Country-Side

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The Taylor Collection – Wildlife Corridors – Leicester Botanic Gardens – Conserving National Collections of Trees – Climate Change and Extreme Weather – Environmental Farming – Orchids in Kent

Country-*Side*

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Front cover: Part of the Taylor collection
Photo: Andy Taylor
Back cover: Orchids in Alpheton Wood
Photo: John Pawsey

Picture Index

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(2) Common names should be capitalised and should include taxonomic names in italics;
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Editorial

Pauline Rutherford

I have noticed how fast the years seem to fly by since I retired, far quicker than they did when I worked; and here we are approaching Christmas! Once again, the weather has dominated the natural world, which seems to happen more as the years progress, and the evidence can be seen in the article by meteorologist Chris Page.

2024 began with prolonged cold and wet weather which affected the insects especially. Sightings of lepidoptera were very sparse until late July/August; many over-wintering species had been washed out with flooding and it will be interesting to see how the official numbers compare when the data from the Butterfly Conservation Trust is compiled.

Other articles in this issue include two collections, one of trees at the Lovell Quinta Arboretum in Cheshire and the other from the Taylor Collection of Natural History in Staffordshire. Both these warrant a visit so, if you are in the area do, I am sure you won't be disappointed.

Thank you once again, to all the contributors for their articles because without them there wouldn't be a Country-Side magazine.

Natural History Observation

Fungi at Wentworth Garden Centre, South Yorkshire

Kevin Hinchcliffe MBNA

All photos: K. Hinchcliffe unless indicated

South Yorkshire branch members have recorded natural history sightings at Wentworth Garden Centre since 2014 with over 800 species recorded. Photos of two fungi below, seen in Autumn 2024, show Blackening Waxcap (*Hygrocybe conica*) in differing age stages and Amethyst Deceiver (*Laccaria amethystina*) which is a new species for the site.

Blackening Waxcap (known as Witches Hat)

1 – appears yellow/orange
Photo: D. Farrar

2 – the cap begins to turn black

Amethyst Deceiver

deep violet convex cap

3 – the cap is all black

4 – cap is all black and turning up

flattens and turns up at the edges

The Taylor Collection of Natural History in Staffordshire

Andrew Taylor FBNA

Some highlights from the collection

Introduction

As a new Fellow of the British Naturalists Association, I wanted to introduce you to the natural history collection that I have developed over many years. The collection now totals over 170,000 specimens collected from around the world and includes donations from many of the greatest natural history institutions.

The collection covers the broadest range of natural history, from palaeontology and geology, to botany, entomology and zoology, together with texts, books, and prints which support the collection. Within the collection, as I'll describe in later sections in this article, I have focused on specimens of species which are rare or unusual, both in the wild and in collections. This includes some from habitats which are some of the most inaccessible in the world, particularly deep ocean ecosystems.

I first became interested in natural history when I was very young, and this interest has followed me throughout my life and career; when on operations with the Royal Marines I would be looking for unusual wildlife, and even today I will often surprise my colleagues by discussing the adaptations of species found around whale-falls or hydrothermal vents!

The collection today is increasingly used not just for the development of my own knowledge and interest, but for research and education, and I particularly want to extend access to members of the British Naturalists Association, so if you would like to use or view the collection, please do get in touch.

History and Development of the Collection

The collection was started around 40 years ago when, as a keen teenager, I was asked to record, collect and preserve local aquatic invertebrates for the Potteries Museum and Art Gallery in Hanley, Stoke-on-Trent. The Natural History Department at the museum provided me with collecting jars, isopropyl alcohol, Ziplock bags and labels, and the then curator (Geoff Halfpenny) taught me how to record my finds and how to preserve them. The museum was interested more in the distribution data than the specimens themselves, and I was allowed to keep any material that I collected - this surprised me but also made me rather happy.

Over the next four or five years I concentrated my efforts on learning more about freshwater species by exploring all the local lakes, rivers, streams, and ponds I could access. I particularly enjoyed finding species that were unfamiliar to me, and I would key them out at home using my hand lens and a Collins guide, and also compare them to a set of whole mount microscope slides that I had purchased from Eric

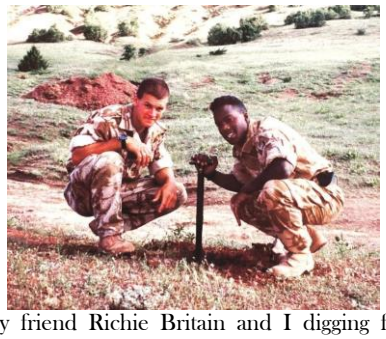
Marsden of NBS (Northern Biological Supplies) in Ipswich.

During this time many friends would also supplement the collection with finds that they had made whilst out and about locally. I would regularly receive all manner of material ranging from roadkill birds and small mammals, to Violet Ground beetles (*Carabus sp.*) and seedpods.

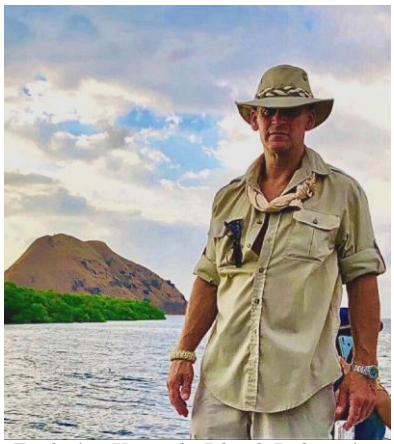
My collections started to grow quickly, and I realised that I needed to be able to store material safely until I could get around to the business of curating it properly. I also needed better storage facilities. This was expensive but absolutely necessary and I turned again to my local museum for help. As always, the museum staff would assist me in providing me with support and equipment to help me better manage my growing collections.

In later years, I added to my collections while on my travels both in the UK and around the world. I had always been interested in learning more through books, but whilst being deployed as a Royal Marines Commando I found myself in parts of the world which included habitats I had never imagined visiting while growing up in Stoke-on-Trent. I was able to employ the techniques in fieldwork and identification that I had learnt while in the UK to entirely new ecosystems.

Later in life I have had opportunities to explore even more far-flung places, including the the Amazon Basin (Ecuador and Brazil), North America, Canada, and the Caribbean. While not all of these travels offered collecting opportunities, some did - for example The National Museum (Natural



My friend Richie Britain and I digging for Wolf Spiders (*Hippasa deserticola*) in the mountains of Northern Iraq - circa 1991)



Exploring Komodo Island, Indonesia

History) Smithsonian Institute in Washington DC employed me to survey and collect poison dart frogs (*Dentrobatidae*) in the Amazon.

My connections, developed through years of correspondence and collaboration, have also enabled me to develop the collections beyond those taxa and habitats that I can access myself. Many institutions and individuals have been incredibly generous in sharing or trading specimens (see the Acknowledgements section below), which has expanded the collection far beyond what I would have been able to achieve alone.

Breadth of the Collection

While I have been told many times that 'at some point I will specialise' in some area of natural history, I have honestly never found that to be the case! My interests span the whole of the natural world, and my collections reflect that. What I have always focused on, though, is being able to represent some of the rarest and hardest to obtain specimens. While I do have some common material, much is unusual, and often difficult to access even in far larger collections and institutions.

The main body of the collection is of world marine, freshwater, land, and arboreal molluscs. Some highlights of this part of the collection include:

- Regional specific marine collections from Ecuador, Brazil, Peru, Chile, Argentina, and Antarctica.
- Arboreal species from the Pacific Islands, including many representatives of remote localities such as St. Tome Island, Galapagos Islands, Lord Howe Island, Christmas and Easter Island, Admiralty Islands, The Solomons and Yule Island.
- Ecosystem specific species from desert habitats in Israel and Morocco.
- Tree Snails from Cuba, Haiti, Florida (Hispaniola) of the genus *Liguus.* (The collection contains c. 98% of the world's species, including many now extinct in the wild.)
- Many examples of Cuban Polymita snails including most colour morphs and related sub-species.
- A comprehensive collection of Partula snails from French Polynesia along with examples of the related Rosy Wolf Snail/Cannibal Snail (*Euglandina rosea*).
- Rare deep-sea bivalves, including complete representation of the

known molluscs from the Japan Trench, the Manus and Lau Basins, and the Mariana Trench, with many collected up to and beyond a depth of 7,000m.

