
Fossil reptiles of Great Britain

M.J. Benton and P.S. Spencer

Department of Geology, University of Bristol, Bristol, UK.

GCR Editors: W.A. Wimbledon and D. Palmer

Chapman & Hall London, Glasgow, Weinheim, New York, Tokyo, Melbourne, Madras

Published by Chapman & Hall, 2–62–6 Boundary Row, London SE1 8HN, UK

Chapman & Hall, 2–6 Boundary Row, London SE1 8HN, UK

Blackie Academic & Professional, Wester Cleddens Road, Bishopbriggs, Glasgow G64 2NZ, UK

Chapman & Hall GmbH, Pappelallee 3, 69469 Weinheim, Germany

Chapman & Hall USA, One Penn Plaza, 41st Floor, New York NY10119, USA

Chapman & Hall Japan, ITP-Japan, Kyoto Building, 3F, 2–2-1 Hirakawacho, Chiyoda-ku, Tokyo 102, Japan

Chapman & Hall Australia, Thomas Nelson Australia, 102 Dodds Street, South Melbourne, Victoria 3205, Australia

Chapman & Hall India, R. Seshadri, 32 Second Main Road, CIT East, Madras 600 035, India

First edition 1995

© 1995 Joint Nature Conservation Committee

Typeset in 10/12 Garamond ITC Book

Printed in Great Britain at the University Press, Cambridge

ISBN 0 412 62040 5

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the UK Copyright Designs and Patents Act, 1988, this publication may not be reproduced, stored, or transmitted, in any form or by any means, without the prior permission in writing of the publishers, or in the case of reprographic reproduction only in accordance with the terms of the licences issued by the Copyright licensing Agency in the UK, or in accordance with the terms of licences issued by the appropriate Reproduction Rights Organization outside the UK. Enquiries concerning reproduction outside the terms stated here should be sent to the publishers at the London address printed on this page.

The publisher makes no representation, express or implied, with regard to the accuracy of the information contained in this book and cannot accept any legal responsibility or liability for any errors or omissions that may be made.

A catalogue record for this book is available from the British library Library of Congress Catalog Card Number: 94–69920

Printed on acid-free text paper, manufactured in accordance with ANSI/NISO Z39.48–1992 (Permanence of paper).

Contents

Acknowledgements

Access to the countryside Museum abbreviations

1 Introduction

Reptilian evolution

Stratigraphy

How the sites were selected

2 British Carboniferous fossil reptile sites

3 British Permian fossil reptile sites

Introduction: Permian stratigraphy and sedimentary setting

Reptile evolution during the Permian

British Permian reptile sites

Middridge, Durham

Cutties Hillock, Grampian

Masonshaugh Quarry, Cummington, Grampian

4 British Triassic fossil reptile sites

Introduction: Triassic stratigraphy and sedimentary setting

Reptile evolution during the Triassic

British Triassic reptile sites

Grinshill Quarries, Shropshire

Coten End Quarry, Warwick, Warwickshire

Guy's Cliffe, Warwick, Warwickshire

Mid Triassic of Devon

High Peak (Sidmouth), east Devon

Otterton Point (Budleigh Salterton), east Devon

Late Triassic of Scotland

Lossiemouth East Quarry

Spynie

Findrassie

Upper Triassic of South Wales and central and south-west England

Bendrick Rock, South Glamorgan

Aust Cliff, Avon

Vertebrate-bearing fissure deposits of south-west England and

South Wales

Slickstones (Cromhall) Quarry, Avon

Durdham Down, Avon

Emborough Quarry, Somerset

Tytherington Quarry, Avon

5 British Early Jurassic fossil reptile sites

Introduction: Jurassic stratigraphy and sedimentary setting

Reptile evolution during the Jurassic

British Jurassic reptile sites

Early Jurassic

Lyme Regis (Pinhay Bay–Charmouth), Dorset

Whitby–Saltwick (East Pier–Whitestone Point), Yorkshire

Loftus, Yorkshire

6 British Mid Jurassic fossil reptile sites

Introduction: British Mid Jurassic reptile sites

Mid Jurassic (Bathonian) of Scotland

Kildonnan and Eilean Thuilim, Eigg

Mid Jurassic (Bathonian) of southern England

New Park Quarry, Longborough, Gloucestershire

Stonesfield, Oxfordshire

Huntsman's Quarry, Naunton, Gloucestershire

Shipton-on-Cherwell Quarry, Oxfordshire

Kirtlington Old Cement Works Quarry, Kirtlington, Oxfordshire

7 British Late Jurassic fossil reptile sites

Introduction: British Late Jurassic reptile sites

Oxfordian

Kimmeridgian

Portlandian: Portland Beds

Late Portlandian to Early Berriasian: Purbeck Beds

Late Jurassic (Oxfordian)

Furzy Cliff, Overcombe, Dorset

Late Jurassic (Kimmeridgian) of England

Smallmouth Sands, Weymouth, Dorset

Roswell Pits, Ely, Cambridgeshire

Chawley Brick Pits, Cumnor, Hurst Oxfordshire

Kimmeridge Bay (Gaulter Gap–Broad Bench), Dorset

Encombe Bay, Swyre Head–Chapman's Pool, Dorset

Late Jurassic (Portlandian) of England

Isle of Portland reptile sites

Bugle Pit, Hartwell, Buckinghamshire

Durlston Bay, Dorset

8 British Cretaceous fossil reptile sites

Introduction: Cretaceous stratigraphy and sedimentary setting

Reptile evolution during the Cretaceous

British Cretaceous reptile sites

Early Cretaceous: Wealden (Berriasian–Barremian)

