

# Biodiversity in the New Forest



Edited by Adrian C. Newton



# Biodiversity in the New Forest

Edited by  
**Adrian C. Newton**

Centre for Conservation Ecology and Environmental Change,  
School of Conservation Sciences,  
Bournemouth University,  
Poole,  
Dorset,  
United Kingdom



**pisces**publications

Newbury, Berkshire

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

Copyright © Bournemouth University (2010)

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

First published 2010.

British-Library-in-Publication Data

A catalogue record for this book is available from the British Library.

ISBN 978-1-874357-42-1

Designed and published for Bournemouth University by Pisces Publications

Pisces Publications is the imprint of NatureBureau, 36 Kingfisher Court, Hambridge Road, Newbury, Berkshire RG14 5SJ  
[www.naturebureau.co.uk](http://www.naturebureau.co.uk)

Printed by Information Press, Oxford

Cover photographs

Front cover: Red deer *Cervus elaphus* (Isobel Cameron / Forest Life picture library, Forestry Commission); noble chafer *Gnorimus nobilis* (Matt Smith); Dartford warbler *Sylvia undata* (David Kjaer); wild gladiolus *Gladiolus illyricus* (Adrian Newton)

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

# Contents

- v **Contributors**
- vii **Preface**  
*Adrian C. Newton*
- 1 **Chapter 1. Birds**
- 3 **A. Bird monitoring in the New Forest: a review of current and ongoing schemes**  
*Greg Conway, Simon Wotton and Adrian C. Newton*
- 11 **B. Bird monitoring in the New Forest: raptors**  
*Andrew Page*
- 21 **Chapter 2. Bats**  
*Colleen Mainstone*
- 32 **Chapter 3. Reptiles and amphibians**  
*Martin Noble*
- 36 **Chapter 4. Dragonflies and damselflies**  
*David J. Thompson and Phillip C. Watts*
- 46 **Chapter 5. Saproxylic beetles**  
*Keith Alexander*
- 54 **Chapter 6. Butterflies and moths**  
*Andrew J. Barker and David Green*
- 58 **Chapter 7. The New Forest cicada and other invertebrates**  
*Bryan J. Pinchen and Lena K. Ward*
- 65 **Chapter 8. Vascular plants**  
*Martin Rand and Clive Chatters*
- 84 **Chapter 9. Lichens**  
*Neil A. Sanderson*
- 112 **Chapter 10. Fungi**  
*Adrian C. Newton*
- 123 **Chapter 11. Bryophytes**  
*Rod Stern*
- 124 **Chapter 12. The condition of New Forest habitats: an overview**  
*Elena Cantarello, Rachel Green and Diana Westerhoff*
- 132 **Chapter 13. The condition and dynamics of New Forest woodlands**  
*Adrian C. Newton, Elena Cantarello, Gillian Myers, Sarah Douglas and Natalia Tejedor*
- 148 **Chapter 14. The effects of grazing on the ecological structure and dynamics of the New Forest**  
*Rory Putman*
- 157 **Chapter 15. Biological diversity in New Forest streams**  
*Terry Langford, John Jones, Samantha Broadmeadow, Patrick Armitage, Peter Shaw and John Davy-Bowker*
- 173 **Chapter 16. A pooled history of temporary pond research in the New Forest**  
*Naomi Ewald, Sue Hartley and Alan Stewart*
- 183 **Colour plates**

199	<b>Chapter 17. The contribution of the LIFE II and III projects to wetland conservation in the New Forest</b> <i>Tim Holzer and Maxine Elliott</i>
202	<b>Chapter 18. Biodiversity in the New Forest: a National Park perspective</b> <i>Stephen Trotter and Ian Barker</i>
212	<b>Chapter 19. Managing the New Forest's Crown lands</b> <i>Jane Smith and Libby Burke</i>
218	<b>Chapter 20. Synthesis: status and trends of biodiversity in the New Forest</b> <i>Adrian C. Newton</i>
229	<b>Afterword</b> <i>Clive Chatters</i>
232	<b>Index</b>

# Contributors

**Keith Alexander**, 59 Sweetbrier Lane, Heavitree, Exeter, Devon EX1 3AQ.

**Patrick D. Armitage**, Freshwater Biological Association, Moor House, Field Station, Garrigill, Alston, Cumberland DL12 0HQ.

**Andrew J. Barker**, 13 Ashdown Close, Chandler's Ford, Eastleigh, Hampshire SO53 5QE.

**Ian Barker**, New Forest National Park Authority, South Efford House, Milford Road, Everton, Lymington, Hampshire SO41 0JD.

