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Institute of  
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**Recent surveys and research on  
butterflies in Britain and Ireland:**

**a species index and  
bibliography**



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Biological Records Centre  
Institute of Terrestrial Ecology  
Monks Wood Experimental Station  
Abbots Ripton  
HUNTINGDON, Cambs PE17 2LS  
Tel: 04873 (Abbots Ripton) 381-8

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# **Recent surveys and research on butterflies in Britain and Ireland:**

## **a species index and bibliography**

**Paul T Harding and Stuart V Green\***

Biological Records Centre  
NERC Institute of Terrestrial Ecology  
Monks Wood Experimental Station, Huntingdon

\*Present address: Department of Zoology,  
University of Cambridge

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## **PREFACE**

This bibliography of recent surveys and research on butterflies in Britain and Ireland is the first in an occasional series of bibliographies, produced by the Biological Records Centre. The series is intended to make available bibliographies which are relevant to biogeographical studies, but which would be unlikely to be published elsewhere.

A great deal of work goes into compiling a bibliography, but however thorough the literature search almost every bibliography is incomplete and is probably out of date as soon as it is committed to paper. The publication of bibliographies is, therefore, a somewhat frustrating process, and as a result few are published. However, experience has shown that much time is wasted by having to research the literature on a topic *de novo* when in all probability someone else has covered the same or similar ground previously. This point is especially true in the field of biogeographical studies of taxonomic groups for which the relevant literature does not become significantly out of date, but accumulates steadily.

The advent of bibliographies held on computers promises to supersede the published form, but until such time as computerised bibliographies exist and are known to be available, the traditional paper form still has a role to fill.

This bibliography is a by-product of a review of national butterfly recording and survey particularly in the 1970s and 1980s. It does not attempt to cover the entire literature on butterflies in Britain and Ireland for that period.

The main value of the bibliography is in providing an index to studies of individual species, particularly to autecological research, studies of distribution, and the management and protection of species.

**Paul T Harding**

Biological Records Centre

April 1991





## INTRODUCTION

The following bibliography has been compiled in an attempt to provide an up-to-date list of recent publications, unpublished reports, and on-going surveys and research on butterflies in Britain and Ireland.

Two earlier publications (Heath, Pollard & Thomas 1984; Emmet & Heath 1989) have included extensive bibliographies of work on butterflies in the British Isles, and a bibliography of county butterfly lists produced in the 1980s has also been published (Corke & Harding 1990).

This bibliography has been compiled as part of a larger project to review butterfly recording and survey in the United Kingdom (Harding & Green 1991). The project was carried out by the Biological Records Centre and formed part of the programme of work agreed under a contract from the Nature Conservancy Council (NCC). In addition, the World Wide Fund for Nature (WWF) provided a grant in support of the project.

The bibliography includes major ecological studies, conservation reviews and other research; in particular, works since Heath, Pollard and Thomas (1984) have been listed, including a few short, popular publications for the sake of completeness. There are over 240 titles in the bibliography, but additional on-going surveys and research are listed under the appropriate species in the index. In addition to research and survey which can be listed under species, results of work by the Institute of Terrestrial Ecology (ITE) and NCC are

covered in the bibliography. Such work includes the NCC Butterfly Site Register, the national Butterfly Monitoring Scheme and ITE's work published by M L Hall, E Pollard and J A Thomas. In 1986 NCC published an important synthesis of ecological survey and research on species associated with chalk grassland (Butterflies Under Threat Team (BUTT) 1986), which drew upon much unpublished information.

No research or surveys on the large tortoiseshell have been undertaken and there have been no publications so that this species has been omitted from the index. Also omitted are the large and small whites, red admiral and painted lady; much work has been done and published on these species but most of it relates to economic aspects or refers to populations outside Britain and Ireland.

