally rare species, however due to the grassland not being managed for nature conservation for a number of years, some of these have now disappeared. The most floristically important areas are the steep slopes to the west and south. Here nutrient levels are marginally lower, probably due to leaching via rainwater. Important species found here include Small Scabious, Betony, Rock Rose, Salad Burnett and Pignut. Scrub has been removed at some point in the recent past as stumps are still evident. This has improved the site by increasing the area of Magnesian Limestone grassland. The bank has a fairly large population of Columbine in the spring.

[24] citing online reference http://www.sssi.naturalengland.org.uk/Special/sssi/index.cfm

Plate 182: *Black Knapweed on a steep-sided bank overlooking Cleadon.*

Plates 183 and 184: *(Left) Rocky outcrops support a much more diverse flora than the flatter areas where grasses dominate. (Right) Small Skipper and White-tailed Bumblebee feed on Field Scabious.*

The flatter areas are cut for early hay. Unfortunately this is too early to have the maximum benefit to flowering plants although regular cutting will reduce the sward density and allow wild flowers to

colonise the areas at some point in the future. With the area being cut, this will remove some of the nutrients from the area, increasing the chances of less dominant species being able to survive. If the plant material is left it will continue to die back each autumn/winter and break down as part of the composting process, releasing more nutrients into the soil. Removing plant material will help to alleviate this process.


Plates 185 and 186: *(Left) Salad Burnett and (Right) Common Rock-rose.*

Plates 187 and 188: *Grass cutting on the flatter areas will help wild flowers to survive, while taller areas are important for insects and small mammals.*


Plates 189 and 190: *School children helping collect data and learn about the environment as part of our species monitoring studies.*

The area is also important for birds and butterflies. The scrub on the south-facing slopes provides cover and breeding areas for birds. Lesser Whitethroat, Linnet and Yellowhammer were frequently seen. The longer grassland areas provided an ideal habitat for Skylark.


Plates 191 and 192: *Wall Brown (Left & Right).*

In addition to the common butterfly species, a number of Wall Brown butterflies were seen. The

population of these have greatly increased in recent years. Until recently an exclusively southern species,. the major populations are now to be found in the North East, and in this area in particular. Other butterfly species seen include Peacock, Red Admiral, Large White, Small White, Green-veined White, Common Blue and Small Tortoiseshell.

CLEADON VILLAGE POND

The pond is situated in the centre of the village east of the Shields Road.

Pond dipping was undertaken to ascertain the species found there. While the pond looks attractive, there are a few factors limiting its wildlife potential. The main one being that the large trees to the south and east are causing areas of heavy shade and, with the suspended solids and silting, this will reduce the light levels in the water, preventing emergent vegetation from establishing. Leaf fall will also increase the acidity of the water, further reducing the number of species that can survive. A thin film of oil on the surface was also noted. This may have been released from vegetative decomposition, but is more likely to be due to the proximity of the main road.

Plate 193: *Cleadon Village Pond.*

The other main factor is the high population of Sticklebacks in the pond. They will effectively reduce the number of aquatic insects through predation. It will be very unlikely that frogs and newts will be able to produce any young in the pond.

The commonest group of fauna found in the pond was snails. Rich silt and decomposing vegetation are ideal for them. Other species found include Water Boatmen, Mosquito Larvae, Olive Mayfly, Stonefly, Bloodworm and Pond Skaters.

On the whole, the pond is of great importance to wildlife in the area. Primarily as a source of drinking water, but also for animals that feed off aquatic insects (we saw a Grey Wagtail doing both while we were surveying the pond).

CLEADON VILLAGE AND ENVIRONS

Our walk around Cleadon village was interesting in a number of ways. The local limestone used in constructing certain walls and buildings provided habitats for plant species more usually associated with quarry faces. We recorded Hart's Tongue Fern, Wall Rue and Hard Fern in the area, as well as commoner species such as Ivy-leaved Toadflax and other species that can survive in low nutrient habitats. It is highly likely that the gases produced by passing cars are also having an effect on vegetation growing in walls and pavements as the nitrogen and hydro-carbons are effectively producing an air-born fertiliser to growing plants.

