

5. Reports from Community Involvement

- i. An informal meeting was held with landowners in September of 2001 to allow them to meet the various contractors and to learn more about the Project. Those who attended were supportive of the ecological survey, but were concerned that revelation of its findings might bring excessive numbers of visitors to the area or unwanted restrictions on land use.

- ii. Guided walks were conducted in the morning and afternoon of 8th June, which were attended by about the dozen walkers. The route was chosen to demonstrate the varied condition of both grassland and woodland habitats of the Eastern Hill Pastures and Ingersley Clough. The effects of grazing and woodland planting were studied, while becoming familiar with a range of plants in flower at the time and the varied fern communities of the woodland.

- iii. The second pair of guided walks is planned for 31st August, when the route will be selected to enable a study of the long-term impacts and opportunities presented by the quarrying industry. From public rights-of-way and the vantage points they provide, it will be possible in to consider most of the relevant issues.

- iv. The potential management projects outlined in Section 4F would all present opportunities for community involvement.

- v. A number of comments were received from members of the public and landowners during the course of the survey work:
 - Badgers were seen as both a blessing and a nuisance.
 - There were comments for and against the preservation of all trees along the quarry margins; with a feeling that the TPO made it very difficult to carry out desired management work to increase the native species component.
 - Gorse was seen as a fire risk, particularly behind the cottages below Redway Tavern.

4. Rescue and relocation of the threatened patch of Dyer's Greenweed at Bridge Quarry.

Such a project would be worth considering if discussions with Mr Tooth, the quarry owner, indicate that it is his intention to continue to work further into the uppermost levels of his quarry. Probably the best re-location site would be somewhere on Massey's Bank, in a position as similar as possible to its present location - again with the owners' permission.

5. Gorse and Hawthorn control on Massey's Bank.

A periodic 'scrub-bashing' session within these important pastures would help maintain their floral richness by preventing succession to woodland. The aim might be to clear about a third every five years, creating a 15-year rotation.

6. Restoration of the millpond at Cowlane Mill.

This would be a more costly project, probably requiring some grant assistance. The owner, Mr Massey, has expressed his interest in considering any possibilities. The task would primarily involve the excavation and disposal of accumulated silt to re-create the pond area and repair work to the sluice/spillway. It would be easier to assess the scale of the works during the winter months, when the tall vegetation has died-back.

7. Cutting-back of Hawthorn and Bramble in a pasture at the bottom of Ingersley Vale.

This small, neglected pasture is easily accessible from Bollington and would make an ideal project in which to involve local residents. As with several of the other projects mentioned above, the first task would be to cut back the encroaching shrubs of Rose and Bramble in order to open up the grassland again. Subsequently, it would be desirable to reinstate occasional grazing, if a local goat or pony owner could be encouraged to take up the grazing rights. NB. Ownership has not yet been established (nor support for the proposed management).

C. Management Potential

The locations of the potential projects described below are shown on **Map 4**.

1. Gorse Management on the fields held by ‘The Bull’ Public House.

Residents in the row of cottages on Redway between ‘The Bull’ and ‘Redway Tavern’ are becoming increasingly concerned about the fire risk posed by Gorse, which has now encroached very close to their properties. Gorse is a valuable shrub for wildlife, providing dense, protective cover for nesting birds. However, to maintain its vigour, regular cutting or grazing is needed. The low grazing pressure on these fields is presumed to be the reason for the expansion of the Gorse patch in recent years. Provided that the landowner’s permission can be gained, the area of greatest concern adjacent to the cottages could be cut back. In subsequent years, other parts of the patch could be cut in the same way. Cutting a quarter every two years, aided by the existing grazing, would bring the clump under an eight-year rotation, maintain the Gorse in a range of different ages and reduce the fire risk considerably.

2. Scrub and tree management on the Old Quarries.

A potentially valuable management activity, but which would first required the permission of the owners at Redway Tavern and a risk assessment, because the slopes are very steep. Accessible parts should be cleared of invading Bramble, Gorse and Hawthorn to maintain the Heather/Bilberry-dominated heath.