**Samantha Broadmeadow**, Forest Research, Alice Holt Lodge, Farnham, Surrey GU10 4LH.

**Libby Burke**, Forestry Commission, The Queen's House, Lyndhurst, Hampshire SO43 7NH.

**Elena Cantarello**, Centre for Conservation Ecology and Environmental Change, School of Conservation Sciences, Bournemouth University, Poole, Dorset BH12 5BB.

**Clive Chatters**, c/o Hampshire and Isle of Wight Wildlife Trust, Beechcroft, Vicarage Lane, Curdridge, Hampshire SO32 2DP.

**Greg Conway**, British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU.

**John Davy-Bowker**, Centre for Ecology and Hydrology, c/o Freshwater Biological Association, East Stoke, Wareham, Dorset BH20 6BB.

**Sarah Douglas**, Centre for Conservation Ecology and Environmental Change, School of Conservation Sciences, Bournemouth University, Poole, Dorset BH12 5BB.

**Maxine Elliott**, Environment Agency, Solent and South Downs Office, Colvedene Court, Colden Common, Hampshire SO21 1WP.

**Naomi C. Ewald**, Department of Biology and Environmental Science, School of Life Sciences, University of Sussex, Falmer, Brighton, Sussex BN1 9QG.

**David Green**, Butterfly Conservation, The Cottage, West Blagdon, Cranborne, Dorset BH21 5RY.

**Rachel Green**, Natural England, 1 Southampton Road, Lyndhurst, Hampshire SO43 7BU.

**Sue E. Hartley**, Department of Biology and Environmental Science, School of Life Sciences, University of Sussex, Falmer, Brighton, Sussex BN1 9QG.

**Timothy Holzer**, Environment Agency, Solent and South Downs Office, Colvedene Court, Colden Common, Hampshire SO21 1WP.

**John G. Jones**, Centre for Environmental Sciences, School of Civil Engineering and the Environment, University of Southampton, Highfield, Southampton, Hampshire SO17 1BJ.

**Terry Langford**, Centre for Environmental Sciences, School of Civil Engineering and the Environment, University of Southampton, Highfield, Southampton, Hampshire SO17 1BJ.

**Colleen Mainstone**, Hampshire Bat Group, 42 Saxon Way, Halterworth, Romsey, Hampshire SO51 5QY.

**Gillian Myers**, Centre for Conservation Ecology and Environmental Change, School of Conservation Sciences, Bournemouth University, Poole, Dorset BH12 5BB.

**Adrian C. Newton**, Centre for Conservation Ecology and Environmental Change, School of Conservation Sciences, Bournemouth University, Poole, Dorset BH12 5BB.

**Martin Noble**, New Forest Ecological Consultants, Keepers Cottage, Holmsley, Burley, Ringwood, Hampshire BH24 4HY.

**Andrew Page**, Forestry Commission, The Queen's House, Lyndhurst, Hampshire SO43 7NH.

**Bryan J. Pinchen**, 7 Brookland Close, Pennington, Lymington, Hampshire SO41 8JE.

**Rory Putman**, Keil House, Ardgour by Fort William, Inverness-shire PH33 7AH.

**Martin Rand**, South Hampshire Vice-county Recorder, Botanical Society of the British Isles, email: [vc11recorder@hantsplants.org.uk](mailto:vc11recorder@hantsplants.org.uk).

**Neil A. Sanderson**, Botanical Survey and Assessment, 3 Green Close, Woodlands, Southampton, Hampshire SO40 7HU.

**Peter Shaw**, Centre for Environmental Sciences, School of Civil Engineering and the Environment, University of Southampton, Highfield, Southampton, Hampshire SO17 1BJ.

**Jane Smith**, Forestry Commission, The Queen's House, Lyndhurst, Hampshire SO43 7NH.

**Rod Stern**, British Bryological Society, 15 Selham Close, Chichester, West Sussex PO19 5BZ.

**Alan J. A. Stewart**, Department of Biology & Environmental Science, School of Life Sciences, University of Sussex, Falmer, Brighton, Sussex BN1 9QG.

**Natalia Tejedor**, Centre for Conservation Ecology and Environmental Change, School of Conservation Sciences, Bournemouth University, Poole, Dorset BH12 5BB.

**David J. Thompson**, School of Biological Sciences, University of Liverpool, Crown Street, Liverpool, Lancashire L69 7ZB.