The index is to species, in the systematic order and using the standard common names and scientific names following Emmet and Heath (1989). The index cites the author and date of publications, which are then listed in the bibliography. Publications are indexed chronologically. Some surveys have not yet been written up, and these are usually listed under the commissioning organisation. Current research is listed in the species index under the parent organisation. Each index entry gives a brief summary of the subject of the publication, survey or research.

## **Abbreviations**

The following abbreviations are used: ATS – Associated Tyre Specialists Ltd, BBCS – British Butterfly Conservation Society, BRISC – Biological Recording in Scotland Campaign, BUTT – Butterflies Under Threat Team, ITE – Institute of Terrestrial Ecology, JCCBI – Joint Committee for the Conservation of British Insects, NCC – Nature Conservancy Council, WWF – World Wide Fund for Nature.

## **ACKNOWLEDGEMENTS**

We are very grateful to Jeremy Thomas and Martin Warren for giving freely of their time in helping to compile the bibliography. Simon Grove kindly provided access to the results of a survey of research at higher education institutions, which he made on behalf of BBCS in 1988. We are --- also grateful to Philip Oswald and Penny Ward for editorial comments  
7  
and to Joyce Rushton for word processing.

## **SPECIES INDEX**

### **Chequered skipper (*Carterocephalus palaemon*)**

- Farrell (1973, 1974) – Surveys for JCCBI  
Farrell (1975) – Status in Britain  
Hockey (1978) – Ecology on a Scottish wildlife reserve  
Brooks & Banks (1981) – Surveys for JCCBI  
Robertson (1981) – Former Northamptonshire locality  
Kelly (1983) – Ecology in Scotland  
Sommerville (1984) – Surveys and ecological studies in Scotland  
Collier (1986) – Status, distribution, ecology and conservation in Scotland; comprehensive bibliography  
Aberdeen University (Department of Zoology) – research by Mr N Ravenscroft, supervised by Dr M Young, in progress (1988–91) (funded by NCC)

### **Small skipper (*Thymelicus sylvestris*)**

- BUTT (1986) – Habitat management

### **Essex skipper (*Thymelicus lineola*)**

- O'Donnell & Carl (1982) – Surveys of sites for research on parasitoids  
O'Donnell, Cock & Carl (1983) – Surveys of sites for research on parasitoids  
BUTT (1986) – Habitat management

### **Lulworth skipper (*Thymelicus acteon*)**

- Thomas, J A (1983b, 1984b, 1990) – Ecology and status in Britain  
BUTT (1986) – Habitat management  
ITE – Site information and research data held by Dr J A Thomas at Furzebrook Research Station  
Dorset Environmental Records Centre – Recent site data

### **Silver-spotted skipper (*Hesperia comma*)**

JCCBI – Survey funded by WWF in 1982; report by Simcox, Thomas & Thomas in draft

Thomas, Thomas, Simcox & Clarke (1986) – Ecology and declining status

Tubb (1982) – Oviposition sites

BUTT (1986) – Habitat management

### **Large skipper (*Ochlodes venata*)**

BUTT (1986) – Habitat management

Stokes (1988) – Pollination of wild gladiolus

Dr R H L Dennis – Study of mating behaviour

Oxford Polytechnic – Study of behaviour in Bemwood Forest (PhD)