Hastings, East Sussex

Black Horse Quarry, Telham, East Sussex

Hare Farm Lane, Brede, East Sussex

Smokejacks Pit, Ockley, Surrey

Brook–Atherfield, Isle of Wight

Yaverland, Sandown, Isle of Wight

Early Cretaceous (Aptian–Albian)

Wicklesham Pit, Faringdon, Oxfordshire

East Wear Bay, Folkestone, Kent

Late Cretaceous (the Chalk)

Culand Pits, Burham, Kent

St James's Pit, Norwich, Norfolk

9 British Cenozoic fossil reptile sites

Introduction: British Cenozoic stratigraphy and sedimentary setting

Reptile evolution during the Cenozoic

British Cenozoic reptile sites

Late Palaeocene and Eocene

Warden Point, Kent

Barton Cliff, Hampshire

Hordle Cliff, Hampshire

Headon Hill (Alum Bay–Totland), Isle of Wight

Oligocene

Bouldnor and Hamstead Cliffs, Isle of Wight

Pleistocene

Acknowledgements

We thank Bill Wimbleton (Countryside Council for Wales, Bangor) for his constant support throughout this project, and for his considerable editorial input. The whole text was read through by Andrew and Angela Milner (London), and we thank them for their input, as well as David Brown (Newcastle upon Tyne), Liz Cook (Bristol), John Cope (Cardiff), Chris Duffin (Morden), Paul Ensom (York), Susan Evans (London), Nick Fraser (Martinsville, Virginia), Malcolm Hart (Plymouth), John Hudson (Leicester), Allan Insole (Sandown, Isle of Wight), Ed Jarzembowski (Brighton), Jim Kennedy (Oxford), David Martin (Leicester), Chris McGowan (Toronto), Dick Moody (Kingston), Alec Panchen (Newcastle upon Tyne), Jon Radley (Sandown, Isle of Wight), Jean-Claude Rage (Paris), Glenn Storrs (Bristol), Mike Taylor (Leicester), David Thompson (Keele), David Unwin (Bristol), David Ward (Orpington) and Geoff Warrington (British Geological Survey, Keyworth), who read portions of the work.

Thanks are also due to the GCR Publication Production Team: Neil Ellis, Publications Manager; Nicholas D.W. Davey, Editorial Assistant (Scientific Officer) and Valerie Wyld, Text Officer. Diagrams were drafted by Chris Pamplin (R & W Publishing, Newmarket) and the photographs were developed by Simon Powell (Bristol).

Access to the countryside

This volume is not intended for use as a field guide. The description or mention of any site should not be taken as an indication that access to a site is open or that a right of way exists. Most sites described are in private ownership, and their inclusion herein is solely for the purpose of justifying their conservation. Their description or appearance on a map in this work should in no way be construed as an invitation to visit. Prior consent for visits should always be obtained from the landowner and/or occupier.

Information on conservation matters, including site ownership, relating to Sites of Special Scientific Interest (SSSIs) or National Nature Reserves (NNRs) in particular counties or districts may be obtained from the relevant country

conservation agency headquarters listed below:

English Nature, Northminster House, Peterborough PE1 1UA.

Scottish Natural Heritage, 12 Hope Terrace, Edinburgh EH9 2AS.

Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd LL57 2LQ.

Museum abbreviations

AUGD, Aberdeen University Geology Department.

AUZD, Aberdeen University Zoology Department.

BATGM, Bath Geology Museum.

BGS(GSE), British Geological Survey, Edinburgh.

BGS(GSM), British Geological Survey, Keyworth (old Geological Survey Museum collection, London).

BMNH, Natural History Museum, London (formerly British Museum (Natural History), London).

BRSMG, Bristol City Museum and Art Gallery.

BRSUG, Bristol University Geology Department.

BUCCM, Buckinghamshire County Museum, Aylesbury.

AMMZ, Cambridge University Museum of Zoology.

CAMSM, Sedgwick Museum, Department of Earth Sciences, Cambridge University.

DORCM, Dorset County Museum, Dorchester.

ELGNM, Elgin Museum.

EXEMS, Royal Albert Memorial Museum, Exeter.

GLRCM, Gloucester City Museum and Art Gallery.

IWCMS, Isle of Wight Museum Geology, Sandown.

LEICS, Leicestershire Museums, Leicester.

LIVCM, National Museums on Merseyside, Liverpool.

MAIDM, Maidstone Museum.

MANCH, Manchester Museum.

MCZ, Museum of Comparative Zoology, Cambridge, Massachusetts.

NEWHM, Hancock Museum, Newcastle upon Tyne.

NMS, National Museums of Scotland, Edinburgh (formerly RSM).

NMW, National Museum of Wales, Cardiff.

NORCM, Norwich Castle Museum.

OUM, University Museum, Oxford.

OXFPM, Oxford Polytechnic Geology Department.

SHRBM, Shrewsbury Borough Museum.

SHRCM, Shropshire County Museum, Ludlow.

SDM, Stroud District Museum.

WARMS, Warwickshire Museum, Warwick.

WHIMS, Whitby Museum.

YORYM, Yorkshire Museum, York.

YPM, Yale Peabody Museum, New Haven, Connecticut.

[References](#)