3. Sycamore control within the older quarry woodland.

From a wildlife benefit point of view, it would be useful to assist the establishment of Oak and Elm in particular within these Sycamore-dominated, stony woods. The blanket TPO, affecting all trees around the quarries, would have to be discussed with the Borough Council before clearings could be made within the canopy to establish other saplings in the open areas. This is a project that could run over many years to lessen any visual impact.

ix. Water courses and mill-ponds

The process of siltation and succession of marshland to wet woodland could be expected to continue and for the River Dean to find its own natural course, re-assuming its erosive role in cutting Ingersley Vale. If sediment loads (often resulting from inappropriate ploughing of land upstream) are maintained, the rocky qualities of the watercourse may become smothered. Pollution and nutrient loadings to the catchment have already increased greatly with the enlargement of Rainow Village and intensification of farming, leading to deterioration in the water quality. Resolution of these problems, which arise from so many sources, would appear to be virtually impossible as development expands and reliance on washing machines, dish washers and detergents continues to increase, even though agricultural pollution is probably decreasing.

The wooded areas of Ingersley Vale are perhaps the least likely to change of all the habitats within the study area. With their antiquity comes maturity in the succession process. There is nothing else into which they could develop even if left to their own fate: non-intervention would permit trees to mature, die and fall, only to be replaced by others from the shrub layer or lower canopy. An increase in the presence of Sycamore is likely in some sections.

vi. Hill pastures

Change across these fields is not to be expected, if grazing regimes are maintained. The major agents of change (apart from altered grazing) would be the application of fertiliser, lime or herbicides. Presently, the primary replenishment of nutrients comes from the sheep droppings. A continued leaching of those nutrients from the top to bottom will turn upper slopes more acidic/nutrient-poor, while lower slopes would become more fertile.

vii. Massey's Bank

The current, minimal grazing regime does not appear to be keeping pace with the invasion of Gorse and Hawthorn. Although flowering quality is high in the grassland, those shrubs could be expected to increase their shade cover (and nutrient input through nitrogen fixation and leaf-fall), eventually to the detriment of the grassland community. An increase in the cover of Ash and Oak could also be expected in the long term.

viii. Footpaths

Recreational use of the Hill and Vale and the footpaths that criss-cross them, can only be expected to increase. With this comes erosion, compaction and a widening of paths, damaging sensitive vegetation. The natural process of erosion by rain, especially after the action of freeze-and-thaw will compound the physical problems created by human (and sheep) feet.

B. Implications for the Future

The processes described above are likely to result in the following generalised changes and steady states over the years to come.

i. Quarry woodlands

Little change could be expected in these Sycamore-dominated woodlands in the short or medium term. After perhaps 50 - 100 years, Oak may gain more of a presence and a 'soil' will begin to develop. Invertebrate populations should increase in size and species diversity - as might be expected of the ground flora.

ii. Relic unimproved grassland fragments

Changes may depend on location. Above Ralph Henshall Quarry, the Bracken cover may impede further tree colonisation, as its smothering litter builds. Existing trees will continue to mature, but will have little effect on the shade-tolerant Bracken. Above Sycamore, Bridge and Endon Quarries, Gorse will spread slowly, but the dense, grassy sward may take decades to succeed to scrub and woodland. The heathland above Marksend has a moderate self-regenerating quality, although tree seedlings will eventually become established in the open areas, where over-mature Heather has died-back. Lower down the slopes, the succession to Gorse and Hawthorn is already moderately well advanced. Although the non-intervention may have benefits for wildlife, some management to slow the natural succession would maintain traditional habitats, rather than permitting a change to something more 'ordinary'.

iii. Quarry working areas

The cycle of disturbance and colonisation of abandoned areas will continue to maintain a mosaic of habitats at different stages of the succession.

iv. Old Quarries

Succession to woodland is already well advanced across the steeper slopes and it could be expected that Bramble, Birch, Hawthorn, Oak and Gorse will not take long to shade out the heathland component. As with the grassland fragments discussed above, 'to manage or not to manage' is a difficult question. Again, arresting succession would maintain a more diverse habitat in flora and fauna terms.

