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BUTTERFLY
CONSERVATION

Institute of
Terrestrial
Ecology

Biological Records Centre

Butterflies for the New Millennium

Proceedings of :

3rd. Annual Meeting held at Doncaster
10 May 1997

Welsh Regional Meeting held at Rhayader
9 November 1996

Edited by
Richard Fox

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The recording needs of Butterfly Conservation

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Introduction

Butterfly Conservation (the British Butterfly Conservation Society Ltd) is probably the largest insect conservation body in the world, and is devoted to the conservation of our native butterflies and moths, and their habitats. Our activities span all spheres of modern conservation work, and our ultimate goal is the restoration of a more balanced countryside, with butterflies and other wildlife returned to the profusion they, and we, once enjoyed.

Butterfly Conservation

- is playing a lead role in conserving butterfly and moth populations, particularly through the preparation of Species Action Plans for those requiring highest priority
- campaigns to save threatened habitats
- is a member of the influential Biodiversity Challenge Group
- lobbies National and Local Government to influence planning and policy decision-making
- carries out research on threatened butterflies and moths
- surveys, records and monitors butterflies and moths throughout the UK
- has Branches throughout the UK which promote and undertake conservation at a local level
- advises landowners on habitat management
- acquires and manages natures reserves
- works in partnership with other conservation bodies
- encourages interest and awareness of butterflies, moths and their conservation

Recording for conservation

To be able to start to conserve a species effectively, we need to know its distribution and abundance, and, more especially, accurate and up-to-date information on how its distribution and abundance are changing. Detecting these changes is done through recording, which consists of survey and monitoring. The Butterflies for the New Millennium Project primarily involves survey, although the results from the many monitoring schemes throughout the UK will be incorporated.

Nature conservation is not just about safeguarding rare species, it is also increasingly about trying to reverse rapid declines of once common species, such as the Pearl-bordered Fritillary (*Boloria euphrosyne*). While rare species can normally be monitored effectively at a local level, the detection and measurement of declines or increases of widespread species is best carried out by large scale recording, such as the Butterflies for the New Millennium Project.

Recording is essential for effective conservation action at all levels, from the site-based and local, through to national and international.

Recording needs at a local level

Site-based recording, such as monitoring on nature reserves, is essential in order *to assess the effects of management* and feed the results back into the management plan. It may also shed light on *important features of the ecology and behaviour* of a

species, which may vary from region to region.

Recording at a local level is a prerequisite for the *identification of key wildlife sites*. Up-to-date and accurate information is also vital for their *defence through the planning system*, for example at a Public Inquiry. Identification of key sites also helps to *target the resources available for management advice* for landowners.

Although conservation action takes place at a local level, it is often useful, and sometimes essential to *put what is happening locally in a regional or national context*, for example, by comparing transect data with data drawn from across the country, the masking effects of the weather (and even climate change?) may be removed and trends due to site management revealed.

Recording needs at a regional/ national level

At a regional or national level, survey data are essential for *assessing changes in distribution* over time. It is often difficult to be precise about such changes as recording techniques and coverage are improving all the time. However, if the changes are interpreted pragmatically, the reasons for species declines can sometimes be identified (e.g. correlation with loss of habitat).

It is these changes in species distribution that are used *to determine regional or national conservation priorities*. For example, the Government recently used declines of more than 25% over the last 25 years to help identify the UK's 116 most threatened species (DoE, 1995).

Species that are the most threatened are candidates for the *preparation of Species Action Plans*, which identify, encourage and co-ordinate necessary conservation action by a wide range of conservation and land management organisations, and those able to influence relevant policies.

Locally-threatened species, together with regionally- and nationally-threatened species are identified in *Local Biodiversity Action Plans*, prepared by Local Authorities in partnership with conservation organisations and even local commercial interests, which tackle all the species of concern in a particular area. These plans themselves are often part of a *Local Agenda 21 process*, which integrates biodiversity conservation with protection of the wider environment and tries to ensure that transport, housing and other policy issues do not conflict with those to protect wildlife.

The data derived from the Butterflies for the New Millennium Project will be used by Butterfly Conservation itself to formulate *future campaigns*, both for individual species, and also for suites of species, in the same way our Land Rover Woodland Campaign was developed. The data will be used to *generate awareness of the conservation needs of butterflies* and of the work of the Society.

In summary

Through the use of butterflies as flagships for the conservation of other insects, and of invertebrates generally, and of their habitats, the Butterflies for the New Millennium Project will help to promote the importance of this large part of our biodiversity to other conservation bodies, to policy-makers, and to the wider public.

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Why ITE is supporting the Butterflies for the New Millennium project

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The Institute of Terrestrial Ecology (ITE) is supporting the Butterflies for the New Millennium (BNM) project because of the potential of data from the project for research and in informing environmental policy making and decision taking. The co-ordination of the BNM project is based at the national Biological Records Centre (BRC) at ITE's Monks Wood research station. The BNM project will update and greatly enlarge the only previous national butterfly dataset, which is held at BRC (the 1984 Atlas dataset - see below). ITE's main use of the extensive datasets at BRC is in its programmes of biogeographic and land use research. Much of this research is commissioned by government departments and agencies (e.g. Carey *et al.* 1995, Firbank *et al.* 1994), or is carried out as part of post-graduate research projects.

What ITE wants from BNM

As with any other dataset to be managed as part of the BRC database, ITE is interested in well validated, standardised and accessible data that are based, as far as possible, on recent records from surveys carried out over a limited number of years. This type of data not only establishes a baseline for future surveys, but also, in the case of butterflies, enables comparisons to be made with the 1984 Atlas dataset.

The BNM project has been seen, since its inception, as a joint venture between ITE and Butterfly Conservation (BC). The development of the BNM project over the period since the joint BC/BRC report on the co-ordination of butterfly recording (Asher 1992), has been based on a pragmatic approach to the types of data likely to be needed for conservation and environmental research, whilst respecting the interests and resources of the butterfly recording community.

The level of detail required for research

The level of detail required for research varies. Much of the post-graduate research carried out on the 1984 Atlas dataset (e.g. Prendergast & Eversham 1995, Quinn *et al.* 1996) has used only 10km square summary data for large scale biogeographic analyses.

Data at the 1km square level is required for the Countryside Information System (CIS), a Microsoft Windows-based program for PCs which brings together indexes and examples of a wide range of spatial information about the British countryside. CIS has been developed for the Department of the Environment by ITE and W. S. Atkins, for use particularly by local authorities and utilities to inform decision making in relation to potential impacts on the natural environment.

Data to support autecological and conservation-based research requires as much detail as possible. BRC has supplied BC and a generation of researchers and conservationists with data from the 1984 Atlas dataset, but many of the data were not sufficiently detailed for site-based conservation work. In future the supply of detailed data from the BNM project is more likely to involve BC than BRC, because BC is now the leading organisation in butterfly research for conservation in the UK.

BNM and the 1984 Atlas dataset

Until BNM began to collate data nationally, the only national butterfly dataset consisted of approximately 1/4 million records and was compiled at BRC (Harding & Greene 1984) as a result of the national survey organised by the late John Heath at BRC between 1967 and 1982. This survey resulted in the national Atlas (Heath, Pollard & Thomas 1984). Although the survey was carried out over a period of 16 years, considerable effort was made to include historical records, in some cases back to the mid 19th century, mainly from the literature. This dataset will be used as a baseline for comparison with the BNM data in the preparation of the new Atlas, in particular to examine any long-term changes in the geographical ranges of species.

The maps in the 1984 Atlas were subsequently updated to December 1988, by the editors and publishers of Volume 7, Part 1 of the *Moths and Butterflies of Great Britain and Ireland* series (Emmet & Heath 1989). These updates were derived from highly fragmented information from a variety of sources, not all of which are now considered to have been wholly reliable, and the data are not available in a computerised form.