Other significant collections include:

- A collection of almost 300 meso/bathypelagic fish, including extremely rare specimens such as *Thermarces cerberys* (an Eelpout species) endemic to Pacific hydrothermal vents, *Eptatretus deani* (a Hagfish species), one of which was collected from a whale-fall ecosystem, and *Eurypharynx pelicanoides*, the Pelican-mouthed Gulper Eel.
- A good representation of Barbeled Dragonfishes (*Stomiidae*) from deep-sea ecosystems in the Central North Pacific Ocean.
- A fine example of an extremely rare Pelican-mouth Gulper Eel (*Eurypharynx pelacanoides*) acquired in 2007 with the help of Dr Tracy Sutton (WHOI).
- Numerous specimens of deep-ocean Hatchetfishes *(Sternoptychidae),* Bristlemouth fishes *(Gonostomatidae)* and Lanternfishes *(Myctophidae)* from Australian mid-water and Atlantic Ocean deep sea locales.
- A superb example of Stoplight loose-jaw or Rat-trap fish *(Malacosteus niger*) caught along with 8 other con-specifics using a bottom trawl from vessel R/V "G.O.Sars" for the internationally famous "MAR-ECO" expedition in 2004.
- Meso/bathypelagic zooplankton, mostly donated by the Institute of Ocean Sciences in Canada.
- Dry-stored invertebrates (c.5-6,000), including tropical and sub-tropical coleoptera, Dytiscid water beetles, Hydrophilid beetles, tropical Vespidae, Lepidoptera, and Membracidae. The collection includes a very rare example of a Titan Longhorn Beetle (*Titanus giganteus)* from French Guiana.
- A parasitology collection (in wet-store and slide formats).
- Rare wet-preserved and dry-store crustacea and mollusca, including specimens from Lake Baikal.
- A deep-sea isopod collection of around 22 specimens of 4 species, including 5 specimens of the iconic Giant Marine Isopod *Bathynomus giganteus.* There are 20 known species of the *Bathynomus* genus, although many of these are known from only a single specimen.
- Miscellaneous amphipod species, including super-giant amphipods and others collected at a depth of almost 10,000m.
- Elasmobranch collections, including wet-preserved and skeletal material.
- Osteological collections and skin specimens, including those from birds (c. 500 specimens) and mammals (including old and new world monkeys, great apes, whale, human, larger carnivores and smaller African mammals).
- A collection of 3D printed bone and skull specimens, primarily of primates, including a number of hominid species.
- A world-wide botanical collection focusing on remote localities in Antarctica, New Zealand, Africa, and Nepal (Mount Everest). The herbarium also includes material donated by Harvard University, flowering plants from the Swiss Alps, and a carpological collection of tropical plants, including a perfect specimen of a Coco-de-Mer, Baobab species, and Breadfruit (collected from the tree on St. Vincent deposited there by Capt. William Bligh).
- An extensive collection of ambers, copals, and other tree resins (c. 1000 specimens), many with plant and invertebrate inclusions.
- A geological collection of around 1000 specimens, plus a collection of semi-precious and precious gemstones and related organic items.
- A complete collection of elements from the periodic table, with supporting material (many requiring secure appropriate storage and documentation).
- Bones, tusk, teeth, and hair from Woolly Mammoth and Woolly Rhino.
- A large collection of fossilised material.

A small selection of molluscs from the collection.

Stop-light Loose Jaw (*Malacosteus niger*).

A selection of marine isopods from the collection. Note the ruler for scale to confirm to Miranda Lowe CBE (Principal Curator, NHM) that the Taylor Collection specimen is in fact bigger than the largest specimen at the Natural History Museum! (Just a bit of curatorial fun!)

A selection from the earth sciences collections.

Within this wider holding there is a focus on UK material within many of the global collections. Two particular highlights of this include a large UK herbarium of over 1000 specimens of flowering and non-flowering plants, including historical and cultivated specimens, and within the amber collection are fine examples of English 'Firestorm Amber'. These ambers are from the famous Hastings amber beds and are around 140 million years old.

Research and Outreach Use

While the collection was initially developed for my own interest and knowledge, I have increasingly become aware of the potential value of the collection to others and have been exploring how I can use the collection to support others in learning, researching, and being inspired by the specimens, just has I have.

Over the last few years, I have worked with local schools and colleges to offer opportunities to young people to discover, explore, and work with species and specimens they would otherwise not have the opportunity to encounter. A major part of that for me has been through British Science Week, celebrated annually in March, and the associated activities that are held locally at Denstone College. As part of these activities, I have taken over 1000 specimens to the college to create displays that children from local schools can explore and discuss. In previous years I have developed teaching materials based on the collections which link to curriculum aims and to current conservation concerns that children will have come across, such as plastic pollution in the ocean. This year I teamed up with fellow FBNA Stephanie Holt from the Natural History Museum, who brought along specimens from the national

A selection of specimens from the collection arranged for British Science Week 2024 at Denstone College.

collection to augment my own, and this encouraged an even more exciting and interesting suite of discussions than usual in the Denstone College events.

I have also provided specimens (including Albatross species, Northern and Southern Giant Petrel (*Macronectes halli* and *M. giganteus*) and King Penguin (*Aptenodytes patagonicus*)) to Nottingham University for 3D scanning. These will be used to aid students' development of skills in modern imaging and 3D printing technology, and also in comparative anatomy using specimens they would otherwise not be able to access.

Given the scale, importance and potential of the collection, I am very keen that the collection is also used by researchers at every level. To date I have loaned material to national charities, for media and broadcasting, including BBC Radio 4's 'Nature Table', and to professional researchers and amateur naturalists alike. I have recently donated material to the marine isopod collection curated by Principal Curator Miranda Lowe CBE, at the Natural History Museum in London, as I had acquired specimens recently from Simon De Marchi (AKA 'Elasmo-Morph') of *Bathynomys kapala* which were not, until now, represented in the national collection.

In conclusion, I hope that you have enjoyed this brief glimpse into the collection that I have amassed. It is certainly unique in many ways, and has brought me so much enjoyment, inspiration, and fascination over the years. I do however consider myself very much a custodian and I am hoping to share and utilise the collection more and more. I am working closely with Stephanie Holt to explore more ways to increase and improve access to the collection through digitisation, collections management, and outreach within the naturalist community. To that end, if you would like to find out more, or to visit the collection here in Staffordshire, or even to borrow specimens for your own research or outreach activities, please do get in touch. I would be particularly delighted to work with members of the British Naturalists' Association and their associates. I can be contacted at andrew4040@hotmail.com. You can also follow what I am working on my social media channels: Instagram @andy_taylor40 and Twitter @Andy404040.

Acknowledgements

The following institutions have been instrumental in the development of the collection through advice or donations, and/or have received donations of material from the collection:

1 - Natural History Museum, London.
2 - Monterey Bay Marine Aquarium Research Institute (MBARI), California.
3 - Florida Museum of Natural History.
Japan Agency for Marine-Earth Science and Technology (JAMSTEC).
4 - Simon De Marchi (Elasmo-Morph), Sydney.
5 - National Institute of Biodiversity, Ecuador.
6 - Bell Museum of Natural History and Herbaria, Minnesota.
7 - Scripps Institute of Oceanography, California.
8 - Australian Museum, Sydney.
9 - Harvard Museum of Comparative Anatomy, Massachusetts.
10 - National Museum of Science and Natural History, Lisbon.
11 - Museo de Ciencias Naturales, Ecuador.
12 - National Museum of Natural History Smithsonian Institute, Washington DC.
13 - J.L.B. Smith Institute of Ichthyology, South Africa.
14 - Carnegie Museum of Natural History, Pennsylvania.
15 - French National Institute for Ocean Science and Technology, (IFREMER).
16 - Field Museum, Chicago.
Lafayette College, Pennsylvania.
17 - Museo Nacional de Historia Natural de Cuba, Havana.
18 - University of Colorado Museum of Natural History, Boulder.
19 - Provincial Museum of Natural Science and Oceanography, Puerto Madryn, Argentina.

Andrew Taylor was awarded FBNA in January 2024. He has been actively involved in the study of natural history for forty years, and has become the custodian of an incredible collection of preserved specimens which are used for education. Photos: A. Taylor

A Brief Look at Wildlife Corridors

Tony Thorn FBNA

This article is a very brief summary describing some of my thoughts on the basics of wildlife corridors. It cannot cover in detail all the various types of corridors, nor how they interreact, or how their use as a means of enhancing nature can be quantified. I hope it shows that wildlife corridors are good for nature.

Roadside verges are mostly undisturbed by human footfall and moving vehicles tend to disperse seeds. Even if partly mown the verges still allow transportation of many species.

What is a Wildlife Corridor?

A wildlife corridor can be thought of as a bridge that links one area of land (or water) to another, and allows for the free movement of wildlife between them. Wildlife corridors may also be called 'habitat' or 'green' corridors and may be natural or artificial. An artificial corridor may be introduced positively by deliberately rewilding land or negatively by simply abandoning it, for example by allowing a ploughed field to become fallow or no longer mowing areas such as grass verges.

There are numerous examples of the need for corridors, but a simple example would be when communities of plants and animals have become isolated because a wooded area has been enclosed by housing. However, even in a simple case like this assessing the effect of introducing a wildlife corridor is not straightforward. An important consideration is that the impact of isolation is species specific: some species may be unaffected, at least in the short term, by isolation, whereas others will be more troubled by it. In similar vein, some species (such as birds) are obviously less likely than others (such as mice) to need a land corridor to escape from an isolated area, but even animals which do need such a corridor may not use it if they sense an increased threat in doing so. There is also the risk that a corridor may introduce instability by allowing the introduction of new predation or disease to the previously isolated area. Other risks, such as the risk of providing a route for fire to spread between areas (via hedges or reedbeds, for instance) must also be considered. Many of these points apply equally to aquatic corridors, such as ditches, which link water bodies, and isolation is clearly a subject that could warrant many pages of discussion.