v. Ancient Woodland

influence on wildlife. The farmers have successfully maintained large areas of grassland in a semi-natural state, but through steady sheep grazing pressure, have encouraged the sward to become more grassy/herb-poor. Quarry operators have retained some of the best areas of semi-natural vegetation, but are gradually removing it, to leave in its place a different, yet nevertheless extremely diverse, transient flora. While many of the walkers using the Hill respect the private land they are crossing, others are irresponsible, wander at will, leave walls broken-down and don't do enough to prevent their dogs from disturbing stock and wildlife.

iii. Cessation of Grazing

If the constant management provided by grazing animals is removed, change is rapid. Initially, all the plants grow taller, with the herbs recovering their presence in the sward. More successful flowering and seeding at least restores the seed banks held in the litter/top soil layers. However, if grazing is not restored, succession marches on as shrubs begin to increase their cover: Hawthorn, Ash and Gorse are the most obvious early colonisers on the hill pastures of Kerridge. If grazing is restored at this stage, many of the trees are tall enough to avoid being browsed and continue to grow (as can be seen around Kerridge End and other upper slopes of the Ridge. On the west-facing flanks, Bracken, Gorse and Heather are the beneficiaries of the relaxed grazing - as can be seen above the quarries.

iv. Tree Planting

Young trees have been planted on two distinct areas of Kerridge Ridge. The regraded quarry spoil banks of Marksend Quarry have been planted with a variety of native species, including much Cherry. The other area comprises the two former pasture compartments below 'Massey's Bank'. Here too, a native mix has been planted and in both situations these areas will connect with existing woodland. Fortunately, neither planting was into an area of recognised wildlife importance (quarry spoil and species-poor pasture respectively), so the effect can only be of benefit to local wildlife.

v. Haymaking Dates

In the same way that grassland will respond to changes in grazing pressure, cutting has its own particular effects on the sward. Grazing is a random 'cutting' process that shifts around the grassland, allowing certain areas or unpalatable species to flower. A different pattern is produced when everything is cut - and all at the same time. Those species maturing to seed prior to cutting will be repeatedly favoured if the cutting date is not varied. A late-cut tends to favour Common Knapweed and Cock's-foot; earlier cuts allow Common Sorrel and softer grasses to predominate. Whether the 'aftermath' is grazed or not will also have a further effect on the species composition. It is difficult to prescribe the best cutting date to favour wildlife. Clearly a change to multiple silage cropping disadvantages wildlife: few herbs are able to flower and ground-nesting birds cannot complete their season. The most species-rich sward appears to be produced by an alternation between grazing and hay cutting, as the weather often dictates, and by allowing a certain variation in the cutting date.

In the final reckoning, all human parties come out with a mixed record with respect to their

4. Discussion

Nature, and the landscape beneath it have been much modified by man's activities. Man attempts to make changes, but nature always fights back!

A. Dynamic Processes and Man's Influence

i. Quarry Succession

Natural succession is nowhere better demonstrated than within the quarries. Where faces are worked and water is in short supply, the invasion of plants to abandoned areas is slow.

Amongst the rock there is virtually no soil, so it is often trees and brambles that grow first.

Seed may be spread by the wind (Birch and Sycamore), or by birds (Oak, Bramble and

Elderberry). This process reaches its most mature state in the roadside woodlands, where

Oak may fail gain the final dominance from Sycamore. Track ways and mounds of the finer

shale waste present a very different substrate. Such areas become very species-rich,

colonised by a wide range of opportunists, notably Self-heal, Wood-sage, Trefoils and

Vetches. If left undisturbed, Birch is the tree that colonises quickly in the succession towards

woodland. The succession process that is taking place on quarry-top grassland is covered in

Section iii below.

ii. Grazing (by sheep)

Sheep have been used for centuries as very efficient, food producing lawn mowers! Their effect when stocked fairly heavily on pastureland is to eat-out the herb content, allowing a

proportional increase in the grasses. Continued close cropping continues to favour the

grasses (which grow from their bases) rather than the herbs (which grow from their tips),

leaving only rosette-forming species (Daisy, Ragwort and other Composites especially).