BNM and the Butterfly Monitoring Scheme

ITE, with co-funding by the Joint Nature Conservation Committee (JNCC), operates the national Butterfly Monitoring Scheme (BMS) (e.g. see Pollard and Yates 1993). This project was launched in 1976 and collates data from weekly butterfly transects at about 100 sites throughout the UK. Some analyses have been made using the existing BRC butterfly database and data from the national BMS (Pollard & Eversham 1995). The BNM data will be an important source for examining medium-term changes in the range of species when combined with the 1984 Atlas dataset and the quantitative data from the BMS, which spans the period of the two national surveys.

BNM and the National Biodiversity Network

ITE is a partner in the consortium of organisations which has initiated the National Biodiversity Network (NBN). This ambitious project is intended to increase the availability and accessibility of information about the biodiversity of the UK to statutory and non-governmental organisations, local records centres, amateur naturalists and the general public. The BNM dataset will be an important component of NBN and it is hoped that increased access to information about butterflies and their habitats will further the cause of butterfly conservation in general and help Butterfly Conservation in its work in the UK. NBN is not intended to provide uncontrolled access to all the data in a dataset such as that from BNM; information about threatened species and sensitive sites will be carefully controlled.

The conservation agencies, BRC and BNM

ITE operates BRC with co-funding from JNCC. JNCC acts on behalf of the statutory nature conservation councils (Countryside Council for Wales, English Nature and Scottish Natural Heritage). BRC's input to the BNM project is partly supported by JNCC as part of the general work programme for BRC. The interests of the conservation agencies in the BNM are described by Adrian Fowles (page 7).

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Biological data and its use by the Countryside Council for Wales

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Biological data provides the backbone for nature conservation and is utilised at all levels by the Countryside Council for Wales, from influencing responses to planning applications and the selection of Sites of Special Scientific Interest, to advising on Governmental environment policies and GB-wide ecological research.

Statutory conservation agencies: uses of species data

INTERNATIONAL OBLIGATIONS
Bern Convention
EC Habitats & Species Directive

GOVERNMENT LEGISLATION
Wildlife & Countryside Act
- Schedule 5 Reporting
- Quinquennial Review
- SSSI Notification

UK Biodiversity Action Plan
- Habitat Plans
- Species Plans

COMMISSIONED RESEARCH
Technical Support Programme

CONSERVATION MANAGEMENT
National Nature Reserves
SSSI Management Plans

WIDER COUNTRYSIDE
Strategic Plans
Local Agenda 21
Agri-Environment Schemes
Grant-Aid

Biological recording is: "the collection, collation, storage, dissemination and interpretation of information, both in space and time, concerning kinds and numbers of wildlife, assemblages of organisms, and their biotopes, especially when the records are related to localised sites" (CCBR 1995). The basic elements of a biological record can be broken down to : WHAT, WHERE, WHEN & WHO. Butterfly recorders should know WHAT they are recording and WHEN and hopefully most know WHO they are! The dilemma of biological recording lies in WHERE. Getting the scale of survey right at the outset maximises the information value of surveys. If the end product is to be a vice-county map of species distribution there is no point in diligently seeking common taxa, meadow browns for instance, in every field. The key lies in deciding what questions the survey is designed to answer before embarking on the fieldwork.

For most taxa comprehensive coverage of GB is a distant dream - it has been estimated that it would take 160,000 years to map the British insect fauna at 10km level (Unwin 1986)! However, the extremely impressive maps already produced by ButterflyNet reflect the fact that, for butterflies, the dream can be a reality - at a suitable scale. Biological recording is all a question of scale: traditionally at vice-county level, more recently 10km distribution mapping, now tetrads. For readily observed and easily identified taxa we should expect something more than the familiar atlas.

"The Atlas must be considered as a by-product of the more important ongoing task of gathering species distribution and abundance information for the purposes of determining and monitoring the status of different species in order to provide sound information to be used for species conservation." (Greatorex-Davies 1996).

The ideal for butterfly recording would be to identify every distinct population of a species, to plot its distribution in relation to suitable habitat, and to record annual fluctuations in abundance. Sadly, this is not possible. In the first place some species do not have recognisable populations at a local level, but certainly the resources to map all of the species with closed populations are beyond current and foreseeable capacity. Compromises must be reached, effort must be targeted.

A simplification of the butterfly conservation questions that can be answered by survey in Great Britain are:

What is the species' range?
What is the species' flight period?
What is the species' habitat?
What is the species' status?
What is the species' abundance?

Nationally, *Range* can be effectively explored at vice-county level. Is the species expanding or contracting in the face of environmental change? This is an extremely important question in light of the rapidity of habitat loss and deterioration in GB, and as we face the prospect of altered distributions due to global climate change. However, much information is lost at such a broad scale and 10km mapping has become the norm for assessing range. 10km mapping also permits detailed analyses to be carried out on aspects of ecological theory, e.g. the assessment by Lawton *et al* (1994) of 'hot-spot' concentrations, in a way that helps to prioritise conservation resources. Such theoretical analyses have a very important role to play in nature conservation and they are only possible with the kind of information generated by surveys such as the Millennium Atlas.

Flight period information should be readily generated from the basic records submitted to the survey. There is already a clear idea of when each of the British butterflies are on the wing at a national scale but the data is patchy at local level. Knowing when a species is likely to be flying locally can be of great assistance in planning survey. It is also vital when planning monitoring programmes, there is no point wasting time visiting key sites to monitor adult butterflies if they have not emerged. Such information will become increasingly important to the statutory conservation agencies as SSSI monitoring becomes more comprehensive.

Habitat. There are numerous habitat classifications in operation in Great Britain, e.g. Phase 1, NVC, CORINE. Each system is designed for specific purposes and as such there are problems translating from one to another. Correct identification of habitat types without training is difficult but there is an attempt to standardise the habitat information generated by Butterflies for the New Millennium on the recording form.

Status is taken here as the number of sites, or populations that a particular species occupies. British butterflies can be categorised as belonging to either closed or open populations.

Butterfly population structure

Population : A group of individuals of a particular species that are separated to some extent, either in space or in time, from other groups of the same species

Open population : Individuals range widely over the countryside, regularly dispersing from one breeding area to another (e.g. Small Tortoiseshell)

Closed population : Individuals form well-defined colonies within discrete areas, with negligible emigration (e.g. Silver-studded Blue)

Metapopulation : An assemblage of local (closed) populations connected to each other

by occasional migration (e.g. Marsh Fritillary).

A major advance in nature conservation, with significant implications for invertebrate conservation, is the development of metapopulation theory. It is now recognised that, for many taxa, the protection of a specific parcel of land is insufficient to maintain viable populations. Such species require a network of patches in varying stages of suitability in order to maintain populations long term. The classic example in Wales is the Marsh Fritillary but approximately two-thirds of the British butterfly species are considered to exist in metapopulations of one form or another. Twenty-one of the forty species resident in Wales probably occur in metapopulations in isolated and fragmented habitats.

