The Glasgow Naturalist (2024) Volume 28, Part 2, 96-103

Book Reviews

Nudibranchs of Britain, Ireland and Northwest Europe

Bernard Picton & Christine Morrow
Princeton University Press (Wild Nature Press series), 2nd Edition, 2023. 360 pages, paperback with many colour photographs. ISBN 9780691230696.
£35.00

Nudibranch sea slugs with their bright colours are popular subjects among underwater photographers. In British and nearby seas, they are generally only a few cm in length though the largest, *Tritonia hombergii*, may attain 20 cm and the smallest interstitial species, which squeeze among sand gains, are only a couple of mm long.

This new addition to the Wild Nature Press series of identification guides is an updated version of the 1994 *Field Guide to the Nudibranchs of the British Isles* by the same authors. The authors are both from Belfast and both long-in-the-radula experts on nudibranch sea slugs and allied molluscs. With the expanded geographical coverage now including Northwest Europe from Brest in France to Bodø in Norway, the number of species included has increased considerably from 108 to over 195 with a corresponding increase of the volume size from 142 to 360 pages.

There is a lot packed into this tome with large photos and rather small text. The introduction is relatively short, at 15 pages, and covers species nomenclature, food and feeding, reproduction, anatomy, how to find nudibranchs, and how to record them. There is a short glossary of morphological and ecological terms and also a fascinating glossary of species names and what they mean. The latter is especially welcome as few nudibranchs possess common names and the scientific names are so much more memorable (dare I say enjoyable) if their meaning is understood.

A detailed table of the food preferences of 144 species is included which is very helpful as many nudibranchs have very specific dietary requirements and are frequently to be found on the relevant food source, helping with identification. The commonest foods are hydroids, bryozoans and sponges, but may also include tunicates, entoprocts, barnacles, sea-pens and soft corals. One genus, *Calma*, specialises on eggs of gobies or clingfish (Gobiidae). Several pelagic nudibranchs are also included, such as *Fiona pinnata* and *Glaucus atlanticus*, which feed on goose barnacles, and siphonophore and velellid jellyfish, though few pelagic nudibranchs have yet been recorded from the shores of Europe.

One interesting aspect of nudibranch biology which has been overlooked is the frequent occurrence of infestation by parasitic copepods, relatives of the well-known sea-lice that occur on salmon. These include the ectoparasitic copepod *Doridicola agilis*, which can be seen skipping over the host's surface. It has various colour morphs which often contrast sharply with that of the host making them quite conspicuous. More insidious are the endoparasitic splanchnotrophid copepods which are concealed within the host's body but extrude pairs of large white egg sacs through the host dorsum. Again, these egg sacs are very conspicuous and easily mistaken for nudibranch spawn. One of the photographers contributing to this volume, David Fenwick, has also produced beautiful images of nudibranchs parasitised by copepods on his AphotoMarine website (https://www.aphotomarine.com/copepoda_sea_lice.html) and these would be worthy of inclusion in any future nudibranch volume.

By far the bulk of this book - 335 pages - deals with the species accounts of nudibranch and allied molluscs. These cover over 160 nudibranchs (clades Doridina and Cladobranchia), a smaller number of other sea slugs (Acteonoidea, Cephalaspidea and Sacoglossa), sea-hares (Aplysiida), and six-gilled slugs (Pleurobranchida). Almost every species has a two-page spread including three large photos and notes on descriptions, key characteristics, similar species, ecology, and distribution. The photos are in resplendent colour including both field photos with the sea slugs in their natural habitat (often on the host/food species and/or with spawn coils), as well as beautiful dark field studio images which accentuate the colours and morphological features. Many different photographers have provided images for this book as indicated in the acknowledgements.

The authors themselves have contributed hugely to the study of nudibranchs over many years. Prior to the publication of the Picton & Morrow photographic guides, the nudibranch enthusiast had to rely on T.E. Thompson's Linnean Society Synopsis (No.8) *Molluscs: Benthic Opisthobranchs* (1988) which was based mostly on black and white line drawings and only a small number of colour photos. The digital photography revolution and the advent of DNA barcode analysis, to unravel species complexes, have both had a significant impact on the study of nudibranchs. Many species within the new guide have only been recognised within the last few years including several described by the authors themselves. Moreover, they have had the honour of having two species (*Atalodoris pictoni* and *Trinchesia morrowae*) named after them by colleagues – the ultimate accolade for a taxonomist.