Sheep have been responsible for most of the damage to the hedgerows across the

agriculturally improved fields to the east. Nevertheless, grazing is very important - see iii.

F. Notes on Historical Ordnance Survey Maps

The Ordnance Survey First Edition maps of 1871 compared to the subsequent edition of 1899 and the present day landscape reveal several changes that have occurred gradually over the last 150 years.

Heathland appears to have been lost from the Miller's Meadow area of new Rainow village and from the area now occupied by Sycamore, Bridge (-end) and Endon Quarries; at Marksend (Park's-end) Quarry the attrition appears to have been less extensive.

It is noted that the quarry known presently as 'Ralph Henshall Quarry' has possessed several different names in the past - 'Cook's Quarry' and 'Gag Quarry' at least.

Possibly labelled in error originally, it is also noted that the lanes named 'Cow Lane' change between the two editions.

xvi. Other Areas

- The parkland around Savio House is a unique habitat within the study area, but with grassland of generally low diversity. More significant are the clough sides, which offer a sizeable sanctuary for badgers.

- The botanical diversity of worked-out areas within the quarries cannot be overlooked in any review of the wildlife of this locality. In most cases, these habitats are only transitory, being destroyed and recreated elsewhere. The repeated reference to the quarries within the text of this report is testimony to their biodiversity. Not only are they very diverse botanically, but they also offer sheltered, flowery areas for butterflies to feed, small pools for dragonflies and amphibians (rare), as well as the extensive cover of the rocks for badgers and foxes. Several pairs of Kestrels breed on the rock faces, while the dense, undisturbed areas of Gorse, Bramble and young trees provide cover for many smaller birds.

xi. Clough Pool Marshes

Only a small part of the pool remains near the spillway; the remainder has become heavily silted and now has mature Crack Willows over marshy grassland and water channels, creating a secluded wetland area for wildlife - a rare feature in the study area as a whole.

xii. Ingersley Vale Grassland

Where the steep slopes of the Vale are not wooded, rough pasture has been maintained. Below Savio House, a relaxation in the former sheep grazing pressure is allowing the herb component to increase and there are several very species-rich areas. By contrast, above the Dye Works, a small pasture has been neglected for several years and its flower-rich banks, with Betony and Scabious, are being overrun by Bramble, Hawthorn and Rose.

xiii. Ingersley Clough Woods

Fragments of woodland survive on the steepest slopes of the clough where grazing has not been practicable. Indicators of their antiquity are scattered throughout: Bluebell, Broad Buckler-Fern and others. However, their proximity to places of residence and industry has meant that most have been subjected to some landscape planting of Beech, Lime and conifers. This corridor of woodland is an important feature for birds and badgers.

xiv. Lima Clough

It was not possible to survey this area in detail (ownership not confirmed). From the adjacent roads and paths, the area appears to comprise flushed, unimproved grassland with scattered scrub. This type of grassland is not found elsewhere in the study area and appears worthy of further evaluation.

xv. Oakenbank Lane Heath and Lichen Walls

Walls of Kerridge Sandstone divide the majority of the study area, but it is the wall on the northeast side of Oakenbank Lane in particular, where the stone-growing lichens are at their most spectacular. The growth is profuse and although no rare species were found, this is an easy area for walkers to study the different growth forms. Towards the Bollington end, a stone gateway towards Savio House is coated with a particularly noticeable orange flash of *Xanthoria* lichen. The lane is also notable for its Bilberry-coated bank along several sections; another valuable corridor for butterflies and birds.

vi. Quarry-top Grassland

A narrow strip of unmanaged and unimproved, acidic grassland survives across the top of Bridge and Endon Quarries. The 'field' contains patches of Heather and Bilberry, and above Bridge Quarry, a single clump of the rare Dyer's Greenweed.

vii. Marksend Heathland

The undisturbed field remnants above the northern end of Marksend Quarry comprise the largest area of heathland surviving on Kerridge Hill. It was noted that the process of vegetation stripping carried out prior to extending a working face, encourages the regeneration of several rarer plants of heathland, such as Milkwort and Violet, and increases the botanical diversity generally.

