Butterflies in the Harrogate District

By M. Barnham and G. T. Foggitt

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Foreword

In the scheme of living things, the Class Insecta conjures up certain undertones of threat to human beings — insects are superabundant and all-pervasive, many equipped with distinctly daunting weapon-systems. But among the insects, the butterflies as a group have a rather different aura — they are among the most beautiful objects in the natural world and an adornment to our countryside and gardens. They have an air of fragility and impermanence which, if anything, enhances their aesthetic appeal.

Margaret Fountaine, that intrepid Victorian traveller and collector, caused to be deposited in the Castle Museum at Norwich, her collection of some 22,000 mounted specimens of butterflies. Nowadays, when we are more concerned with the place of the living organisms in the ecosystem, we tend to be impressed by numbers of rather a different kind. One measure of the achievement in this book is the 28,154 butterfly sightings personally recorded by one of the authors. Here indeed is a masterly account of the present status of butterflies in our locality in Yorkshire — a bold and firm baseline has been drawn for future studies. Michael Barnham and Graham Foggitt have upheld the long established tradition of the amateur naturalist in this country; so much of the data essential to the formulation of effective conservation policies is produced by busy people in their so-called spare time. But we have also in this lucidly written book a helpful and practical guide to our local butterflies which will doubtless encourage many people out into the field to extend their knowledge and enjoyment of the natural world in the countryside around Harrogate.

Dr. A. M. G. Kinnear
President
Harrogate and District Naturalists' Society
1987

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Introduction

General

The butterflies of England have long been the subject of professional and amateur study. Recent contributions have included a national mapping scheme using the Ordnance Survey 10 kilometre squares (Institute of Terrestrial Ecology)[1] and a number of more detailed local distribution studies, usually under the auspices of Natural History Societies.

This booklet records the results of an investigation by members of the Harrogate and District Naturalists' Society into the status of butterflies in the district during the decade 1976-1985.

Design of the study

Information from the period 1976-80 was taken retrospectively from the detailed notes of the Society to include, in particular, the unusual migrations of 1976 and 1980; the second half of the period was devoted to a more systematic search of the district. A small number of experienced amateurs gathered data onto individual maps which were later compiled, and clear and reliable records in the annual returns of others in the Society were also accepted.

Presentation of results

The results of our study are presented here in several ways, including distribution maps and monographs for each species, a composite graph to show the flight periods of the butterflies and a tally from butterfly counts to show their relative abundance.

The maps use the one kilometre squares of the Ordnance Survey grid and black dots show where the butterflies were sighted. The area of the district is approximately 940 square kilometres and the outline falls upon 1024 O.S. squares. There were some problems of access, particularly on the moorland, but we were able to examine almost all the squares on at least one occasion. The density of sightings around Harrogate and Knaresborough appears high in comparison with other parts as this was close to home and easy for the observers. It is important to note that the maps record definite sightings — the gaps do not necessarily imply absence of the butterfly.

The monographs give a description of the butterflies as we have noticed them in our district, with comments on their seasons, distribution and fluctuations. We have largely concentrated on the adult stages with a note on their habits, as they are usually given little space in the textbooks. The reader is referred to general and popular books on butterflies for detailed illustration and scientific data[1,2,3]. Nomenclature is as in J. D. Bradley and D. S. Fletcher: 'An Indexed List of British Butterflies and Moths', Kedleston Press, 1986.

The flight period graph gives the general time of appearance of all the species in the district. This may be

used to see what butterflies may be about when planning an expedition but it should be remembered that the season may vary by up to a few weeks according to the weather.

Information from the butterfly counts is used to show the relative abundance of the different species and the relative strength of different broods in the year. Numerical abundance is compared with the number of dots on the species map — the geographical abundance.

Broad observations

The choice of the study period proved to be a happy one: conditions were generally good and favoured high seasonal numbers of butterflies, there were some unusually good years for migrants, several species reappeared that had not been seen in the district for many years and others appeared that had not been recorded here before. We were able to locate 28 species, about half the national total.

Four butterflies seen in the district in the past were not found in the study. The Comma was sighted on two occasions in the late 1940's; this butterfly is given to periods of expansion and contraction in range and may well be seen here again one day. A few specimens of the rare migrant Pale Clouded Yellow were said to be present in the district in 1947[4].

The Grayling was recorded by Porritt as common around Great Alms Cliff during the last century[5] but it has not been seen there since. The Small Blue was recorded near Wetherby in 1901 but subsequent searches for it have been unsuccessful; its foodplant is most abundant on the Spofforth railway line. The Speckled Wood has never been seen in the district but is currently in a period of expansion and has been noted a few miles to the south of us, at Bramham.

Many butterflies have a shorter season here than in the south of England, reflecting the differences in climate. Variation in weather conditions also has a considerable impact on the abundance and timing of our butterflies. The long hot spell in the summer of 1976 allowed a very good showing of many butterflies but the early stages of the next generation were badly affected by it; 1977 was a poor year on account of this, compounded by the prevailing bad weather. In general the climate of the late 1970's and early 80's was very favourable but there was considerable variation year to year.

In the persistently bad weather of 1985 butterfly counts were high on the brighter days, presumably because they were the products of the kind summer of 1984, but second brood insects, reared during the season, made a poor showing. The time of appearance of butterflies was also very delayed that year and there were unusual sightings, such as the persistence of Meadow Browns, Small

Skippers and first-brood Common Blues into September, and Walls and second-brood Small Coppers into October. There was an unusual major appearance of Painted Ladies in mid-October that year.

Severe winter conditions do not seem to have much affect on our commoner butterflies. Hibernating species such as Small Tortoiseshells and Peacocks came through the very cold winter of 1981/2 well, presumably less affected than their predators by the bitter weather. Snow may help to hide the insects in all their stages.

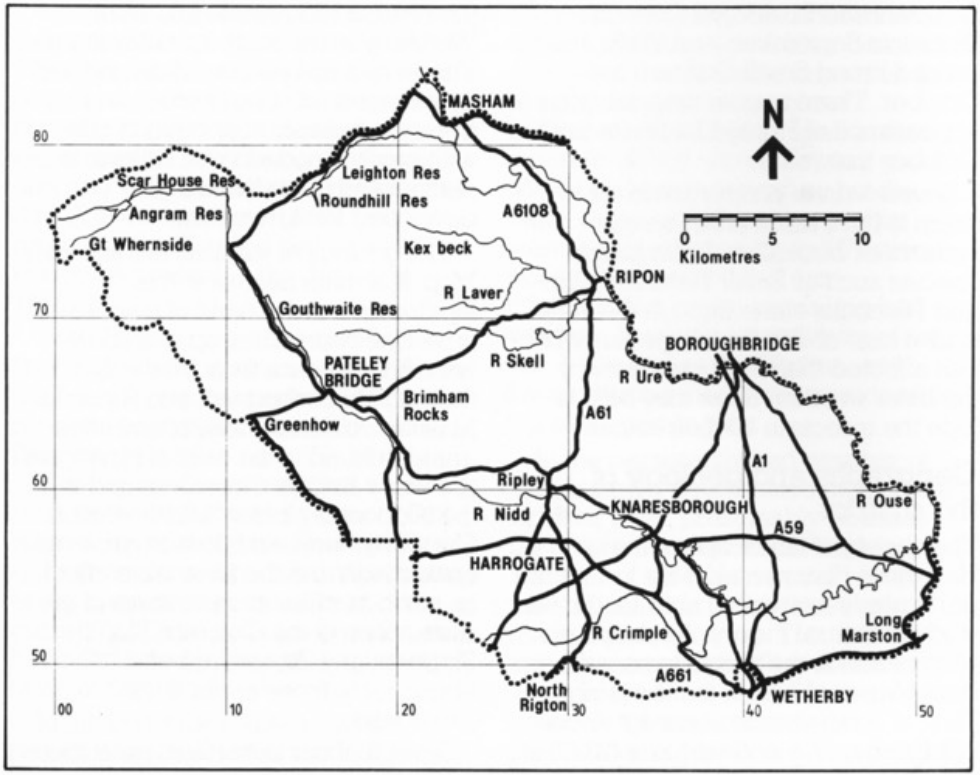
Geography and geology of the district

The variety of landscape in the Harrogate district makes it a particularly interesting area for the study of natural history. As shown in Maps 1 and 2, the territory extends from Marston Moor in the low-lying Plain of York (altitude about 40′ above sea level) to Great Whernside (2310′) at the head of Nidderdale and from Wetherby in the south up to Masham. The terrain ranges from dales topped by expanses of open heather and grassy moorland, hilly countryside with partly wooded river valleys, to plains which have been highly developed for agriculture.

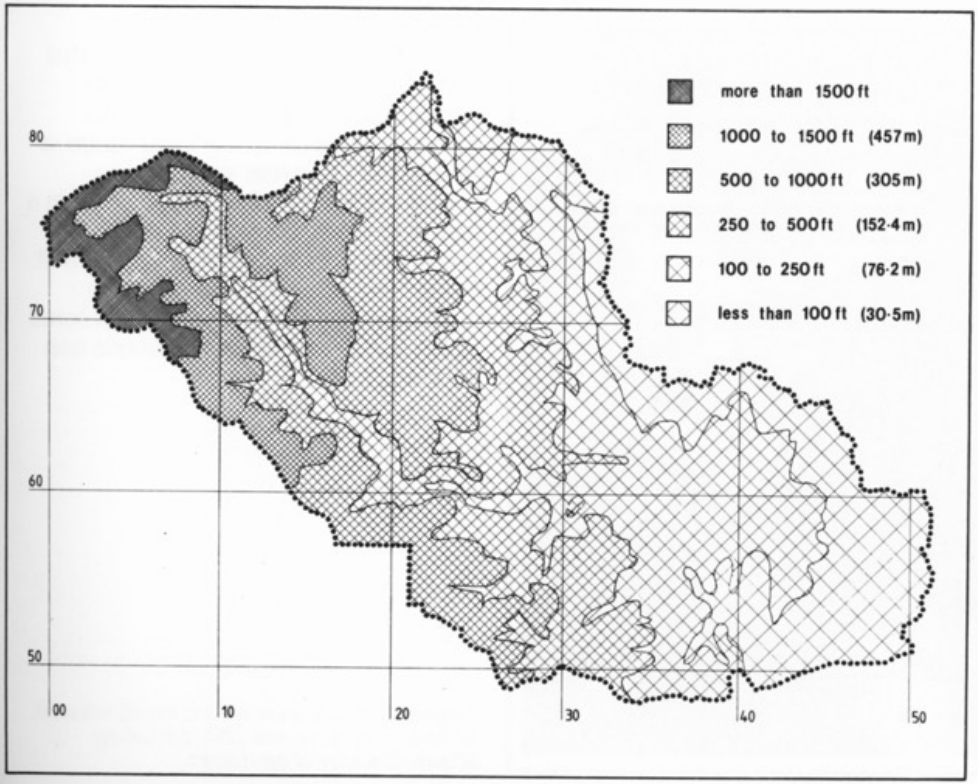
The geological features are shown in Map 3; of main interest to the lepidopterist is the band of magnesian limestone which runs up in a north-westerly direction from Wetherby through Knaresborough and Ripon to Masham. Isolated areas of limestone are also found to the west of Harrogate, at Pateley Bridge, Greenhow and in the Nidd valley below Middlesmoor. Certain grasses and flowers grow best on this land and the favourable effect on our butterflies is best shown in the distribution of the Common Blue. Skippers and browns are also abundant in these areas in the lower land.

Several of our butterflies are at their northern limit in North Yorkshire and others show territorial limitations as a result of the local geographical features; this allows us to gain a clearer impression of the factors that limit their distribution.