Welsh butterfly species with closed populations restricted to 'island biotypes'
(After Pollard & Yates 1993)

	Status in Wales
Dingy Skipper	Local
Grizzled Skipper	Scarce
Wood White	Scarce
Green Hairstreak	Local
Brown Hairstreak	Scarce
Purple Hairstreak	Local
White-letter Hairstreak	Scarce
Small Blue	Scarce
Silver-studded Blue	Scarce
Brown Argus	Local
[Northern Brown Argus]	Scarce
White Admiral	Scarce
Small Pearl-bordered Fritillary	Local
Pearl-bordered Fritillary	Scarce
High Brown Fritillary	Rare
Dark Green Fritillary	Local
Silver-washed Fritillary	Local
Marsh Fritillary	Local
Marbled White	Local
Grayling	Local
Large Heath	Scarce

The local nature reserve or Site of Special Scientific Interest is still a vital part of safeguarding metapopulations, but additional measures must be taken if the full network of patches is to be conserved. Our best hope of achieving this is through agri-environment schemes - Environmentally Sensitive Areas or Tir Cymen, for example - by getting sympathetic management in place on parcels of land that have the potential to support scarce butterflies. However, such schemes are costly and need targeting. Some form of zoning is necessary and this can only come about through surveys which reveal the actual and potential value of habitat patches. For butterfly conservation this means identifying areas that would benefit most from targeting agri-environment resources because they have the greatest potential of sustaining viable populations of scarce butterflies if sympathetic management is put in place. The requirement for survey here is to identify, at site level, the occurrence of scarce butterflies and also to indicate which currently unoccupied, but potentially suitable, patches are within reach of colonisation.

The *abundance* of a particular species is not usually depicted in atlases, although there are exceptions, e.g. the recent breeding bird Atlas (Gibbons *et al* 1993). Such information has to be collected by strategic sampling and this is likely to be beyond the capacity of available insect recorders in Britain, but nonetheless some measure of abundance, even coarse estimates, should back up distribution records. One problem with the interpretation of any distribution map is whether or not a particular symbol relates to a resident population or an accidental occurrence. For butterflies, hot summers occasionally permit otherwise sedentary species to wander widely. Good examples are the Marsh Fritillary and the Marbled White, both of which can turn up in very unlikely places in good years like 1976 or 1983. Such records undoubtedly

confuse the picture of range and status and affect calculations of extinction rates. 'Weeding out' such vagrants, perhaps by using different symbols for lone individuals, should be an aim of modern distribution atlases.

The most informative kind of abundance data comes from monitoring transects, such as the Butterfly Monitoring Scheme run by ITE in conjunction with the statutory conservation agencies. There are currently thirteen BMS transects in operation in Wales. These transects demand a high level of commitment but yield great rewards. Placed into a local or national context with data from similar transects it is possible to discern trends in species' fluctuations and to interpret the successes (or failures) of conservation management. Note that transects can also be effectively established for larvae (e.g. Marsh Fritillaries) or eggs (e.g. Brown Hairstreaks). ITE has recently embarked on a collation of independent monitoring schemes carried out in Britain and there are currently believed to be seventeen in Wales. The establishment of more species or site monitoring transects must be one of the major aims of butterfly conservation in Wales in the future.

Butterflies for the New Millennium is an exciting project that has the potential to make a major contribution to butterfly conservation in Wales. It is certainly feasible to produce a meaningful atlas at 10km scale by the next Millennium but we must ensure that such a major effort generates results of wider value than a series of up-to-date maps. It would be foolish, for instance, to neglect monitoring transects in order to spend more time in the field recording new 10km squares for common butterfly species. My own view is that records for the Atlas should naturally flow from more targeted efforts on scarce species surveys. Producing detailed local inventories of the status of Silver-washed Fritillaries, Dingy Skippers, Small Pearl-bordered Fritillaries, Large Heaths, etc. will inevitably yield 10km information on the distribution of the commoner species in the area. Producing a completely blacked-in map of the distribution of Small Tortoiseshells in Wales will do little on its own to further the cause of butterfly conservation. What butterfly conservation needs is more information on the butterflies that need conservation effort - Butterflies for the New Millennium provides the impetus and framework to gather that information.

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Butterfly recording in Cumbria - an example of a local recording scheme

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The Cumbria Butterfly Recording Scheme was initiated in 1991 by the Cumbria Naturalists' Union Lepidoptera Recorder Mr D.W. (Bill) Kydd, and Tullie House Museum. To date over 22,500 records of butterflies in Cumbria have been added to the RECORDER biological records database package used by the Museum. A system of record collection, validation, data input and feedback has been established. The information gained is used in local distribution maps providing feedback to the local recorders as well as being of use to conservation and planning organisations within the county. The information is also available to the national recording scheme. Whilst the production of a local distribution atlas of butterflies in Cumbria is one aim of the scheme it is not viewed as a final product but rather as one useful by-product of maintaining an ongoing database of information on distribution and abundance of butterflies in Cumbria.

The county of Cumbria forms an obvious unit comprising the north west corner of England. Consisting of vice-counties 69 and 70 (with a small corner of North-west Yorkshire (vice-county 65) in addition), it is bounded on three sides by the Solway Firth, the Irish Sea and Morecambe Bay; the chain of the high Pennine fells forms the eastern border of the area. The centre of the county is occupied by the Lake District National Park with fells reaching up to 3,000 feet in altitude. While the varied topography and geology of the county gives rise to a rich variety of wildlife habitat and species diversity, it also creates problems of communication. With the middle of the county occupied by a region of high fells, most of the human population is settled on the fringes of the county, resulting in the lack of an obvious centre. The largest conurbation is Carlisle in the north east of the county. 45 miles to the south is Kendal, a further 45 miles south west lies Barrow. Whitehaven and Workington are situated more or less equidistant between Carlisle and Barrow on the west coast.

The largely rural nature of Cumbria also means there is a low resident population and therefore relatively few active naturalists studying and collecting records of the wildlife. There are of course many tens of thousands of visitors to the Lake District and other parts of the county each year and there must be many able naturalists among them who keep a record of the species encountered during their holidays. However, there are very few visiting naturalists who pass on their information to the local recording schemes, of which they are probably unaware. Some of this information will doubtless be fed into the national recording schemes and while BRC has always been willing to pass on records which it has for Cumbria it has not always been in a position to do so. So far we are unable to read information from BRC directly into our RECORDER database and so must manually input BRC records again from the printouts which they kindly supply. Time and money obviously restricts the degree to which such a task can be undertaken - we have however re-input all the Cumbria butterfly records up to 1982 which were used in the *Atlas of Butterflies in Britain and Ireland* from printouts provided by BRC. There will of course be a certain number of errors

in the data resulting from this duplication of effort and future developments of RECORDER which allow electronic importation of data from BRC and other computerised sources will be a great advantage.

Cumbria was first considered as a single unit for biological recording by the Rev. H. A. MacPherson whose 'Lakeland Faunal Area' described in his *Vertebrate Fauna of Lakeland* (1892) closely compares to the modern day county boundary (with the exception of a corner of North-west Yorkshire (vice-county 65) which was incorporated into the county when it was created in 1974). MacPherson became the first Director of Tullie House Museum when it was opened by Carlisle City in 1893. In 1902 the Museum initiated the local biological records centre to continue MacPherson's work and "*to carry on the work of studying the fauna of Lakeland and the Solway district, to preserve the "Records" in the museum, to make as many people as possible personally interested in the fauna of the area generally and in the museum collections in particular*" (Hope 1910). The Museum has maintained a role of collecting and storing information on the natural history of the region over the course of the last century in collaboration with the various natural history societies active in the county.

In 1991 the county Lepidoptera Recorder, Bill Kydd, initiated a survey of the butterflies of the county with the aim of establishing the present day distribution of all Cumbria's butterfly species. Tullie House Museum, having just acquired the RECORDER biological records computer package was in a position to collate the records and to service the recording scheme. This local initiative pre-dates the national Butterflies for the New Millennium scheme and hence the strategy and implementation of the Cumbria scheme was developed independently. The concept of the project was quickly expanded to include all records of butterflies in Cumbria (not just those post 1989).