**Stephen Trotter**, New Forest National Park Authority, South Efford House, Milford Road, Everton, Lymington, Hampshire SO41 0JD.

**Lena K. Ward**, 53 Miles Avenue, Sandford, Wareham, Dorset BH20 7AS.

**Phillip C. Watts**, School of Biological Sciences, University of Liverpool, Crown Street, Liverpool, Lancashire L69 7ZB.

**Diana Westerhoff**, Natural England, 1 Southampton Road, Lyndhurst, Hampshire SO43 7BU.

**Simon Wotton**, Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire SG19 2DL

# 17 The contribution of the LIFE II and III projects to wetland conservation in the New Forest

Tim Holzer and Maxine Elliott

## A Vision

*“Retaining its [the New Forest’s] integrity as an irreplaceable complex of wildlife habitats will continue to be the goal of the naturalists and conservationists who are involved. If the commitment to management for wildlife were great enough, perhaps restoration of its vanished features is not beyond possibility.”* (Derek Ratcliffe: March 2001, from Tubbs (2001)).

This statement by the late Derek Ratcliffe recognises the inherent and highly valued nature conservation importance of the New Forest and a strong desire to protect such interests. However, it also appears to invite interested parties to demonstrate just how committed they are by posing the ultimate challenge of restoring features that are not just damaged, but have gone altogether.

The conservation and restoration of wetland habitats in the New Forest represents a particularly significant challenge. In addition to the logistical difficulties involved of recreating or restoring complex natural processes, there are difficulties in working within such a sensitive environment where the restoration itself can result in at least short-term damage, and where the long-term implications of wetland restoration appear to be in conflict with other legitimate interests and activities.

High risk of project failure has been a driving force responsible for the evolution of a new approach to the conservation of wetland habitats in the New Forest under two successive initiatives, referred to as the LIFE II and LIFE III projects. The LIFE acronym comes from the European Union funding body ‘*L’Instrument Financier pour l’Environnement*’, of which LIFE-Nature is a component part. This fund assists nature conservation projects, targeting habitats and species populations, particularly Natura 2000 sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)).

Each discrete tranche of LIFE funding has provided the opportunities and financial assistance to greatly increase the pace of practical conservation on the ground. However, highly ambitious programmes of conservation work have also succeeded on account of significant improvements to the consultation processes and stakeholder engagement.

## The LIFE II project: ‘Securing Natura 2000 Objectives in the New Forest’

The first of the two New Forest LIFE projects was one of the largest and most complex multi-agency projects ever funded by LIFE-Nature. It was a partnership

project comprising English Nature, Forestry Commission, Hampshire County Council, Hampshire Wildlife Trust, National Trust, New Forest Committee, Ninth Centenary Trust, RSPB, Verderers of the New Forest and the Wiltshire Wildlife Trust. The five year project ran from 1997 to 2001 and had a budget of £5.2 million, 50% of which came from the LIFE-Nature funding body.

The LIFE II project aimed to draft a Management Plan for the 13 habitats and three species that comprised the features of the SAC, which extends over 29,000 ha. The Management Plan represents a fundamentally important tool for the successful management of such a large and complex area of habitats where the integration, consistency and consensus of management activities is paramount (Wright and Westerhoff 2001). The project also had ambitious targets to restore around 4,000 ha of degraded habitat, wetland components of which included bog woodland, mire, wet heath and ephemeral ponds. Land purchase featured amongst the key objectives in order to further facilitate sympathetic management.

The completion of a comprehensive mire-by-mire survey was particularly informative in characterising the condition of this wetland habitat type and resolving the extent and nature of damage, principally from historic drainage operations. Excellent progress was made through LIFE II on the delivery of conservation measures for non-wetland habitat types, primarily where management techniques were already in wide use across the Forest (e.g. tree and scrub removal from heath). However, progress with the restoration of wetland habitats (primarily the mires) was slow. Strong resistance to the reversal of historic drainage resulted in a failure to meet restoration targets, where around 170 ha of the targeted 500 ha received works to restore hydrological attributes. This highlighted the need for a specific approach to resolve differences of opinion between various New Forest interest groups. Future progress on the restoration of such wetland habitats would be strongly influenced by an ability to demonstrate that the long-term viability of livestock grazing would not be compromised. Indeed, given the importance of livestock as a management tool for many SAC habitats, including wetlands, the long-term viability of livestock grazing was in the interests of both conservation and Commoning alike.