Plates 194: *Rocky outcrops, magnesian limestone grassland, scrub, farmland and the village itself all provide diverse and important habitats for wildlife.*

The other interesting observation was that the area has very few native, veteran trees. The village has a number of wooded gardens, but these are nearly all imported species, such as Monkey Puzzle, Sycamore, Horse Chestnut, Copper Beech and European Larch. Some species found are now classified as pest species, such as Rhododendron and Japanese Knotweed. Some of these species may be the

legacy of 18th- and 19th-century landscaping associated with Cleadon House, the Old Hall and Cleadon Meadows, especially as the age of the trees are fairly uniform. One of the trends of the 19th Century (for those few who could afford it) was for travellers to bring back potential garden plants from a 'Grand Tour' of Europe, with the aim of establish these new varieties in various parks and gardens back home.

Plate 195: *Cleadon Grotto, part of the former leisure gardens belonging to Cleadon House, laid out in the mid 18th Century by John Dagnia.*

TILESHEDS LOCAL NATURE RESERVE (LNR)

Tilesheds LNR, situated to the west of the village, provides an important area for nature conservation. The site is primarily newly planted woodland, but has important magnesian limestone grassland and a small wetland area. The grassland has been improved by scraping off the top soil, exposing the lime-rich subsoil underneath. This area is very important, containing a large population of orchids as well as other species such as Ragged Robin, Greater Knapweed, Glaucous Sedge, Ox-eye daisy and Meadow Vetchling.

The woodland provides a good habitat for birds and insects. A number of species were seen including Bullfinch, Greater-spotted Woodpecker and Speckled Wood butterfly.

Plate 197: *The entrance to Tilesheds Local Nature Reserve.*

Plates 198 and 199 *Ragged-Robin and Northern Marsh Orchid.*

The pond area provides habitat for water birds, including Mute Swan, Mallard and Moorhen. Chicks, goslings and cygnets were seen. The high populations are likely to be attributed to feeding by members of the public; on days where we surveyed the site, a number of families were feeding the ducks. While feeding may benefit the birds, often it can have a detrimental effect on the pond itself. It increases the

nutrients in the water, often reducing the water pH resulting in acidification. It also increases the growth of aquatic plants resulting in the pond being overgrown. Water birds also cause the sediment to be disturbed. Suspended sediment reduces the amount of light that can reach the pond bottom. This, as well as not having a substrate firm enough to root in, prevents submerged vegetation from growing.

Plate 200: *'Scraping' helps to reduce nutrients and grasses, which allows a much more diverse flora to exist.*

Plates 201 and 202: *(Left) Speckled Wood , (Right) Yellow Flag Iris and Common Reed.*

BOLDEN FLATS

Bolden Flats, situated to the south of the village, is an important area for wildlife. As it is subject to flooding, it forms a wetland habitat ideal for winter wading birds. During the summer it still has a range of bird life including Heron, Moorhen, Mallard and the occasional Lapwing and Greylag Goose.

It also has a number of bee and butterfly species, including Small White and Speckled Wood, that frequent the hedgerows and field margins. Unfortunately we were unable to secure permission to enter the site, but the lack of public disturbance would be of benefit to ground nesting birds.

Plate 203: *Boldon Flats, with Heron taking off in the centre of the picture,*

As the 2013 summer was particularly dry very few areas were suitable for biological water quality testing. This involves disturbing the sediment of the stream and using a net to catch aquatic insects. Certain insects have little tolerance to water pollution and populations tend to fluctuate dramatically if a pollution episode occurs. By recording the numbers of species found on a monthly basis changes in water quality can be determined. As there are no major streams within the parish no data has been collected to undertake a historic comparison.

As in the agricultural areas (see below), field boundaries are very important for wildlife, and a number of important species were found in these areas and along the roadside verge. Unfortunately, Japanese Knotweed was also found along the latter.