The back-issues of local natural history journals and national entomological publications were searched for published lists and articles. BRC kindly supplied printouts of processed butterfly records for Cumbria (this included only those records received by BRC up to the end of 1982 - the deadline for the *Atlas of Butterflies in Britain and Ireland*). The collections at the Museum were also examined and data incorporated into the recording scheme database. Bill Kydd appealed for records from the naturalist community through the annual report on wildlife in the county - *Birds and Wildlife in Cumbria*. The audience for this journal is relatively small and with a popular group such as butterflies it was felt that the wider community could be involved in recording and reporting sightings. This was achieved with a simple recording form designed to encourage casual observers to record and send in their sightings. In this way several hundred people have become involved in supplying thousands of records of butterflies in Cumbria. There is of course a risk of receiving poor quality data in involving non-specialists in the recording scheme. However it was felt that the advantages outweighed the disadvantages as with careful vetting dubious records of the more notable species could be fairly readily weeded out and any errors of identification within the common species would not affect the distribution maps and would not be relevant in conservation / planning issues. The recording form gives advice on filling in the fields and help on working out a grid reference, but does not give any indication on what species of butterfly are likely to be seen in the county or how to identify them. This was a deliberate decision to avoid the risk of

people making assumptions on what they had seen from what would necessarily have been inadequately brief information on the recording form. In this way if a recorder does not recognise a butterfly it either remains unrecorded or they look it up in a book rather than being tempted to select a name from a list on the recording form.

The recording form was kept deliberately simple in order to encourage as many people to complete it as possible. The basic fields are included - Name and address of the recorder, Species seen, Location Name, Grid Reference, Date, Type of Record (Egg, Larva, Pupae, Adult, Mating). Recorders are requested to enter the numbers seen of each category, and a final Comments field on the form enables recorders to give any additional information on habitat, behaviour etc. if they wish. A Site Recording form was also developed, based on the Butterfly Conservation Site Recording form of the time. The species listed on this form were altered to correspond with the Cumbria list and also the groupings for abundance were altered to correspond with the abundance groupings used by the RECORDER programme. This latter alteration could have created problems in relating abundance as recorded in Cumbria with the national scheme which later adopted the Butterfly Conservation abundance categories. However, as it has transpired there has been very little uptake of the *Cumbria Butterfly Site Recording Forms* - most site-based information being received via Butterfly Conservation on their own Northern England Site Record Forms.

As records are received they are passed to the county recorder for vetting. Doubtful records are checked and either confirmed or dismissed before inputting to the database. RECORDER offers a useful facility of being able to flag certain records as *requiring confirmation* - in this way interesting but dubious records can be stored for future information but are not normally incorporated into maps, reports etc.

Data input takes place at Tullie House Museum using volunteers. This is carried out mainly at the end of the year through to the following spring/summer. Most of the records are in the form of lists of individual records - either on the recording scheme forms or as straight forward lists. A few recorders and members of Butterfly Conservation carry out more intensive studies of particular sites and their records are received as lists of species for a site, often using the Butterfly Conservation Site Recording Forms. The RECORDER database checks grid references against the site name given and/or the parish and/or the vice-county and flags up any that do not correspond. This system is only accurate to 10km square level but is a very useful aid to reducing inputter error. Similarly the programme also rejects dates of sightings which fall outside the dates of the recorder's birth and/or death (if known).

In order to maintain recorders' interest and also to direct them to less well covered parts of the county, a provisional atlas was produced in 1994 and updated in 1995. All but the three most sensitive species in the county were mapped to tetrad level and an *All records* map showed the squares for which no records had been received.

The annual insect report in *Birds and Wildlife in Cumbria* provides feedback to recorders with an account of the previous year's discoveries and coverage achieved by the recording scheme. A free newsletter produced by the Museum goes to all local naturalists with whom the Museum has had contact and gives information on various local recording schemes - including the butterflies. Although the general nature of this newsletter means that there is no space for in-depth items on butterflies or the

butterfly recording scheme, its brevity and generalised nature has the advantage of bringing the recording scheme to the attention of a wider audience of local naturalists.

Most information is provided unconditionally to the recording scheme. Very occasionally a recorder or land owner may wish the information to be kept confidential. Again the RECORDER programme has the facility to flag records as confidential and these will then not normally be included in standard reports, maps etc.

The database is used to produce up to date maps of species distribution - the inclusion of historical data in the database gives a good indication of any changes in range over the last century. The importance of research into historical records and their inclusion in the database is now appreciated by conservation organisations, who now place more emphasis on biodiversity and changes in species status over time.

The recording scheme has proved very successful at establishing baseline information and showing trends in changing distribution on a broad scale. This "broad brush" approach effectively draws together much information which is often over-looked by more species or site-specific projects. However, the trends and issues highlighted by the recording scheme are generally better investigated by specific, detailed studies led by particular individuals, organisations or partnerships. Several such projects are currently underway on the study and conservation of rare butterflies in Cumbria. The Museum has supplied historical and current records as baseline data to these projects. Marsh Fritillary, High Brown Fritillary, Pearl-bordered Fritillary, Duke of Burgundy , Small Blue and Large Heath have all been subjects of studies in recent years to which the recording scheme has provided information.

As well as being useful for butterfly-specific study and conservation purposes, the butterfly records provide valuable information for site management and planning enquiries (together with other wildlife records held by the records centre). These activities are beyond the remit of the recording scheme and the Museum, and are generally dealt with by one or other of the conservation organisations operating in the county. We have offered to provide copies of the relevant information on the database to conservation organisations in the county to help them deal with such enquiries.

To date, the Cumbria Butterfly Recording Scheme has collected over 22,500 records, two thirds of which have been generated since 1989 as a direct result of the recording scheme. The Scheme now acts as the local contact point for the Butterflies for the New Millennium Project and feeds records into this national recording scheme. A local atlas of butterfly distribution in Cumbria is planned, but this is not regarded as the final goal of the recording scheme which will run indefinitely as an ongoing survey and monitoring system of the status of butterflies in Cumbria.

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Butterflies for the New Millennium - the farmer's view

Philip Winter, Lepidoptera Recorder for Yorkshire Naturalist's Union, West End Farm, Muston, Filey, North Yorkshire YO14 0ES.

I aim to show how I record butterflies on our family farm and how butterfly conservation works in practice in a farming situation.

The farm

The farm is situated about 10 kilometres south-east of Scarborough, on the north-east slopes of the Yorkshire Wolds and at the eastern end of the Vale of Pickering. Much of it undulates between 40 and 50 metres (125 and 150 feet) above sea level, but rises south-westwards to 100 metres (325 feet). Soils, topography and climate limit the type of farming and much of the land is best suited to livestock. Although the prevailing wind is westerly, the higher ground is very exposed to cold winds off the sea, which is 3 kilometres (just under 2 miles) away to the east and 5 kilometres (3 miles) to the north. Also, the lowest ground is at the bottom of a basin where cold air and mist tends to accumulate: particularly under clear skies on calm summer evenings or early in the morning in spring and autumn.

The farm is about 130 hectares (just over 320 acres) and the main source of income is milk from a Friesian dairy-herd. All cattle are home bred and none have been bought for over 30 years. Female Friesian calves are reared for herd replacements and beef-crosses as suckler cows to be sold with their first calf to beef producers. All bull calves are sold for beef production when 2 - 3 weeks old. Wheat and barley are the arable crops, which are grown in rotation with temporary grass leys across 80 ha (198 acres). Towards the end of May these grasses are used to make silage for feeding to the milking herd in winter and subsequent growth is either grazed or made into hay, though sometimes a second crop of silage has to be taken. Chemical sprays are applied to the cereal, but not to the leys, though both are given artificial fertiliser.