This issue had been recognised in formulation of the LIFE II project, where the New Forest Verderers were able to introduce a pony premium scheme (with categories for ponies, mares, stallions, colts and mature stallions). This scheme provided financial incentives to



commoners in return for improving the quality of the pony stock on the Forest. Increased sale value of the stock would also improve the economics of this activity and further assist in securing the long-term viability of grazing. However, this scheme was insufficient to allay all of the concerns relating to the perceived impact upon grazing habitat from wetland restoration.

In spite of difficulties experienced under the LIFE II project, significant conservation achievements for wetland habitats (primarily mires) were made, and the debate over the principles of wetland restoration in the New Forest was greatly advanced. The foundations for tackling this difficult issue were laid and there was strong support for a second bid to Europe and the LIFE III tranche of funding in order to pursue wetland conservation goals.

### The LIFE III project: ‘Sustainable Wetland Restoration in the New Forest’

The success of a bid for funding under the LIFE III programme can be attributed to a number of factors. Firstly, the LIFE-Nature funding body was impressed by the achievements of LIFE II, particularly in terms of successfully managing a large, diverse and potentially cumbersome partnership. Attention was drawn to the difficulties frequently encountered when trying to bring together wide and potentially diverging interests for a common purpose. Success in this area still represents something of a novelty and the development of best practice models was being strongly encouraged. The aspirations of a LIFE III partnership to tackle precisely this issue appealed to LIFE-Nature. A strong focus on SAC Priority habitats (bog woodland and alluvial forest), where restorative actions also have novelty value, was similarly instrumental in a successful bid. LIFE III ran from 2002 to 2006. It involved six partners including English Nature, Environment Agency, Forestry Commission, Hampshire County Council, The National Trust and RSPB and cost £2.9 million, 40% of which was funded by LIFE-Nature.

Restoration of alluvial forest brought with it new challenges, particularly where historic damage comprised extensive deepening, straightening and rerouting of the river channel and separation of it from its flood plain. Particularly problematic was the ‘loss’ of significant volumes of mineral material from the system where dredged material had been spread too

thinly to be recovered, and where increased flow energy had apparently caused large amounts of eroded material to be flushed from the system altogether. Whilst such works have historically been confined largely within the Inclosures (woodland enclosed for the purposes of silviculture), upstream migration of erosion extended the damage onto the Open Forest and into mire systems that had been the focus of much attention under LIFE II.

Taking a holistic, catchment-based approach to restoration of alluvial forest therefore extended remedial works up into mire systems, creating a tangible and necessary link between works under the two LIFE projects. The long-term sustainability of earlier mire work very much depended on comprehensive mends throughout the system.

The importation of very large volumes of mineral material required to backfill drains and raise river bed levels, together with the resulting changes in hydrological conditions, undoubtedly caused greatest concern for partners and stakeholders (see also Chapter 15). Smaller-scale pilots or demonstrations helped to build confidence that restoration on such a scale was possible and desirable. The resulting effect on flood plain functionality was visually dramatic during the onset of winter rainfall, as river channels began to make regular contact again with their flood plain. Restoration of such physical and hydrological processes enabled the SAC habitat to self-mend and thereafter perpetuate conditions that limit the requirement for further intervention, contributing to the sustainable approach to the restoration works advocated by the project.

The success of managing such extensive works relied heavily upon effective communication and consultation. This was achieved through the creation of a Water Basin Management Forum comprising representatives from around 20 interest groups, local experts and, importantly, an independent chair. Meeting three or four times each year, round-table and in the field, proved invaluable in achieving the necessary progress on the ground and has been heralded as a consultation model.

It is a tribute to the success of effective consultation through both LIFE projects, but particularly that achieved through the Water Basin Management Forum in LIFE III, that so much wetland habitat was restored to favourable or unfavourable-improving condition (see Chapter 12 for definitions) between 1997 and 2006 (Table 46).

**Table 46**  
Wetland habitat restoration works under LIFE Projects 1997 to 2006.

Habitat	LIFE II	LIFE III	Comment
Alluvial Forest	0 ha	261 ha, 10 km river length	Major hydrological restoration and vegetation management. Required the importation of over 28,500 tonnes of mineral material otherwise lost from the system from previous drainage works
Bog Woodland	1.5 ha	18 ha	Hydrological restoration and vegetation management
Valley Mire	170 ha	184 ha	Hydrological restoration and vegetation management
Ephemeral Ponds	3	0	Mostly vegetation management
Wet Grassland	0 ha	141 ha	Mostly vegetation management with some hydrological restoration

**Table 47**

Selected wetland management interventions proposed in the New Forest for the period 2006–2016, focusing on ecological and nature conservation issues. Adapted from the Wetland Management Plan (Smith 2006).