Several of the species depicted are still in a state of taxonomic flux or have yet to be formally described. In this respect it would be useful to further explain how species are distinguished using DNA barcodes. The

statement about separating *Trapania pallida* and *T. lineata* on page 66 is confusing as is the inclusion of two different *Coryphella* species on pages 206/208 which are said to have "identical" DNA barcodes. Are we to assume that the two nominal *Coryphella* are regional genetic morphs of one species? If so, why have they not been synonymised?

A number of the nudibranch species appear to have arrived on the southern shores of Britain only in recent years and may be part of a northerly migration trend, perhaps related to warming seas. These include flamboyant species, such as *Babakina anadoni*, which are unlikely to have been previously overlooked. However, other species from south-west Britain remain rather rare (*Atagemma gibba*), very rare (*Thordisa azmanii*) with a single record, or have mysteriously disappeared from both Britain and Ireland over the last 30 years (*Greilada elegans*). It is clear that there is still a lot to be learned about the nudibranchs that occur in British waters. The distribution descriptions in this guide would benefit from the addition of dot maps, which would better enable a species' ubiquity or scarcity to be gauged at a glance.

In conclusion the new nudibranch volume is an excellent and authoritative field guide, which will hopefully encourage naturalists to delve more deeply into the sea slug's realm. It is accessible to both amateur and professional naturalists, whether rock-pooling, snorkelling or carrying out underwater photographic surveys.

Myles O'Reilly

Plant-Life: A Walk with Nature

Edward Bent
Self-published via The Great British Bookshop, 2023.
240 pages, paperback. ISBN 9791221009576.
£21.00

I had a bit of a dilemma reviewing this book. This was because I found it hard to assess the anticipated readership. The author's aim is to make the reader appreciate plants and develop a sense of their value, and to understand their form and function and interaction with other life forms, including humans - including at artistic and cultural levels. This is conspicuously ambitious, and so to make it more palatable the main content of the book is divided into five sections that are linked as if the reader is being taken on a guided walk through nature. It seems like a great idea, but there is a huge mix, from botanical naivety, through philosophy and poetry, then up-to-date botanical research. Hence my problem. However, the author is well equipped for this, with a degree in botany, research experience, teaching and life experience in many countries of the world. His background also includes marketing. I wondered if the title *Plant-Life*, so very like the well-respected charity "Plantlife", reflected any of these experiences.

Alas, before beginning this walk, the reader has to stumble through many, many pages: a Preface, Reviews, Acknowledgements, Tabled list of contents, plus an Introduction where the contents are summarised. At last, the walk begins and I can put my boots on.

Section I is divided into three chapters and is where, on our walk, we are encouraged to admire and notice plants, (note, "plants" throughout mainly relates to flowering plants only). Their interaction with the environment is looked at, largely targeting non-botanists and a little irksome at times in use of language if you are a botanist. However, a happy spring would have been back in my step in Section II, which contains four chapters full of information on plant physiology and biochemistry, and also covering the interaction of the whole plant with the environment above and below ground. This is really good stuff.

Section III, and I am beginning to trip again. The author classes this section as holistic considerations, a mix of mathematics, ecology and aesthetics. Take a deep breath and move on to Section IV - evolution and biodiversity. This section is rich in fascinating information. It deals with the co-evolution of plants and insects, biodiversity and interaction with humans, and variation in bees (with reference to Dave Goulson's research on this subject). Pollination and evolution of metabolic pathways are covered and well up-to-date. Epigenetic inheritance in evolution in relation to biodiversity is discussed and even the role of bacteria and cyanobacteria in evolution at biochemical and molecular levels. The interaction of humans with biodiversity is evaluated for food, fuel, medicines, education and well-being. Much in this section is thought-provoking and is well illustrated and tabulated throughout. We may be approaching overload and tired feet on our walk, but we have more to think about ahead.

Section V looks at "Earth systems as a whole", taking us through immediate and far-reaching topics in relation to human interaction - climate change, food yields, pollution, education and life-style, and "Going green". A considerable mix of topics here, which includes art, mathematics, politics, science. It revisits educational topics, which are further examined and discussed. This is classed as a descent at the end of your walk. Your brain and your feet might be tired by now. Very thought-provoking and you thought you were finished, but you still have the "Debriefing", a Glossary of Terms and a substantial Bibliography including suitable references for each chapter. After 240 packed pages, our walk is now complete!

In conclusion, I am truly impressed with much of the content of this book, but perhaps the author has been too ambitious in covering such a wide spectrum of topics. Consequently, while the seasoned botanist and natural historian could find certain parts rather simplistic, the less well-versed may find parts too complex. Who is the target readership? Of one thing I am certain, strong boots and stamina are required for this walk with nature and there are some rewards for all.