viii. Massey's Bank

This compartment of the Eastern Hill Pastures differs markedly from the others. The grazing pressure, over recent years at least, has been considerably lighter, allowing a taller sward to develop. Although acid-loving grasses still dominate the community, the herb content is visibly much higher, with many areas of Heather and Bilberry and particularly fine displays of Pignut in the early summer, Betony in mid-summer and finally Devil's-bit Scabious in autumn. On the other hand, both Gorse and Hawthorn are slowly expanding their cover and supplementary cutting-back would help maintain the floral diversity.

ix. Kerridge End Quarries and Pastures

The southern end of the ridge also has unimproved pasture, with greater amounts of Harebell than seen elsewhere. The old quarry has become heavily wooded across most of its disturbed area, but where the sun penetrates, the old rock faces are topped with Heather and other flowers, which grazing animals cannot reach.

x. Cowlane Silk Mill Pond

Like so many of the other millponds in the valley, this one has become heavily silted; water also escapes through a breach in the dam wall. The damp bed of the pool now supports tall grasses and nettles, with one small area of marsh with Yellow Iris. A notable feature in this area is the collection of old Crack Willows, which colonised the pool many years ago and today are festooned by lichens and fungi, including the uncommon Hoof Fungus.

E. Area Descriptions

The location and extent of the areas of high nature conservation interest described below are shown on **Map 4**.

i. North End Hedge

A diverse, old hedgerow with several mature trees, which flanks one of the primary footpath routes up to White Nancy. The majority of the hedgerows within the study area have become degraded by years of sheep grazing pressure.

ii. Redway Old Quarries

Heathland survives as the main vegetation community across the steep, upper slopes of the old quarry. Flowering of the Heather and Bilberry is profuse because the area is fenced to prevent grazing. However, the total absence of management is permitting the development of Hawthorn, Gorse and particularly Bramble, which are extending to smother the heathland.

iii. North End Heath

The triangular field below White Nancy has a more diverse and heathy flora than most of the Eastern Hill Pastures. Grazing pressure is slightly less intense than elsewhere, but is sufficient to control the expansion of scrub Hawthorn and Gorse.

iv. Bridge Quarry Swirl-Hole Exposure

This is probably not a unique exposure, but this geological feature was particularly easy to view in this quarry. The process involved in development of these features is described in paragraph D iii.

v. Eastern Fungi Pastures

Botanical diversity has been reduced across this expanse of fields by years of sheep grazing. However, the short sward produced maintains an extremely diverse fungal flora, including many varieties of Wax-cap, their different colours visible to walkers in autumn. A full species list, provided by Mrs Rachel Hunter, is included in Appendix 2.

D. Geological Features

The sloping beds of Kerridge Sandstone are exposed on both sides of the Hill and are reported to slope at a shallow angle from west to east. Quarrying has concentrated on winning the stone from the steeper, west-facing, scarp side because more strata are accessible beneath shallower layers of overburden. The following features can be studied at various locations around the Hill, in worked and natural settings.

i. Cross-bedding - resulting from shifting river currents and patterns of sediment deposition, in much the same way as sand dunes form and re-form under the influence of the wind. The differently sloping sections of each sandstone layer indicate the direction of flow, in that the flow deposits downstream, in the slack water beyond any obstruction.

ii. Fossils - are reportedly encountered frequently in certain strata, and may be selected as centrepiece stones. One stone, with the flattened fossilised form of a tree-fern trunk was seen. Such finds indicate climatic periods when tropical vegetation was able to establish, at least on temporary islands, only to be washed away and preserved beneath layers of subsequent sediment.

iii. 'Swirl Basins' - were found best exposed in the working faces of Bridge Quarry. They indicate fluctuating conditions of fast flow and calm water at the time the sediments were being deposited. Whirlpools and eddies scooped out deep holes in the riverbed, rather like an ice-cream scoop. When torrent flows receded, fresh sediments quickly filled the cavities. After hardening over time, like the rocks around them, the 'stone globes' separate from the swirl hollow beneath them when the rock face is eventually worked. A series of these spheres are on display beside the access track into the quarry.

iv. Ripple Marks - are evident in many of the flat stones used for building walls and as steps along footpaths. The flat face of the stone has an appearance akin to the ripples in the sand along the low-tide line, giving further evidence of the water-borne origin of this mineral material.