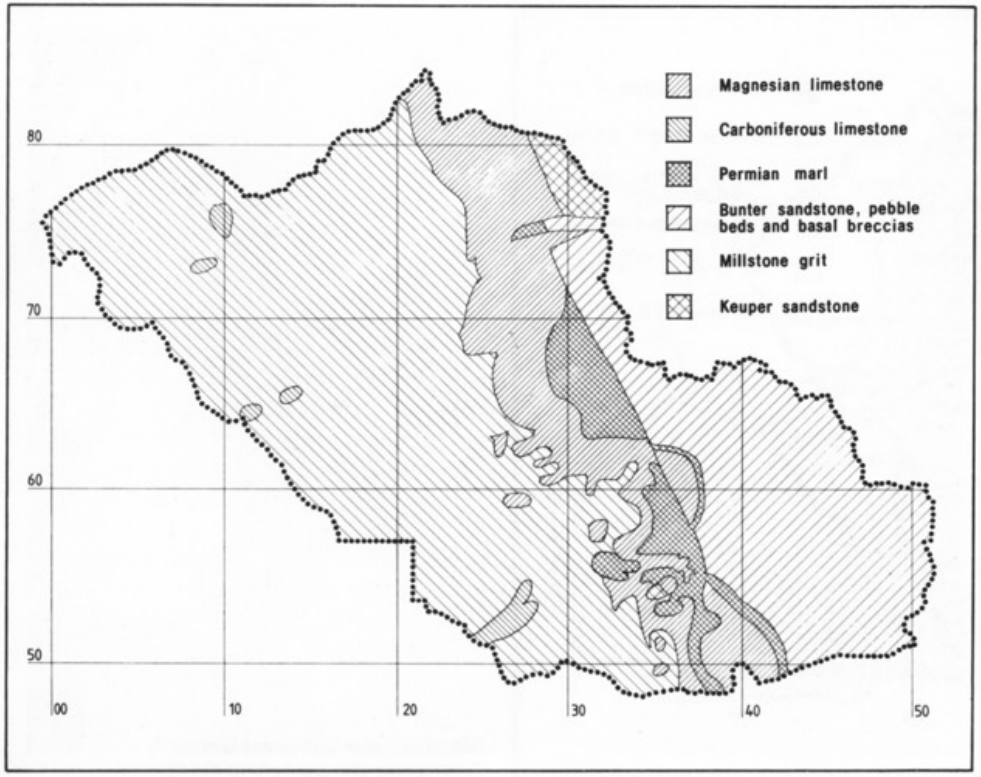
The upper parts of the Pennine dales are generally regarded as poor areas for butterflies and our results broadly confirm this view (see Map 32, page 48). Despite many seemingly suitable places for them, the Orange Tip, Meadow Brown, Wall and skippers are few or absent in those parts. On the other hand, they provide the stronghold of the Small Heath and the only parts where we can now find the Dark Green Fritillary in our distrtict. Some generally distributed butterflies such as Small Tortoiseshell, Green-veined White and Small Copper may be locally profuse in the upper dales and moorland areas.



Map 1:
Principal towns and features in the Harrogate district.



Map 2:
Contours to show altitude in the district.



Map 3: Geology of the district.

Ecology

We were impressed with the fact that butterfly ecology is not stable: the appearance of species new to the district, alteration in the local range of others and the great variations in colony population size showed us that a mapping exercise would never produce a comprehensive, final result. Indeed we hope that the exercise might be repeated in our district some years hence to see what changes can be found.

PART I: The Butterflies

Meadow Brown at Hookstone Wood, Harrogate on 2nd July 1983; this is our most plentiful butterfly.

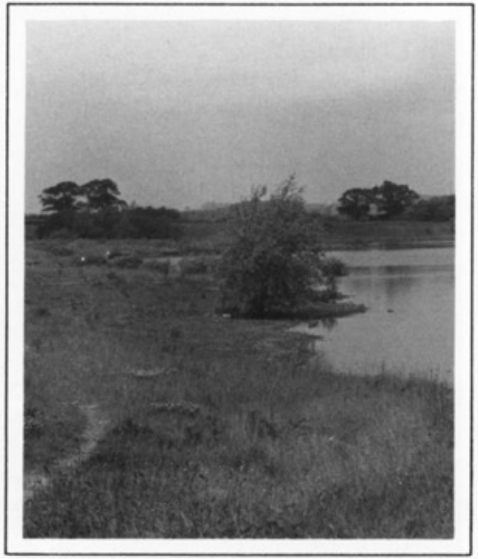
SMALL SKIPPER *Thymelicus sylvestris*

Larval foodplants: various grasses
Overwintering: larva

This butterfly did not occur in the Harrogate district until the mid 1960's when it made a major extension of its range in Yorkshire. It is now very well established here and has become our third commonest butterfly. It is hard to understand why it was not always here, as it clearly enjoys the conditions.

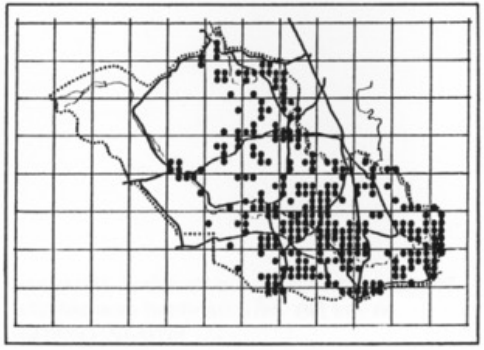
It is on the wing in a single brood in July and August when it is found throughout the lower land, extending westwards as far as Pateley Bridge and northwards beyond the limit of our district.

The Small Skipper frequents rough grassy areas and in suitable places hundreds of the butterflies may be found. Freshly-emerged specimens are a bright golden brown and they may be seen clinging onto grass stems with wings held open to the sun in the typical 'all apart' position. In the early morning sunshine, before it is warm enough for flight, many of them may be seen together like this in a grassy corner. Later they will be on the wing with their fast and skipping flight, pausing here and there to visit and explore, and settling to feed on knapweed, thistles and clover.



Grassy margins of the old gravel pit at Farnham hold strong colonies of Common Blue, Small Heath, Small and Large Skipper; wandering specimens of Brimstone and Clouded Yellow have been seen here.

None of our skippers are interested to visit gardens but an observer might see a Small Skipper fly quickly by. The butterflies do not always remain discretely in their colonies and this observation of high-speed roving helps to explain the extent to which the butterfly has colonised our district in the last 20 years.



LARGE SKIPPER *Ochlodes venata*

Larval foodplants: various grasses
Overwintering: larva

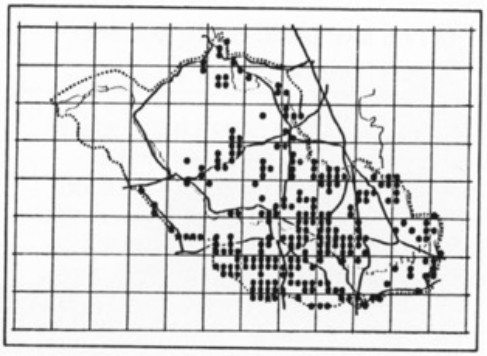
The three skippers found in our district are often cohabitants in the places that suit them but there is a difference in the time of emergence and the Large Skipper is the second to appear, principally in June and July. It is a bright orange-brown butterfly distinguished by its size and dark markings.

It is generally distributed in the lower parts of the district with an apparent concentration in the rougher grassy areas around Harrogate and Knaresborough. Further up Nidderdale it is more readily found in rough roadsides on the hills than in the valley bottom, a distribution that contrasts with that of the Small Skipper. Its highest location is at the Greenhow quarries (altitude 1345′).

Until recently this was our commonest skipper but it has now been overtaken by the Small Skipper both in the number of sites colonised and in the number of butterflies seen. Colonies are found in the same place year after year but numbers are very variable. In a good year a strong colony might hold 50-60 individuals.

Typical localities for the Large Skipper include the grassy margins of hedgerows and farming tracks, the broader roadside verges where trefoils and vetches flourish, old pits and quarries and disused railway tracks.

In the sunshine this is an active little butterfly with a very fast flight. It dashes around sheltered glades, hovers locally to explore the grass and flowers and settles to bask in a sunny spot with all four wings apart, in the typical manner of the skippers. It often visits flowers to feed, particularly clovers, bird's foot trefoil, blue vetches and thistles. In dull weather it sits unobtrusively on grass stems with the wings held firmly together.



DINGY SKIPPER *Erynnis tages*

Larval foodplant: bird's foot trefoil
Overwintering: larva

This little butterfly is a rich chocolate brown with a healthy sheen when freshly emerged but the colour soon fades to a lighter brown. It has a single brood in the year and is on the wing on sunny days in May and June, when it may be found in areas of grassland where the foodplant flourishes, particularly in sheltered spots where the turf is low and full of little flowers. Suitable sites in our district include naturalised gravel pits and quarries, disused railway lines and sheltered rides and clearings in the woods.

It is an inconspicuous butterfly and the weaker colonies are easily overlooked, but it is certainly much the rarest of the three skippers that inhabit our district. Indeed, there have been long periods in which the butterfly has not been noticed in the district at all.

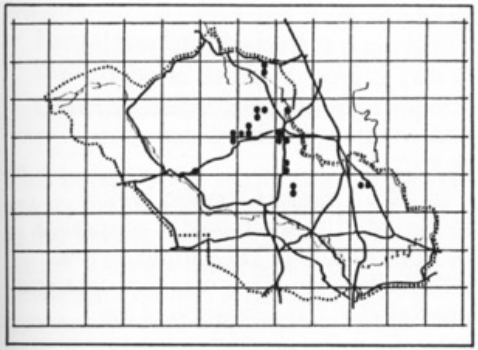
We have not been able to find it in our southern parts although flourishing colonies were formerly known at Scotton and Follifoot[4], and its main stronghold now seems to be in the countryside around Ripon. Even here it is very local and many of the known sites are currently threatened with development.

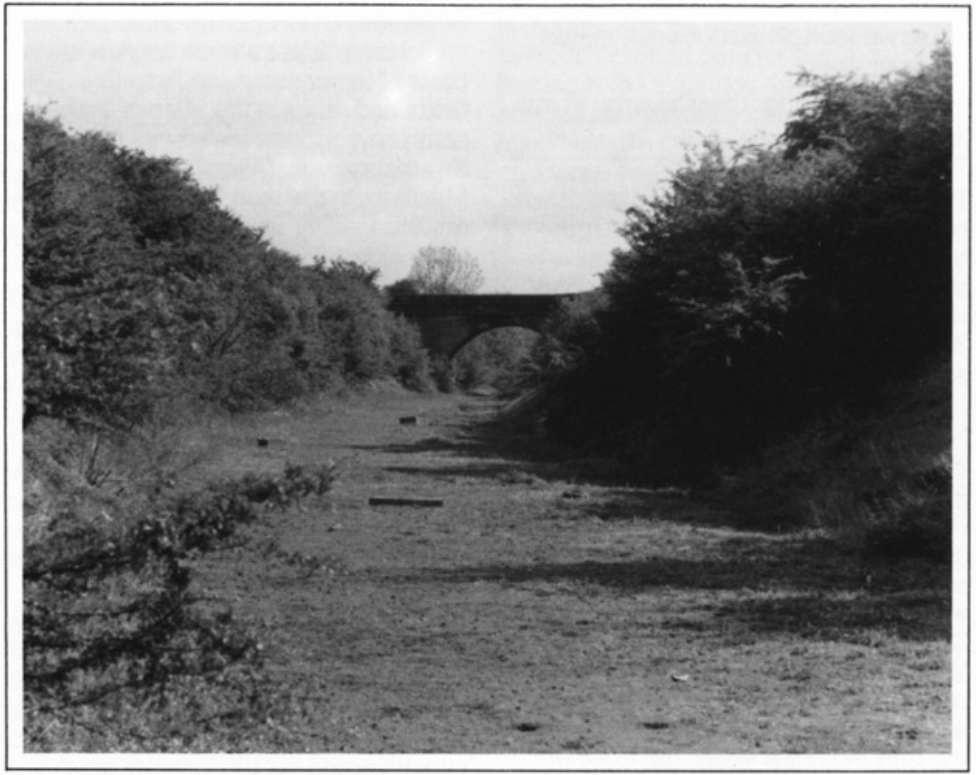
An occasional butterfly has been seen in the Pateley Bridge area and it is possible that it occurs there in a low-level diffusion in the 'old-fashioned' hay meadows, as appears to be the case with the Common Blue, a butterfly of similar haunts.

The Dingy Skipper likes to bask in the sunshine with its wings spread flat while perched on some low plant or stone, and it makes occasional visits to the flowers of daisy and bird's foot trefoil to feed. When flying it is a blur of grey-brown hardly distinguishable from its surroundings and it is easily lost from sight; sometimes a pair will circle very closely together above the grass and then separate and skip away.