### **Dingy skipper (*Erynnis tages*)**

BUTT (1986) – Habitat management

### **Grizzled skipper (*Pyrgus malvae*)**

BUTT (1986) – Habitat management

### **Swallowtail (*Papilio machaon*)**

Dempster, King & Lakhani (1976) – Status in Britain

Dempster & Hall (1980) – Re-establishment at Wicken Fen

JCCBI – Survey funded by ATS/WWF in 1984; report by Hall in draft

BBCS – Study by Norfolk Branch

### **Wood white (*Leptidea sinapis*)**

Heal (1965) – Spread in Ireland

Wiklund (1977a, b) – Courtship, oviposition, feeding and spatial separation

Warren (1981, 1984b) – Ecology and status in the British Isles

Warren (1985b) – Effects of shade and ride management in woodlands

Warren, Pollard & Bibby (1986) – Annual and long-term changes in a population

Morgan (1987) – Occurrence in Dyfed

### **Brimstone (*Gonepteryx rhamni*)**

- Pollard & Hall (1980) – Movement between hibernating and breeding areas  
Bibby (1983) – Oviposition  
Dennis (1984a) – Defence behaviour  
Dempster, Lakhani & Coward (1986) – Chemical composition as a population marker  
BUTT (1986) – Habitat management  
Oxford Polytechnic – PhD study by Ms H McKay

### **Black-veined white (*Aporia crataegi*)**

- Pratt (1983) – Causes of decline and extinction in Britain  
Emmet (1984) – Causes of decline and extinction in Britain

### **Green-veined white (*Pieris napi*)**

- Lees & Archer (1974) – Ecology in Britain  
Courtney (1980) – Biology in relation to speciation  
Dennis (1985d) – Oviposition sites

### **Orange-tip (*Anthocharis cardamines*)**

- Wiklund & Åhrberg (1978) – Host plants, nectar source and habitat selection  
Courtney (1980) – Biology in relation to speciation  
Courtney (1981, 1982) – Foodplants and oviposition  
Courtney & Duggan (1983) – Population biology  
Courtney & Courtney (1982) – Oviposition  
Dennis (1982a,b, 1983b, 1985b) – Oviposition  
Thomas, C D (1984) – Oviposition  
University of Cambridge (Dr J P Dempster) – Food resource limitation and population dynamics

### **Green hairstreak (*Callophrys rubi*)**

- BUTT (1986) – Habitat management

### **Brown hairstreak (*Thecla betulae*)**

Thomas, J A (1974) – Ecology; other papers in preparation  
Green (1990) – History, ecology and habits in Worcestershire

### **Purple hairstreak (*Quercusia quercus*)**

Thomas, J A (1974, 1975) – Ecology  
Gerrard (1988) – Occurrence in Surrey

### **White-letter hairstreak (*Satyrrium w-album*)**

Thomas, J A (1974) – Ecology  
Archer-Lock (1980) – Possible effects of Dutch elm disease  
Oates (1984) – Ecology and habits  
Peachey (1983) – National survey  
Steel (1984) – National survey  
Davies (1986) – National survey  
- Willmer (1987) – Decline

### **Black hairstreak (*Satyrrium pruni*)**

Thomas, J A (1974) – Ecology  
Thomas, J A (1976) – Conservation report  
Thomas, J A (1980a) – Conservation

### **Small copper (*Lycaena phlaeas*)**

Dempster (1971) – Population ecology  
BUTT (1986) – Habitat management  
Aspinall (1987) – Occurrence in Northumberland

### **Large copper (*Lycaena dispar*)**

- Duffey (1968) – Ecological studies  
Duffey (1977) – Re-establishment at Woodwalton Fen  
Smout (1987) – BBCS monitoring at Woodwalton Fen

### **Small blue (*Cupido minimus*)**

- Coulthard (1982) – Habitat requirements and behavioural ecology  
Morton (1985) – Population biology  
BUTT (1986) – Habitat management

### **Silver-studded blue (*Plebejus argus*)**

- Dennis (1972b) – Foodplant specialisation of isolated population in North Wales  
Sutton (1981) – Ecology and conservation  
Thomas, C D (1983) – Ecology and status in north-west Britain  
Thomas, C D (1985a) – Biology in North Wales  
Thomas, C D (1985b) – Status and conservation in north-west Britain  
Read (1985) – Conservation report  
Read (ND) – Conservation report  
BUTT (1986) – Habitat management  
Read (1986) – Status and conservation in Devon  
Warren (1986b) – Status of *cretaceus* race on the Isle of Portland  
Ravenscroft (1986, 1987, 1988, 1990) – Status, conservation and ecology in Suffolk