Permanent grass accounts for 43 ha (106 acres) and includes 9 ha (22 acres) of marsh and 7 ha (17 acres) of chalk-grassland, though perhaps only half of this field can be called true chalk-grassland. It is, however, thought to be the most northerly chalk-grassland in Britain. A further 5 ha (12.4 acres) are hay-meadow to provide winter fodder for calves and supplementary feed for the cows in times of reduced grass-growth such as drought or when temperatures fall in autumn. We have environmental agreements with the Ministry of Agriculture on 31.6 ha (78 acres) of the permanent grass, including 5.6 ha (13.8 acres) reverting from arable cropping and neither chemicals nor farmyard manure must be applied. There are also restrictions on grazing intensity and timing of certain operations. Manure is sometimes spread on the remaining 11.4 ha (28 acres) of permanent pasture not subject to any agreement, but sprays and artificial fertiliser are no longer applied. Weeds such as nettles, thistles and docks are controlled by cutting at intervals through the summer. Lambs bought in Autumn are fattened through the winter and they help to reduce the vigour of ragwort, which is a particular problem in some fields.

Farmyards account for 1 ha (2.47 acres) and the remaining 5.5 ha (13.6 acres) or 4.2% of the farm is economically unproductive: comprising tracks, wide

banks on field margins, 15 ponds, a stream, at least 3 - 4 kilometres of ditches and a considerably longer stretch of hedgerows. There is no woodland except for a small spinney on adjacent property at the edge of the village.

As already mentioned, crops are rotated around the arable area: the object being to reduce disease risk and build fertility levels while fields are in temporary grass. Each field grows wheat in two consecutive years, followed by winter barley, spring barley and two years as grass. This spread of sowing and harvesting is necessary because of labour demands on the dairy enterprise, limited grain storage which requires clearing at least twice during harvest and to avoid sowing in late November or December when the ground is more likely to be too wet. The average field size is between 3.5 - 4.0 ha (9 - 10 acres) which suits grazing management with the cattle and hedges provide them with shelter. The size of the milking herd is limited by milk quota and determines the area of grass required, including that for the young stock. Hence, land above that requirement is available for arable cropping which is really best suited to a field size of around 12 ha (30 acres). By coincidence, our annual area at each stage in the rotation is about this size, but the fields have to be arranged in groups so that some of the grass leys are always within reach of the cows. As soon as silage has been taken, they are sent in to eat grass on the banks and in corners out of reach of the mower. This reduces pressure on the permanent grass and as the summer progresses the hay-meadows and fields cut a second time become available: young stock and cows having a rest from milking being taken to those too far or awkward to reach from home every day.

About 24 ha (60 acres) of wheat are grown each year and the same of barley divided equally between winter and spring varieties. Some of the arable land has to be set-aside and the minimum percentage is determined by EC politicians every year. We sow ours with grass and can use it for our own animals after 1st September. Consequently 5.7 ha (14 acres) of land, extra to the 48 ha of cereals, are used to balance the set-aside requirement or provide extra grazing if cattle numbers increase a little.

Surveys and other farmers

As regards public access to the farm, there's a 1.5 kilometre stretch of the Wolds Way National Trail and other footpaths which link with a bridleway to the next village. This is more than enough, as most use is for exercising dogs and vertebrate wildlife has vanished from some fields. There are also occasional problems with people who leave gates open or vandalise property. On the other hand, like many farmers, I'm quite happy for anyone to investigate beyond the areas of usual public gaze if they have a serious interest. This, of course, is providing they ask first, do not interfere with my work and generally leave everything as they find it. An awful lot of time can be wasted chasing a possible poacher, only to find an eccentric looking at butterflies. It should also go without saying that any information gathered should be regarded as confidential: not to be passed to anyone else without the landowner's permission. Many farmers worry that it would result in a deluge of restriction and bureaucracy even though they might genuinely sympathise with wildlife conservation. As the land agent for a long established estate once remarked, " It takes time having to deal with the interference and achieves nothing, since nothing is going to change as regards use of the land". In these circumstances, if one hopes to be welcome again, it's usually acceptable to present data to surveys on a 10 km square basis: even a 1 km square can point to a particular property.

Butterfly recording

General

As a recorder I have little patience with those people who persist in giving only 1 km and 10 km references instead of the full eight figure national grid reference. So it has to be hammered home that, on the ground, grid references change every hundred metres. How do I reconcile this with a request for confidentiality? Where precise details have been withheld at a landowner's request, then little can be done; except perhaps to give assurances that records will be held in confidence and used only for statistical purposes. Usually, where full grid references are given, it has to be taken for granted that permission has been obtained for site access and data release. The responsibility lies with the field worker. Records from public footpaths and similar situations do not present the same problem, unless they fall into a wider, authorised survey of a property. Similarly, it is little more than formality seeking permission to use data from places such as designated reserves, SSSI's and Forest Enterprise land, but it should be remembered that all land belongs to somebody and that records acquired in confidence have to be strictly honoured as such.

On the farm

To return to my home situation: in recording terms the farm covers the equivalent of 1.3 one-kilometre squares, but actually occupies part of 6 one-kilometre squares and 4 ten-kilometre squares. It's hardly practical to use all 130 computations needed to give all points a true grid reference. So to compromise, each field or part of a field that falls in a different 1km square is given a reference. For ease of memory this is database related to a personal code based on the fields name. For example "Horse Pasture" is "HP" suffixed by "N" or "S" to denote north or south of the grid line dividing it. This gives a list of just over fifty locations on the farm and rough notes can be made when I'm working, though there isn't always time to count every butterfly.

Outline distribution and abundance

I have memories of butterflies on this farm dating back to the early 1950's and I often think stories of a general decline are based on myths. I've actually kept records since 1963, but only in detail since 1982 and then there have been lapses when work has been too overwhelming. The results give a total of 23 species: 14 resident, 2 migrants which breed regularly, 1 rare migrant, 2 occasionals and 4 vagrants. Three residents have arrived since 1970 and one other probably didn't start breeding until about 1972 or 1973. Certainly, since 1965 there appears to have been a 40% increase in resident species, although some have been temporarily absent in that time: notably Small Copper and Wall which were never as common in the 1950's and 60's as they have been in the mid-1990's.

The species are outlined in Table 1. All appear to breed mainly below the 80m (250ft) contour and apart from Whites, Peacock and Small Tortoiseshell, few other species are seen much above this level; that could be related more to the botanical component of field margins and mainly large, arable fields on adjoining land than the exposed position. Vanessids tend to breed on nettles next to the farmyard or around the permanent pastures, where they also find nectar plants such as dandelion, thistles and ragwort, but they soon seem to move on. Large and Small White, on the other hand, appear to breed in gardens and pause for nectar as they fly over the fields. Green-veined White breeds in the hay-meadows and marsh, but nowadays it never seems to be in the numbers I remember at the latter site. Perhaps this is because the habitat has dried out in several summers during the past ten years. Orange-tip breeds on relatively undisturbed areas of the

farmyards and where weeds are growing next to tracks or have been missed by the sprayer on the edge of cereal fields.

Apart from Holly Blue, which breeds on Ivy growing on the garden wall and possibly in some of the adjacent overgrown hedges, all the remaining resident species are associated with grassland where the availability of suitable habitat is influenced by grazing cattle. Small Copper will thrive on sorrels in very short turf in sandy areas, but prefers taller grass alongside tracks and in the hay meadows, which are usually cut before the second generation emerges. Wall numbers vary according to the availability of bare ground, particularly along tracks or where cattle have trampled at gateways or water troughs and numbers shoot up after ditches have been cleaned and re-graded, but it prefers long grass for breeding. Like Small Copper, it seems to decline following wet periods. Bird's-foot Trefoil grows patchily across much of the permanent grassland and although some patches are quite extensive, it is usually grazed very short. Consequently Common Blue occurs at a very low level and numbers rise only when the foodplant is undisturbed for a couple of years: on banks in arable fields or when sections of chalk grassland are fenced to stop grazing.