Alison Moss

British Craneflies

Alan Stubbs

British Entomological and Natural History Society, 2021. 434 pages, hardback with 31 black and white plates and 32 colour plates, and numerous line drawings in the key section. ISBN 9781899935093. £36.00

British Craneflies covers six families of Diptera comprising over 350 species – all instantly recognisable by their long dangly legs. It includes, in addition to the four families of "true" craneflies (superfamily Tipuloidea) - Cylindrotomidae (damsel craneflies), Pediciidae (hairy-eyed craneflies), Tipulidae (long-palped craneflies), and Limoniidae (short-palped craneflies) - two further families that are similar, i.e. Ptychopteridae (fold-wing, or phantom craneflies), and Trichoceridae (winter gnats).

Craneflies, particularly the Tipuloidea, are hugely important ecologically, with the larvae and adults of many species being significant components of food chains in many habitats. The breeding of many upland waders such as golden plover (*Pluvialis apricaria*) coincides with the emergence of abundant craneflies during summer, and there is evidence that this may be affected by climate change (https://research.manchester.ac.uk/en/publications/warmer-springs-advance-the-breeding-phenology-of-golden-plovers-p).

The book is packed with interesting biology and life-history observations of both larvae and adults, their associated habitats, predators and their conservation. There is an impressive amount of information about the various families, subfamilies, and genera, with a detailed account for each species covering its description, habitat preferences, phenology, and an indication of its distribution in the U.K. and Ireland.

The keys focus on wing venation and genitalia (as do many other Diptera keys), but these are well described and illustrated with some wonderfully detailed drawings and colour photographs which are really helpful, and it is worth mentioning that tricky dissection of the genitalia is not required. Anyone who has chased a daddy-long-legs around the room in late summer will be aware of how readily their legs fall off – so thankfully legs are generally optional extras in most of the keys!

There are many species that the reader will quickly be able to recognise in the field, such as the large and well-patterned *Tipula maxima* and the colourful "tiger" craneflies - *Nephrotoma* spp. and *Pedicia rivosa*, and the autumn cranefly *Tipula pagana* the wingless females of which can be spotted on urban walls and trees. There are many common species that can be found in any garden, as well as rarities associated with ancient veteran trees, peatlands or submerged rotten wood. Craneflies are under-recorded in Scotland, so there are lots of opportunities for interesting finds and gap-filling!

Craneflies do not often attract the same interest as the more colourful hoverflies, but they are equally fascinating, and so it is to be hoped that this book, with its keys and ancillary information, will help foster a wider interest in the group.

Richard Weddle & Scott Shanks

Discovering Scotland's Butterflies

Paul Kirkland

Pisces Publications, 2022. 232 pages, hardback with colour photographs and maps. ISBN 9781874357995 £29.95

Paul Kirkland worked for Butterfly Conservation Scotland for 25 years, and so he is in an ideal position to know about Scotland's butterflies. His book is the first publication looking at all of Scotland's butterflies since George Thomson's *Butterflies of Scotland*, published in 1980. Much has changed since then. Climate change, loss of habitats and other factors have led to dramatic changes in the fortunes of the butterfly fauna and this book summarises the current (2022) situation. There are introductory chapters on "butterfly basics" and on "Scotland's landscapes and habitats". For each species there is information about its status in Scotland, its distribution and good places to see it, flight period(s), larval food plant(s), along with a general description of the butterfly and its ecology. There are excellent photographs throughout of adult butterflies and often their life stages, and of some notable localities.

The other thing that has changed since 1980 is the amount of interest in Scotland's butterflies. There are far more knowledgeable enthusiasts now who search for, study, record and, above all, enjoy the 36 species regularly seen here. The author invited several of these people to submit anecdotes about particular butterflies, which have been included. This makes the book particularly good, as many very interesting personal observations are included, some of which explain what it was that led to these individuals getting "hooked" on butterflies.

Overall, this is an informative book on Scotland's butterflies, with much added interest, making it a good read in its own right.

Richard Sutcliffe

Ancient Sea Reptiles: Plesiosaurs, Ichthyosaurs, Mosasaurs and More

Darren Naish

Natural History Museum, London, 2022. 192 pages, hardback illustrated. ISBN 9780565095345. £20.00

My initial impression of this book is that it is a good sized, well-illustrated, contemporary, and affordable plunge into the aquatic realm of Mesozoic reptiles. After reading the book, my opinion has not changed. Darren Naish is a skilled science communicator who already has several books to his name in the field of palaeontology and cryptozoology. He set up the Tetrapod Zoology weblog in 2006 (https://tetzoo.com/) which covers many tetrapod-related topics and has appeared in, advised on, and contributed to, quite a number of popular television and radio programmes. In

addition to all this media involvement, he has published a substantial body of scientific research on dinosaurs, pterosaurs, fish, turtles, and, of course, marine reptiles of the Mesozoic.