C. Animal Life

i. Badger

Widespread and numerous across the entire study area, taking advantage of the extensive areas of undisturbed cover available within the stone piles of the quarries and steep, scrubby banks of Ingersley Vale. Although very few actual setts were found, there was much evidence of well-trodden trails, scuffle marks and latrine areas to be seen throughout the site.

ii. Fox

Possibly less numerous than the badgers, but reported widely across the site. Again, the cover of stone piles in the quarries proves particularly attractive.

iii. Bats

Only a few individuals were seen hunting in the evening, although it is possible that roosts may be found in the old chimneys of Ingersley Vale or any of the undisturbed buildings across the site. The wetlands and more heavily wooded areas along the Vale, as well as the neglected grassland areas are likely to be good feeding areas for bats.

iv. Amphibians

The porous nature of most of the soils across the site means that virtually no field ponds exist. The only amphibians seen were frog tadpoles in a deep, old wheel-rut in Marksend Quarry. A new pond has been created beside the access road to North End Farm, below White Nancy, which appears to have good potential as an amphibian breeding site.

v. Butterflies

Found in greatest numbers in parts of the quarries, where there is shelter from the wind and extensive floral nectar sources. Species lists are given in Appendix 2.

vi. Dragon and Damselflies

These insects prefer still, open water bodies, which are in short supply across the study area. A few individuals are reported from specific areas in the quarries. Otherwise, the remnants of the millponds in the valley bottom are likely to be the most attractive areas.

The rarest species found during the survey and more usually found on slightly calcareous soils. It is therefore somewhat out of place above Bridge Quarry, where it is unfortunately situated immediately adjacent to an actively worked quarry face.

Field Scabious *Knautia arvensis**

Also found only at one location (Marksend Quarry)

Harebell *Campanula rotundifolia*

Another species which flowers late in the year. It appears to be more abundant towards the southern end of the ridge.

Heather *Calluna vulgaris*

The range and abundance of this plant is continuing to be reduced. A small amount is being lost as quarrying moves into undisturbed areas, but more significantly as a result of either too much or too little grazing. Like Bilberry, it is suppressed by heavy grazing (throughout the Eastern Hill Pastures) and where grazing is removed (allowing Bramble, Gorse and Hawthorn to invade), it gradually becomes shaded-out, as is happening in the Old Quarries.

Heath Milkwort *Polygala serpyllifolia**

This small plant was only found on an area where the surface vegetation (Heather) had been stripped in preparation for quarry extension. Although much of the ground is bare, an interesting pioneer community of mosses, Heather, Gorse, Heath Speedwell and Common Dog Violet, together with the Milkwort, has developed.

Mountain Pansy *Viola lutea**

Not re-found during this survey, but likely to still occur across the tops of the Eastern Hill Pastures. Its flowering season is short and early, and is therefore easily missed.

Quaking Grass *Briza media*

Perhaps the rarest grass discovered during the survey. It is a strong indicator of undisturbed grassland and was only found in small amounts on the pasture banks below Savio House and in Massey's Bank.

B. Uncommon and Notable Plant Species

The locations of the less common plant species described below and marked ‘*’ are shown on **Map 3**.

Kerridge Hill in particular has long been known as a place to find some of the county’s less common plants; this survey discovered several additional species of note.

Adder’s Tongue Fern *Ophioglossum vulgatum**

Not re-found during this survey, but likely to still occur within the short-cropped Eastern Hill Pastures. This is a small plant, very easily overlooked and may well be more widespread than the two reported sightings.

Betony *Stachys officinalis*

This plant is a reliable indicator of old, undisturbed grassland. Although it will survive grazing, it flowers much more profusely under a light grazing regime. On Massey’s Bank there are extensive patches, which attract large numbers of butterflies.

Bilberry *Vaccinium myrtillus*

Less commonly seen than Heather, and more-or-less restricted to be ridgeline and quarry tops. Under moderate to heavy grazing pressure it is suppressed by the growth of grasses.