In several of our sites the butterfly is numerous and counts of 30-40 individuals can be made on a bright day, but in others there seem to be just a few and visits may not show any, even on a sunny day. On dull days the insect will not fly and it will not be put up by a walker browsing through the grass, instead it falls down amongst the roots and scuttles under cover.

On account of these features it is difficult to be sure that the butterfly is not present in a particular site, but it does seem to be genuinely absent from many places in our district that appear suitable for it.





The disused railway cutting at Hutton Conyers: Green-veined White, Orange Tip and Dingy Skipper may be seen here in the springtime.

CLOUDED YELLOW *Colias croceus*

Larval foodplants: lucerne, melilot, clover, trefoil

Overwintering: unsuccessful in this country

This migrant butterfly from the continent is recorded every year in greater or lesser numbers in the southern counties of England but only very occasional butterflies are noted in Yorkshire, except in the years of abundance.

It was very common around Harrogate in 1947 but not seen again in this district until the substantial invasion of 1983. The first wave of butterflies was noticed in several parts of the district between 19th-25th June and later more numerous butterflies were recorded from 27th July to 23rd September. Observations elsewhere in Yorkshire suggested that there were several waves of migrants during the season[6] and it is unclear to what extent the later sightings were due to local breeding.

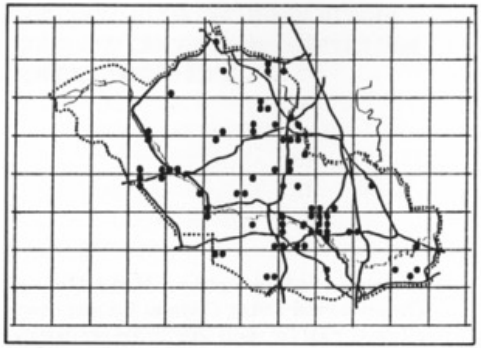
Clouded Yellows were seen in all parts of the countryside from the fields and lanes of the Plain of York, commonly around the gravel pits of Knaresborough, West Tanfield and Masham, to the moorland and quarries around Pateley Bridge. In all there were about 100 sightings reported in our district during the 1983 season.

Most Clouded Yellows are coloured an unmistakeable bright yellow but there is a much paler variety, *helice* (x-linked recessive character, seen only in the female). Of a total 1041 sightings reported in Yorkshire in 1983 only eight were of this variety[6]; we were lucky in seeing two, at Farnham gravel pit and Knaresborough Ringing Station.

In comparison with insects captured around Harrogate in 1947 our 1983 Clouded Yellows were noticeably smaller.

The insect flies strongly in the sunshine and is able to make good headway even against a breeze. Often it flies close to the ground, settling briefly to feed on clover or yellow flowers such as hawkbit and ragwort, and when settled it will not open its wings.

In 1984 a single Clouded Yellow flying steadily south-east was spotted by one of us (GTF) at Pannal on the 18th September. This was thought to be unrelated to the presence of the butterfly in the district in the previous year as the species would not survive our winter.



BRIMSTONE *Gonepteryx rhamni*

Larval foodplants: buckthorn, alder buckthorn
Overwintering: adult hibernation

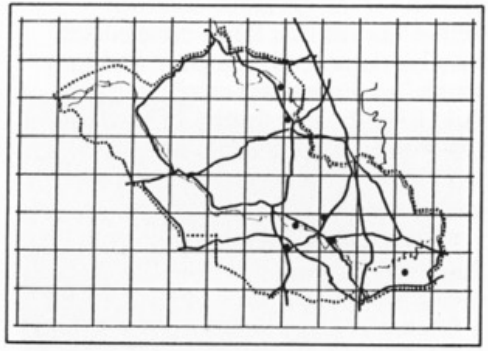
This butterfly is a bright sulphur yellow colour in the male and greenish-white in the female, with unusual pointed wings. It enters hibernation in August or September and emerges in more noticeable numbers in the spring, when pairing occurs and the eggs of the next generation are laid.
In southern counties of England, where the butterfly is common, it is often seen on sunny days in the early spring flying along woodland edges and rides or exploring areas of scrubland where the foodplant is abundant.

In Yorkshire there are only limited areas where the buckthorn grows and colonies of the butterfly are few, mainly confined to the southern part of the county. Occasional butterflies, particularly males, wander far from the breeding sites and have been seen here and there throughout the county between April and September.

The warm summer of 1976 led to a temporary increase in records in several parts of Yorkshire and the favourable seasons in the early 1980's resulted in a general northward spread by 1984.

The Brimstone has never been known to reside in our district, presumably because of the general absence of its foodplant. There were a few unconfirmed sightings of individual butterflies wandering in the district in the early sixties and late seventies but it was not until 1983 that the record was made certain: a male was caught by P. Treloar at Farnham gravel pit on 19th June.

Further sightings of males were made around Knaresborough, Harrogate and Ripon in the 1984 and 1985 seasons during May, June, July and August reflecting the increasing abundance of the butterfly in Yorkshire. For reasons set out above it is thought that the species will not establish itself in our district and therefore the sightings are of no special conservation interest. It is nonetheless exciting when one is encountered.



LARGE WHITE *Pieris brassicae*

Larval foodplants: cabbage, nasturtium, horseradish
Overwintering: pupa

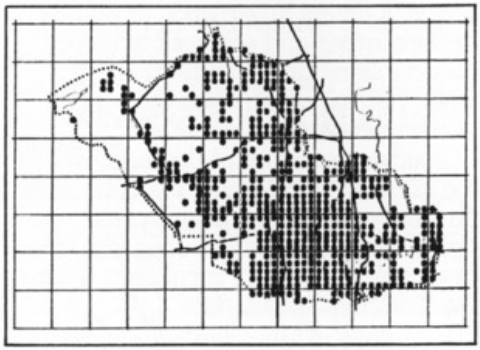
This butterfly is a notable garden pest and one of the genuine 'cabbage whites'. Its familiar large caterpillars may be numerous on a plant and they exude an unpleasant-smelling green fluid from the mouth when disturbed. The pupae are often to be found on fences or inside garden sheds and garages.

Butterflies are on the wing throughout the season from late April until October with a first brood peak in May and a second in August. Numbers are boosted by immigration and when extensive this can produce years of particular abundance. The number of butterflies in the second brood is variable depending on factors such as the weather, the extent of larval parasitism and any further migration that may occur. In our study there was no year in which it was exceptionally common and it was generally present in rather lesser numbers than the other whites.

The butterfly leads a wandering existence and is not usually seen in large numbers in a particular spot, but good counts can sometimes be made in flowery meadows or along deserted railway tracks where they feed on the flowers of clover, thistle, knapweed and hawkbit. It is also a butterfly of woodland glades and is commonly seen in gardens where it lays its eggs on the vegetables or nasturtiums, or feeds on buddleia, michaelmas daisy and other flowers.

The butterfly has been found as far up the dales as Scar House, the Greenhow quarries and Leighton reservoir. It is not commonly seen on open moorland but was noted on Riggs Moor at an altitude of 1870′ on one occasion.

The Large White is most easily distinguished by its size and the impressive females, with their distinct black markings, often appear rather floppy in flight when fresh. As with many other butterflies, they remain inactive when the weather is dull and can be surprisingly well camouflaged when at rest amongst pale leaves and stems.



SMALL WHITE *Pieris rapae*

Larval foodplants: cabbage, nasturtium, garlic mustard, rape, etc.

Overwintering: pupa

This is one of our commonest butterflies, seen in all parts of the district and on the wing throughout the season from April to October; there is a first brood peak in late April/early May and a second in August. It is the first of our whites on the wing in the spring and often the last to be seen in the autumn. Immigration probably makes a regular contribution to the annual numbers and accounts for the years of exceptional abundance.

The butterfly is familiar in many different habitats including gardens, roadsides, meadows and fields in the lower ground and around the quarries and reservoirs towards the top of the dales; on occasions it has even been seen on desolate open moorland.

As a 'cabbage white' the caterpillar is one of the common garden pests and the butterfly visits to feed on a variety of garden flowers. In the country it visits the blooms of many trees and is commonly seen at thistles, scabious, knapweed, dandelion, yellow rattle and clumps of purple vetch by the roadside.

The Small White often flutters amongst vegetation and settles in the sun with its wings held partly open. The flight is not powerful or fast but it can make elegant use of the currents and turbulence of the wind on its way along hedgerows and other such places. A typical sight in the autumn is of many of these butterflies in the cabbage and kale fields, sometimes rising and following each other in chains of perhaps five or six.

Whites and Meadow Browns are plentiful in uncut grassy areas such as this, beside the Nidd at Hampsthwaite.

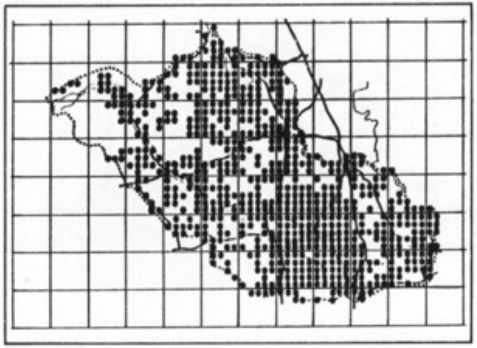
GREEN-VEINED WHITE *Pieris napi*

Larval foodplants: rape, garlic mustard, trefoils, etc
Overwintering: pupa

The Green-veined White is generally distributed and often common throughout our area but it seems to be more a species of the countryside than of the garden. It frequents woodland edges, rides and clearings, marshy hollows and the rushy, sedgy areas where streams come down from the moorland. It is present from the lowest-lying land to the upper reaches of our dales and, although not often found on the open moorland, it has the distinction of being our highest recorded butterfly, noted in the peat haggs on the summit of Little Whernside (altitude 1982').

Immigration is much less a feature than in the other two whites and the butterfly seems to have less tendency to wander in the countryside; indeed, colonies are often to be found in particular places year after year. The two broods give peak sighting of butterflies in May and August with a distinct gap between, and the last individuals disappear in early September.

The butterfly is similar in general appearance and flight to the Small White but distinguished by the dark scales along the wing veins. It visits various flowers to feed including bramble, thistle, cuckoo flower and buddleia. Occasional specimens much smaller than normal have been noted in our district, perhaps due to some difficulty in feeding up during the larval stage.



As with other whites it is remarkable that such a conspicuous butterfly is rarely chased and caught by birds — it is thought that they soon find the taste disagreeable.

The Green-veined White is often found in large numbers in damp, rushy fields such as this, at Delves Ridge.

RED ADMIRAL *Vanessa atalanta*

Larval foodplant: nettle
Overwintering: adult hibernation, rarely successful

Records of the Red Admiral on 1st April 1983 and 20th April 1984 suggest that successful hibernation can occur here but in general the presence of this butterfly depends on migration each year from abroad. May and June migrants are seen in our district most years and their more numerous offspring, supplemented in some years by further migrants, are regularly seen from August to October. Occasional butterflies have been seen still on the wing on sunny days in November and December.

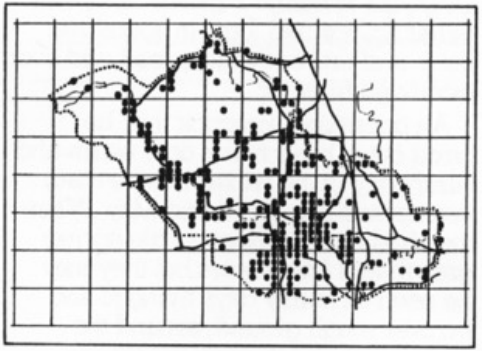
The strong and graceful flight of this butterfly is a familiar sight in gardens where it is attracted to feed on rotting fruit and flowers such as buddleia and michaelmas daisy. Sometimes it sits in the sunshine for prolonged periods perched on a wall or rooftop, and a particular specimen may remain resident in a garden for several days.

This species is most easily recorded and observed in gardens but it may also be found in all parts of the countryside. It has been seen flying over moorland and sometimes feeds there on the heather bloom; the highest we found was on the slopes of Little Whernside (altitude 1886′) in October 1984. Sheltered flowery spots amidst the moors become colonised, such as at the Greenhow quarries where good numbers are sometimes to be found.

They have been seen in the highest fields bordering moorland, such as above Middlesmoor and at Angram and Roundhill reservoirs. In such places isolated clumps of oak, birch or sycamore become roosting places from which they will swoop down to explore and feed.