If a new corridor is planned, for example the planting of a new hedgerow, careful thought must be given to the impact of any changes that result, including risk assessments of both the hedge itself and the impact of the corridor. Planning should also ensure that the corridor has meaningful connectivity and that the result is not just the creation of another biodiversity island. It is not sufficient to assume that all such ventures are beneficial unless the “good idea” is tested and the question “why put it here?” answered. The provision of new corridors should not adversely affect the maintenance of existing corridors, whether man-made or natural. Existing corridors are at least as important as new ones and the construction of a new building, road, gravel pit or even a boundary wall should not obstruct an existing corridor. The result could be at best restrictive and at worst catastrophic.

Types of Wildlife Corridor

In general, a wildlife corridor may be 'continuous' where there is geographical connectivity or 'stepping stone' where there are gaps but the gaps are not a major obstruction to free movement.

Within these broad headings wildlife corridors may take many forms, including the following:

Wooded areas
Irrigation channels and ditches
Canals
Streams and rivers
Field margins
Gardens
Tree Avenues
Railway tracks
Roadside verges
Hedgerows and fences

Real-world corridors range from the obvious to the obscure and from natural to artificial. Brown Rats (*Rattus norvegicus*) use sewers to move relatively unhindered in city environments, and while animals are seldom seen using public transport, Red Foxes (*Vulpes vulpes*) are often seen on or near railway lines. With regard to artificial corridors, an article in National Geographic magazine (Vartan, 2019) shows that a dedicated wildlife bridge (a bridge surfaced with local vegetation) over a highway can make both animals and humans safer. In the UK, the Wildlife Trusts together with the Highways Agency have launched their 'Network for Nature' project (see 'Further Reading', below). This has several objectives including the enhancement of roadside habitats, which could add greatly to the freedom of movement of plants and animals along the verges of roads and motorways.

Canals, of course, have served as wildlife corridors for centuries and the Canals and River Trust advise that rivers and canals currently provide over 2000 miles of connected habitat - not only in the water but in the great variety of different habitats that are found along the banks.

Railway tracks may be used as corridors by animals. Look out for foxes. Plants may spread along the length of the track. Note the plants growing on the sunny side of the station platform.

Rivers are corridors along which fish and eels may travel. In season this river has a very high eel population. The banks are especially useful for the spread of plants and migration of animals.

Effectiveness

Both natural and man-made corridors can provide a mechanism that reduces inbreeding and allows migration and colonisation of species previously either absent or lost. Corridors work by allowing an organism to expand its geographical range, and they do so by removing restrictions to movement. However, at the moment there does not seem to be a universal methodology for calculating the effectiveness of a wildlife corridor apart from a numerical 'before and after' survey.

Obviously, the factors which will affect the effectiveness of a corridor will differ from species to species because of their different requirements. Plants, for

example, need both the environmental conditions and the means of dispersal to follow a corridor, which may include wind or hitching a ride on an animal or within its intestines. Land animals generally require a path to be relatively unobstructed and low in perceived risk. Flight has given birds a major advantage in that they are less constrained by the need for wildlife corridors. They are however seasonally tied to their food sources, which may themselves be linked to and impacted by wildlife corridors. What may be little known is that bats may use hedgerows as navigational aids. A good wildlife corridor in addition to being a means of allowing movement of species, is a discrete ecosystem in itself.

Negatives

A factor that is not usually discussed is that a wildlife corridor may have downsides as well as upsides. Predators can move between sites and cause devastation on a previously isolated site that had hitherto been a refuge for endangered species. Corridors may allow the spread of disease: Grey Squirrels (*Sciurus carolinensis*) carry squirrel pox to which they are immune, but Red Squirrels (*Sciurus vulgaris*) are not. In similar vein, Signal Crayfish (*Pacifastacus leniusculus*) carry a disease known as crayfish plague to which the native White Clawed Crayfish (*Austropotamobius pallipes*) has no resistance. Fire can have the negative impact of destroying a wooded corridor habitat and returning previously linked areas to isolation. The downsides of corridors are discussed by Ogden (2015).

Seasonal corridors

Geographically, protected wildlife corridors tend to be permanent, and serve as an aid to dispersal throughout the year. There is however an ephemeral and seasonal need for some species. The common toad *Bufo bufo* for example migrates to the pond where it was born. This may involve crossing roads with the obvious peril of being killed and volunteers sometimes assist the toads in their journey along this seasonal corridor.

Local Wildlife Sites

These are described by the Wildlife Trusts as exceptional wildlife areas that are stepping stones across the wider landscape. It is probable that some sites will be more aligned to corridors than others and that some species will be less able to use stepping stones than others.

References and Further Reading

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Tony Thorn was awarded FBNA in 2021 and is an active member with the Essex branch.
Photos: Tony Thorn

Plants Wow! Best Day Ever!

Ruth Fairley

I read an article the other day that said, *"Let's raise children who can identify plants and animals not brands and celebrities."* It certainly got me thinking especially as that's one of the things I now do for a living.

I took early retirement in 2023 from teaching in a secondary school after thirty-three years. I was really fortunate in that I managed to get myself a job teaching at our local Botanic Garden in Leicester.

Now, I am an instructor who helps deliver some of the education programmes available for schools at the gardens.

You know, the most amazing part of my job is the fact that the children love the programmes we deliver. So often after doing plenaries with the children at the end of the day I hear, *"Best day ever!"* They love the programmes that are carefully planned and enthusiastically delivered. They are amazed at the gardens, almost awed by them. They love being out and about in the great outdoors. They want to know about the plants, they want to smell the flowers and are very keen to return very soon.

I will admit, we are very lucky. Our Botanic Gardens are very impressive. They are on a sixteen-acre site, with three mansions in the grounds one of which we use as our classroom base. We have a series of statues dotted around the gardens, a nature pond, for pond dipping, complete with newts and a large ornamental pond with huge Koi Carp (*Cyprinus sp.)* swimming in it. When they see the shadows of the children they swim quickly up to them with their mouths out of the water, like a scene from Jaws. The excitement it causes amongst the children is a joy to behold.

University of Leicester Botanic Gardens.

We have several glasshouses; a Desert house, a Tropical house, a Temperate house, and two Alpine houses. We have Giant Redwood trees (*Sequoiadendron giganteum)* which the children love to punch, a sunken garden to play 'tig' in....the list goes on. The children love it.

The Botanic Gardens offer programmes for children of all ages, from pre-school bear hunts to A-level biology, from world cake to Islamic art and even maths!

The schedules are carefully planned to educate the children, they reflect and deliver the national curriculum and programmes of study for public exams. They can be custom made to suit the specific needs of individual schools, all created by the Education Officer, Ruth Godfrey.

Yes, we have good facilities, we have great organisation and programmes but the children never cease to amaze me, they are fascinated.

I have only been doing this for a year but I have never yet seen a child refuse to take part in the activities, nor met a child that we couldn't engage. Even the most hardened street wise teenagers have melted into the magic of the garden, having caught a newt whilst pond dipping and to name it.

The children are enchanted by the garden and engaged by the activities. They vow to return in the future with their families. They clearly want more.

There is a huge interest in primary schools to get children out into gardens and forests, a lot of schools have forest schools and allotments. I imagine the difficulty comes when trying to give the children opportunities to continue their interests into secondary school and beyond. I am hoping that the introduction of a natural history GCSE exam in 2025 may well go some way in sustaining their interest and opportunities.

I don't think it would take much more to ensure that they can name plants as well as they can name brands and celebrities, after all in the words of children; *"it's better than TV"!*

Beaumont House student accommodation and education building.

One of the entrances to the gardens.

Ruth Fairley works as an instructor in the Botanic Gardens, Leicester.
Photos: R. Fairley.
Find out more about the gardens at: https://le.ac.uk/botanic-garden

Conserving National Collections of Trees

David Skydmore FBNA

Arboreta

An arboretum, from the Latin for "a place of growing trees", is a botanical garden that specialises in trees, though the plants it contains will not be exclusively so. Although, trees have been collected and cultivated in landscapes from time immemorial, it is likely that the Derby Arboretum, opened in 1840, was the first public park in the UK that was planned and planted with trees. The National Memorial Arboretum was opened in Staffordshire in 2001 to "celebrate lives lived and commemorate lives lost".

As well as being open for people to enjoy seeing and being amongst the plants, the tree collections are often used for scientific use, particularly taxonomic, and for education in telling people about the biodiversity of trees, and living in them, and the uses and identification of trees.

Lovell Quinta Arboretum, Cheshire

The Arboretum, in Swettenham, Cheshire was the brainchild of Sir Bernard Lovell (1913-2012), the radio-astronomer and force behind the founding of the Lovell Telescope at Jodrell Bank. He had a passion for trees and decided to try and plant every tree and shrub appropriate to Cheshire, that was mentioned in W.G. Bean's book *Trees and Shrubs Hardy in the British Isles* (first published in 1914). He went a long way to achieving this, although, since he started, the number of cultivated species and varieties that are documented in new sources such as www.treesandshrubsonline.org has grown so large that they cannot all be accommodated at the site.