### **Brown argus (*Aricia agestis*)**

- Jarvis (1958, 1959, 1963, 1966) – Biology and genetics  
BUTT (1986) – Habitat management  
Warren (1986a) – Habitat selection and larval host plants  
Williams (1987) – Identity of *Aricia* species in the Derbyshire Peak District  
Whitehead (1987) – Identity of *Aricia* species in Clwyd  
Smyllie (1988) – Identity of *Aricia* in the Derbyshire Peak District

### **Northern brown argus (*Aricia artaxerxes*)**

- Jarvis (1958, 1959, 1963, 1966, 1969) – Biology and genetics  
Selman, Luff & Monck (1973) – Biology at Castle Eden Dene  
Williams (1987) – Identity of *Aricia* species in the Derbyshire Peak District  
Whitehead (1987) – Identity of *Aricia* species in Clwyd  
Smyllie (1988) – Identity of *Aricia* species in the Derbyshire Peak District

### **Common blue (*Polyommatus icarus*)**

- Dowdeswell, Fisher & Ford (1940) – Population ecology  
Lees (1969) – Voltinism  
Robertson & Young (1984, 1987) – Spot pattern variation  
Dennis (1984b) – Oviposition sites  
Dennis (1985a) – Voltinism and resource exploitation  
BUTT (1986) – Habitat management  
Aspinall (1988) – Occurrence in Northumberland  
Barrington & Young (1990) – Breeding experiments on aberrations

### **Chalkhill blue (*Lysandra coridon*)**

- Frazer (1977) – Population study in Kent  
ITE – Research on ecology and oviposition by Dr J A Thomas, Furzebrook  
Research Station  
BUTT (1986) – Habitat management  
Rimington (1988) – Occurrence in northern Britain

### **Adonis blue (*Lysandra bellargus*)**

- JCCBI – Conservation report by R P Buxton & M L Connolly, 1973  
Robertson & Young (1982) – Spot pattern inheritance and variation  
Tubb (1982) – Oviposition sites  
Thomas, J A (1983a, 1990) – Ecology and conservation  
BUTT (1986) – Habitat management  
Duffield (1987) – Oviposition



### **Holly blue (*Celastrina argiolus*)**

Pollard (1985) – Larvae on male holly bushes  
BUTT (1986) – Habitat management

### **Large blue (*Maculinea arion*)**

Spooner (1963) – Causes of decline in Britain  
Hunt (1965) – Status in Britain  
Muggleton & Benham (1975) – Isolation and decline in Britain  
Thomas, J A (1977a,b,c) – Ecology  
Thomas, J A (1980a,b, 1989) – Extinction and conservation  
Goodden (1982) – Review of work  
Thomas, J A (1987) – Re-establishment  
Thomas, J A (1989) – Re-establishment  
Thomas *et al.* (1989) – Ant hosts  
ITE – Contract reports to NCC

### **Duke of Burgundy (*Hamearis lucina*)**

Shreeves (1979) – Territorial behaviour  
Oates (1982) – Conservation on chalk grassland  
Wilmott (1985) – Conservation  
BUTT (1986) – Habitat management  
Mr M Oates – National survey in 1982 funded by WWF; report in preparation

### **White admiral (*Ladoga camilla*)**

Pollard (1979) – Population ecology and change in range

### **Purple emperor (*Apatura iris*)**

Read (1984) – Ecology in Wiltshire and Dorset  
Smith (1989) – Captive breeding  
WWF – Conservation report by K J Wilmott in 1987  
Mr M Oates – Surveys in Hampshire  
ITE – Ecological data from research by Dr J A Thomas, Furzebrook Research Station