Ecological and nature conservation issues	Proposed actions
Condition status of habitats	<ul style="list-style-type: none"> <li>Restoration of wetland habitats to achieve 95% SSSI favourable condition status by 2010</li> </ul>
Drying of mires	<ul style="list-style-type: none"> <li>Mire restoration</li> </ul>
Drainage and canalisation resulting in loss of flooding regime resulting in habitat degradation	<ul style="list-style-type: none"> <li>Restoration of rivers and associated floodplain function</li> </ul>
Invasion of pest and exotic species	<ul style="list-style-type: none"> <li>Removal of exotics and pest species</li> <li>Increase knowledge of distribution of pest species</li> </ul>
Dead wood removal and debris dams	<ul style="list-style-type: none"> <li>Remove cut timber and brush, especially conifer fellings from the floodplain</li> </ul>
Coppice of alder/sallow stands in riverine woodland	<ul style="list-style-type: none"> <li>Undertake coppicing and pollarding work in selected locations</li> </ul>
Trapped pre-Inclosure riverine and bog woodland	<ul style="list-style-type: none"> <li>Restoration of natural flood regime, selective felling and scrub removal, reintroduction of grazing</li> </ul>
Effect of river restoration on fish species	<ul style="list-style-type: none"> <li>Monitoring</li> <li>Planning timing of works to avoid migration and spawning periods</li> <li>Use of sediment mats in sensitive location to avoid smothering of downstream gravels</li> </ul>
Effects of debris dams on fish	<ul style="list-style-type: none"> <li>Monitoring of debris dams to ensure that passage of migratory fish is unimpeded</li> </ul>
Effect of channelisation on macro-invertebrate communities	<ul style="list-style-type: none"> <li>Restoration of hydraulic connectivity and channel variation</li> <li>Survey and monitor existing and future works</li> </ul>
Decline in breeding wader populations	<ul style="list-style-type: none"> <li>Implementation of initiatives from Progress Project</li> <li>Ongoing wetland habitat restoration</li> <li>Continued survey and monitoring</li> </ul>
Low flows placing stress on fish populations	<ul style="list-style-type: none"> <li>Continue mire restoration</li> <li>Support Catchment Abstraction Management</li> <li>Strategy process, developed by Environment Agency</li> <li>Support/help with initiatives to improve water quality</li> </ul>

## New Forest Wetland Management Plan 2006 to 2016

Continuing on with the successes of LIFE II and III, work beyond the projects has formed the basis of a comprehensive management plan specific to wetland habitat within the New Forest SAC (Smith 2006). Drafted by the Forestry Commission in consultation with the LIFE partners and members of the Water Basin Management Forum, this document brings together a significant amount of information on factors influencing habitat characteristics and condition with the many issues that influence restoration. It distils and presents the experiences from the LIFE projects together with highly informative and illustrative case studies. More specifically, it represents the foundation for wetland conservation efforts in the New Forest to 2016 (Table 47).

## Conclusion

Although the New Forest LIFE projects are unlikely to have restored habitats otherwise thought to have vanished, they have made a highly significant contribution to the restoration of wetland habitats

hitherto in the process of vanishing. The Water Basin Management Forum and a 10-year catchment-based wetland habitat management plan together represent a worthy model for continuing such conservation efforts, as well as tackling the objectives and requirements of new conservation drivers such as the Water Framework Directive.

Detailed reporting on the LIFE II and III projects can be found in New Forest Life Partnership (2006) and at: <http://www.newforestlife.org.uk/life2/life2index.htm>.

## References

- New Forest Life Partnership (2006). *Sustainable wetland restoration in the New Forest*. Technical final report. LIFE Project Number LIFE02NAT/UK/8544. Hampshire County Council, Winchester, Hampshire.
- Smith, J. (2006). *New Forest Wetland Management Plan 2006–2016*. Forestry Commission, Lyndhurst, Hampshire.
- Tubbs, C. R. (2001). *The New Forest. History, ecology and conservation*. New Forest Ninth Centenary Trust, Lyndhurst.
- Wright, R. N. and Westerhoff, D. V. (2001). *New Forest SAC Management Plan*. English Nature, Lyndhurst.