There have been several books on ancient sea reptiles in the recent past such as *Prehistoric Marine Reptiles: Sea Monsters During the Age of Dinosaurs* (Judy Massare, 1991), *Ancient Marine Reptiles* (Jack Callaway and Elizabeth Nicholls, 1993), and *Sea Dragons: Predators of the Prehistoric Oceans* (Richard Ellis, 2003). All these books were of their time (and at least one was very academic) and the latest one was published exactly 20 years ago. Although these books still make some useful contributions to our understanding of the development of scientific thought on these reptiles, they are now becoming quite dated and there was certainly a need for a new, substantial book on this topic. This is where Naish floats in with his contemporary perspective.

Naish begins with three chapters that help to contextualise the marine reptiles. The Introduction covers the changing shape and connectivity of their seas, their changing climate, and the history of their discoveries – with a special section dedicated to Mary Anning. The second chapter covers how the different marine reptiles relate to each other – with the exception of the enigmatic turtles which are at least considered to be highly modified diapsids. Like the turtles, ichthyosaurs were once considered to have non-diapsid origins but are now thought to be closer to sauropterygians which leaves little doubt as to their diapsid origins. The evolution of the marine reptiles is still a contentious area of research which is sensitively approached by Naish. The anatomy of these animals forms the third chapter where he discusses the science of locomotion, feeding styles based on tooth shape and skull morphology, flexibility of the fins and necks, the body shape and skeleton as well as soft-tissue and cartilage preservation. It was important that these topics are covered in order to understand the huge variety of forms represented in the next six chapters.

From the lesser-known groups and strange-looking sauropterygians (like my favourite *Atopodentatus* which has a snout like the brush-head of a hand-held vacuum cleaner) to the better-known groups like the ichthyosaurs and plesiosaurs, Naish covers many of these groups based on their morphological characteristics and differences. The ichthyosaurs are placed into a chapter on the "shark-shaped reptiles", whereas the plesiosaurs are in the chapter on "long necks, big mouths". This appears to be a practical and accessible way of distinguishing between the major groups as well. Palaeontologists mostly rely on morphology for their taxonomies and so, conveniently, did these animals.

The last chapters mop up the remaining marine reptiles. Some of the Mesozoic marine crocodiles were very different from their extant cousins - some of them were highly modified to have fins rather than feet and a tail fluke to support a fully marine mode of life. Predators like the mosasaurs are mostly common towards the end of the Cretaceous immediately prior to the big extinction event. They also had a tail fluke and were very diverse from small species to giants, from shell crunchers to apex predators. New forms of these animals are being discovered every year in places like Morocco's Oulad Abdoun Basin as the phosphate deposits are still being exploited. The final chapter covers the sea turtles which were once a more diverse group within the clade Americhelydia of which only the Chelonioidea survived the end-Cretaceous extinction until today Some of these grew to immense size like the impressive *Protostega* with a 3 m shell length and the enormous *Archelon* that grew up to at least 4.6 m in length. Within the picture credits, Naish shows that he is an accomplished artist as well as writer, having produced many of the illustrations of these extinct animals associated with the cladograms.

Much has happened in the science of palaeontology over the last few decades and our understanding of these fascinating animals has advanced in huge hydrodynamic strokes. Even now, new discoveries are being made that will change our understanding of these beautiful beasts – not making Naish's book obsolete but merely adding to the body of knowledge. Naish's book will be a useful book for the student of palaeontology, and related sciences, providing an essential introduction to the diversity of marine reptiles during the Mesozoic. As a well-illustrated and well-written book, it will also be of use to those with a penchant for all things dinosaurian as a digression from the terrestrial into the (mostly) non-dinosaurian marine realm (marine birds, which Naish briefly mentions in Chapter 4, are the closest he gets to mentioning dinosaurs in this environment). I enjoyed reading it, and read it several times, finding new information at each reading.

Ancient Sea Reptiles will continue to excite and encourage a new generation of palaeoscientists to dive into a sea of discoveries that is still very much fluid. Discoveries that will revolutionise our understanding of the Mesozoic environment and the ecology of the organisms within.

