

Biodiversity in the New Forest



Edited by Adrian C. Newton



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United Kingdom



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*Dedicated to the memory of
Muriel Eliza Newton (1929–2009),
who loved the New Forest,
especially the donkeys.*

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Back cover: Wood Crates (Adrian Newton)

The maps in this book are for illustrative purposes only, and do not represent the legal definition of National Park boundaries or any other feature

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6 Butterflies and moths

Andrew J. Barker and David Green

Introduction

This chapter reviews the history of Lepidoptera in the New Forest and evaluates the current status and distribution of priority species and broad groupings of Lepidoptera associated with key habitats of the New Forest, most notably woodland and heathland. The foundation for this work was established following a major study carried out by Butterfly Conservation under the LIFE III project on behalf of the Forestry Commission (Green 2000). It has been supplemented by ongoing research and monitoring undertaken by Butterfly Conservation volunteers and various conservation organisations and individuals active in the New Forest. The geographical extent of the original study comprises the then provisional Special Area for Conservation (SAC) boundary, but excluding the coastal areas. The area outside the SAC boundary, but now included in the New Forest National Park, is less well known, but studies are planned to address this.

The richness of the New Forest

The New Forest has been regarded as an area of outstanding national importance for butterflies and moths since at least the mid-19th century (Oates 1996, Oates *et al.* 2000, Goater and Norriss 2001). In his evaluation of macromoth species richness across Britain by Watsonian vice-county, Leverton (2001) found vc11 (south Hampshire), with 678 species, to be second only to vc9 (Dorset). Leverton (2001) made the specific comment that this was in part due to the richness of the New Forest. Considering all Lepidoptera (macromoths, micromoths and butterflies), at least 1,488 species are known to have been recorded from the New Forest study area, approximately two-thirds of all species ever recorded in the British Isles (Green 2000). This is an unparalleled total and gives an indication of the great historical richness of the area for Lepidoptera. This total includes a remarkable 72 Red Data Book and 192 Nationally Notable species.

This unrivalled fauna is due to: the extent and continuity of semi-natural habitat within the New Forest; its geographical location in central southern England providing a mild climate; the varied geology and soil types; the complex mosaics of semi-natural habitats present (at all scales); the continuity of traditional land management practices, particularly livestock grazing.

The changing fortunes of Lepidoptera in the New Forest

There was a general decline in both abundance and diversity of Lepidoptera found in the New Forest

during the second half of the 20th century (Oates 1996, Barker *et al.* 2000, Green 2000), as elsewhere in southern England (Fox *et al.* 2006a,b). Clearly, management of the Forest for much of the 20th century failed to deliver effective conservation measures for many species. Over 65% of the Red Data Book and Nationally Notable butterflies and around 50% of the scarce and threatened moths have not been recorded since before 1980, and may now have been lost (Table 15 and Appendix). Many other species including butterflies such as the pearl-bordered fritillary *Boloria euphrosyne*, small pearl-bordered fritillary *Boloria selene*, Duke of Burgundy *Hamearis lucina*, dingy skipper *Erynnis tages* and grizzled skipper *Pyrgus malvae* now survive only as small, relict populations.

The greatest losses have occurred for Lepidoptera species associated with the herb and shrub layers in open woodland habitats, and particularly those species dependent on early succession vegetation (Table 16). This category includes most of the scarcer butterflies mentioned above, and mirrors declines seen throughout southern England (Fox *et al.* 2006a, 2007). There have also been marked declines for those New Forest Lepidoptera species associated with bogs and mires, heath and open grassland areas.

The overall pattern for moths in south-east England is equally concerning, with the long-term trends from Rothamsted traps (1968–2002) revealing that 74% of common and widespread species have substantially decreased in numbers over recent decades (Parsons *et al.* 2005). Fox *et al.* (2006b) considered that the declines of many woodland macromoth species probably related to changing structure, management and composition of woods, especially increased shading, loss of open spaces and decline in plant species diversity. Such factors are undoubtedly

Table 15
The Red Data Book and Nationally Notable Lepidoptera of the New Forest.