Both Skippers, Meadow Brown and particularly The Ringlet, follow the arable crop rotation: breeding in tall grass that grows undisturbed for 3 or 4 years round the edge of fields. These sites are soon colonised when the fields are taken out of grass production: the hay meadows, some ditches and stretches of track acting as a reservoir. The fact that the permanent grassland more or less encircles the arable areas, together with features like tracks and linking hedgerows, undoubtedly helps the process. In fact I have few records of Ringlet in the meadows or other areas of tall grass away from field margins. Green lanes, public footpaths and the River Hertford also act as another source of re-colonisers, yet butterflies are sometimes seen in the middle of corn fields.

Conservation

The distribution of butterflies on this farm shows that any definition of "rare" has to be related to a given area and that plotting to the level of 1km squares should give the most meaningful result. All that's been said so far has, hopefully, highlighted the fact that the farming system depends on the soil and climate. It also depends on market forces and comes very much before the butterflies, which only follow with a host of other creatures. As regards other farmers: many are keen to help the conservation effort and seek advice. This usually comes from the Farming and Wildlife Advisory Group. Despite having an adviser in nearly every county and five in Yorkshire, it often has difficulty keeping pace with demand for information on such things as tree or hedge planting, excavating ponds or managing a whole farm with wildlife in mind. As I mentioned at the beginning, there are also various government schemes designed to bring certain types of land out of intensive agriculture through payments to compensate for lost income. The main targets are wetlands, chalk grassland, lowland heath, moorland and in specified regions, hay meadows. Unfortunately, the compensation has so far proved insufficient to encourage much uptake and the fact that management agreements in some schemes have to be for twenty years hasn't helped the situation. In addition, many farms no longer have grazing animals, which are the key to maintaining diversity in my situation and a necessity if grassland schemes are to work properly. Otherwise, the concept provides an important step towards re-instating the infra-structure needed to link habitats nation-wide.

The Millennium Project, therefore, may well be coming at an important stage in the national conservation strategy. So, besides recording butterflies, can the individual do more to help? Really, given the market influence on farming and recent political changes, the answer has to be," Yes!". First lobby the politicians to improve the incentives for farmers to join a conservation scheme. Secondly, subscribe to your county Wildlife Trust or Butterfly Conservation asking them to add their weight to the argument. Then you need to use less water, eat less poultry and pork, drink more milk, eat more lamb and above all, eat more beef.

Table 1 : Butterflies recorded at West House Farm, Muston (where no year is given for a first post-1963 record the species was known to be present before 1960).

Species	Year of First Record post 1963	Present Status	Comments
Small Skipper	1976	Resident: quite common	Tracks, field edges, hay meadows
Large Skipper	1976 ?	Resident: small numbers	Few records before 1982
Clouded Yellow	1983	Migrant: rare	2 in 1983 + 5 in 1996
The Brimstone	1995	Vagrant	2 specimens in 1995. Two Buckthorns known on high ground.
Large White		Resident	Breeding unproven away from gardens
Small White		Resident	Breeding unproven away from gardens
Green-veined White		Resident: fewer than in 1960's	Probably breeds on Lady's Smock
Orange-tip	1974	Resident: fairly common most years	Said to have been seen in 1920's or 30's. Breeds on weeds in farmyard and at edge of cereal crops
Small Copper-		Resident: often common and sometimes three generations	Can be absent for a few years as in 1960's and early 1990's
Brown Argus	1983	Vagrant	One only: nearest known colony at 5.5 km. No foodplant on farm.
Common Blue		Resident: usually rare, but occasionally in moderate numbers	Probably influenced by cattle grazing
Holly Blue	1990	Resident: very common in 1990 & 1991; absent 1993 - 95; imagines & a larva in 1996 & 1 imago 1997	Mainly around farmyard, though sometimes along hedgerows
Red Admiral		Migrant: seen most years, sometimes numerous	Usually breeds
Painted Lady		Migrant: perhaps 4 years out of 5-6	Often breeds
Small Tortoiseshell		Resident: usually very common	Larvae abundant some years
The Peacock	1967	Resident: usually very common	Not in 1968, otherwise annually. Probably no breeding before 1972.
The Comma	1980	Occasional	No others until 1992. Could probably breed, but would have to be on nettle.
The Wall		Resident: often common yet periodically absent for a year or two	Mainly along tracks and bare ground near field gateways
Marbled White	1984	Vagrant	4 records: last in 1995. May colonise, but habitat & climate not ideal.
The Gatekeeper	1982	Vagrant	Singles also in 1985 & 1996. May colonise, though climate not ideal.
Meadow Brown		Resident: usually quite common	Highest numbers in hay meadows.
Small Heath	1976	Occasional	10 - 12 records in total. May colonise, though aspect and climate not ideal.
The Ringlet		Resident: very local on certain field margins	Absent from circa 1977 to 1982. Prefers to be close to hedges or scrub

Butterflies for the New Millennium - project and progress

Jim Asher, Project Leader, 24 Fettiplace Road, Marcham, Abingdon, Oxfordshire OX13 6PL.

The following provides a summary of the objectives, structure and progress of the Butterflies for the New Millennium project. The principal objectives of the project are:

To provide a comprehensive audit of the status of butterflies in UK and Ireland by 2000 - a basic requirement for conservation planning and priority setting

To develop fully a nationally co-ordinated regional recording network for butterflies

A higher profile for Butterfly Conservation as an issue (and as an organisation) in the minds of the key conservation planners, other conservation organisations and the public.

The main deliverables of the project will be:

A new atlas of butterflies of Britain and Ireland, targeted for publication in 2000, containing important new findings, but accessible to a wide audience.

An national database, annually updated from the co-ordinated network.

The project is based on a network of regional centres attracting local records from individual field recorders, as shown below. Consolidated record sets are then submitted by the regional centres for national collation and the preparation of national summaries, the atlas and the national database.

A key feature of the system is feedback, which is vital both to maintain recorder enthusiasm and to direct recording towards under-recorded areas. Two levels of feedback are envisaged - local feedback by recording centres to their own set of recorders and feedback from the national level to the recording centres to show how the local coverage matches the national level.

The project involves an unprecedented level of co-ordination between organisations with interests in this area. These include Butterfly Conservation branches, the Biological Records Centre and a large number of county record centres, Environmental Record Centres and Wildlife Trusts as well as other conservation organisations, including RSPB, BTO and the Woodland Trust and those with land management responsibilities, including the National Trust and the Forestry Commission, all of which are likely to both contribute to and benefit from Butterfly*Net*.

The project has faced a number of problems and challenges, but is making very good progress with tackling the issues:

Breaking new ground in co-ordination - the project is linking a large number of separate bodies with different agendas and priorities, and drawing on data in a variety of original formats.

Coverage of sparsely populated regions - recorder populations are strongly biased towards the southern half of England. There are challenges in getting sufficient coverage over Northern England, Wales and Scotland. Pro-active recording will be organised to reduce that imbalance.

Data validation, ownership and security - these are all issues that concern those

with archives of data. We need to build confidence in the accuracy of the data, in minimising transcription errors and in making sure that adequate back-ups are kept. It is recognised that data are best validated at the local level.

Keeping recorders informed - feedback is key to maintaining recording effort. It takes time and effort to assemble news-sheets and provisional maps, but without that feedback, the project will not deliver the best result.

Financial resources - most of the above need time and money. The project has been actively seeking funding and will continue to do so as required to meet its objectives.