Neil D.L. Clark

The Forest Guide: Scotland: Copses, Woods and Forests

Gabriel Hemery

Bloomsbury Wildlife, 2023. 320 pages, paperback with many coloured photographs and maps. ISBN 9781472994646.
£25.00

At first one might think that it is a fairly prodigious task to write a guide to the forests of Scotland. The author points out, however, that he has restricted the work to 365 forests so that selecting sites to include was quite a task. The book is far more than simply a guide to Scotland's forests, as soon becomes abundantly clear. The introduction is well worth a read, dealing as it does with Scotland's geography and trees, a summary of the most notable sites, trees and natural history, Scotland's

forest history, Gaelic language and place names, and forest ownership.

No such guide would be complete without clearly labelled maps. These maps are found towards the back of the book apart from the Caledonian Pinewoods map which is located at the start of the region labelled "Highlands". It seems to have been considered that placing all but one of the maps together at the end of the book is better than at the start of each section. The country has been divided into 14 different regions with an introduction at the start of each, which is of considerable interest. They are placed alphabetically and are also clearly found on the Contents page. Each of the 365 sites has been allocated a number so that they may be found easily on each of the maps. In addition, each site has a six figure OS map reference, explorer map number as well as a ten digit access point number with the relevant what3words reference and postcode. Furthermore, each has its ownership detailed; its designation, e.g. LNR (local nature reserve), SAC (special area of conservation), SSSI (site of special scientific interest) and others; its area in hectares; its forest type, *viz*. broadleaved, conifer, mixed, Caledonian pinewood, montane, temperate rainforest or Atlantic hazelwood; and ease of access.

Scattered through the book are eight very informative articles about Atlantic hazelwoods, red squirrels, temperate rainforests, Arran whitebeams (*Sorbus arranensis*), Caledonian pinewoods, Trees for Life, arboreta and Scottish plant hunters. Nowhere, however, are these interesting articles indexed.

The text is illustrated with many quite stunning photographs, including lichens and moss-covered stems, female catkins of alder (cones), witches broom, fungi, birds such as tree pipit perched on a dead Scots pine, roe deer part-hidden in foliage, butterflies such as small copper on an ox-eye daisy, ancient tree boles such as field maple, bark of Scots pine, natural regeneration of Scots pine at Tentsmuir in Fife, leaves of the Arran whitebeam, ancient beech at Cartland Craigs, Lanark. These photos give a great impression of the many fine locations referred to in the text. Records mentioned include the most northerly natural oakwood in Britain (Loch a' Mhuilinn, near Scourie), the most southerly remnant Caledonian pinewood site in Scotland (Glen Falloch, near Crianlarich), the most westerly forest in the guide (Langass Wood of lodgepole pine and Sitka spruce, Lochmaddy, North Uist) and the most southerly site in the guide (Physgill Glen, broadleaved, Whithorn). The introduction includes a section headed "Notable sites" in which the highest altitude, most remote, tallest, rarest trees and other records are listed.

In a book of this quality, criticism seems churlish. Errors exist, however, some being more important than others. Under a section on Geography, the Great Glen is not part of the Highland Boundary Fault as stated; under Glen Falloch "conversation" should read "conservation"; under the Black Wood of Rannoch reference is made to pine regeneration but not to oak regeneration, which the Society noticed some years ago. Reference to Glasgow is restricted to the Botanic Gardens and to Kelvingrove Park. No mention is made of Pollok Park or Glasgow Green, two of Glasgow's richly endowed parks; but such comments could also be made of Edinburgh where there is no reference to Princes Street Gardens (Wheatley elms) and no doubt to other Scottish locations. Another shortcoming is the lack of any reference to International Conifer Conservation Programme (ICCP) plantings in a number of safe sites scattered through the country. This relates to the suitability of the climate of Britain, despite its latitude, for the growth of trees from many parts of the world, thus enabling endangered tree species to be planted under the auspices of the Edinburgh-based programme. Both of these drawbacks are related to the restriction of the number of sites in the guide to 365. Ownership of Glasgow Botanic Gardens is described as "Private: Friends of Glasgow Botanic Gardens". However, Glasgow City Council owns the Botanic Gardens, one of Glasgow's five city parks. In the comprehensive glossary, gymnosperms are described as a division of the flowering plants (angiosperms). In fact, they are a group of seed-bearing plants (spermatophytes) where the seeds are not enclosed in an ovary. Angiosperms have their seeds enclosed within a fruit that develops from the ovary.