In lower land the Red Admiral may be found sunning itself beside cornfields and in sheltered places on paths, walls, fenceposts and woodland edges.

The butterfly seems to have a special interest in trees, often flying high up amongst the branches and in and out of the shade under the canopy of a wood. It is very well camouflaged when settled with its wings together on a tree trunk. On occasions several of these butterflies have been seen feeding on a damaged tree — an oak stripped of leaves by caterpillars, a hazel oozing sap from insect boreholes or an elm dying of dutch elm disease.



PEACOCK *Inachis io*

Larval foodplant: nettle
Overwintering: adult hibernation

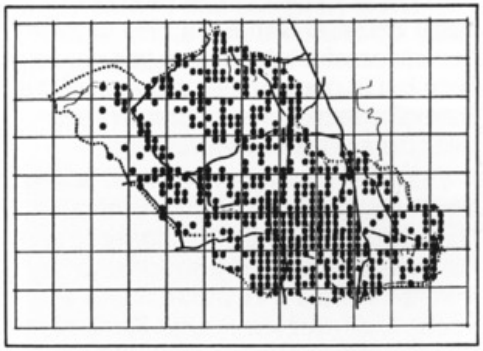
This familiar butterfly is easily recognised by its prominent eye-spots and, in flight, by its darkness and size. It is widely distributed in our district throughout the low land and up the length of the dales; when the heather is in flower it is also regularly found on the moors.

There have been periods in the last 150 years when the butterfly has been rather scarce and local in Yorkshire but it is at present widespread and even locally profuse.

An occasional Peacock may be lured out of hibernation on a warm and sunny day in the winter but the main emergence is in April and May. When they first appear there is little spring growth and few flowers but they may be seen on sunny days flying to and fro over rough ground, around the hedgerows and through the woods. They like to settle in the sunshine with wings flat out on bare areas such as on footpaths, walls and crumbling earthy banks.

Caterpillars of the next generation are usually fully fed by early July and the peak of the second appearance of butterflies is in August. At this time of the year they feed on flowers such as knapweed, thistle, ragwort and hawkbit on sunny slopes and in meadows; sometimes they bask in ripe cornfields and then flap up and glide away when approached. In the late summer they visit gardens in good numbers to feed on buddleia and other scented flowers.

Numbers gradually decline as the insects take up hibernation and the last are usually seen in October. Hibernation may occur in buildings such as barns, outhouses or a church belfry but the butterfly often chooses more natural sites such as hollow trees, wood piles, roots, caves, crevices and haystacks. On one occasion at Scotton Banks more than 20 were found together outside in an old discarded cupboard. When disturbed in this state they open their wings with a curious hissing or crackling noise.



PAINTED LADY *Cynthia cardui*

Larval foodplant: thistle
Overwintering: unsuccessful; may migrate south in the autumn

This butterfly migrates to us annually from Southern Europe and North Africa and was seen every year in our survey. Numbers are usually small but there are exceptional years, such as 1980[7], when it is abundant.

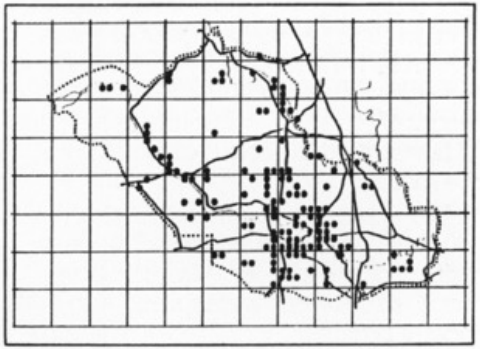
The first migrants are seen in June and have been noted flying swiftly northwards or feeding on flowers in gardens or sheltered meadows; the females flutter rapidly from thistle to thistle to deposit their eggs. Some of these insects are very worn and tattered but the damage does not seem to impair their strong flight.

The Painted Lady is usually more numerous in August and September when the next generation has hatched, and it may be supplemented by further immigration. Numbers have usually dwindled before the autumn cold begins and it is thought that many of them migrate away to the south at this time. 1985 was unusual with a major appearance of the butterfly in mid-October.

The butterfly is a characteristic light orange-pink colour and is easily distinguished by this even when in fast flight. It may be seen in gardens on scented flowers such as buddleia and may become resident there for a few days. When it is not feeding it sits in a sunny position, often with the wings flattened out against the ground.

The Painted Lady has been noted throughout our district including moorland areas, particularly in spots where thistles and knapweed flourish around the quarries and reservoirs. Flowery slopes, meadows and glades in the lower parts of our district seem to be most favoured by this butterfly.

It was a common and very pleasing sight in 1980 to see perhaps 20 or 30 of these beautiful insects swooping around the glades with other butterflies and settling to feed on the flowers of scabious, knapweed and hawkbit. The butterfly has also been seen to visit bramble, privet and thistle flowers in the countryside.



SMALL TORTOISESHELL *Aglais urticae*

Larval foodplant: nettle
Overwintering: adult hibernation

The Small Tortoiseshell is widespread and often numerous throughout the district, and familiar to everyone. It may be tempted out of hibernation at any time during the winter by unseasonal spells of mild, sunny weather: it was seen in every month of the year except January in our study period.

It is one of the first butterflies out in the spring, making a regular appearance from April to June. There is some variation in numbers at this time of the year but the hibernation is usually successful and was not impaired by the very cold winter of 1981/2.

The presence of butterflies throughout the early months of the summer often results in a diffuse and unpredictable time period for the appearance of larvae on the nettles; in our district they have been found from May to August. The main appearance of the butterfly then occurs from late July to the onset of the winter cold.

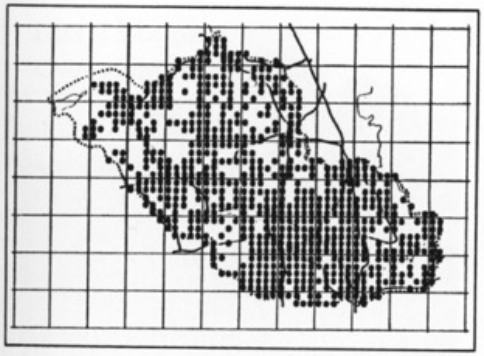
Individuals have been seen seeking out places to hibernate from August onwards, often exploring dark corners and holes, eaves and outhouses. On two occasions we have watched butterflies crawl into the crevices of a dry stone wall in the countryside and they have also been found when haystacks are dismantled. In February 1985 some were found hibernating in How Stean Cave.

It is not specially renowned as a migratory insect but continental butterflies probably arrive in variable numbers in the spring and summer to augment our resident population.

The Small Tortoiseshell has been extensively recorded in our area in all types of terrain from the lowland to the moors. It is particularly to be found wherever nettlebeds occur such as beside dry stone walls, delapidated buildings, rubble tips and bonfire sites. It may also be found in large numbers in flowery meadows and along riverbanks and railway tracks feeding on scabious, thistle, bramble and water mint.

On a sunny day wandering butterflies may be seen feeding on heather bloom on the moors together with Peacocks and an occasional Red Admiral. It is a familiar butterfly in the garden where in the late summer it may be numerous on privet, buddleia, sedum and michaelmas daisy. When it is well-fed it retires to a sunny position on a wall, roof or paving stone to repose.

Despite its agility and bright colouring the Small Tortoiseshell falls prey to birds, and sparrows have been observed repeatedly taking them from our buddleia bushes.



Upper Skell Gill: few butterflies can be found on open moorland but shallow valleys may hold Green Hairstreak, Green-veined White, Small Tortoiseshell, Small Heath and Small Copper.

CAMBERWELL BEAUTY *Nymphalis antiopa*

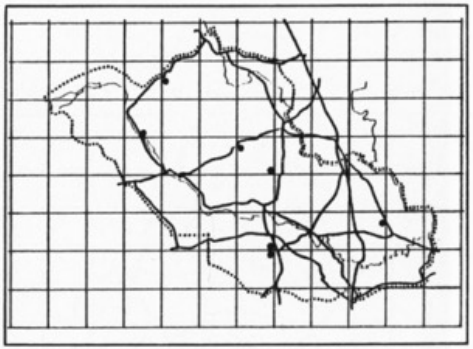
Larval foodplants: willow, birch
Overwintering: adult hibernation, mainly unsuccessful

This rare and impressive butterfly migrates in the late summer months from Scandinavia but it is only in very occasional years that substantial numbers arrive in this country.

1976 was such an exceptional year, the best for more than 100 years, and six specimens were recorded in the Harrogate district in late August and early September. Butterflies were seen feeding on fallen fruit and buddleia flowers in gardens and were recorded as far up the dale as Gouthwaite reservoir. This migration occurred during conditions of unusually persistent high pressure, giving prolonged dry and sunny weather with light easterly and north-easterly winds.

A single specimen seen by P. Carlton on 12th October 1980 at Roundhill reservoir, a remote spot surrounded by moorland, was one of only two recorded in England that year.

Mating in this species occurs after hibernation but as this usually fails the butterfly stands no real chance to maintain itself here. It occurs as an occasional and unexpected visitor — the 'Grand Surprise' of earlier lepidopterists.



Small Tortoiseshell, Peacock, Green-veined White and Small Heath feed together in flowery hollows near the moorland, as here, where a stream descends to Gouthwaite.

HIGH BROWN FRITILLARY *Argynnis adippe*

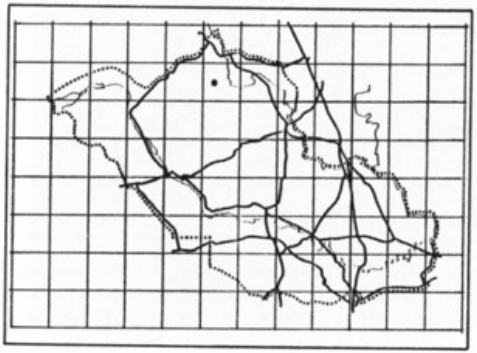
Larval foodplant: violets
Overwintering: egg

This fritillary was resident in certain southern parts of Yorkshire in the nineteenth century but has since been almost absent throughout the county, with occasional sightings here and there thought to be due to straying or deliberate introduction. This disappearance has been part of a general decline in all species of fritillary in northeast England during the period[1].

There was no record of it in the Harrogate district until 1983 when Miss H. Robson noticed a fritillary whilst riding her horse in the plantation at Nutwith and Roomer Common, near Masham in late July. Returning later with her father, and again on the first of August, a male butterfly was seen closely and photographs were taken which proved its identity.

This is a bright orange-brown butterfly which frequents woodland borders and rides. The flight is strong and fast and it likes to cruise about, a few feet from the ground, pausing briefly to feed on thistle heads. It is most easily distinguished from the Dark Green Fritillary by the row of silver-centered red spots on the underside of the hindwing.

The origin of the butterfly near Masham is unknown but we prefer to believe that it was a natural vagrant rather than a deliberate release. Local searches for this butterfly in the following years were unsuccessful. The nearest known colonies of the species are at Leighton Moss, Cumbria and in North Staffordshire.



DARK GREEN FRITILLARY *Argynnis aglaja*

Larval foodplant: violets
Overwintering: larva

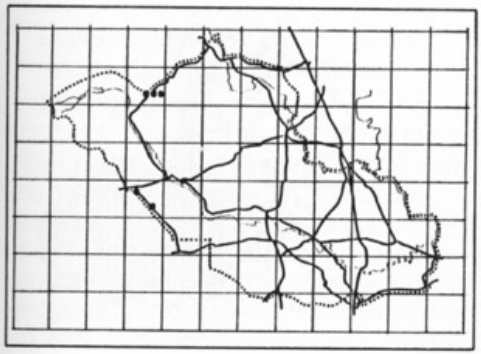
Dr Rutherford recorded the Dark Green Fritillary as common around Knaresborough in the early 1950's but the last sightings were in Walkingham Warren (1957), Farnham Mires (1959) and Goldsborough Woods (1960)[4]. It was not recorded at that time on our moorland although it was known to be present in the neighbouring Washburn valley and to frequent open slopes in parts of the North Yorkshire Moors, as in Newtondale.