### **Small tortoiseshell (*Aglais urticae*)**

- Dennis (1970b) – Effects of shade temperatures  
Baker (1972) – Territorial behaviour  
Dennis (1984c, 1985b) – Oviposition sites  
Dennis (1985c) – Voltinism  
Dennis & Richman (1985) – Egg-keels  
Pullin (1986a, 1987) – Life history strategies  
Pullin (1986c) – Oviposition strategies  
Bowler (1987) – Numbers in 1986  
Pullin (1988) – Variable voltinism and environmental cues

### **Peacock (*Inachis io*)**

- Baker (1972) – Territorial behaviour  
Pullin (1986a,b, 1987) – Life history strategies  
Bowler (1987) – Numbers in 1986

### **Comma (*Polygonia c-album*)**

- Bailey (1984) – Effects of light and temperature  
Pratt (1986) – Fluctuations  
Nylin (1989) – Photoperiod and life cycle regulation

### **Small pearl-bordered fritillary (*Boloria selene*)**

- ITE – Research on woodland fritillary butterflies by Dr J A Thomas,  
Furzebrook Research Station (funded by NCC)  
WWF – Survey in Berkshire, Buckinghamshire and Oxfordshire in 1986 by  
C Steel and T G Shreeve

### **Pearl-bordered fritillary (*Boloria euphrosyne*)**

- ITE – research on woodland fritillary butterflies by Dr J A Thomas,  
Furzebrook Research Station (funded by NCC)  
WWF – Survey in Berkshire, Buckinghamshire and Oxfordshire in 1982 by  
C Steel and T G Shreeve

### **High brown fritillary (*Argynnis adippe*)**

Simcox (1983) – Survey in England and Wales

ITE – Research on woodland fritillary butterflies by Dr J A Thomas,  
Furzebrook Research Station (funded by NCC)

NCC – On-going survey by Mr M Oates, including several reports

### **Dark green fritillary (*Argynnis aglaja*)**

BUTT (1986) – Habitat management

ITE – Research on woodland fritillary butterflies by Dr J A Thomas,  
Furzebrook Research Station (funded by NCC)

### **Silver-washed fritillary (*Argynnis paphia*)**

Barrington (1989) – Melanic aberrations and temperature

ITE – Research on woodland fritillary butterflies by Dr J A Thomas,  
Furzebrook Research Station (funded by NCC)

### **Marsh fritillary (*Eurodryas aurinia*)**

Ford & Ford (1930) – Fluctuations in numbers and variation

Porter (1981) – Population dynamics of small colonies

Porter (1982) – Basking behaviour in larvae

Dr K Porter – Independent conservation study, 1982

Porter (1983) – Parasitism

Fowles (1985) – Survey in Ceredigion

BUTT (1986) – Habitat management

Warren (1986a) – Habitat selection and larval host plants

Forsyth (1987) – Survey in Hampshire

Warren (1990) – Conservation in United Kingdom

JCCBI – Survey in England and Wales by D J Simcox

JCCBI – Ecological study of populations on chalk and wetland in Dorset in  
1988 by Dr M S Warren

### **Glanville fritillary (*Melitaea cinxia*)**

- Simcox & Thomas (1980) – Survey in 1979 for JCCBI  
Thomas & Simcox (1982) – Estimating larval populations  
Wilmott (1985) – Roosting sites  
Pope (1988) – Surveys on Isle of Wight

### **Heath fritillary (*Mellicta athalia*)**

- Luckens (1980) – Distribution and ecology in Britain  
Warren, Thomas & Thomas (1981) – Conservation report to JCCBI  
Warren, Thomas & Thomas (1984) – Status in Britain  
Warren (1984a) – Future in Britain  
Warren (1985a,c) – Ecology and conservation  
Warren (1987a,b,c) – Ecology and conservation  
Cressy (1987) – Ecology and conservation of foodplant, *Melampyrum pratense*  
Corke (1989) – Predation by pheasants (*Phasianus colchicus*)  
Warren (1989) – Predation by pheasants (*Phasianus colchicus*)