This book is most useful to anyone interested in trees and wildlife who is travelling to any part of Scotland. As explained above, some important locations have been missed out but, arguably, this shortcoming is more than made up for by the plethora of locations that are mentioned within the guide.

The author is chief executive of a British forest caring charity, Sylva Foundation.

Bob Gray

The Atlas of Early Modern Wildlife: Britain and Ireland between the Middle Ages and the Industrial Revolution

Lee Raye
Pelagic Publishing, 2023. 408 pages, hardback. ISBN 9781784274078.
£45.00

This unusual book examines the wildlife of the British Isles in what is largely the pre-Linnean age. It covers some 160 species based on over 10,000 records, many of which use local names (with varying reliability) in multiple languages from New Latin to Cornish. It does encompass an age when Eurasian beavers swam in the River Ness without the need of re-introduction programmes, and wolves and Eurasian lynx generated hunting parties and not scientific conferences.

At the beginning, the author urges us to avoid several common preconceptions. Imagining that the past was a golden age when myriad species inhabited these islands in a state of harmony is dismissed as a fallacy; what we have now may perhaps be less but it is also different, and well before the Industrial and Agricultural Revolutions a number of species were dying out while others had yet

to appear. The "Little Ice Age" lasted nearly 150 years until the mid-1700s. It had devastating effects on our wildlife, including marine fish stocks, and we are arguably still climbing out of it.

There are many caveats which must be borne in mind when considering zoological atlases. First and foremost, they often map out the distribution of human recorders rather than the animals themselves. This was recognised as a deficiency at the time and occasional attempts were made to solve the problem by means of circulated questionnaires – a system of citizen science described here as "Baconian". Nevertheless, we are looking at a time well before the widespread nature recording which characterises our own age. Secondly, what people chose to comment on or to record leans heavily towards things we ate or hunted, or things which competed with human self-interest. Indeed, the author remarks that while the readers of his book will be interested in animals and their conservation for its own sake, this notion would be quite foreign to the naturalists of the time. Thus, mammals are reasonably covered but there is nothing smaller than a rat; invertebrates are limited to edible molluscs, crustaceans and starfish; the coverage of birds is strong on raptors, wildfowl, waders and gamebirds, but include very few passerines; newts are lumped into a single species which includes lizards; fish do well. Each species has two to three pages devoted to it. Topics include its modern conservation status, how early naturalists spoke or wrote of it, its distribution and a map – as well as a period woodcut of often alarming caricature. Bearing in mind how sedentary the general human population was at the time, naturalists who travelled were also inclined to record the absence of species in places they visited, and nobody bothered to record species that were presumably ubiquitous, such as house mice or sparrows. Names can be unreliable; I was surprised to learn that the great grey shrike (*Lanius excubitor*) was called the "night-jarr" in Northamptonshire.

There is an illuminating explanatory chapter at the beginning of the book. The recorders/authors were largely professionals - a quarter were physicians or apothecaries; a quarter clergy; a quarter men such as teachers, lawyers or army officers; and a quarter the idle (*sic*) gentry or aristocracy. A small number of women also wrote on natural history and Raye names some. Perhaps the thorniest problem that the author addresses is how reliable an old record is, bearing in mind that mythical creatures such as mermaids were still widely credited, barnacle geese were believed to come from goose barnacles (so an author might be tempted to record both where only one existed) and a monkey was hanged in Hartlepool as a suspected French spy. Raye shows where the most (and least) survey effort was made; Scotland does well overall, especially the Highlands and Western Isles. The degree of agreement between expected and reported distribution is subjected to an Exact Multinomial Goodness of Fit test which, at best, will make the reader's eyes glaze over and, at worst, will introduce a hint of suspicion – especially when he adds that "the Monte Carlo method was used to reduce computational demand". Nevertheless, these statistical evaluations have been essential to the creation of the distribution maps for each species. On these a dot is a specific named place, a shaded area is a county where the creature occurs, a cross-hatched area is one where the records are so poor that nothing can be deduced, and a blank space is an area of good recording where the species is not mentioned so that absence must be inferred.

More than 330 pages are devoted to the species Raye has included, and there are fascinating details at every turn. Choughs were found at Dover; in 1875 the corncrake was common in almost every county of Britain and Ireland until a change in crop rotation methods did away with a fallow period; coots were shot in large numbers for food until the early 20th century; badgers were also eaten, the fat used as a substitute for lard or to ameliorate kidney stones or joint pain, and the pelts used for human clothing and dog collars; Castle Loch in Dumfries and Galloway was as attractive to anglers of old as it is to those of today, containing "Pikes, Green backs, Breams, Vetches, Pearches with some others".