Figure 1. *Quercus robur* Fastigiata at the entrance to the Lovell Quinta Arboretum

He started by first planting in the garden of his house, The Quinta, and then began to buy up surrounding cattle fields and converting these into his Arboretum. The site now extends to 11 hectares and contains more than 2500 trees and shrubs comprising over 800 taxa. It adjoins Cheshire Wildlife Trust's Swettenham Meadows which were also part of his project. Design features in the Arboretum reflect major events in Sir Bernard's life such as the Reith Avenue commemorating his BBC lectures in 1958, Knight's Avenue when he became a Knight Bachelor in 1961, and the Franklin Meadow from when he was awarded the Benjamin Franklin medal. He was President of the Tatton Garden Society and, wishing to see his arboretum legacy safeguarded, he passed it into the ownership of the Society in 2003.

The mission of Tatton Garden Society is to promote science and research in horticulture and

botany for the benefit of the public, and education and recreation that enhance an appreciation of plants, nature and the environment. So, the Arboretum is open to the community. Its collections are recognised as being of international importance and so it is Level III accredited in the Morton Register of arboreta by ArbNet. It also takes its place amongst botanic gardens through Botanic Gardens Conservation International (BGCI) and is active in the international monitoring of pest and diseases as a member site of the International Plant Sentinel Network.

There is a wide range of species at the Arboretum, with trees and shrubs representing 79 families as well as both native flora and ornamental hardy perennials and herbaceous bulbs. So, it is hoped that the visitor will learn much about distinguishing between genera and species and identifying them. To assist this, nearly every tree and shrub is labelled. There is an accession number, made-up of the individual plant's unique number, its location code within the Arboretum and the date it was planted. All this is included in the Arboretum database along with other maintenance records of the plant. The label also gives the Latin binomial and cultivar name (where appropriate), the family and, when it is not a cultivar, the country or region of native origin of the species.

Because the Arboretum is of a relatively large size there is an onus on us to maintain natural biodiversity and habitats alongside the Collections. As the site originated from dairy cattle fields, the wild vegetation is a repopulation of these areas and brings with it associated invertebrates. So, although there is some grass mowing within the National Collections to make walkways for visitors, mowing is minimal over most of the site and in some designated areas there is no intervention. The trees do provide habitats for many bird species and bird boxes have also been erected. Many of the hedges in the site were removed long ago but where they still exist, they are predominantly Hawthorn (*Crataegus monogyna*) and they have been laid traditionally over the past few years and gap planted with species such as Field Maple (*Acer campestre*) and Guelder Rose (*Viburnum opulus*). There are also fine examples of native trees and shrubs such as *Quercus robur, Ilex aquifolium* and we have recently planted 30 male and female whips of one of Cheshire's rarest, native trees, the Black Poplar *Populus nigra* subsp. *betulifolia*.

Many arboreta are open to visitors. This enables people to learn about plants and their geographical origins. However, this does bring with it certain problems from those visitors who see an arboretum simply as a recreational space, rather than a precious resource. Damage to the trees and ground flora can result. It is important, though, that we do give access to the interested visitor and we try to educate through interpretation boards, and the website, about the trees and how important the collections are.

Figure 2. Leaves of *Quercus semecarpifolia,* originating in montane forests of the Himalayas

National Collections

The Arboretum is home to three National Collections: oak, ash and pine. It also hosts one of the duplicate collections, for the Royal Botanic Garden Edinburgh (RBGE), of the International Conifer Conservation Programme (ICCP) which combines taxonomic, conservation, genetic and horticulture work at the RBGE. There are many distributed sites, across the world, for the ICCP so that the collections are less vulnerable than they would be if held at only a single site. The number of species and cultivars for these collections, at the Lovell Quinta Arboretum, are shown in Table 1. The numbers show that the Collections make a significant contribution to the conservation of these species and their cultivars. Providing access to a National Collection enables visitors to see the range of tree, leaf and flower forms that occur within a genus. (see Figures 1,2,3)

Collection	Number of species	Number of cultivars within species
Quercus	67	23
Pinus	34	13
Fraxinus	16	12
ICCP	24	

Table 1. Taxa in National Collections at the Arboretum

The National Collections in the UK are administered and certified by the organisation Plant Heritage. Each collection is based on a botanical association between the plants such as a family, or a subset, or has an historical connection. It is unlikely that it will include all the relevant plants but it must have a significant number. Each collection is documented and the records are retained by Plant Heritage. Plant material may also be exchanged between collections. So, this means that they are an excellent resource for researchers, plant breeders, conservationists and gardeners. Plant Heritage's National Collections currently hold approximately 95,000 different plants held across about 700 collections. There may be more than one National Collection for a particular group. For example, there are four national collections of *Quercus* of which the one at the Arboretum is named the Lovell Collection because of its historic association.

Conservation

In-situ conservation of a species is to be preferred as the whole habitat is maintained with the interlinking dependencies of all the plant, animal and microbial species (including mycorrhizal associations). However, there are arguments for *ex-situ* conservation. This is when a species is conserved outside its natural habitat, such as in a zoo or a botanic garden or, indeed, seed banks which have the capacity to hold huge numbers of species. This is particularly valuable when the species is surviving in a habitat that is under threat and material from the species is placed in an *ex-situ* site where it can be more easily protected. Some plant species now only remain in botanic gardens. Also, when there are only a few individuals remaining in the wild then they can be multiplied *ex-situ* and reintroduced. An example of a plant, trial reintroduction is that of the Rosy Saxifrage, *Saxifraga rosacea,* to a place in Eryri from which it had been absent since 1962.

Of course. in the case of agricultural or horticultural plants there is no natural habitat and it is these *ex-situ* situations in which they are preserved when they fall out of fashion or are no longer commercially popular. However, they still represent an important genetic resource, developed and adapted to cultivation over a long period of time and through dedicated selection. They have the potential to be valuable in future plant breeding or may even return to popularity, particularly as climatic conditions change.

Ex-situ conservation is only successful when accurate records are kept of the taxonomy and of where the *ex-situ* plants are located across the world. So, the international sharing of the records created by botanic gardens and arboreta is essential and this is one of the areas in which the work of BGCI is so important. Conservationists can search the databases for the plants they need. Plant material is exchanged and information on how to look after the plants is researched and made available. *Ex-situ* conservation carries the risk that, if a plant is maintained in only a few places, the genetic base of the population can become very narrow, leading to genetic bottlenecks that can threaten the survival of the species. So, by ensuring there is exchange of plants for breeding, this risk is reduced.

The international Convention on Biological Diversity of 1992, also known as the Biodiversity Convention, provides important objectives for botanic gardens. A very interesting part of this is the Nagayo Protocol which provides for "Access and Benefit Sharing". This means that if a plant, or a resource from a plant such as medicine, becomes commercially important then a proportion of the benefits must be returned to the country of origin, or to the indigenous people that provided the knowledge of the resource. All botanic gardens and arboreta must be aware of this protocol when they take in new plant species and exchange them or make them available for research.

The Lovell Quinta Arboretum is open nearly every day, looked after by a Curator and a very committed team of volunteers. We do hope, that when you are in Cheshire you will take the opportunity to visit and see the trees and shrubs, and the wildlife that lives amongst them.

Figure 3. Leaves of *Quercus phellos,* Willow Oak, originating from South Eastern USA

Professor David Skydmore is Honorary Director of the Lovell Quinta Arboretum.
He received FBNA in 2020.
Find out more about the Arboretum on this link: https://lovellquintaarboretum.co.uk/

Climate Change and Extreme Weather – the Impact of the 2022 Summer Heatwave on the Natural World

Chris Page

We know that the climate is warming and we know that this is due to the increase in man-made greenhouse gases – predominantly Carbon Dioxide - being released into the atmosphere.

Before we start, I'll answer a common question: "*What is the difference between weather and climate?*' In a nutshell, weather focuses on what we're likely to experience in the coming few hours, days and in some cases weeks. Climate, on the other hand, refers to the average weather patterns observed over a much longer period of time. As a baseline we meteorologists tend to look at 30 years for climate as a minimum. This way, we iron out all the natural climatic variability in the extremes and we get a much clearer overall picture of the climate. So, to put it more simply, weather determines what you wear on a daily basis, whereas climate determines what's in your wardrobe: you're not going to wear your thick woolly coat during the summer months!

I have been a meteorologist for over a decade and in that comparatively short space of time the effects of climate change are not only being felt and seen in distant places around the world, but also here where we live. At the time of writing, the Met Office (see *Links*) and Royal Meteorological Society (RMetS see *Links*) has just released the state of the climate report for 2023 (Kendon et al., 2024). This looks back on the previous year's significant climate events that shaped the year and discusses how human-caused climate change has influenced them.