After a gap of 24 years the butterfly was seen again, in two moorland areas, in July 1984. Two specimens were seen in a gill near Roundhill reservoir (the first by Miss J. Atkinson) flying and settling amongst the bracken and feeding on spear thistle in rough fields and beside a stream. A few days later five butterflies were found in a disused quarry at Greenhow, flying about the flowery slopes and chasing each other in the sunshine. A further specimen was seen a few kilometres to the south-east, on Braithwaite Moor.

1985 was a poor season but butterflies were again seen in the Greenhow quarry in August. They paused to feed on knapweed flowers or to settle on the ground in the sunshine, but they crawled down and concealed themselves in the grass when there were darker, cloudy intervals. In the spring this quarry is thick with flowering violets, the larval foodplant, and it is likely that the butterfly is now breeding there. It is, however, a well-visited spot and we are fairly certain that the presence of the butterfly there is new.

The Dark Green Fritillary is a large and conspicuous butterfly with a powerful flight as it glides and swoops, wheels and flutters amongst the flowers on which it feeds. Perhaps we have witnessed a recolonisation of the district with butterflies from elsewhere, alternatively it has survived unnoticed over the years in our district, presumably in suitable but remote moorland parts, and an increase in numbers has brought it to our attention.

The general decline of fritillaries in north-east England since the 1950's may be related to developments in agriculture and forestry, climatic changes and the dramatic reduction in rabbit population from myxomatosis: lack of grazing affects the violets. Rabbits have become numerous again in many parts as they have come to terms with the disease and it is possible that this, together with a favourable change in the weather, has led to the reappearance of the butterfly.



Duck Street Quarry at Greenhow (altitude 1350') is rich in butterfly species including the Dark Green Fritillary, Wall, Peacock, Large Skipper, Common Blue and Orange Tip. In good years Painted Ladies and Red Admirals have been numerous here.

WALL *Lasiommata megera*

Larval foodplants: various grasses
Overwintering: larva

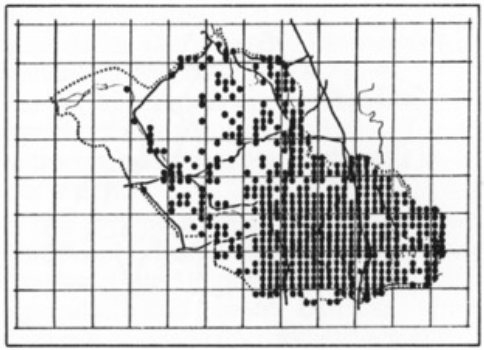
The Wall frequents sheltered areas beside hedgerows and along the borders of woods and fields; it acquired its name from the habit of perching in the sunshine on exposed surfaces such as walls, rocks and earthy banks. It is a territorial butterfly and males may be watched patrolling a particular piece of ground and chasing off intruders before returning to a favourite perch.

It makes short flights and feeds on various wild flowers, particularly yellow ones such as buttercup, ragwort, dandelion and hawkbit; it will sometimes visit gardens and feed on scented flowers there. Some butterflies lead a wandering existence and they have even been seen flying in the streets in the centre of Harrogate.

The underside markings of fine circles and wavy lines give this butterfly an excellent camouflage against a variety of backgrounds. Perfect specimens are not easy to find as the wings are brittle and soon develop tears and gaps.

Two generations of Wall butterflies are seen in the year, the first in relatively small numbers in May and June and the second, more numerous, in August.

Rutherford wrote in 1965 that this species was not uncommon and fairly widespread in our district. It seems to have steadily improved its position over the last few years and is now to be found almost everywhere in the lowland areas with an abundance that, in places, rivals the Meadow Brown. As with that species there seems to be some reluctance to penetrate and colonise the upper parts of the dales and it does not fly on the open moorland. It is present in the quarries above Pateley Bridge, and at Greenhow it has been found at an altitude of 1370'.



The old quarry at Killinghall: Peacock and Walls perch in the sunshine on the path and crumbling banks.

ORANGE TIP *Anthocharis cardamines*

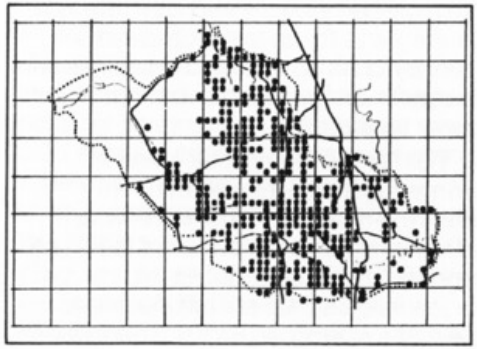
Larval foodplants: garlic mustard, hedge mustard, cuckoo flower
Overwintering: pupa

The Orange Tip is single-brooded with the main appearance usually in the latter part of May. It is one of the pleasures of spring to see this rather delicate butterfly on the wing when the hedgerows and meadows are growing up with fresh green plants and flowers.

The male is conspicuous with its orange-tipped forewings and easy to identify even from a distance when in flight; the female has no orange but is recognised by its dappled hindwings. On a dull day the butterfly is well camouflaged at rest amongst the leaves and flowers with its wings tucked together, reducing the profile and hiding the orange markings.

There have been periods this century when the species has been rather uncommon, occurring only in local colonies, but it is at present widely distributed and easily found in small numbers in our district, particularly in the lowland areas. It seems to penetrate no further up our dales than Gouthwaite and Leighton reservoirs and it is not found on the moorland.

The favourite haunts of the butterfly are where the foodplants flourish such as along roadside ditches and hedgerows, woodland borders and glades, boggy meadows and the banks of meandering streams. In the spring the woods are light with mottled sunshine and the butterflies may be seen to wander there amongst the bluebells and anemones.



It feeds at a variety of wild flowers but shows little interest in the cultivated ones when it flies into gardens. Small specimens have been found here and there in our district and these have a particularly delicate and pretty appearance.

GREEN HAIRSTREAK *Callophrys rubi*

Larval foodplants: mainly bilberry in our area; also dyer's greenwood, gorse, broom

Overwintering: pupa

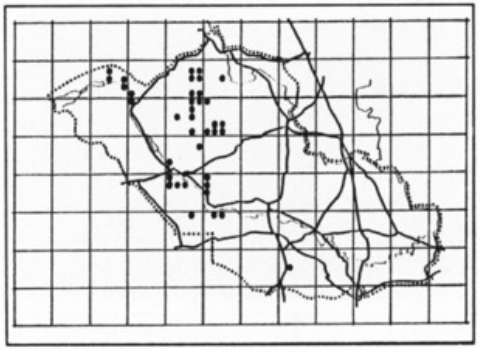
This species is single-brooded and most of our sightings have been in mid-May. The butterfly is mainly to be found in moorland areas, especially in sheltered places where the bilberry is plentiful as in stream cuttings and hollows, on rocky slopes and beside moorland walls. Often these places are covered with bracken later in the season. Colonies have also been found in rough clearings in woods and in forestry plantations where bilberry and heather colonise slopes or line the rides.

Sometimes the hairstreaks are plentiful in a localised colony but in other apparently suitable places just an occasional butterfly may be encountered. The insect is certainly under-recorded as a result of its inconspicuous nature and the difficulties of access to much of the moorland, but it seems to be genuinely absent from all the lower-lying parts of our district except one site to the south of Harrogate. There is no trace now of the once-flourishing colony at Pot Bank on the western edge of Harrogate.

In the sunshine the butterflies are very active with a rapid and irregular flight, quickly racing away or vanishing in a flash of green and grey. Often they fly quite close to the ground, settling briefly to crawl and turn on the bilberry and dry bracken, or they will fly up to perch on some nearby bush or sapling. Sometimes two butterflies meet in flight and circle far away together.

The Green Hairstreak holds its wings together when settled, only showing the bright underside which closely matches the colour of the fresh spring foliage; on a dull or windy day it is inactive and almost impossible to find. If a specimen is disturbed when settled it will drop down and hide amongst the grasses and roots. We have occasionally found a mating pair down on the main stems inside a bilberry bush.

There is little variation in this species and most of our specimens show the standard row of white dots on the underside. One of us found a specimen a few miles outside our district with the dots replaced by radiating white dashes.



PURPLE HAIRSTREAK *Quercusia quercus*

Larval foodplant: oak
Overwintering: egg

This little butterfly lives an unobtrusive existence at the top of oak trees and its presence is easily missed. Porritt recorded several sites for the species in Yorkshire in the late 19th century but none in the Harrogate district[5]; the nearest was at Bramham. In the last 70 years it has been noted on oak in woodlands, parkland and roadsides to the east and north of York, and near Selby.

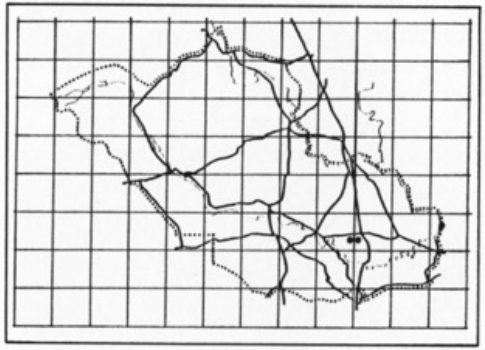
Purple Hairstreaks spend much of their time sunning themselves and crawling around the twigs in the upper branches of large trees and now and then they may be seen circling and flitting around the tops in the sunshine. In flight they appear rather larger than the White Letter Hairstreak and may show flashes of silvery-grey. Butterflies sometimes come down to visit isolated younger oaks in clearings, where they may be more easily observed, and occasional butterflies, particularly females, wander some distance from the trees.

The first record of the Purple Hairstreak in our district came on 5th August 1983, when twelve adults were counted in the canopy of Goldsborough Wood by Mr P. Treloar and Mr M. Whorley. Climbing close they saw the purple sheen of the insects as they held their wings open in the sunshine, a colour and attitude that distinguished them from White Letter Hairstreaks also present in the trees.

No doubt the butterfly could have lived unnoticed in the wood for many years but invasion and colonisation could equally account for its presence in these years when other local butterfly species have extended their range.

The second record came on a visit to Beningbrough Hall on 20th August 1984, when Dr J. Turner found a Purple Hairstreak sitting on a mulberry tree near some oaks. The underside patterns on the wings were clearly seen before the butterfly flew off.

Despite some careful searches in Goldsborough Woods in 1984 and 1985 no further sightings of this elusive butterfly were made.



WHITE LETTER HAIRSTREAK *Strymonidia w-album*

Larval foodplant: elm, especially wych elm here
Overwintering: egg

This little butterfly was thought to have been lost to the district, with final sightings at Fountains Abbey in 1955, but there was a resurgence throughout Yorkshire in the late 1970's with reports from many places, some as far north as the Tees.

The first new colony recognised here was found beside the river Nidd at Scotton Banks in August 1979. A careful search in the following seasons showed it to be present in many of the woods and copses in our lower land and it was even found on the town elms in the centre of Harrogate. In 1984 it was found at Glasshouses and Wath in Nidderdale but it seemed not to have progressed beyond Gouthwaite reservoir.

The sources of the Yorkshire recolonisation were not established and it is possible, in view of the butterfly's secretive habits, that colonies survived unnoticed in our district from the 1950's. It is known to disperse from its regular sites in years of particular abundance and perhaps the decimation of trees by Dutch Elm Disease spreading from the south had some precipitating effect in this period. Butterflies tend to move away from dying trees on which they fed as larvae, and we have noticed a preference for eggs to be laid on healthy rather than blighted trees.

Eggs gathered on elm twigs in Goldsborough woods hatched in the last week of March and the young larvae fed on flower buds, shoots and leaves of the wych elm, which they resemble very closely. Larvae have been found on the trees in our district towards the end of May and pupae have been found later, attached to twigs or to the base of a leaf.

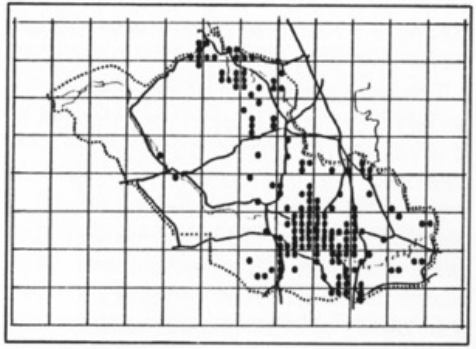
Butterflies are out in July and August and are very dark on the upperside when fresh; in flight this flashes with the rich brown sheen on the underside. Most of our sightings were in small numbers around groups of trees and the maximum was of about 100 butterflies in Goldsborough woods in late July 1984. We did not experience the massive populations of many thousands that are said sometimes to occur.