There is a short chapter at the end which looks at species which have increased or decreased to date. This needs careful consideration as the author deals with distribution, not abundance. That said, about 20% of species have declined but this is balanced by a similar 20% that have expanded and Raye tries to explain both trends. The voluminous references occupy nearly 30 pages in small print and are a tour de force. The author has worked for the Royal Society for Protection of Birds and now teaches at the Open University. A fellow of the Linnean Society, he is interested in the distribution of plants during the same historical period and I wonder if a botanical companion volume is in preparation.

Overall, this is an undoubted labour of love that, despite all the difficulties of interpreting historical records, makes for a wonderful read. It is not a book for tackling end-to-end, but one to dip into. Its most important message is not the doom and gloom of habitat loss or species decline, but the absolute need for recording effort as a basis for understanding change.

Tony Payne

Trees and Woodlands

George Peterken
Bloomsbury Publishing, 2023. 416 pages, hardback with 300 illustrations. ISBN 9781472987013.
£40.00

Trees and Woodlands is number 12 in the British Wildlife series on aspects of British natural history. George Peterken has already contributed to this series with a book on *Meadows*, a superb volume which I reviewed for *The Glasgow Naturalist* and, indeed, hurriedly purchased. However, *Trees and Woodlands* represents the main theme of George's lifelong work. His dedication from his graduate years, through 60 years in woodland and forest ecology, has influenced the categorisation of woodland, management and

conservation. His formative ideas he would share with others to whom he gives credit throughout, particularly to Oliver Rackham. Peterken's knowledge and passion are augmented in this volume by nearly 300 excellent photographs covering all aspects of a very complex subject. The scope of woodland description was necessarily limited by the prior publication of *Woodland Flowers* by Keith Kirby (2020) in this series. Otherwise, all aspects of British native and semi-native woodland, and some comments on forestry, are covered in this volume. In addition, the influence of trees and woodland on art, culture and well-being are examined and discussed in well researched detail.

In the Preface and Introduction, Peterken outlines his own background of family holidays at Ringwood on the edge of the New Forest, followed by Ph.D. studies on holly substantially in the New Forest. Ultimately his employment was largely in forest ecology and conservation, including a sabbatical spent at Harvard and extensive visits to European woodlands. He has widespread experience of woodlands in the British Isles - 146 woodlands named and located on a site location map – leading to the development of a personal concept of the term "ancient" and a deep understanding of the influence of man to our present perceptions. The following discussion of "Natural woodlands" enlarges on this theme, tracing woodlands from Neolithic times to the present, including comments on the conifer plantations following the Second World War. These last are easy to define, but generally Peterken recognised just how inadequate the existing definitions of woodlands were, and gives due credit to early pioneers of categorization.

Prior to developing this concern, Peterken provides several chapters of sound background information. First, a chapter on "The forms of trees and shrubs" - how so many interacting factors give different shapes to different tree species in each woodland. Then follows a chapter on "Forest dominants" - the large trees that substantially define our descriptive name of the woodland and then a chapter on "Pioneers, small trees, shrubs and climbers". Throughout, the illustrative photographs are excellent, giving attractive backing to the very informative text. This detail allows the reader to better grasp the following chapters on named, natural woodlands and how generations of people have used and interacted with the woodlands, this section finishing with the development of conservation management and woodland nature reserves.

Peterken's Nature Conservancy work in particular led him to recognise how difficult it was to properly describe the woods he visited. This made management advice and conservation development more challenging. He recognised that ecology, geology, geography, vegetation and habitat all needed to be encompassed and Peterken's resulting classification is a ground-breaking achievement. The chapter on "Woodland types and their distribution" gives full details of a system which is universally applicable at all levels and has been the categorisation used for many years. Particular credit is given to the contribution of the late Oliver Rackham to this massive achievement. This type of classification allows the whole concept of habitat to be illustrated with all forms of animal life, plants and fungi and their interactions and significance, giving a sound basis for the conservation and management which is so important to Peterken.

In subsequent chapters we are treated to the history and description of the beneficial feelings trees and woodlands give us, followed by the cultural appreciation of trees including their significance in the world of art and conservation concepts. Impressively researched and presented with illustrations. Finally, in a chapter "Looking forward", we are forced first to look backwards. I am of the same generation as George Peterken. I too remember the good, the bad and the ugly of the last 60 years. He describes the changes he has helped to bring about, e.g. the aims of Forestry - the Broadleaved Policy of 1985. Introductions are outlined - grey squirrels, imported beetles, etc. Also, there is a sadness expressed that we have not learned from past mistakes, particularly with fungal and bacterial pathogens. However, Peterken describes many successes especially with community involvement (his own long involvement with Lady Park Wood), and the conservation concepts he has helped people grasp.