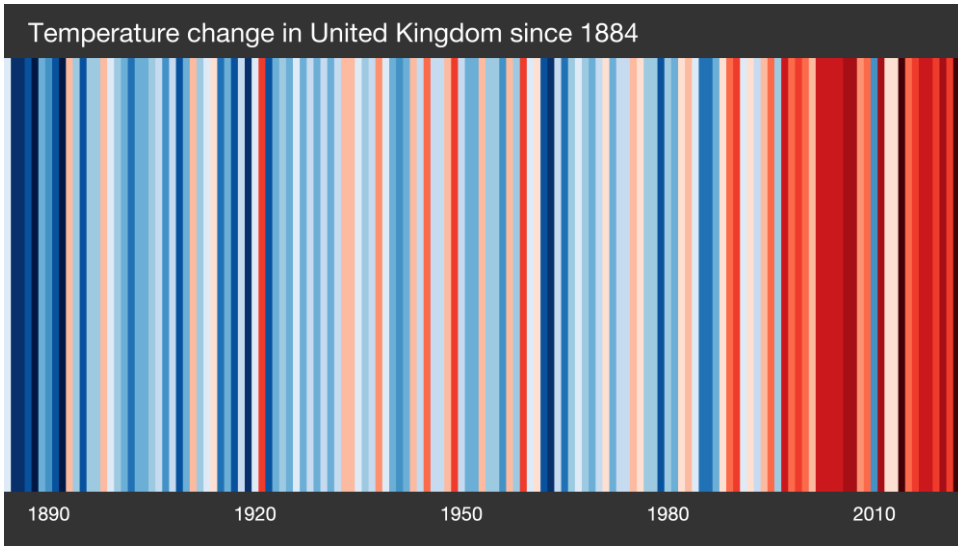
Meteorologist Chris Page.

One of the key messages in the report is that the frequency of extreme weather events is increasing. And if it feels to you like we're regularly reading or hearing about more weather records being broken in more recent years, you wouldn't be wrong. "*The highest temperature ever reported in the UK", "the sunniest spring since records began", "the warmest May on record*". In fact, just these three headlines have occurred since 2020.

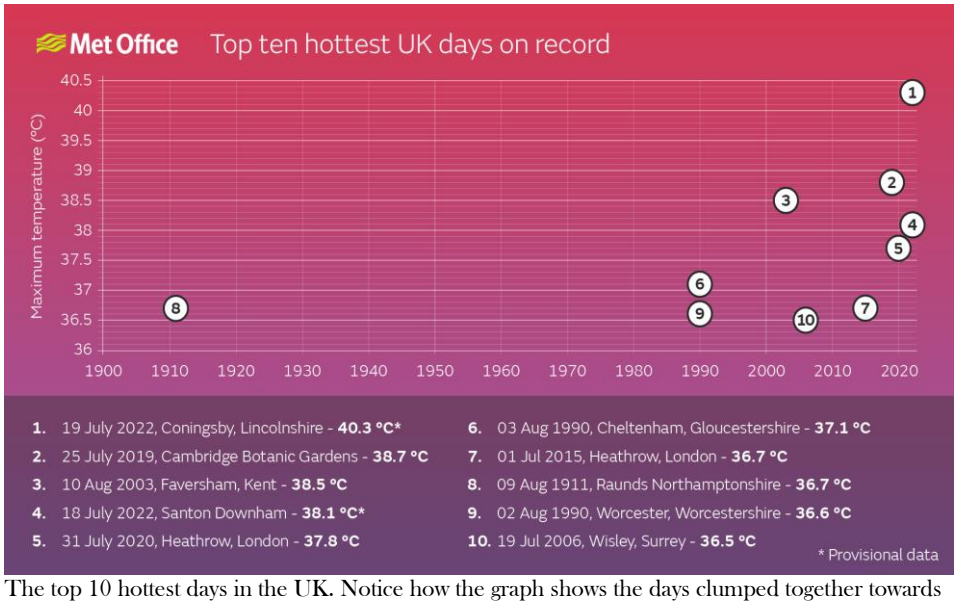
When we look at climate change the variable that tends to get the most air time is temperature as it's the easiest to measure. However, a warmer atmosphere can hold more moisture. In fact, for every one-degree Celsius rise in temperature the atmosphere can hold seven percent more water. Therefore, along with rising temperatures we also see changes in rainfall amounts, intensities and distribution globally.

Since 2014, in the UK we have seen a 20% increase in days of exceptional rainfall compared to the 1961-1990 period. In fact, the five wettest winters on record have all occurred since 1990, and these records date back to 1836. The wettest winter of all, in 2013-14, had approximately double the rainfall of 2023, highlighting how rainfall varies from year to year.

However, 2023 was no exception to the rule when it came



Climate Warming Stripes for the UK since the mid 1850's. Each year shows a line based on whether the temperatures were above (red) or below (blue) average temperatures. The graphic clearly shows how recent years have seen an increased rate of warming. Credit: Met Office



The top 10 hottest days in the UK. Notice how the graph shows the days clumped together towards the right. Showing how the most extreme temperatures have occurred in more recent years. Credit: Met Office

to significant extreme weather events. We experienced the warmest June on record, beating the top spot of June 1940 by +0.9°C. The highest temperature of the year, 33.5°C, was recorded in Faversham, Kent on September 10th, which in meteorology is classified as Autumn. Statistically, the highest temperature tends to occur in July. Furthermore, 2023 had the most active start to the storm-naming season resulting in seven named storms and serious flooding problems in the autumn months.

Latest scientific research from the Met Office has found that man-made climate change is estimated to have increased the likelihood of a year as warm as 2023 by a factor of more than 150. Furthermore, a warming climate means that an event that would have been exceptionally unlikely in the past has now become one that we will increasingly see in the near future.

Summer heatwave 2022

As the climate continues to change, we're seeing impacts in both the human and natural worlds.

The summer heatwave of 2022 was not only hot, but produced some unprecedented heat here in the UK. On July 19th, a temperature of 40.3 degrees Celsius was recorded in Coningsby, Lincolnshire. It marked the first time in the UK a temperature of 40°C had been reached, and surpassed the previous temperature record of 38.7C, recorded in Cambridgeshire just a few years earlier in 2019, by a big margin. The Met Office issued its first red extreme heat warning, announcing a threat to life, and the Government declared a national emergency.

It was estimated an excess of 2,985 deaths were associated with five heat events in 2022, the highest number in any given year. Heatwaves are silent killers impacting the elderly, people with underlying health conditions, the young and those directly exposed to heat.

Climate change is making heatwaves more likely, more intense and longer lasting in the UK. Furthermore, an attribution study conducted by the Met Office has shown in a climate unaffected by humans, it would be virtually impossible for temperatures in the UK to reach 40°C, and estimates suggest that raised greenhouse gas emissions increased the likelihood of the summer heatwave of 2022 by ten times.

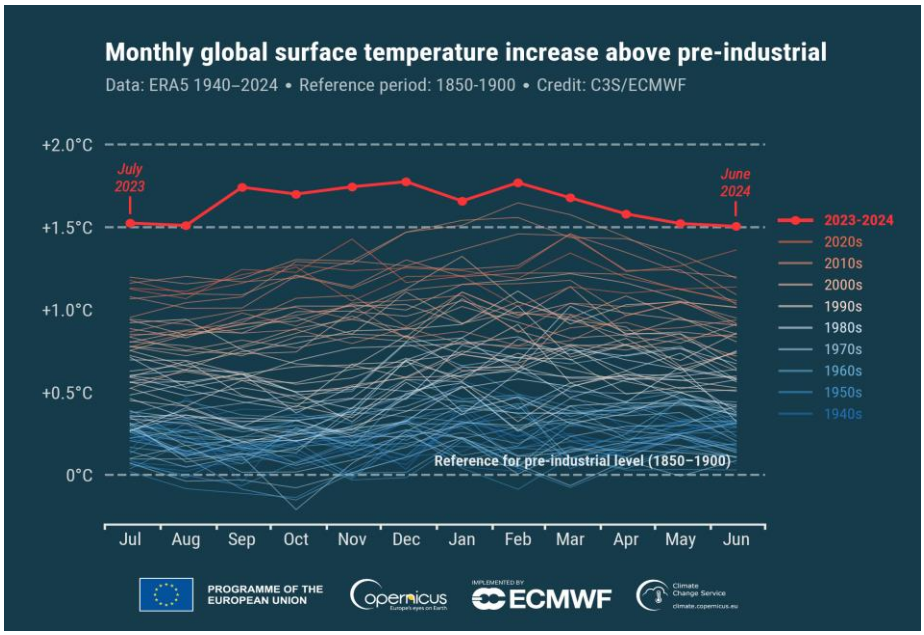
Apart from the increased mortality in the UK in 2022, we saw a number of ecological impacts too.

Wildfires

As the dry hot weather continued during the summer it led to an increase in wildfires -

particularly in grasslands, heathlands and forests. Large areas of natural habitat were destroyed, affecting numerous plant and animal species. Heathland areas, home to species like the Dartford Warbler (*Curruca undata*) and various reptiles, were particularly hard-hit in Norfolk at the Wild Ken Hill coastal park. Here 33 hectares of habitat and public greenspace were burnt.

Wildfires at Wild Ken Hill, Norfolk] credit: Wild Ken Hill



Monthly global surface air temperature anomalies (°C) relative to 1850–1900 from January 1940 to June 2024, plotted as time series for all 12-month periods spanning July to June of the following year. The 12 months from July 2023 to June 2024 are shown with a thick red line, while all other 12-month periods are shown with thin lines shaded according to the decade, from blue (1940s) to brick red (2020s). Data source: ERA5. Credit: Copernicus Climate Change Service /ECMWF

Freshwater Ecosystems

The longevity of the heatwave and lack of rainfall caused significant drop in water levels throughout rivers, lakes, and ponds. This caused fish species, especially those in shallow waters, to suffer from low oxygen levels and increased water temperatures. The Aysgarth Falls in the Yorkshire Dales almost completely dried up. The lack of water also meant there was a reduction in fresh drinking water for birds like Kingfishers (*Alcedo atthis*) and mammals like Otters (*Lutra lutra*).