Status	All records	Post 1980	% decline
RDB1	16	2	87.5
RDB2	9	4	55.6
RDB3	35	16	54.3
RDB4	2	0	100
RDBI	2	0	100
RDBK	1	0	100
RDB Appendix (Extinct)	7	2	71.4
Total RDB	72	24	66.7
Notable/Na	26	13	50
Notable/Nb	164	95	42.1
Notable	2	0	100
Total Notable	192	108	58.5
Total RDB and Notable	264	132	53.57

Table 16
The Red Data Book and Nationally Notable Lepidoptera of the New Forest by habitat association.

Habitat category	All records	Post 1980	% decline
Mature trees in ancient semi-natural deciduous woodland	49	38	22.5
Shrub layer in open woodland, rides or clearings	41	19	53.7
Herb layer in open woodland, rides or clearings	41	19	53.7
Coniferous woodland	5	2	60
Humid and wet heath, mires, bogs and fens	48	30	37.5
Dry heathland	27	16	40.7
Open grassland habitats	8	4	50
Open bracken habitats	3	3	0
Domestic areas (gardens and houses)	4	1	75

also relevant to the New Forest woods. Species associated with the canopy layer of trees in mature deciduous woodland of the Forest have maintained their status rather better (Table 16), and lichen-feeding species such as the marbled beauty *Cryphia domestica* have shown population increases. Parsons *et al.* (2005) and Fox *et al.* (2006b) relate this to improved air quality and resultant increase in the status and distribution of various lichens (see Chapter 9).

The principal factors driving the declines in New Forest Lepidoptera are considered to be:

- increased levels of herbivore grazing and browsing, particularly in the Inclosures, leading to a loss of structural diversity;
- greater intensity of management for grazing (burning, re-seeding, scrub clearance);
- direct destruction of habitat caused by forestry operations (e.g. conifer planting, surfacing of rides in Inclosures);
- economic pressures driving land use at the Forest margins (e.g. development, pony paddocks, lack of support for traditional woodland management).

The conservation of butterflies and moths in the New Forest

The Lepidoptera declines identified highlight the need for a landscape-scale strategy for the conservation of Lepidoptera in the New Forest. Despite the loss of abundance and diversity, many national rarities do still occur and the area has considerable potential for habitat restoration and improvement. The New Forest is unique, and one of the very few unfragmented landscapes of semi-natural habitats in central southern England. Although it is important to ensure that the needs of individual species are taken into account, management should attempt to provide sufficient areas of diverse habitat types in order to support functioning metapopulations.

There is cause for optimism, not least of which is due to the changing priorities and initiatives undertaken by the Forestry Commission. Their ongoing work to regulate stock numbers, control deer numbers and undertake dynamic and sustainable forest management in selected Inclosures around Brockenhurst has resulted in:

- restoration of a varied vegetation structure;
- increased foodplant resources;
- increased nectar sources;
- maintenance of early successional habitats.

As a result, the pearl-bordered fritillary is thriving and other key Lepidoptera species, all critically reliant on regulation of grazing in the Inclosures, are benefiting. The upturn in fortunes of the pearl-bordered fritillary is particularly encouraging, as it is a species that has fared particularly badly in south-east England over recent decades, with some 55% of all colonies lost over the period 1997–2004 (Fox *et al.* 2006a). There are now perhaps fewer than 10 colonies of this species in the whole of south-east England, and of these, the New Forest populations near Brockenhurst are the only ones currently showing an increase and expansion, and perhaps the only population with long-term viability. The small pearl-bordered fritillary is similarly one of the fastest declining butterflies in England, and now reduced to just a handful of sites in south-east England. The New Forest supports two or three tiny populations, all critically reliant on regulation of grazing within the fenced Inclosures.

The ancient deciduous woods continue to support a suite of rare RDB3 and UKBAP priority canopy-feeding moths, including such rarities as the scarce merveille du jour *Moma alpium*, the light crimson underwing *Catocala promissa* and the dark crimson underwing *Catocala sponsa*. On the heathlands, continuity of grazing, ensuring cycles of heather regeneration, has ensured the survival of nationally important populations of silver-studded blue *Plebejus argus* and shoulder-striped clover *Heliopsis maritima*.