The timetable for the project breaks down into two scales: the overall project timetable and the data collection cycle. The project timetable is:

Butterfly*Net* development:	1993-1996
Field recording:	1995-1999
Pro-active field recording:	1998-1999
Atlas publication:	2000

It is important to realise that the work must continue beyond 2000 to maintain the record database and keep the underlying information as up-to-date as possible. Old data cannot be used effectively in conservation management or to minimise the impact of developmental planning.

The annual data collection cycle is the target that we are seeking for the response of the regional centres and Butterfly*Net*:

April-October: Field recording

November-January: Local data entry/validation at the regional centres

February-March: Disks sent from regional centres for national data collation

April: Feedback to regions on data coverage, aimed at targeting new recording effort to 'fill the gaps'.

We recognise that some centres will have difficulty in meeting this timetable immediately, but already we are seeing a gradual improvement, both in the level of coverage being achieved locally and in the submission of data sets for national collation.

Progress to date

Details of the progress to date are best found in the annual reports which are sent out to all regional centres. Extra copies may be obtained from Richard Fox, BRC, Monk's Wood, Abbots Ripton, Huntingdon, PE17 2LS (phone: 01487 773381, e-mail: r.fox@ite.ac.uk).

By the end of the 1996 data submission season, over 250,000 butterfly records had been collated, covering nearly 2000 ten-km grid squares across Britain and N Ireland. We estimate that the project is likely to generate more than 200,000 records per year in total, so we are likely to exceed 1 million records in total. It is worth noting that the previous national atlas, published in 1984, was based on a total of about 250,000 records over a ten-year period. This indicates the more comprehensive coverage that should now be achievable.

By mid-1997, the main funding required to finance the project has been secured from the Vincent Wildlife Trust and the Esmee Fairbairn Charitable Trust, enabling us to appoint a full-time project officer with effect from September 1997. We are very grateful for their generous support.

Summary of discussions at Rhayader and Doncaster

compiled by
Nick Greatorex-Davies, Biological Records Centre, ITE Monks Wood, Abbots Ripton, Huntingdon PE17 2LS.

Recording and coverage

Targeting less common species and recording in the "Wider Countryside"
Most butterfly recording effort is directed towards nature reserves and other protected land. Many recorders tend to visit the same sites year after year and appear reluctant to record "new" localities. Recorders should be encouraged to visit unrecorded areas, especially where unexplored semi-natural areas may contain unknown colonies of rarer species. A systematic approach using ecological principles to guide survey is needed if coverage is to be comprehensive. This has already been carried out successfully for some species in certain areas (e.g. for Heath Fritillary on Exmoor, Marsh Fritillary and High Brown Fritillary in Montgomeryshire, and for Large Heath in Northumberland) and could be carried out in other regions if resources were made available.

Earlier records can be useful to target sites for survey to find out whether a certain species still occurs at particular sites. Records held by BRC will be made available to local co-ordinators as time allows.

It is also important that recording covers the wider farmed countryside where, for example, field corners, small blocks of woodland, hedgerows and other linear areas of semi-natural habitat provide refuges for many common widespread species of butterfly. Censuses by the British Trust for Ornithology have shown dramatic declines in the abundance, but not range, of several formerly common farmland birds. There is some indication that some common butterflies also have declined but other species have increased in both abundance and range as has been demonstrated by results from the Butterfly Monitoring Scheme. However there are not enough butterfly recorders at the present time for the BNM project to be in a position to give the level of information that has been gathered for birds. It was nevertheless felt important that the wider countryside is covered by the present survey as valuable information relating to the status of common species will be thus obtained.

Access to private land
It was emphasised that permission for access should always be sought before entering private land to record butterflies. In the absence of such permission, recorders should keep to public rights of way. The BNM project is not in a position to check the legality of records, and the onus is on the recorder to ensure that permission has been sought and granted before recording takes place. Recorders should not go ahead and record if permission has been refused.

Confidentiality of records
Records submitted to the BNM will not be treated as confidential unless flagged as such by the recorder. However, records flagged as completely confidential are not useful to the project and there is therefore little point in submitting them. If the presence of a species at a site is kept completely secret the site is less likely to receive the protection it needs. For the purposes of the Atlas, details of records will only be published in a summarised form, mostly at 10 km resolution. Requests

for more detailed records will be referred back to the relevant Local Records Centre or BNM local co-ordinator as appropriate.

Availability of records
As stated at the bottom of the recording forms, it is intended that information contained in the BNM database will be used for nature conservation, research, education and public information, but at a level in each case that will not jeopardise confidentiality, where this is required, or go against normal good practice in the dissemination of data. The information submitted to the project remains the intellectual property of the recorder at all times. It was felt that records should be made freely available for genuine research purposes. However those undertaking commercial contract work for government or non-government organisations should be charged for the time involved in extracting the records or for making an interpretation of the records. The records themselves cannot legally be charged for as they belong to the recorders.

In time the BNM data will be accessible on the Internet via the National Biodiversity Network. However the level of information available will be carefully controlled depending on both the sensitivity of the information itself and the credentials of those wanting data.

Recording numbers of individuals
On the current forms recorders are instructed to record butterflies using a series of alphabetic codes. However there is no restriction imposed on the recorder who may wish to record actual numbers seen.

Training
Training is needed, at least in some areas, to increase the number of competent recorders. Walking butterfly transects is considered an excellent way for people to learn to identify butterflies and it was suggested that one or two "training transects" could be set up by local co-ordinators or other local experts to help train butterfly recorders. In addition meetings focused on butterfly identification and field trips could also be arranged locally. There are good, relatively cheap identification guides available on the market.

Data collation and regionalisation

Data transfer and the Internet
Jim Asher is willing to receive digital data as an e-mail attachment from local co-ordinators.

The potential use of the Internet for receiving records was discussed. A Web site could be set up for people to input their records directly, but there would be problems with confidentiality and validation and this could also attract bogus records. In addition, extra work would be involved in feeding these records back to the local co-ordinators. However a digital recording form on a Web site that could be down loaded by recorders could be useful.

Duplication of records
It is important to avoid the duplication of records in order to provide a more accurate picture of the status of butterflies in each part of the country. Records may be submitted both directly to the BNM and separately via a Local Record Centre, Wildlife Trust, the Garden Survey and so on. A method will need to be designed to trawl the database for duplicate records. However a lack of records is considered to be a greater problem than the duplication of records.

Out of area records
Recorders should be encouraged to send their records to the local co-ordinator responsible for the area from which the records came. Failing this, local co-ordinators should send the records, preferably on disk, to the relevant local co-ordinators, but not to send these records in

centrally to Jim Asher themselves, to avoid duplication. Liaison between the local co-ordinators involved should aid validation of the records in these cases.

Republic of Ireland (RoI)

A parallel project to the BNM has been set up for the RoI - Butterflies for the New Millennium - Ireland. The official nature conservation body, the National Parks and Wildlife Service (NPWS), have been approached but are not likely to be involved with the project. The NPWS suggested Tim Lavery of County Watch (Co. Kerry), who has agreed to co-ordinate for the RoI.

Data backlogs

Data from the 1982-1995 period are being added to the BNM database, along with the dataset from which the 1984 atlas was produced. Where time and resources could be a limiting factor, BNM local co-ordinators should input onto computer the most recent data first (i.e. that from the 1995-1999 period).

Validation of records

The accuracy of some records is in doubt. Individuals of some species are sometimes recorded well outside their known range. These are most likely to be the result of misidentifications or casual releases. Doubtful records should be flagged as such by the local co-ordinators. Records from known introductions should be recorded but noted as such. Validation of records is the responsibility of the local co-ordinator but help with this will be given where required. Doubtful records should be queried with the recorder, who should be asked for a description of the butterfly (ies) seen. This often clarifies the validity of a record. In Hertfordshire and Middlesex unusual sightings are considered by a panel of five experts, two from within the region, two from outside and the local co-ordinator. It is also important that there is liaison between the local co-ordinators of adjoining areas to help with the validation of stray individuals that may have come from these adjoining areas.