### **Speckled wood (*Pararge aegeria*)**

- Downes (1948) – History in Scotland  
Lees (1962b) – Factors determining distribution in Britain  
Goddard (1962, 1967) – Broods  
Davies (1978) – Territorial behaviour  
Lees & Tilley (1980) – Influence of photoperiod and temperature on larval development  
Robertson (1980) – Occurrence in 1979  
West (1980) – Colour selectivity in feeding  
Shreeve (1984) – Habitat selection, mate location and microclimate  
Shreeve (1985) – Population biology  
Shreeve (1986a) – Oviposition, female behaviour, host plant abundance and temperature  
Shreeve (1986b) – Effect of weather on life cycle  
Barbour (1986) – Expansion of range in Scotland  
Winokur (1988) – Influence of rearing protocol on life cycle and survival  
BRISC – Surveys of range in Scotland

### **Wall (*Lasiommata megera*)**

Dennis (1982c) – Mate location

Dennis (1983a) – Oviposition

BUTT (1986) – Habitat management

### **Small mountain ringlet (*Erebia epiphron*)**

Dr K Porter – Independent conservation study in Cumbria, 1976

National Trust – Surveys of Lake District properties

### **Scotch argus (*Erebia aethiops*)**

Dr R H L Dennis – Independent conservation study, 1982

WWF – Conservation study by Cumbria Trust for Nature Conservation, 1982

### **Marbled white (*Melanargia galathea*)**

Paul (1977) – Population size and flight activity

Rafe & Jefferson (1983) – Status on Yorkshire Wolds

BUTT (1986) – Habitat management

### **Grayling (*Hipparchia semele*)**

Dennis (1970a, 1972a) – Microgeographical race in North Wales

Findlay, Young & Findlay (1983) – Orientation behaviour

BUTT (1986) – Habitat management

Shreeve (1987) – Behaviour

Shreeve (1990) – Habitat use and background matching

### **Gatekeeper or Hedge brown (*Pyronia tithonus*)**

Limbert (1975) – Occurrence in Yorkshire

BUTT (1986) – Habitat management

Brakefield (1987) – Geographical variability in, and temperature effects on, phenology

Stokes (1988) – Pollination of wild gladiolus

### **Meadow brown (*Maniola jurtina*)**

- Dowdeswell, Fisher & Ford (1949) – Population ecology  
Dowdeswell & Ford (1952) – Spot numbers and geographical variation  
Dowdeswell (1961) – Natural selection  
Dowdeswell & McWhirter (1967) – Spot pattern  
McWhirter (1969) – Heritability of spot number  
McWhirter & Creed (1971) – Spot placing  
Handford (1973a,b) – Pattern of variation in genetic systems  
Thomson (1973a,b) – Temperature effects and geographical variation  
Brakefield (1979a,b) – Spot pattern  
Dowdeswell (1981) – Ecology  
Pollard (1981) – Ecology  
Brakefield (1982a) – Adult behaviour, microdistribution and dispersal  
Brakefield (1982b) – Population dynamics  
Brakefield (1984) – Ecological genetics  
Barrington (1984, 1987, 1988) – Aberrations and variation  
BUTT (1986) – Habitat management  
Shreeve (1989) – Flight period and phenotype

### **Ringlet (*Aphantopus hyperantus*)**

- Warren (1985b) – Effects of shade and ride management in woodlands  
BUTT (1986) – Habitat management

### **Small heath (*Coenonympha pamphilus*)**

- Lees (1962a, 1965) – Voltinism  
BUTT (1986) – Habitat management

### **Large heath (*Coenonympha tullia*)**

- Turner (1963) – Wing spot variation in Welsh colony  
Dennis (1972c) – Biometrical study  
Porter (1980) – Clinal variation  
Dennis, Porter & Williams (1984, 1986) – Wing spots and defence strategies  
Melling (1987) – Ecology and population structure

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