Plant Communities

Further to the water shortages, the extreme heat put stress on plants affecting their health and survival. Many grassland areas turned brown and dry, impacting species that rely on these habitats for food and shelter. These included insects, small mammals, and ground-nesting birds. Trees, especially young saplings and shallow-rooted species, experienced drought stress, leading to leaf scorch and increased vulnerability to pests and diseases. Meanwhile urban parks and gardens faced similar stress, with many plants wilting and dying, affecting urban biodiversity with knock-on effects on human well-being.

The (RHS) Royal Horticultural Society (see *Links*) noted that a number of plant species struggled in the heat, and found it no surprise that the hydrangea, Japanese maple (acers) and fuchsia species suffered, as these all prefer cooler conditions with plenty of soil moisture. However, roses were more of a surprise. Some had flower damage throughout July and August but many saw an extended flowering season and were still producing flowers in late October. The RHS warned gardeners that pruning after heat and drought can put plants under more stress. It advised that most plants would leaf up when the temperature was right and rain arrived.

Agriculture and Farmland

The extreme heat also impacted our agricultural production which led to knock-on effects on local wildlife. Crop yields were reduced due to heat stress and lack of water, impacting not only human food supply but also wildlife that feeds on agricultural produce. Livestock suffered from the heat stress, requiring additional water and shade, which in turn affected the management of farmland habitats.

Furthermore, farmland birds and other wildlife that rely on agricultural landscapes for food and habitat were impacted by the changes in farming practices and reduced availability of food resources.

According to Carbon Brief (a UK based website covering the latest developments in climate science, climate policy and energy policy: see *Links*), 18,500 chickens died in transport due to heat stress during the summer heat of 2022 compared to just 325 deaths in the same period in 2021. There is growing concern over how future heatwaves will affect Britain's food security.

So, what can we do?

We need to consider creating shady areas for wildlife to shelter from the midday sun and ensure there's a variety of water sources for animals to drink from during times of extreme heat. Where possible we should encourage local communities to participate in conservation efforts, such as planting drought-resistant native species and maintaining wildlife-friendly gardens.

The climate will continue warming unless action is taken. There are policies now in place which will allow us to work towards net zero and to limit global warming to 1.5°C. It is vital that we keep the rise to less than 2°C because beyond this, Earth's systems could enter a danger zone where climate tipping points could lead to further warming and irreversible change.

The Earth's global-average temperature reached or exceeded 1.5°C above the pre-industrial level in every month from July 2023 to June 2024. This worrying statistic comes from the 'Copernicus' satellite project (see *Links*). However, remember that for climate we have to consider the average temperature over a 30-year period, and as a result we can still aim to keep the 1.5°C dream alive, although it's most likely on life support at the moment as we're simply not acting quickly enough.

We not only need to slow down the warming of the planet and prevent it from getting above a dangerous level, but we also need to learn how to live in a warmer world too.

We need to all work together to reduce the amount of energy we waste, take on new greener energy alternatives - whether that's an electric car or heat pump - and we need to offset our carbon emissions - predominantly by using means that nature has already provided. This includes how we use agriculture and our land generally, planting trees and vegetation to increase carbon capture.

The science is clear: climate change is no longer a distant threat but a present reality reshaping our world. The extreme weather we're experiencing today is just a glimpse of what could become the new normal unless we act now.

The impacts that climate change will have on our ecosystems, agriculture, and even our daily lives are profound, but they also serve as a stark reminder that we have the power to shape our future. By embracing sustainable practices, supporting policies aimed at reducing greenhouse gas emissions and taking personal steps to lessen our environmental footprint, we can still make a difference.

The challenge is monumental, but so too is our capacity for innovation and change. The climate crisis is not just about saving the planet; it's about preserving the intricate balance of life that sustains us all. The time to act is now for the sake of our children, our grandchildren, our natural world, and the countless species that all call Earth their home.

Links

Carbon Brief:
https://www.carbonbrief.org/

Copernicus:
https://climate.copernicus.eu/

Met Office:
https://www.metoffice.gov.uk/

Royal Horticultural Society (RHS):
https://www.rhs.org.uk/science/gardening-in-a-changing-world/climate-change

Royal Meterological Society (RmetS): https://www.rmets.org/

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My Farmed Environmental Journey

John Pawsey

When I first started farming with my maternal grandfather in 1985 at the age of 21, any talk about taking nature into consideration whilst growing food on our endless East Anglian fields was considered to be the domain of the lettuce-eating loser. The only exception to the rule was nature that could be shot. Having enjoyed a few days freedom after being released from a chicken-wired release pen, hapless birds would be cajoled into the air by sticks and spaniels over some jolly red-faced farmers on a November afternoon. The measure of how nature was doing was judged by what vermin had been killed and the game birds shot at the end of the year. I am of course being frivolous but, in some cases, this was pretty near the truth.

John Pawsey on Shimpling Park Farm

I do remember my grandfather speaking about the heady days of shooting wild Grey Partridges (*Perdix perdix*) before the Second World War. His great claim was that on one particular day he and his team of guns achieved thirteen drives in a day with the shots standing behind castellated hedgerows used as butts. What he didn't speak about was why the Grey Partridge had latterly disappeared from his farm. Given all accounts he was an excellent shot and was obsessed with the sport but seemed oblivious to the reasons for the bird's demise.

Not having grown up on the farm, I arrived in the mid-eighties not knowing any of my farming neighbours. I did attend a couple of Young Farmers' Club meetings but didn't feel particularly at home. I was never a farm kid. But I did meet two people who were my farming neighbours: these were Julian Roughton who was working for the Woodland Trust surveying dormice in Bradfield Woods and Juliet Hawkins who was an advisor for Suffolk Farming and Wildlife Advisory Group. I felt more at home in their company. Julian ended up being Director of the Suffolk Wildlife Trusts and Juliet is one of our most eminent naturalists.

My grandfather sadly died in 1989 and in researching this article I was surprised to find that the year before he passed away, I had commissioned Juliet to perform a whole farm conservation plan for the farm. Given that Countryside Stewardship Schemes didn't start until 1991 I like to think that we were at the forefront of working out how we could build for nature on the farm along with producing food. Looking back at Juliet's plans, her suggestions mainly revolved around taking awkward corners out of fields and planting with trees, which was still very much keeping nature on the periphery of our large arable fields, but all the same, an important first step.

In 1990 an opportunity came to buy the farm next door, and to help fund that purchase we took the decision to take up the runways on the former USAF Lavenham airfield which covered 500 acres of the farm and sell the hardcore. It was a difficult decision as it meant a huge upheaval for several years (we took up 55 acres of concrete) and also because of the strong ties our family had built up with the American veterans and their families, but it was an opportunity that we could not miss. Once the runways had gone, we were left with a blank canvas of land without a tree or a hedge on it. Over the next few years, we planted four woods and several kilometres of hedgerows but we did so in a way that preserved an impression of the former runways, including a roundel of oaks in the middle of a central wood planted by returning veterans at a reunion in 1991.

Our first foray into an official environmental scheme was in 1998 with the launch of the Arable Stewardship Pilot Scheme, which targeted parts of East Anglia and the West Midlands and was an important early step in integrating environmental conservation with intensive arable farming practices in the UK. It marked a shift toward recognising the importance of farmland biodiversity and provided key insights that informed the design of future agri-environment schemes, such as Environmental Stewardship and ELMS (Environmental Land Management Scheme: see link). Although limited in scope, it demonstrated that targeted financial incentives and practical conservation measures could help reverse biodiversity declines on arable land. It was also the first scheme that attempted to get nature into and around arable fields. with field margins, conservation headlands, beetle banks, over-wintered stubbles and wildlife seed mixtures. This is all common practice now but in 1998 it was pioneering stuff!

To a certain extent I also saw it as a farm diversification scheme as it gave us an additional income from parts of fields in which we had struggled to make a profit when producing food without subsidy.

At that time, I was doing all the spraying on the farm, and was becoming more sensitised to the effects of what our farming methods appeared to be doing in terms of loss of wildlife as well as how continuous winter cropping was affecting our soils. The message hit home while spraying a mixture of chemicals one afternoon. A hare ducked under the sprayer booms and got coated in the mixture and then sat on the headland licking itself. It was a graphic demonstration of the fact that the targets of my chemicals were not only the crops I was endeavouring to protect but anything that was caught by the blunt chemical-applying instrument I was operating. I was coating things that I could see but more worryingly the things that I could not see. It had to stop. In any case, we were not making any money out of farming chemically. There were no winners.

In 1999 the Organic Farming Scheme was launched. It was introduced as part of the UK's efforts to support farmers transitioning to organic agriculture, promoting environmentally friendly farming practices. The scheme offered financial assistance to farmers to cover the costs of converting their land from conventional to organic farming. Could organic farming be for us?

Ben Powell farmed at Hawstead a few miles to the west of me and had been farming organically for many years. When mentioning to my farming neighbours that I was thinking of converting to organic production they told me of all the reasons why I couldn't while Ben told me all the reasons why I could.