This is a butterfly with no special interest in gardens and it must generally be hunted down in its natural settings: woodlands, well-grown hedgerows and the larger isolated trees. White Letter Hairstreaks may be seen flitting and circling around the upper branches of the elms in the sunshine and we have seen them still flying after 1830 h. Only a proportion of the butterflies are visible as they may remain settled for prolonged periods, simply walking about on the leaves and twigs. At certain times of day they sit on the leaves and tilt to catch the full sunshine. Sometimes they take up

particular positions on nearby oaks, ashes, birches and sycamores and they may feed on honeydew there.

Occasional specimens descend from the trees to perch on lower plants and shrubs and we have watched them feed on creeping thistle, ragwort, greater willowherb, privet, bramble, thyme and hogweed. In windy weather we have seen them shelter in a cornfield downwind from their trees and when disturbed they dropped down onto the ground.

The future of the White Letter Hairstreak here is very uncertain. The butterfly generally selects mature trees on which to lay its eggs, but they are the most likely to be lost to the elm disease. In the south, where the disease has been devastating the elms for some years, the butterfly has disappeared from many of its former sites but it has been found to survive in reduced numbers in areas where there are plenty of regenerating saplings. Unfortunately the disease has recently become very active in our district and already most of the large trees are affected.



This old elm at Wath holds the furthest colony of White Letter Hairstreak we were able to find up Nidderdale.

SMALL COPPER *Lycaena phlaeas*

Larval foodplants: sorrel and docks
Overwintering: larva

This butterfly is regularly double-brooded in our district with peak appearances in June and late August. In the occasional favourable year (1976, 1982) fresh butterflies have been seen in October, representing a partial third brood.

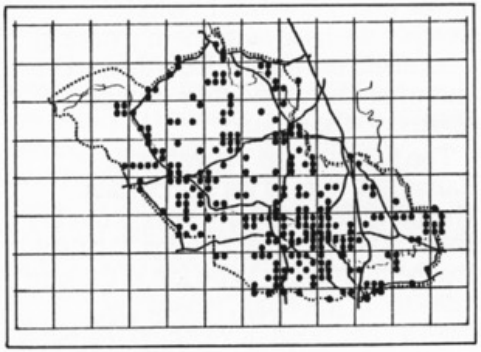
The Small Copper basks in the sunshine on open ground or on a low stem or leaf. When approached it is easily disturbed and the flight is fast and difficult to follow, but it will often return to a favourite perch and may be awaited there. On sunny days it feeds at the flowers of thistle, ragwort, water mint, dandelion and groundsel but in dull weather it sits on stems with its wings closed and is then easily overlooked.

The species is often found in just the same place year after year and it seems able to support itself in very low numbers, typically two or three butterflies seemingly present in a colony. In good years considerably higher numbers have been noted and counts of 20-30 have been made in the more extensive sites.

The map shows that this species is widely distributed, taking advantage of a variety of habitats. It is found in meadows and the rough corners of fields in the lower land and it is regularly seen in old quarries and along stretches of disused railway where the sparse, low vegetation with plenty of bare ground seems particularly favourable. Common Blues, skippers and Small Heath also like these sites and the butterflies are often seen together.

It is regularly found in the upper reaches of the dales; on the moors the walker can expect to encounter it in the little patches of low grass with thistles that are to be found amidst the heather, or in the sheltered grassy hollows where moorland streams descend. In August and September it may be seen feeding there at the heather bloom.

The form with blue spots on the hindwings, *caeruleopunctata*, is not uncommon in our district and has been noted at Lingerfield, Scotton, Bilton and Follifoot.



COMMON BLUE *Polyommatus icarus*

Larval foodplants: bird's foot trefoil, occasionally black medick

Overwintering: larva

The shiny blue males of this species look most attractive flying in their grassland haunts but the females are less conspicuous with a duller, brownish hue. Butterflies are on the wing from June to early August and in most years we see a second appearance in lesser numbers from late August to early October.

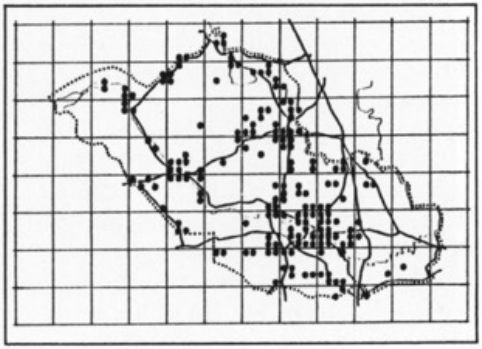
Peak counts of up to 350 butterflies were made in the extensive Farnham gravel pit and Greenhow quarry sites in the good summers of 1983 and 1984 but in colder, wetter years the counts have been much smaller. The Common Blue is said to be univoltine in Pennine areas and in general we have found this to be true in our upland sites, although occasional second brood specimens have been seen at Greenhow.

Many recall the sight of blues in the countryside in years gone by but say that they now no longer encounter them. The general loss of suitable habitat and the changes in farming technique are probably responsible for this but in fact the Common Blue is still to be found, often restricted to localised colonies in sheltered spots where the trefoils grow.

To the east of the A1 road the agriculture is modern and intensive and only a few colonies of the butterfly remain, in areas of undisturbed grassland. It is most easily found in the magnesian limestone belt which crosses from Wetherby to Masham and in other parts up the dales where limestone occurs (see Map 3, page 10). In these parts it abounds in undisturbed land such as disused railway lines, naturalised gravel pits, grassy wasteland and woodland clearings. Around Pateley Bridge it is quite widely distributed beside the river and along roadside verges, also diffusely amongst the old hay meadows where the bird's foot trefoil grows freely.

Butterflies feed on the flowers of bird's foot trefoil, lucerne and vetches. In courtship a pair will fly one above the other and repeatedly collide, and when settled and joined they may be visited by further interested males to make a colourful cluster of butterflies.

The only significant aberration we saw was in one specimen at Ripon Quarry Moor, which showed the underside dots partly replaced by rays.



HOLLY BLUE *Celastrina argiolus*

Larval foodplant: holly
Overwintering: pupa

An occasional Holly Blue is found in April but its main appearance here is in May and June. For reasons that are unclear the late summer brood seen in more southerly parts has not been observed in our district; perhaps, analogous to the Common Blue here, the main location on higher ground has some inhibitory effect on the development of a second brood.

Males in flight resemble the Common Blue but the different time of emergence gives us a useful distinction: that a blue in our district before the end of May will usually be a Holly Blue.

The butterfly is noted for its erratic fluctuation in numbers, being common for some years and then seeming to disappear for long intervals; this is thought to be due to various factors, including climatic variation and parasitism. It was common in many parts of Yorkshire in the late 19th century, in the late 1940's and 50's and has emerged again in one or two parts in the late 1970's. During the intervals it presumably subsisted unnoticed in small numbers in a few favourable sites.

In our district one butterfly was observed by Mr William Storey at Guise Cliff on 17th May 1884 and, at the turn of the century, Porritt[5] noted a sighting at the same place by another of his contributors. One of us (GTF) recalls finding the butterfly quite plentifully around Pannal in the late 1940's.

From 1957 none were seen in our district until May 1978 at Bishop Thornton. The butterfly soon became quite abundant, as at Burnt Yates and in the wooded hills between Summerbridge and Fellbeck, and it was found again in the woods below Guise Cliff. Within four years it occupied an oval territory measuring some 15x10 km between Pateley Bridge and Burton Leonard.

The records suggest that from a single focus the butterfly has steadily spread to take advantage of the areas where holly is common. By the end of our survey all parts of our district strong in holly were colonised, in particular the rectangular area between Masham, Knaresborough, North Rigton and Pateley Bridge. In these parts holly is often very common in the field hedgerows and on the borders of woods; fortunately many farmers consider it unlucky to remove the holly trees.

In the spring sunshine the bright blue butterflies show up easily as they flutter around and between the holly bushes or make short excursions away. When settled on the shiny leaves they are surprisingly well camouflaged and the females crawl about the twigs and under the leaves to deposit their eggs on the flower buds. When approached by a male the female sits and flutters her wings very rapidly.

Holly Blue butterflies sometimes feed on holly flowers, drink from damp earth, as beside a puddle or stream, and feed on animal droppings. Larvae have been found on the holly in our district in early June.

The Holly Blue flourishes in these fields below Burnt Yates, where the foodplant grows abundantly along walls and in the hedgerows.

MARBLED WHITE *Melanargia galathea*

Larval foodplants: various grasses
Overwintering: larva

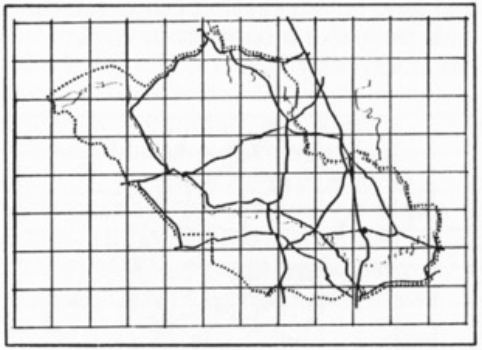
The long-established colonies of this butterfly on the Yorkshire Wolds constitute the only stronghold of the species in north-east England, some 150 km from the nearest population to the south[8]. Fine seasons in the early 1980's were very favourable to the Wolds colonies and high counts were recorded there.

On 16th July 1985 a female in perfect condition was found and photographed by one of us (MB) on a grassy south-facing road embankment near the A1 road at Allerton Mauleverer. It fluttered above and amongst the grass there for a while and then lifted and was blown away across a cornfield.

This is the only Marbled White ever recorded in our district and, indeed, sightings other than on the Wolds have been exceptionally few. One was found at Hetchell Crags near Bardsey in 1947[9] and, in his List of Yorkshire Lepidoptera (1883)[5], Porritt recorded that it had once been established in a quarry near Tadcaster. He also noted that a specimen was taken at Bramham Park "many years ago".

Almost certainly our butterfly originated from the Wolds colonies 40 km away, but the following circumstances suggest that it might have developed locally as the offspring of a 1984 wandering female: its freshness, its early appearance in the delayed 1985 season, and the fact that there had been persistent strong westerly winds for the preceding days. As a rule this butterfly remains within its local colonies but in exceptional seasons individuals may wander away for long distances, as was recorded in Cheshire in the fine summer of 1976[10].

Whether other Marbled Whites were present unnoticed in our district in 1985 and whether the species could establish itself here remain unknown. It seems unlikely, but the recent and unexpected spread of the Ringlet and Gatekeeper into our district suggests that we should keep an open mind.



GATEKEEPER *Pyronia tithonus*

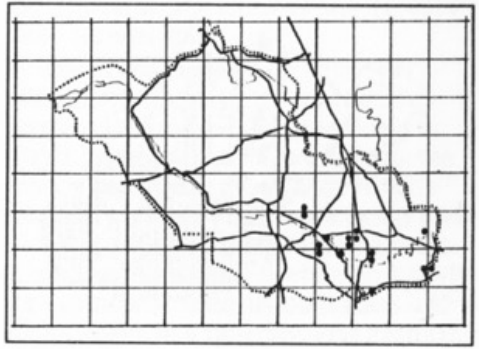
Larval foodplants: various grasses
Overwintering: larva

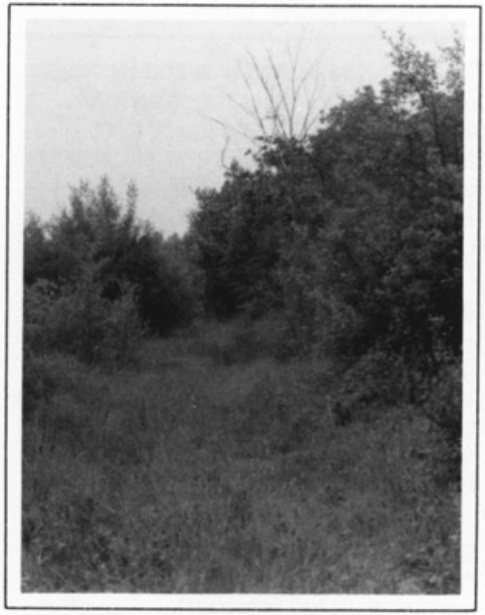
The main strongholds of this butterfly in Yorkshire are in the east and south of the county but there have been marked fluctuations in its distribution in the last century. Since the mid 1970's the range has been extending and the first record of the Gatekeeper in our district came on 26th July 1983 when one of us (MB) saw a male fluttering along a flowery ditch in the Swinnow Park area, north of Wetherby racecourse.