Conclusions

The New Forest is recognised as one of the most important areas for Lepidoptera in the whole of Britain, and has been so for more than 150 years. Even with the declines experienced in the second half of the 20th century it remains an area of exceptional species diversity. Not only is the Lepidoptera fauna of the New Forest valuable in its own right, but it provides a vital food source for many other organisms higher in the food chain (e.g. birds, bats). Furthermore, Lepidoptera are shown to be sensitive indicators of environmental change (Thomas *et al.* 2004, Fox *et al.* 2006a,b, 2007, Greatorex-Davies *et al.* 2007), have a positive public profile (even including moths these days!), and are well-studied with good baseline information.

For the conservation of butterflies and moths in the New Forest, the overriding need is to protect the integrity of the Forest as a landscape, with structural

and habitat diversity maintained and enhanced at all scales. If these objectives can be achieved we can be confident that the Forest will remain an area of outstanding natural value with species diversity robust enough to accommodate future change. Change is natural; although it is unrealistic to expect to preserve every last species, by conserving the overall condition of the landscape we will ensure that the rich assemblages of today are replaced by equally rich and diverse assemblages of the future. Central to all this is the need for economic support for traditional grazing practices and for conservation-sensitive forest management. Butterfly Conservation looks forward to further collaboration with all its conservation partners to help achieve these aims.

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Appendix

The 'lost' Lepidoptera of the New Forest.

The 2000 study referred to in the text identified the following Red Data Book and Nationally Notable species that had not been recorded from the New Forest since before 1980, and were considered likely to no longer occur. Species listed in square brackets are considered to require confirmation. There have been further losses since 1980, most notably the UK BAP Priority butterflies, the high brown fritillary *Argynnis adippe* and the marsh fritillary *Euphydryas aurinia* (Oates *et al.* 2000). Conversely, a few species have been re-found, including the RDB1 micromoth *Scythris empetrella*, rediscovered near Lyndhurst after a gap of 167 years (Parsons *et al.* 2001). Losses of species with no UK conservation status have never been quantified. It is hoped that future studies of the Lepidoptera of the New Forest National Park area will allow this list to be updated.

Code	Species	Status	Code	Species	Status
0021	<i>Ectoedemia sericopeza</i>	Nb	0373	Currant clearwing <i>Synanthedon tipuliformis</i>	Nb
0118	<i>Enteucha acetosae</i>	Nb	0374	Yellow-legged clearwing <i>Synanthedon vespiformis</i>	Nb
0133	Currant shoot borer <i>Lampronia capitella</i>	Nb	0375	White-barred clearwing <i>Synanthedon spheciformis</i>	Nb
0163	Forester <i>Adscita statices</i>	Nb	0377	Sallow clearwing <i>Synanthedon flaviventris</i>	Nb
0168	New Forest Burnet <i>Zygaena viciae</i>	RDB1	0380	Red-tipped clearwing <i>Synanthedon formicaeformis</i>	Nb
0183	<i>Bacotia claustrilla</i>	Nb	0381	Large red-belted clearwing <i>Synanthedon culiciformis</i>	Nb
0188	<i>Proutia betulina</i>	Nb	0431	<i>Yponomeuta sedella</i>	Nb
0191	<i>Acanthopsyche atra</i>	Nb	0457	<i>Ypsolopha lucella</i>	Nb
0207	[<i>Myrmecozela ochracealla</i>]	Nb	0593	[<i>Elachista regificella</i>]	Nb
0220	<i>Nemapogon clematella</i>	Nb	0624	<i>Biselachista trapeziella</i>	pRDB3
0234	Tapestry Moth <i>Trichophaga tapetzella</i>	Nb	0634	<i>Schiffmuellerina grandis</i>	pRDB1
0258	<i>Leucoptera lathyrifoliella</i>	Nb	0638	<i>Denisia augustella</i>	pRDB1
0311	<i>Dialectica imperialella</i>	Nb	0645	<i>Borkhausenia minutella</i>	pRDB1
0344	<i>Phyllonorycter strigulatella</i>	Nb	0668	<i>Luquetia lobella</i>	Nb