Who does this book target? There are many books on trees and woods. My bookshelves are full of them, my personal background being in botany, mycology and landscaping. However, this book holds a lot of interesting information and is very well written by someone uniquely qualified to deal with a broad-based subject but with real depth and perception. Its concepts and contents are modern; George Peterken was ahead of his time and still is. For a younger generation, whether a general reader with an interest in natural history, a student or a professional biologist of any sort (and let us hopefully include politicians and administrators), this volume has much to give and is beautifully presented.

Alison Moss

Goethe in the Age of Artificial Intelligence. Enlightened Solutions for a Modern Hubris

Malte C. Ebach
Palgrave Macmillan, 2023. 130 pages, hardback with 20 figures. ISBN 9789811967405.
Hardback £34.99; eBook £27.99

This is a short book of 7 chapters and an epilogue. Each chapter has references and there is a final reading list. Chapter titles to whet the mental appetite include "Goethe in the Age of AI", "AI and the Modern Hubris", "How to Remedy Direct Observation", and "Getting Rid of Bad Metaphysics". It could almost be read in an afternoon if one could muster the necessary concentration and stamina. The style is both direct and reflective, the content very wide, giving any reader much to ponder on. Some lines on page 10 state the book's subject and our shared situation – "*This book is about us, human observers of the natural world, in a global economy that is becoming automated, in a*

scientific community that is slowly replacing human observation with machine learning and models."
The author stresses that the responses to our situation lie in the transformation of each individual scientist and he uses Goethe's life as subject for such possible transformation. Goethe is Johann Wolfgang von Goethe (1749-1832), poet, novelist, playwright, geologist, colour theorist and experimentalist, botanist, morphologist… The chapters present aspects of Goethe's life, growth and development interpenetrated with Ebach's reflections on artificial intelligence, machine learning, big data, observation and discovery, good and bad metaphysics and the history of science.

Ebach, an Australian with Germanic heredity has a fine collection of notable publications, both as sole and co-author, across wide horizons of natural history. Herein he tries to re-form and re-fuse the sundered world of our experiences of, and with, Nature (note the capital) using Goethe's life as a guide. How successful this is, depends I think, on where each one of us is on our own life's journey, rather like Ebach's hero Goethe. And how receptive we are at each moment to re-thinking our understanding of the nature of things and the things of Nature. We also have to try to grasp the sense and meaning of some almost untranslatable and elusive German terms. Goethe the dilettante grew on, transforming and metamorphosing to become scientist, poet, artist and novelist. In sum, a very rare creature indeed - in forgotten Thomas Carlyle's forgotten words – "the Universal Man". And a creature now largely shunned by the current English-speaking world, especially the scientific world. Why should this be? Possible answers to that question lie far beyond the scope of this review.

Ebach's counterpoint then to Goethe's life is our present predicament and our infatuation with, and seduction by, technology – "the Modern Hubris". Can Goethe's life's journey really come to our aid here? Goethe fretted and fidgeted about spectacles, microscopes and telescopes filtering and corrupting his sensual, perceptual and conceptual acuity. Thankfully for Goethe's mental well-being he did not have to experience televisions and Truman shows, smart phones and the internet, and the call centre. Ebach remains remarkably sanguine and balanced with respect to technology, provided we are willing and able to recognise the relationship for what it really is. I, for my part, am less sanguine. But perhaps it takes manners, morals and metaphors to maketh man.

Unaddressed by Ebach is the larger question of whether Nemesis always follows Hubris. Is life, the universe and everything deterministic? A moment's reflection on David Hume's sound Scottish scepticism (shaped by Scottish historical legal form?) on all matters suggests that a "not proven (yet)" judgement might be the correct one here, and a victory for Pandora's hope over the demons of experience? Meanwhile we all choose to be click-bait addicts, being the information-seeking creatures that we, and all other organisms, are. Ebach does not surrender to the easy delusions of prediction, and his book stays grounded in the changing form, growth and metamorphosis of Goethe and his thoughts and how these can relate to our situation. Ebach take us to the very edge of our current Hubris, and probable Nemesis remains unexplored.

Can I recommend this book? Most certainly. Is it an easy read? No. But if our aim is to have civilisation, culture and science where people matter, and a world where machines serve people, and not the reverse, it is necessary reading.

Robin Bruce