Armed with the confidence that Ben instilled in me, between 1999 and 2000 I converted twenty percent of the farm to organic and ran through a six-year rotation of cereal and legumes fertility leys, (these are temporary grasslands that can improve soil fertility and structure - see link). Having completed that first rotation we compared our figures from farming organically against the bulk of the farm which was still in a conventional rotation and found out that we were better off financially farming without chemicals. We converted the rest of the farm and by 2007 we had sprayed our last field on the farm.

Our organic "living" soil

Apart from not using pesticides, how does organic farming support nature on our farm? To my mind it's all about the complexity within our rotation.

After two years of using a variety of legumes to build natural fertility in our soils our cropping alternates between autumn and spring cropping. Over-wintered stubbles form part of that rotation before a spring crop, which gives opportunity for farmland birds to glean the seeds left by the harvester. Our pre-organic rotation of continuous autumn cropping did little in this regard and only in small areas of the farm funded by environmental schemes. Now, over-wintered stubbles account for a third of the farm and a further third is in herbal leys with flowering clovers increasing invertebrate numbers and providing additional food. Some crops are under-sown with legumes which can flower within the crop near to and after harvest and this means we rarely have a single-crop monoculture in a field.

More recently we have been bi-cropping growing wheat with beans. This is really a risk reducing strategy. If one crop doesn't do well for whatever reason you still have another crop that can capitalise on the space

that the situation allows. Additionally, beans flowering within a wheat crop (right) provide food for pollinators which would be un-fed in a wheat monoculture.

Farming organically allows nature to thrive across the whole farmed area, not just in the edges and corners, and we are generally better off financially. Everyone is a winner.

That deals with the farmed bit of the farm, but what about all the other stuff? The woodland, hedges and the copses we planted in awkward corners when Juliet drew up our whole farm conservation plan in 1988?

During Covid, in one of the periods when we were granted a small amount of freedom, my wife Alice and I spent a week camping in one of our woodlands, Alpheton wood (see image: back cover). Alpheton wood is an ancient woodland and a Site of Special Scientific Interest. It is part of a complex of ancient woodlands starting near to Kentwell Hall near Long Melford in Suffolk. Since the installation of wood-chip boilers on the farm the wood has come into its own, providing wood to heat most properties on the farm as well as yielding an income through the Renewable Heat Incentive. The reintroduction of coppicing has raised the wood's condition from 'unfavourable' to 'favourable', bringing benefits both to us and to nature.

During that camping week Alice and I immersed ourselves in the richness of the only piece of land on the farm where nature does what nature does within a coppiced system, and has done so since the 17th century. Coppicing mimics what large herbivores would have done in wild landscapes over thousands of years, preserving some areas of open land for grazing or browsing. Under coppiced management Alpheton wood is a mixture of open rides, some mature trees and regenerating coppice at various stages of development. This makes the wood a patchwork quilt of different habitats giving the maximum opportunity for nature to thrive. Alpheton wood is our most important bank of wildlife on the farm.

Fields of crops

On that trip, one sunny evening I ventured out of the southern edge of the wood into one of our fields to look back to the other Kentwell woods in the distance. Three things struck me. Firstly, although for twenty years we hadn't applied any chemicals to the field I was standing in, compared to what the wood had to offer in terms of diversity, the field felt sterile. The crop was a beautiful tall field of spelt swaying in the evening sun with the odd thistle flower poking out of the top of the crop, blue flowers of speedwell in the bottom and some budding clovers trying to reach the light. Sure, there were insects but nothing compared with the wood. Secondly, although seamlessly connected by ancient hedgerows, the Kentwell woods were islands

Wild flowers growing within the crops

of nature, too far from their neighbours to share less-mobile species and too small an area for those species to survive. Thirdly and most importantly, I realised that all the environmental work we had been doing over the years, and the work our neighbours had been doing too, had been done in isolation. None of us had been making any connections in terms of thinking or habitats.

Hopefully that is all going to change.

In 2020 I started a conversation with Sam Hanks at the Suffolk Wildlife Trust (SWT) with regard to setting up a farm cluster. We had been working with the SWT since 2015 to do our wildlife surveys and for advice. The SWT had also set up a farmer-facing team of advisors realising, as I had done that evening outside Alpheton Wood, that it's fine doing good work in their reserves but if you really want to make an impact you have to address the spaces in between those reserves, and that means working with us Farmers.

If you manage a large contiguous estate of 26,000 acres and you make a change in your environmental policy you can have a huge impact in terms of nature recovery. As a farmer managing a few hundred acres, and usually unconnected with other farmers with a similar environmental ambition, it's much harder to do that. But a connected cluster of farms could. In addition, the Government was at the time consulting on its new ELMS and it seemed that if you wanted to qualify for the top tier of funding (Landscape Recovery), you either had to have a lot of land or be part of a group of farmers with a shared ambition.

With the support of Sam, I wrote to twenty-five farmers in the area asking if they would be willing to form such a group, and twenty-four responded positively. The Suffolk Wool Towns cluster was born and covers an area of 25,000 acres from south of Bury St Edmunds to Hadleigh.

But it gets better. Last year, facilitated by the SWT, we collaborated with our neighbouring group - the Stour Valley Cluster - and put in an ELMS Landscape Recovery bid to conduct a pilot scheme to connect the ancient and secondary woodlands across the two clusters with wildlife corridors. Our bid was accepted.

We have a long way to go with the project and it would require another article to communicate our ambition, but it has made me reflect on the journey we have been on.

Over the last forty years we have come from judging our environmental success by numbers in a game bag, to collaborating with our neighbours with a shared ambition to really make a difference in terms of nature recovery. I do believe that the conversations that are happening between organisations like the Wildlife Trusts and farming businesses are going to produce something really exciting. The natural world cannot be restricted to islands consisting of wildlife reserves or ancient woodlands and I think we all understand that now. Equally we need to exorcise our own island mentality, to listen to and respect each other, because ultimately, we all want the same thing.

Links

ELMS -
https://www.gov.uk/government/collections/future-of-farming-in-england#about-elm

Fertility Leys -
https://agricology.co.uk/resource/fertility-building-leys/

John Pawsey has been farming organically for 25 years. Apart from farming, John and his wife hire out their Victorian barn for conferences, meetings and weddings. They also lead farm and wildlife tours to explain organic farming.
More information on this link:
https://shimplingparkfarm.co.uk/

On the Hunt for Orchids part II

Harry West MBNA

I hope you enjoyed my previous article (Country-*Side* Winter 2023) describing the beginning of our search to find the orchids of Britain and Ireland, and I'm excited to report that Part II is here! This time, Alice and I continued our search in the South-East and East of England, and although we were initially concerned because of the wet weather early this year, our enthusiasm was high as we set out once more. Armed with new contacts and a clearer plan, we explored some brand-new locations and some that we had missed the previous year. Despite the challenges of fitting these trips into our already busy schedules, we made it work and I'm eager to share the discoveries that we have made.

Greater Tongue Orchid

Our new journey began on a humid, overcast day in a quaint village just outside Braintree renowned for its jam making. A brisk walk along scrubby paths brought us to a crossroads where as luck would have it, we made a wrong turn, but after retracing our steps, we finally arrived at the area we had been told about, and the hunt was on! We followed winding paths until we discovered the small open patch we had been seeking. After about ten minutes of searching carefully, with our backs aching and knees hurting, we finally found what we had come to see – the Greater Tongue Orchid (*Serapias lingua*), standing in all her glory! The search had been worth it, and we stood in awe before this small but magnificent colony.

Marsh Helleborine

Our next leg of the journey led us back to Sandwich Bay Bird Observatory, where blue skies

and scattered clouds promised a perfect day for exploring. After parking, a short walk along the road brought us to the footpath we were seeking. As we followed the path through the diverse habitats of the observatory, the skies began to change. What had started as a bright day quickly turned ominous, with dark grey clouds rolling in. Then the heavens opened and the rain hammered down, forcing us to run for cover. Once the downpour had subsided, we pressed on along the footpath, eventually arriving at the section we were searching for. There, without much effort, we stumbled upon a vast colony of Marsh Helleborine (*Epipactis palustris*). In my opinion, this is one of the most beautiful orchids that Britain and Ireland have to offer, and it quickly became a new favourite for both of us. We swiftly snapped photos of these stunning plants before heading back, eager to beat another potential downpour.

The next exploration took us back to a site in Wye Downs we knew well, having visited last year in search of Monkey Orchids (*Orchis simia*). This year, the conditions were noticeably cooler but we hoped that our sought-after specimen would still be waiting for us. After walking through meadows that were still filled with various orchids that we had admired the year before, we reached the meadow we were looking for and began our search, carefully scanning the grass and low growing plants. An hour into our search, our initial excitement began to wane as the weather grew gloomier with a light drizzle starting to fall, but thankfully it quickly passed. Just as our spirits were dipping, we finally spotted what we had come to find, and it wasn't long before a few other searchers in the area shared in our discovery, their excitement mirroring our own. The tiny

Musk Orchid

Musk Orchid (*Herminium monorchis*) had finally made its appearance, and the sense of accomplishment was immense. This diminutive orchid, standing at around 15cm, is notoriously difficult to spot amid dense vegetation, but once our eyes had adjusted, more of these delicate flowers began to reveal themselves. Photographing this little orchid proved challenging due to its size, but all the effort we had put into the search was well worthwhile. Finding the elusive Musk Orchid served as a reminder of the rewards that come with patience and perseverance in natural history exploration.