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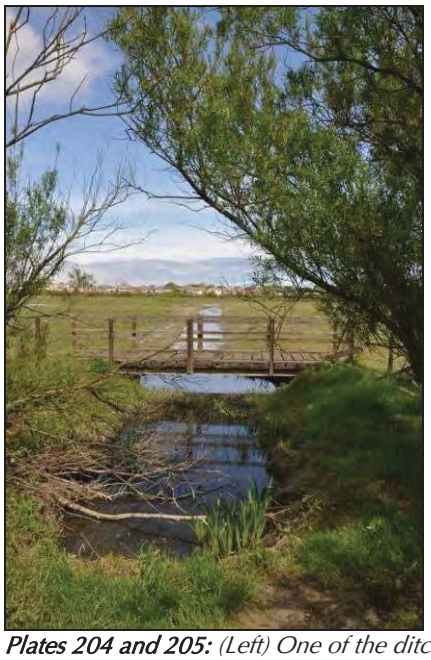


Plates 204 and 205: *(Left) One of the ditches feeding Boldon Flats, (Right) May, the flower of the Hawthorn, is important for insects early in the summer.*

Plate 206: Japanese Knotweed, growing along the roadside beside Boldon Flats car park.

AGRICULTURAL AREAS

Outside the village the area mainly consists of arable agriculture and horse grazing. Remaining hedges are probably the most important habitats, but some annual pioneer species can find a home. These include species such as Knotweeds, Pineapple Mayweed and Chamomile.

Plate 207: *Arable agriculture is predominant to the south and west of Cleadon Hills.*

Plate 208: *Cattle and horse grazing is used to control the grassland at Boldon Flats.*

Having standard trees in association with the hedges provides additional habitats. We saw Greater-spotted Woodpecker and Sparrowhawk in this area.

Grazed areas tended to be over-grazed from an environmental point of view and have minimal wildlife as the low sward is only conducive to certain plants such as daisy and various plantains. This is due to plant adaptations that protect the main areas of the plant by having the majority of the leaves too low to be grazed and those high enough to be grazed low in nutrients so their loss to the plant is tolerable. They also tend to be quicker to flower and seed increasing their chances of reproduction.

In some areas garden escapes can thrive in the hedgerows. One of note in this area was Soloman's Seal.

Plate 209: *Soloman's Seal, rare species or garden escapee?*

SPECIES RECORDED AS PART OF THE VILLAGE ATLAS WILDWATCH PROJECT

Often areas can have really exciting wildlife, though known to very few people. In some cases this might protect them, but it also means that no one can help them either. The vast majority of our local wildlife is never reported to national or regional authorities and this lack of information exchange can often lead to valuable wildlife areas being damaged or destroyed. Changes in land use, building development and even 'local wildlife areas' have been created to the detriment of important species that are already there. Often the plants and animals are known about by the people who live in the area, but the records aren't available to the organisations that make the final decisions.

The aim of the Limestone Landscapes' *WildWatch Project* has been to build a more comprehensive picture of the wildlife value of this area, but only through your help.

Finding, and sharing, wildlife sightings works both ways. Others can see just what a great place you live in and you can see just what wildlife is in your area. Perhaps there's something you didn't know about?

By reporting what wildlife species you see you can make a difference.