Bitter Vetch *Lathyrus montanus*

Like many of the other plants of acidic grassland, Bitter Vetch does not respond well to heavy grazing. It was never found in large amounts, but was at its best on Massey’s Bank.

Common Spotted-Orchid *Dactylorhiza fuchsii**

Found only in one location in the quarries, where rabbit grazing is reported to eat most of the flowering spikes. It may also occur in the flushed pastures in the northeast of the study area.

Devil’s-bit Scabious *Succisa pratensis*

Its distribution and abundance very much mirrors that of Betony, but its true cover is difficult to estimate until it flowers fully in late August.

Dyer’s Greenweed *Genista tinctoria**

iv. Oakenbank Pastures and Meadows

Agriculturally improved hay meadows and sheep pasture typify this wide expanse of enclosed fields in the easternmost zone of the study area. Botanical diversity is low in the grass-dominated sward, especially where re-seeding has taken place recently and fertiliser is added regularly. Elsewhere, improvement has been limited to only a partial re-seeding during the war years (early 40s) and hay is still taken, although this too tends to be low in herb content.

Field boundaries are perhaps the most notable feature, with several remnants of old hedgerows and lengths of sandstone walling clothed in lichens.

Because of the similarities in land use and low botanical diversity, this zone has been extended around the head of the catchment at Brookhouse Farm to include the lower slopes of the east-facing pastures.

The parkland around Savio House is contained within this zone.

v. North Pastures

This is a discrete zone of pastureland on the gentler slopes between Kerridge Hill and the town of Bollington. The grassland is generally species-poor, although lower slopes to the northeast are flushed and much richer botanically. Hedgerows and their trees are prominent features.

ii. Eastern Hill Pastures

Although the sandstone strata only lie beneath shallow soils on the eastern flank, quarried areas are much more localised (and abandoned many years ago); one large area is at Kerridge End and a smaller quarry lies midway along the ridge.

This tract of grazed land grades from shallow, leached soils with small sandstone outcrops above, to deeper, more neutral and fertile soils at their foot. Evidence of Heather and Bilberry is much less easily found in the tightly grazed grassy turf, although these species, together with Gorse, are showing some recovery where grazing pressure has been relaxed, such as north of White Nancy and above Cowlane Mill. Heath Bedstraw, Tormentil, Betony and Devil's-bit Scabious also flower more profusely where grazing is lighter. The extent and botanical diversity of this series of unimproved fields are of high nature conservation importance, although the fields are perhaps most noted for the extremely diverse fungal flora they support.

iii. Ingersley Vale

This zone comprises both woodland and pasture on the steeper slopes of the valley bottom, where agricultural profitability has remained marginal. Much of the woodland, particularly Clough Wood, appears to be ancient, with much bluebell in the ground flora. However, almost all parts have received supplementary planting of Beech and conifers, at the expense of the more natural Oak in their canopies.

Areas of species-rich, unimproved pasture also remain on the less-accessible slopes, but these are generally more neutral than the Eastern Hill Pastures and are locally flushed by spring water. Common Knapweed and Crested Dog's-tail grass are more typical components, although the more acid loving species mentioned in 'ii' above are also represented.

3. Study Findings

The broad zonation discussed below is shown on **Map 1**. A detailed distribution of the habitats encountered is shown graphically on **Map 2**.

The photographic record (forming **Appendix 1**) is provided as a pictorial reference for points raised and species mentioned in the text of the report. (The locations of many of the photographs are shown on **Map 5**.)

Botanical species lists have been separated into **Appendix 2**.

A. Geology, Soils and Characteristic Vegetation Communities

i. Western Quarries

The underlying sandstone geology of Kerridge Ridge is well exposed for all to see along the western flanks, where stone is cut from the face across a wide band. Indeed, by selecting localities in each of the quarries, the whole sedimentary sequence can be viewed. Note that beds of sandstone are also well exposed in Ingersley Vale, near the Dye Works.

The thin soils over acid bedrock would normally support a typical community of heather and bilberry, which develops where a long history of grazing ceases as a result of land use change, such as along the undisturbed field remnants above each quarry. Elsewhere, the abandonment of grazing has led to dominance by Bracken, as above Ralph Henshall Quarry.