1984 and 1985 saw further records of male and female butterflies at Marston Moor and Nun Monkton on our eastern boundary, in the Goldsborough woods area, at Hunsingore, Knaresborough Ringing Station, Birkham Wood and at Lingerfield. The butterfly appears to be breeding in our district now but numbers have been small and we cannot yet count it as a secure resident.

The Gatekeeper is smaller than the Meadow Brown and Ringlet but it flies in a similar slow, hopping manner above the grass; it may be distinguished by its bright orange markings and the thick border of grey-brown around the wings.

Gatekeepers are on the wing on sunny days in late July and early August in a single brood; they may be found perched in sunny positions in the hedges and bushes or feeding on ragwort and thistle flowers. Typical haunts for the butterfly include rough grassy banks, hedgesides, scrubland and woodland clearings.





Regenerating scrub borders a ride in Goldsborough Wood, one of our strongest sites for butterflies; the White Letter Hairstreak flies here, although threatened by the death of elms.

MEADOW BROWN *Maniola jurtina*

Larval foodplants: various grasses
Overwintering: larva

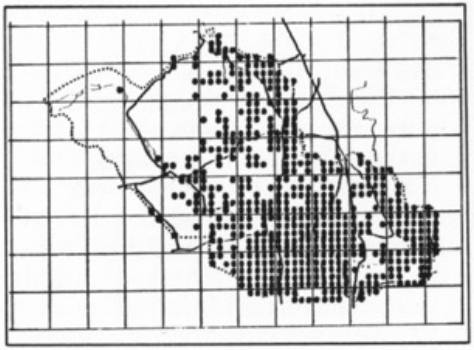
This familiar butterfly is widespread and often abundant throughout our lowland areas but it is much less numerous in the dales and has rarely been noted in Nidderdale beyond Pateley Bridge. Overall it is our commonest butterfly.

It is on the wing from mid-June to the end of August in a single brood, with peak numbers in late July. It is in general a rather drab brown butterfly but fresh specimens are velvety, with a greenish iridescent sheen; the larger female has more extensive light gold markings than the male.

The Meadow Brown is a butterfly of grassland and is able to subsist quite as happily on the broader roadside verges as in the more extensive sites in meadows, wasteland, quarries and disused railway lines. The reasons for its limitations in the dales are unclear.

Occasional specimens wander into gardens and feed on scented flowers but the butterfly is more commonly found in rough grassland, where it feeds on a variety of wild flowers and settles at some depth in the pasture to sun itself with the wings opened out. It is easily disturbed when approached and sets off with its characteristic hopping flight across the grass, rather reluctant to settle again.

The Meadow Brown is capable of surprisingly strong flight and on occasions two or three will chase each other at a fast pace, perhaps along a hedgerow. Sometimes numbers of Meadow Browns have been seen high up in the boughs of a tree, often an oak, but it has not been clear whether they were feeding there on some attractive secretion or were simply using it as a roosting place.



At 1000 feet above sea level the sheltered verges at Humberstone Bank hold some of our highest colonies of Meadow Brown and Large Skipper.

SMALL HEATH *Coenonympha pamphilus*

Larval foodplants: various grasses
Overwintering: larva

The Small Heath flies in our district from May to September with a peak of abundance in June. There appears to be a successive emergence from the pupa as fresh butterflies can be found throughout the season.

Its distribution is in direct contrast with that of the Meadow Brown, being most widely distributed in the higher, western part of the district. It is locally common in many natural grassy areas in the dales, particularly in the sheltered fringes, hollows and tracks on the moorland, and it is widespread on the slopes to the west of Harrogate. The highest sighting we made was at Nidd Head (1805′ altitude). It seems odd that this rather weak and delicate-looking butterfly is most regularly found in the colder, windier, exposed parts of our district.

It is a rather local insect in our lower ground, favouring sheltered areas such as certain disused quarries and pits, old railway lines, naturalised slopes and commons, and woodland clearings. In these lower parts the butterfly is absent from many places that would appear suitable for it. The colonies here are usually discrete, but in 1984 occasional butterflies were found wandering some distance away, a time when several species of brown butterflies were extending their range. It is very rarely found in our district to the east of the A1 road where intense agricultural development has left very little natural land.

The Small Heath is an attractive little butterfly with light gold-brown upper surfaces that are seen only in flight; when settled it always holds the wings together. It flies rather weakly and only in the sunshine, hopping and fluttering in the grass and sometimes rising up to settle for a while on a bush or bramble. It is easily disturbed into flight, even on a dull day, and must be approached very gently for close observation or photography.

RINGLET *Aphantopus hyperantus*

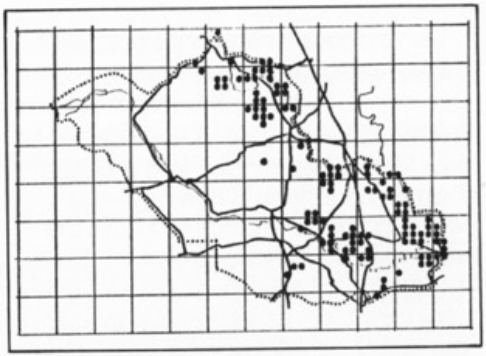
Larval foodplants: various grasses
Overwintering: larva

The Ringlet has long been widespread and often abundant in eastern parts of Yorkshire but it is much less commonly found to the west. The first colony in our district was discovered in the early 1970's in the High Batts reserve beside the Ure, north west of Ripon; this has been observed in every season since, often with an abundance of butterflies: on 8th July 1984 a count of 1885 butterflies was made there.

In the early 1980's the Ringlet started a dramatic extension of its range and at first we found it in new positions around Ripon Parks, Bellflask, West Tanfield and Ellington Banks. In 1984 it was found to be invading extensively along the whole of our east and northeast boundaries with some sightings up to 10 km inside the district, such as at Flaxby Covert, Lingerfield and Fountains Abbey. 1985 showed it to be strongly established in many of these new positions.

The Ringlet is a soot-brown butterfly characterised by the white fringe to the wings and the row of cream-coloured rings on the underside. It is on the wing in July and August in a single brood and may be found in rough grassland and woods, particularly in the sheltered clearings, rides and borders. Occasional specimens of the ringless form *arete* have been seen in our district, as at Roecliffe Whin in 1985.

The butterfly has a lazy flight, often fluttering about amongst and above the tall grasses, wandering along brambly hedgerows and settling to feed on the flowers there. In the late afternoon Ringlets settle in the long grass and bracken and a passer-by may disturb numerous butterflies into a brief, tired flight. Sometimes they have been seen roosting in the trees here, particularly in silver birch, hawthorn and elder.



Ringlet, Wall, Common Blue and Dingy Skipper may be seen around these sheltering banks on the hilltop at Marton-cum-Grafton.

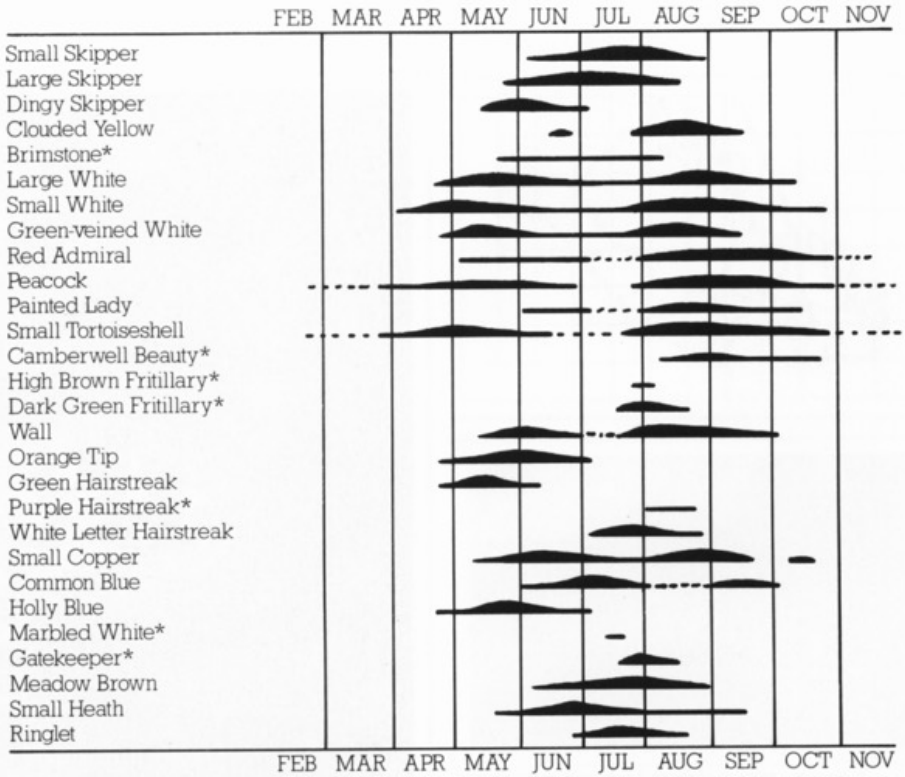
PART II: The Flight Periods

Painted Lady at Burton Leonard quarry on 24th August 1980, an outstanding year for this migrant butterfly.

The Flight Periods

Figure 1 shows the time of appearance of butterflies in our district based on our observations during the ten year study period. The seasons in a particular year may be advanced or delayed by up to several weeks, according to the weather, but sightings are usually within the ranges shown. The data are sketchy for species that have been seen here only on rare occasions, and these are marked with an asterisk.

Figure 1: Flight Period Graph



*Limited experience here with this species

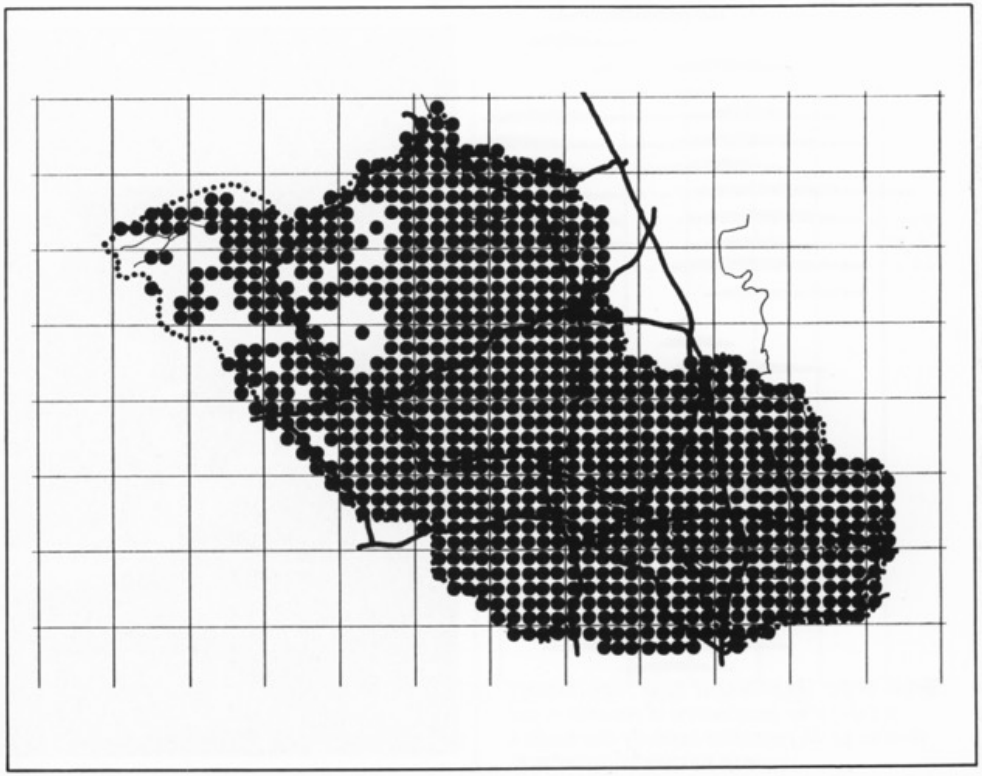
PART III: Measures of Abundance

White Letter Hairstreak at High Batts reserve, Ripon; after an absence of records in our district for 25 years this butterfly has made a very successful comeback.