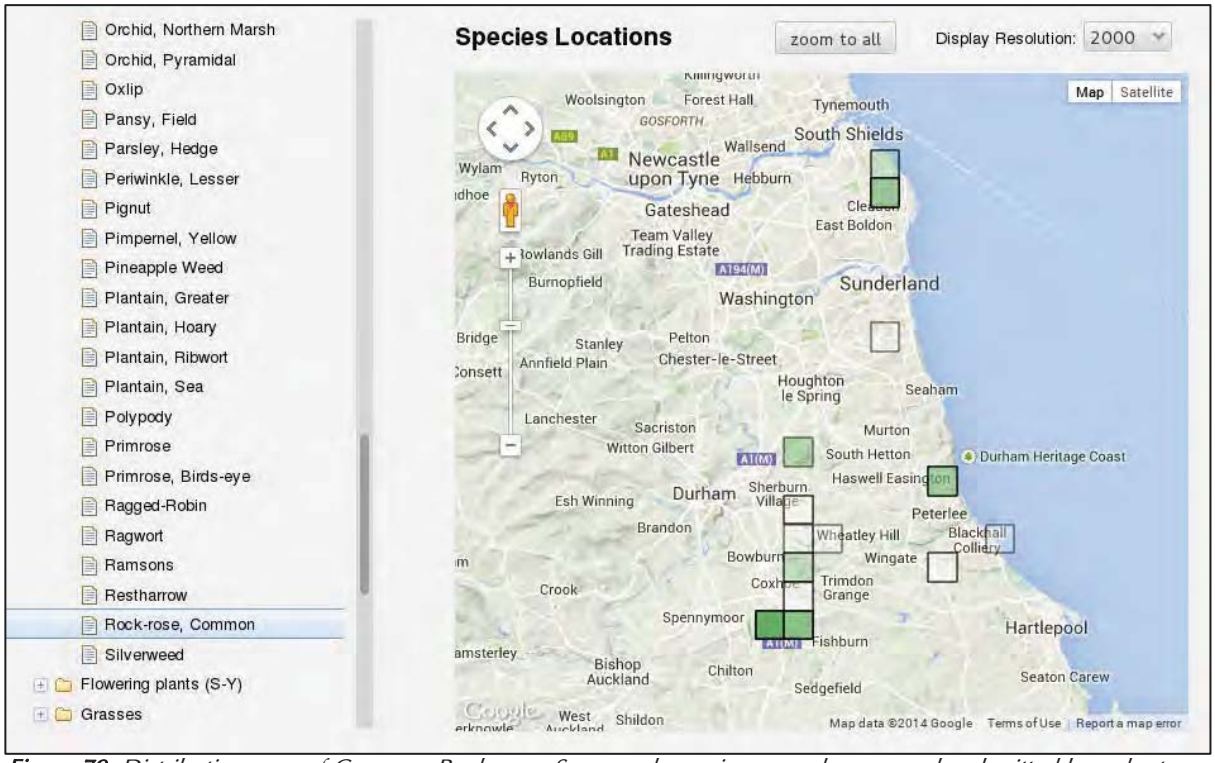

Figure 79: *Distribution map of Common Rock-rose. Squares shown in green show records submitted by volunteers, while squares shown in white are from the regional biological record centre (ERIC). The intensity of the colour shows the number of records in that particular area.*

Birds

Blackbird	Turdus merula
Blackcap	Sylvia atricapilla
Bullfinch	Pyrrhula pyrrhula
Chaffinch	Fringilla coelebs
Chiffchaff	Phylloscopus collybita
Collared Dove	Streptopelia decaocto
Coot	Fulica atra
Curlew	Numenius arquata
Dunnock	Prunella modularis
Goldfinch	Carduelis carduelis
Greater Canada Goose	Branta canadensis
Grey Heron	Ardea cinerea
Greylag Goose	Anser anser

Herring Gull	Larus argentatus
Jackdaw	Corvus monedula
Lapwing	Vanellus vanellus
Linnet	Carduelis cannabina
Magpie	Pica pica
Mallard	Anas platyrhynchos
Moorhen	Gallinula chloropus
Blue Tit	Cyanistes caeruleus
Common Whitethroat	Sylvia communis
Great Spotted Woodpecker	Dendrocopos major
Great Tit	Parus major
Grey Partridge	Perdix perdix
House Sparrow	Passer domesticus
Lesser Redpoll	Carduelis carbaret
Lesser Whitethroat	Sylvia curruca
Long-tailed Tit	Aegithalos caudatus
Mute Swan	Cygnus olor
Pochard	Aythya ferina
Robin	Erithacus rubecula
Rook	Corvus frugilegus
Sky Lark	Alauda arvensis
Song Thrush	Turdus philomelos
Sparrowhawk	Accipiter nisus
Starling	Sturnus vulgaris
Swallow	Hirundo rustica
Swift	Apus apus
Willow Warbler	Phylloscopus trochilus
Wood Pigeon	Columba palumbus
Wren	Troglodytes troglodytes
Yellowhammer	Emberiza citrinella

Invertebrates

Buff-tailed bumblebee	Bombus terrestris
Common carder bee	Bombus pascuorum
Early bumblebee	Bombus pratorum
Garden bumblebee	Bombus hortorum
Red-tailed bumblebee	Bombus lapidarius
White-tailed bumblebee	Bombus lucorum
Common Blue	Polyommatus icarus

Green-veined White	Pieris napi
Large Skipper	Ochlodes venata
Large White	Pieris brassicae
Meadow Brown	Maniola jurtina
Orange-tip	Anthocharis cardamines
Peacock	Inachis io
Ringlet	Aphantopus hyperantus
Small Skipper	Thymelicus sylvestris
Small Tortoiseshell	Aglais urticae
Small White	Pieris rapae
Speckled Wood	Pararge aegeria
Wall	Lasiommata megera