Within the quarries themselves the worked areas of stone support virtually no vegetation, in stark contrast to the long-abandoned areas of coarse stone waste, where secondary woodland, dominated by Sycamore and Ash has now matured over a ground floor of limited diversity. On small, recently abandoned areas, where finer waste materials have been levelled and consolidated, a high floral diversity has developed. These areas now support the highest biodiversity to be found within the study area as the whole. Heather and bilberry now occur only rarely in the quarries.

The whole topic of vegetation succession and man's influence on it is explored further in Section 4a.

2. Scope and Methodology

The extent of the study area had been prescribed some years ago at the inception of project - the boundary is shown on **Map 1**. In broad terms, this includes the high ground of Kerridge Ridge, the clough of Ingersley Vale and the more accessible, gentler slopes of the agricultural fields to the east.

Within this area, as many aspects of its wildlife as the knowledge of the surveyor permitted were to be investigated. Although this would be primarily based on the botany of the area, it would also cover mammal and bird life and the more obvious insects. In natural hill areas such as this, the lower plants (fungi, mosses and lichens) are a particularly important component. The fungi of the area have already been studied in some depth and their growth season did not coincide with the study period. The mosses and lichens however, are less well recorded and can be studied at any time of the year.

The Study Area was walked and recorded on virtually a compartment-by-compartment basis, making botanical lists where useful to highlight the interest of an area or to demonstrate the characteristic communities of the locality. Some attention was also paid to features of geological interest, particularly in the quarries, where they are especially well exposed. Indeed, a significant proportion of the field survey time was spent in the extensive quarried areas of the west-facing slopes, making the best use of the opportunity to study these areas, which are closed the public, not least for Health and Safety reasons.

The following desk studies were completed prior to field survey:

- a study of existing knowledge of the area (information largely related to the existing SBI held by Cheshire Wildlife Trust);
- preparation and updating of the OS base map for use in field recording, by highlighting rights-of-way and stream lines;
- a study of historic maps and air photos to identify features of potential interest;
- confirming land ownership and obtaining access permission;
- attending a 'scoping' meeting and liaison meetings with the other consultants and landowners in the area.

Not only did the commission involve the recording of factual and descriptive ecological information about the area, but it was also hoped that an active interest about their local wildlife could be engendered amongst the local community, especially the landowners. Informal training in the proper recognition and recording of features of nature conservation importance would be available for the seriously interested and the survey work itself would be carried out in the closest possible liaison with land owners and managers.

All these factors have influence the approach to survey work, in that the information was gathered primarily for the benefit of landowners and users of the Hill, rather than for Groundwork, wildlife enthusiasts or the wider Cheshire public.

KERRIDGE RIDGE & INGERSLEY VALE

Countryside and Heritage Project

Ecological Appraisal

1. Background

This ecological appraisal is part of a wider study, commissioned in 2001, but delayed by Foot and Mouth Disease. The ‘Landscape Character’ and ‘Historical Research’ aspects of the study are presented in separate reports. It is envisaged that the three commissioned studies will be used as source documents for the preparation of overall Management Plan, to be prepared by Groundwork in consultation with the local community as the next stage of the project.

Hence, the basic output required of this study was a reasoned catalogue of those natural features worthy of conservation and a similar list of opportunities for project work to maintain and enhanced that value. In some cases this might involve remedial work to reverse deterioration or even ‘rescue’ proposals, where irreplaceable features are threatened by other legitimate uses of the area, of which there are many.

Most of the east-facing slope of Kerridge Hill is already recognised as a Site Of Biological Importance (SBI) for the natural quality of its grassland. However, this project was not seen as in opportunity to revise the SBI boundary, but much more a stocktaking of the wildlife interest across a wider, less well-researched area.

From the outset, it was acknowledged that people making their living from the land, through agriculture or industry, particularly the winning of minerals, privately own the majority of the study area. The area also contains a number of residential properties and their gardens (largely excluded from the study), but probably more significantly, the intensive recreational use of parts of the site has the potential to affect the local ecology.