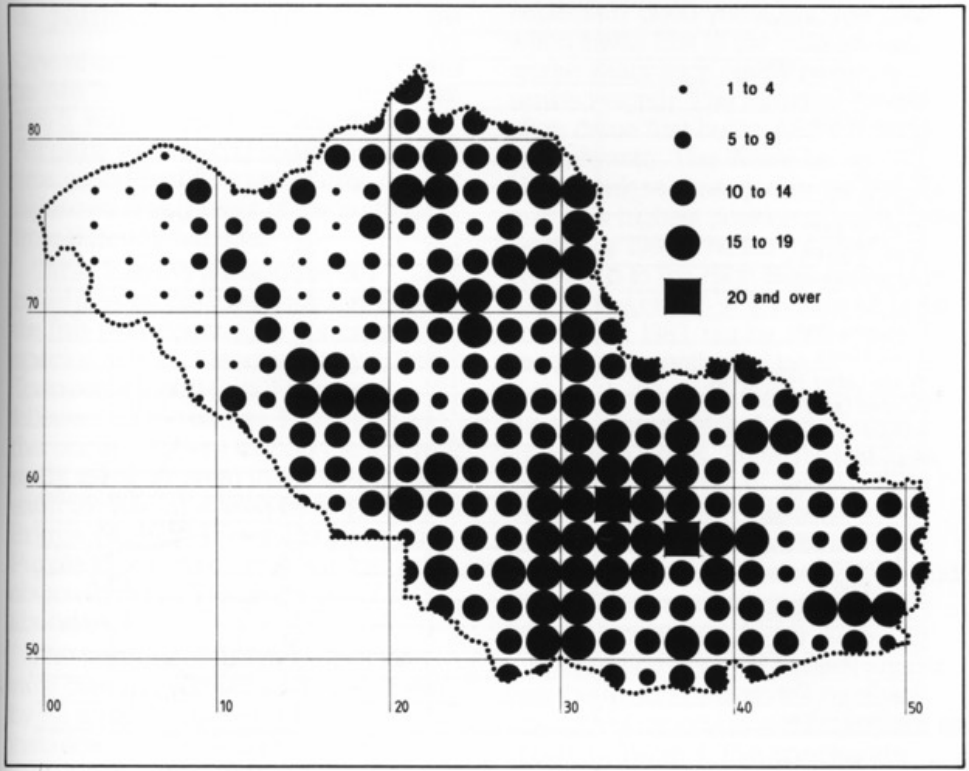
1. Distribution

The distribution of each butterfly is given in the maps in Part 1 but here we put the information together to gain a broad picture.

Map 32 shows the total records: every 1 km square in which we saw a butterfly bears a dot. In all we made sightings in 943 squares (92% of the total 1024 squares). We searched most of the remaining areas without success but this is remote, desolate and mainly private moorland with obvious difficulties of access. Occasional wandering or moorland butterflies probably do occur in these parts although we were unable to find them.



Map 32:
All 1 km squares in which we saw butterflies during the survey.



Map 33 shows the number of species recorded in each 2 x 2 km tetrad throughout the district. The largest variety of species was recorded in the lower parts of our territory, particularly around Knaresborough, with up to 21 species per tetrad. Moving up the dales and onto the higher land the range of butterflies was progressively reduced.

Map 33:
Number of butterfly species recorded in each 2 x 2 km tetrad during the survey.

Assessed by the 10 x 10 km squares the highest number of species was recorded in the Knaresborough and Grewelthorpe squares (23 species) followed by the Green Hammerton, Fountains Abbey and Ramsgill squares (22 species), South Stainley and Pateley Bridge squares (21 species) and the Hampsthwaite and Ripon squares (20 species). In the Scar House reservoir square of Upper Nidderdale there were only 13 species recorded.

Table 1 shows the relative abundance of butterfly species according to the number of 1 km squares in which they were recorded (i.e. the number of dots on the map), and the percentage of the total 1024 squares is also given. The most widely distributed butterflies were the Small Tortoiseshell (68%), the Small White (66%) and the Green-veined White (65%).

TABLE 1: League of Abundance by Recorded Squares

Butterfly	League order of abundance	No. of 1 km^2 records	% of total 1024 squares	% of total recorded squares
Small Tortoiseshell	1	693	68	73
Small White	2	675	66	72
Green-veined White	3	665	65	71
Meadow Brown	4	520	51	55
Large White	5=	516	50	55
Wall	5=	516	50	55
Peacock	7	492	48	52
Orange Tip	8	354	35	38
Small Skipper	9	288	28	31
Small Copper	10	259	25	27
Large Skipper	11	243	24	26
Red Admiral	12	235	23	25
Common Blue	13=	172	17	18
Small Heath	13=	172	17	18
White Letter Hairstreak	15	155	15	16
Painted Lady	16	134	13	14
Ringlet	17	113	11	12
Holly Blue	18	103	10	11
Clouded Yellow	19	73	7	8
Green Hairstreak	20	38	3.7	4.0
Dingy Skipper	21	21	2.1	2.2
Gatekeeper	22	16	1.6	1.7
Brimstone	23=	7	0.7	0.7
Camberwell Beauty	23=	7	0.7	0.7
Dark Green Fritillary	25	5	0.5	0.5
Purple Hairstreak	26	3	0.3	0.3
High Brown Fritillary	27=	1	0.1	0.1
Marbled White	27=	1	0.1	0.1

2. Numerical Abundance

One of us (MB) counted every butterfly he saw in the district for the five years 1981-5, with a total of 28,154 sightings. All parts were being searched at the time so the results give a fairly balanced assessment of the butterflies from different habitats.

Table 2 shows a league of our butterflies by the total numbers seen in the five year count. Our commonest species are the Meadow Brown, Small Tortoiseshell and Small Skipper, followed by the whites. Four species that occurred here during the ten year study were not seen in the counting exercise (Camberwell Beauty, Brimstone, High Brown Fritillary and Purple Hairstreak); they would obviously come low on the list of abundance.

The fortunes of different species vary over the years, as can be shown by an annual ranking of butterflies. For instance, the Small Tortoiseshell has especially good years, such as 1982 when it was first in the league, and worse years such as 1981, when it ranked eighth. The Meadow Brown often came first but in 1982 it ranked only seventh. The White Letter Hairstreak re-emerged in the late 70s and hit a highest position of ninth in the league in 1984. The Ringlet was restricted to the High Batts reserve in earlier years and was not noted in the count until 1983, but by 1985 it had reached eleventh position.

Comparison with the geographical distribution in Table 1 shows some interesting points. Butterflies such as the Orange Tip, Small Copper and White Letter Hairstreak are widespread but in small numbers; others such as the Meadow Brown and Small Skipper are very numerous where they occur.

Information from the butterfly count may be used to assess the relative strength of broods in our butterflies, as shown in Table 3. The species are grouped into (a) those that are double-brooded, (b) those that hibernate and show separate spring and summer appearances, and (c) the migrants that first arrive in the early summer, with offspring or further migrants appearing later.

Some butterflies such as Holly Blue that are double-brooded in southern England give only one appearance here, whereas others such as Common Blue usually show a small to moderate second brood. In some species (Wall, Small Copper) the second brood butterflies regularly give the stronger appearance. In others, such as the whites, the relative strength of the broods depends very much on the prevailing weather. These variations are clearly seen in our results, as shown in the Table.

TABLE 2: League of Numerical Abundance

Butterfly	League order of abundance	No. seen in 5 year count	% of total 28,154 butterflies seen
Meadow Brown	1	5505	20
Small Tortoiseshell	2	3799	13
Small Skipper	3	2822	10
Small White	4	2766	10
Green-veined White	5	2104	7
Wall	6	1958	7
Peacock	7	1823	6
Common Blue	8	1615	6
Large White	9	1351	5
Large Skipper	10	832	3
Small Heath	11	620	2
Ringlet	12	608	2
Orange Tip	13	490	1.7
White Letter Hairstreak	14	418	1.5
Small Copper	15	330	1.2
Red Admiral	16	324	1.2
Green Hairstreak	17	289	1.0
Holly Blue	18	220	0.8
Dingy Skipper	19	212	0.8
Painted Lady	20	35	0.1
Clouded Yellow	21	18	<0.1
Dark Green Fritillary	22	9	<0.1
Gatekeeper	23	5	<0.1
Marbled White	24	1	<0.1

Appendix

TABLE 3: Relative Strength of Broods

Butterfly	Ratio of first to second appearance in year 1981	1982	1983	1984	1985	Average 5 yr
a) double-brooded						
Large White	1:1	1:2	2:1	1:3	1:1	1:1
Small White	2:9	1:6	2:5	1:9	1:1	2:5
Green-veined White	1:5	1:6	1:1	3:7	4:3	2:3
Common Blue	136:1	2:1	9:2	4:1	★	4:1†
Small Copper	1:2	1:9	1:2	1:10	1:2	1:5
Wall	1:17	1:13	1:3	1:3	2:5	1:4
b) hibernators						
Peacock	1:12	1:15	1:3	3:8	1:2	1:5
Small Tortoiseshell	1:9	1:31	1:3	1:10	1:3	1:9
c) migrants‡						
Red Admiral	—:9	2:186	—:37	10:60	—:20	1.26
Painted Lady	—:—	2:19	—:9	—:1	1:3	1.11
Clouded Yellow	—:—	—:—	1:17	—:—	—:—	1.17
	1981	1982	1983	1984	1985	Average

★ = no second brood in 1985
† = ratio shows average of 4 years
‡ = in the migrant category annual figures show total butterflies seen, 5 year average shows the overall ratio.

Advice to hunters

a) General

Those going out to look for butterflies should consider the following practical points: conditions must be right — few butterflies will be seen if the wind is strong, the day cold or if there is no sunshine; there is a particular habitat for many species that should be sought out — some will regularly visit gardens, others are local to natural land that can be rather hard to find: paradoxically, this is mainly land once developed and now derelict such as old quarries, pits and railway lines. Binoculars are useful to scan the treetops for hairstreaks and to identify distant insects.

There are years of plenty and years of scarcity for most species and it may prove impossible to find a particular butterfly even on a good day in the right place at the right time of year.

There is still plenty of scope for

observation and study of our species. There is much pleasure derived in finding our butterflies in new or unusual locations and several familiar British species are uncommon or only newly-arrived in our parts — this makes them of special interest. The sight of a Meadow Brown in Upper Nidderdale or a Gatekeeper at Goldsborough can be very exciting. Each species can reveal interesting facets in its natural history and there is a great deal yet to be learned even about the most abundant butterflies.

b) Photography and collection

Butterfly photography is a challenging form of collection. It requires a lot of patience but the results can be very pleasing, showing the living appearances of the butterflies in their natural surroundings. Also it is good to be able to leave the insects quite untouched.

The technical aspects are now quite easy with the use of a single lens reflex camera with fast colour film or electronic flash[11]. Close-up focusing is achieved with extension rings for the standard lenses; with a special macro lens the photographer may stand further back but the camera must be held very still and the image is somewhat flattened.

Those who still want to catch butterflies should take only small numbers in good condition and ideally only from large colonies in years of abundance. The rarer butterflies should be left although they are the most tempting to the collector. Butterflies emerging from hibernation and freshly arrived migrants should *not* be taken as they will normally be parents to a more numerous generation in better condition.

Conservation

This is an issue of great importance in these days when financial pressures put our last woods and meadows in jeopardy and foster a desire to develop every corner of 'waste land'. Many butterflies have been in steady retreat in the face of modern development, particularly since the last war, and are now in a very vulnerable position.

Periods of relative increase in butterfly populations come and go as natural fluctuations and should not be interpreted as evidence that all is well. All those who enjoy seeing butterflies and who want them to survive should support the preservation of whatever natural land remains to us.

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Cover Photographs

Front cover: Peacock butterfly at Hartwith on 7th August 1982 (Mr. L. Rush). **Back cover:** Holly Blue at Shaw Mills on 15th May 1982 (Mr. L. Rush).