Mammals

Brown Hare	Lepus europaeus

Broad-leaved Trees

Alder	Alnus glutinosa
Ash	Fraxinus excelsior
Aspen	Populus tremula
Birch	Betula pendula
Chestnut, Horse	Aesculus hippocastanum
Elm, Wych	Ulmus glabra
Hazel	Corylus avellana
Maple, Field	Acer campestre
Oak, Pedunculate	Quercus robur
Sycamore	Acer pseudoplatanus

Ferns

Hard-fern	Blechnum spicant
Harts-tongue	Phyllitis scolopendrium
Rue, Wall	Asplenium ruta-muraria

Vascular Plants

Bedstraw, Lady's	Galium verum
Betony	Stachys officinalis
Bittersweet	Solanum dulcamara
Black Medick	Medicago lupulina
Bluebell	Hyacinthoides non-scripta

Burnet-saxifrage	Pimpinella saxifraga
Buttercup, Meadow	Ranunculus acris
Campion, Bladder	Silene vulgaris
Centaury, Common	Centaurium erythraea
Cinquefoil, Creeping	Potentilla reptans
Clover, Red	Trifolium pratense
Clover, White	Trifolium repens
Colts-foot	Tussilago farfara
Columbine	Aquilegia vulgaris
Comfrey, Common	Symphytum officinale
Cowslip	Primula veri
Cranesbill, Meadow	Geranium pratense
Crosswort	Cruciata laevipes
Cuckooflower	Cardamine pratensis
Daisy, Ox-eye	Leucanthemum vulgare
Dead-nettle, White	Lamium album
Eyebright	Euphrasia arctica
Fat-hen	Chenopodium album
Flax, Fairy	Linum catharticum
Goats-beard	Tragopogon pratensis
Gorse	Ulex europaeus
Ground Ivy	Glechoma hederacea
Harebell	Campanula rotundifolia
Hawkbit, Rough	Leontodon hispidus
Hawkweed, Mouse-ear	Pilosella officinarum
Herb Robert	Geranium robertianum
Hogweed	Heracleum sphondylium
Horehound, Black	Ballota nigra
Meadow Buttercup	Ranunculus acris
Nettle, White Dead	Lamium album
Salad Burnett	Sanguisorba minor
Garlic Mustard	Alliaria petiolata
Iris, Yellow	Iris pseudacorus
Knapweed	Centaurea nigra
Knapweed, Greater	Centaurea scabiosa
Knotgrass, Equal-leaved	Polygonum arenastrum
Knotweed, Japanese	Fallopia japonica
Meadowsweet	Filipendula ulmaria
Mignonette, Wild	Reseda lutea

Mugwort	Artemisia vulgaris
Orchid, Bee	Ophrys apifera
Orchid, Northern Marsh	Dactylorhiza purpurella
Pignut	Conopodium majus
Pineapple Weed	Matricaria discoidea
Plantain, Hoary	Plantago media
Ragged-Robin	Lychnis flos-cuculi
Ragwort	Senecio jacobaea
Ramsons	Allium ursinum
Restharrow	Ononis repens
Rock-rose, Common	Helianthemum nummularium
Scabious, Field	Knautia arvensis
Scabious, Small	Scabiosa columbaria
Sedge, Glaucous	Carex flacca
Sedge, Greater Pond	Carex riparia
Solomons-seal, Angular	Polygonatum odoratum
Speedwell, Field	Veronica persica
Speedwell, Germander	Veronica chamaedrys
Tansy	Tanacetum vulgare
Thistle, Carline	Carlina vulgaris
Thyme, Wild	Thymus polytrichus
Trefoil, Birds-foot	Lotus corniculatus
Vetch, Bush	Vicia sepium
Vetchling, Meadow	Lathyrus pratensis
Violet, Common Dog	Viola riviniana
Violet, Hairy	Viola hirta
Willowherb, Great	Epilobium hirsutum
Yarrow	Achillea millefolium
Yellow Rattle	Rhinanthus minor
Quaking-grass	Briza media

INFORMATION SOURCES AND FURTHER READING

You can find out more on the following websites:

http://www.limestonelandscapes.info/wildwatch/

http://www.eco-it.org.uk/LimestoneLandscapes/