Archiving of original record sheets

Original paper copies of records must be kept and archived. If they cannot be kept locally they should be sent to the national Project Co-ordinator at ITE Monks Wood for safe keeping at BRC. The keeping of original recording sheets/cards is general practice at Local Record Centres.

Feedback to centres and recorders

It is important that annual feedback to recorders should include species maps, so that under-recorded areas can be targeted more easily locally, and as an incentive for recorders to send in any unsubmitted records they hold.

Other issues

Appointment of a Project Co-ordinator

It is planned to appoint a full-time BNM Project Co-ordinator for three years during the latter part of 1997. The appointee will be based at Monks Wood where he/she will be able to take advantage of the infrastructure available (networked computer, telephone, administrative help, initial supervision from Nick Greatorex-Davies and Paul Harding etc.). The job will be advertised in June or early July.

Proceeds from the Atlas

Any profits made from the sale of the Atlas will go to Butterfly Conservation funds. However, past experience shows that most atlases make very little (if any) profit.

Mapping European Butterflies project

A scheme to map the distribution of butterflies on a 50 km square resolution for the whole Europe (Mapping European Butterflies (MEB)) is being run by Dr Otakar Kudrna from Germany. An atlas is due for publication in about the year 2000. In due course summarised data for the UK

(50 km on the UTM grid) will be fed into the MEB from the BNM database. Recorders are encouraged, in the first instance, to send records of butterflies from other European countries to the relevant national records centres/schemes where these exist. Details of these national record centres/schemes and of the MEB will be published in a future issue of *Butterfly Conservation News*.

Introductions/reintroductions
Butterfly Conservation have published a clear written code on the introduction /reintroduction of butterflies to sites and does not encourage introductions to areas where the butterfly concerned has not occurred before. In all cases BC encourages caution and in particular that permission must be granted by the landowner(s) concerned and that relevant conservation organisations are both consulted and informed.

(Additional topics were raised at previous meetings held at Monks Wood in May 1995 and at Abbots Ripton in March 1996 and are not included here. Details of these can be found in the proceedings from those two meetings).

Lists of Participants:

3rd. Annual Meeting, Doncaster

Dr. Jim Asher	BC Recorder, BNM database manager
Mr. Roy Bedford	BNM co-ordinator for South-west Yorkshire
Mr. Peter Boardman	Survey co-ordinator for sites in Shropshire/Clywd
Mr. Harry Eales	Large Heath survey
Mrs. Alison Fraser	Nottinghamshire Countryside Group, Notts. County Council
Mr. Howard Frost	BNM co-ordinator for South-east Yorkshire
Mrs. Marie-Christine Frost	East Yorkshire
Mr. Nick Greatorex-Davies	BNM project co-ordinator, Biological Records Centre, ITE
Dr. Alan Green	Butterfly Conservation Hampshire Branch
Miss. Melanie Hall	Cleveland Wildlife Trust
Mr. Paul Harding	Head of Biological Records Centre, ITE
Mr. Peter Hardy	BNM co-ordinator for Greater Manchester
Mr. Steve Hewitt	BNM co-ordinator for Cumbria
Mr. Howard Hillier	Cambridgeshire
Mr. Phil James	Ross-shire
Mr. Paul Kirkland	Butterfly Conservation, Edinburgh
Miss. Kirsty Maddocks	Nottinghamshire Assistant Nature Conservation Officer, Notts. County Council
Mr. Doug Murray	BNM co-ordinator for Caernarvonshire
Dr. John Murray	BNM co-ordinator for Hertfordshire & Middlesex
Dr. Derek Parkinson	BNM co-ordinator for North-west Yorkshire
Mr. David Pears	Yorkshire
Dr. Val Perrin	BNM co-ordinator for Cambridgeshire & Essex
Mr. Peter Roworth	English Nature
Mrs. Susan Stead	BNM Mid-west Yorkshire co-ordinator
Dr. Stephen Sutton	Yorkshire
Mr. Mark Tyszka	BNM co-ordinator for Lincolnshire & Humberside
Mr. Keith Warmington	BNM co-ordinator for Warwickshire
Dr. Terence Whitaker	Lancashire
Mr. Philip Winter	BNM overall co-ordinator for Yorkshire
Dr. Sheila Wright	Nottingham Natural History Museum

Welsh Regional Meeting, Rhayader

Mr. Nigel Ajax-Lewis	Glamorgan Wildlife Trust
Dr. Martin Anthoney	BNM co-ordinator for Monmouthshire
Dr. Jim Asher	BC Recorder, BNM database manager
Mr. Mike Bailey	The Warden Dyfi NNR, CCW
Ms. Michelle Bromley	Forest Enterprise
Mr. Peter Brown	Dyfed Wildlife Trust
Mr. & Mrs. Steve & Anne Coker	Pembrokeshire
Mr. Dafydd Davies	Carmarthenshire
Mr. Martyn Davies	BC Information and Education Committee
Mr. John Davis	Butterfly Conservation, Wareham
Mr. Bob Dennison	Radnorshire
Mr. Rex Eckley	Radnor Wildlife Trust
Mr. Basil Evans	Planning Dept. County Borough of Blaenau Gwent
Mr. Andrew Ferguson	Warden, CCW Powys
Mr. Bryan Formstone	Denbighshire
Dr. Adrian Fowles	CCW Invertebrate Ecologist
Ms. Lin Gander	BNM co-ordinator for Cardiganshire, Dyfed Wildlife Trust
Dr. & Mrs. Peter & Joyce Gay	BNM co-ordinators for Radnorshire
Mr. Nick Greatorex-Davies	BNM project co-ordinator, Biological Records Centre, ITE
Mr. Paul Guha	Education Officer, Bridgend Council
Mr. Paul Harding	Head of Biological Records Centre, ITE
Mr. David Hargreaves	Conservation Officer, Radnorshire Wildlife Trust
Mr. Bob Haycock	CCW Pembrokeshire
Dr. Mike Howe	CCW Biodiversity Officer
Mr. Neil Jones	BNM co-ordinator for South Wales
Mr. Roy Jones	Glamorgan
Ms. Jan King	Brecon Beacons National Park
Mr. Jerry Lewis	Monmouthshire County Borough Council Planning & Economic Development Department
Dr. Norman Lowe	Brecknock Wildlife Trust
Mr. Steve Lucas	BNM co-ordinator for Carmarthenshire
Mr. Roger Matthews	CCW Montgomeryshire
Ms. Caroline Moscrop	CCW Radnorshire
Mr. Nigel Mudie	Cardiganshire
Mr. Andy Nicholls	BNM co-ordinator for West Midlands
Mr. Rob Nottage	BNM co-ordinator for South Glamorgan
Mr. & Mrs. Alan & Shirley Osborn	Glamorgan
Mr. Gordon Parker	Breconshire
Mr. Andrew Peterken	CCW Glamorgan
Mr. Richard Preece	Reserve Warden BBNP NNRs, CCW
Mr. Lawrence Rawsthorne	Flintshire
Mr. Ray Sandiford	BC North Wales Branch
Mr. John Smith	Denbighshire
Mr. Richard Smith	BNM co-ordinator for Mid Glamorgan
Dr. Simon Spencer	BNM co-ordinator for Montgomeryshire
Dr. Paul Whalley	BNM co-ordinator for Anglesey
Mr. Rob Whitehead	BNM co-ordinator for North Wales

Butterflies for the New Millennium

Proceedings of the 3rd. Annual Meeting (1997) and Welsh Regional Meeting (1996) organised by Butterfly Conservation and the Biological Records Centre.

Additional copies of these Proceedings are available from :

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