Our journey then took us to a nature reserve in Strood beyond the River Medway on a sweltering, humid day. After parking and indulging in a quick ice cream at the café, we prepared to find our next target. Armed with some helpful information and a quick scan of the reserve map we set off down one of the paths. However, after about half an hour of walking in the sticky heat, we realised that we had taken the wrong direction - blame it on the heat! Rather than turning back, we decided to continue along the path, knowing it would eventually lead us back to the café. When we finally found the correct trail (a bridle path running alongside the road), the

sun was at its peak, glaring down on us, making every bit of shade a welcome relief. As we neared our destination, we began to spot signs of orchids growing in small clusters along the path. And there they were, standing tall and proud Broad-leaved Helleborine (*Epipactis helleborine*)! Unfortunately, the humid conditions also brought out biting insects, and I quickly become their target, collecting 15 bites in total. However, despite the discomfort and annoyance of the insects, we had successfully added another orchid to our list.

Another hot and humid day found us driving up the M20 to Eynsford in search of a rare find. This particular trip was a short one, with the orchid located in a layby along a busy road - a far cry from the serene settings we usually explore. After driving past the spot twice, we finally found the right layby on the third attempt. Stepping out onto the busy roadside, with cars and lorries speeding by, we felt a sense of determination mixed with excitement. It wasn't long before we spotted our quarry, the Green-flowered Orchid (*Epipactis phyllanthes*). Though the flowers were not yet fully open, the orchid still stood magnificently. The sight of its delicate green buds, poised to bloom, was a reminder that nature's wonders can appear in the most unexpected places, even beside a bustling road. After documenting the orchid and taking our photos we decided to extend our adventure by visiting the nearby lavender fields and local nature reserve. The day's journey was a reminder that sometimes, the most memorable discoveries happen in the places you'd least expect. Even in a noisy layby, nature has a way of surprising us with its resilience and beauty.

Broad-leaved Helleborine

Lavender fields near Eynsford

Green-flowered Helleborine

Violet Helleborine

Autumn Ladies Tresses

Our next exploration took us back to a familiar part of Wye Downs. The drive to this location felt like a return to our usual surroundings as we drove down quaint country roads. We parked at a small crossroads with a short walk through the woodlands lying between us and our target. As we stepped out of the car, the wind picked up, and as we ventured deeper into the woods, the gusts grew stronger, sweeping in from the nearby fields. Following the footpath, we eventually arrived at the spot we had been searching for, and it took only a few minutes of scanning the woodland floor before we stumbled upon what we had come to see - Violet Helleborine (*Epipactis purpurata*). At first, these orchids blended in with the surrounding foliage, but once we spotted one, more began to reveal themselves. Another orchid in Kent was ticked off our list, bringing us closer to completing our exploration of the county's hidden gems.

Continuing our botanical journey after discovering the Violet Helleborine, our next stop was an ancient 8th century village nestled in Dover, Kent. We followed the directions we had been given, hoping they would lead us to the elusive orchid we sought. The directions led us to a certain paddock, and we scanned the ground there for any sign of this delicate flower, unsure of its size or exact location. Finally, after much searching, we stumbled upon the Autumn Ladies Tresses (*Spiranthes spiralis*). Though small in stature, standing at just 10-15cm tall, its beauty lies in the elegant spiral of its tiny white flowers reaching towards the sky. A truly stunning flower to close the orchid season with. With this find, our quest to discover Kent's orchids is complete, but the adventure is far from over. Next, we'll set our sights on the rest of the orchids of Britain and Ireland. Where will our adventure take us next?

Harry West is a student member of the BNA and is studying Wildlife Conservation under the Durrell Institution of Conservation and Ecology at the University of Kent. He was awarded MBNA at the 2024 Encaenia.
All photos: H. West.

Book Reviews

Editor: Roy Stewart MSc, FIBMS, FLS, FRSB, FBNA

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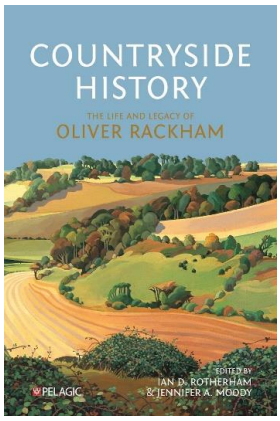


Countryside History, the lie and legacy of Oliver Rackham.

Edited by Ian D. Rotherham and Jennifer A. Moody. Published by Pelagic Publishing 2024. ISBN: 978-1-78427-316-3, Hardback. £50

Reviewed by Michael Demidecki FBNA

As a sign of the considerable esteem in which the late Oliver Rackham was held 33 authors from around the world (Oliver had travelled widely) have combined in 25 chapters to write this tribute. As well as to sites in the UK they take us for example to the Sacred Forests in Greece, to the Bialowieza Primeval Forest in Poland, to Old-Growth Forests in the Eastern Alps and to Satoyama landscapes in Japan- all places where Oliver's ideas had been taken on board and where his legacy clearly lives on.

Oliver Rackham (1939-2015) is well known to BNA having attended three of our AGMs – in 2001, 2005 and 2007. I was enthralled by the lecture he gave in 2001 which I remember went on for nearly two hours. I appreciated for the first time, for example, the significance of Wood Pastures and Royal Forests.

As Frans Vera explains in his chapter in the book, he was greatly influenced by what Oliver wrote about wood-pastures in his seminal book *Ancient Woodland: Its history, vegetation and uses in England* (1980). This led Vera to suggest that in the lowlands of Europe early woodland even without the influence of man was not closed forest as had been thought but rather open parkland akin to wood-pasture, this having been due to grazing by the herbivorous wild animals such as the primeval wild cattle and the Aurochs that were roaming in Europe at the time. Vera entitles his chapter 'On the Shoulders of Oliver Rackham', which speaks for itself.

Oliver placed great emphasis on using documentary evidence and noted that without historical information it is impossible to assess the importance of individual woods and woodland types, or to draw up rational management plans. His knowledge of medieval latin allowed him to read monastic charters and other documents.

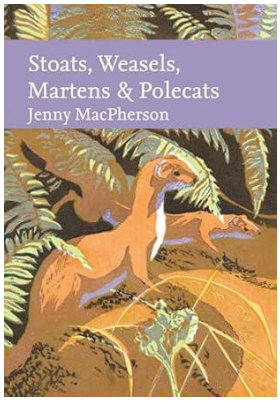
In his *History of the Countryside*: *The full fascinating story of Britain's landscape* (1986) Oliver states that he is '*Especially concerned with the loss of meaning. The landscape is a record of our roots and the growth of civilization. Each historic wood, heath etc., is uniquely different from every other, and each has something to tell us.*'

Oliver had the great ability to write not only for the academic world but for the amateur natural historian as well. Indeed, he gave much of his time to the interested amateur. I remember a visit he made to Swanton Novers Great Wood, Norfolk in November 2009. I had written to Oliver on behalf of the late Bryan Sage and myself inviting him to visit this ancient wood which he had written about. Not only did Oliver accept our invitation but he sent me copies of earlier notes he had made about the wood afterwards.

Oliver was concerned with the preservation of archives. In his book *Woodlands* (2006) he wrote '*Notebooks and photographs belonging to deceased ecologists are part of the nation's archives and need to be properly housed and catalogued.*'

So, it is fitting that many have been working to preserve, curate and digitise Oliver's archives, the bulk of which are at the University of Cambridge. Oliver kept two types of field notebooks: Red notebooks that contain his original notes taken on the spot in the field and blue notebooks which are usually compilations and further thoughts. There are 698 red notebooks and 440 blue ones. He had also amassed over 26,000 slides before he went digital in 2005. In addition, there is an herbarium collection of over 17,000 samples. Notebooks and slides which have been digitised already can be accessed on https://cudl.lib.cam.ac.uk/collections/rackham.

I have no hesitation in recommending this excellent book. There is much to learn from it and we can all benefit from Oliver Rackham's legacy!



Stoats, Weasels, Martens and Polecats
(New Naturalist Library) by Jenny MacPherson.
Published by Harper Collins. 2024 ISBN: 978-0-00-833493-2 Hardback £65

Reviewed by David Skydmore FBNA

If you see a stoat or weasel, it is likely to be just a glimpse of shining eyes and a sharp face looking out of a hedgerow, or a looping shape crossing a road. It is even less likely that you will have seen a pine marten or a polecat. Nevertheless, these animals fascinate us and, with this book, you now have a chance to discover much more about them.

This is a wonderful book for naturalists, whether experts or those wanting to learn. Jenny MacPherson demonstrates what a world expert she is on mustelids and leads you on a fascinating exploration of their lives and ecology. The book immerses you in their enigmatic world through the depth of the author's knowledge, the comprehensive range of the topics that are covered and the way that detailed facts are woven into a compelling read written with a light and engaging style.

It is a new addition to the New Naturalist Library and is in the best of the traditions of this series, with a feast of information, intriguing facts and illustrations. It covers the smaller mustelids - pine marten, polecat, stoat and weasel (and discusses when a polecat is actually a ferret - you need to read it to find out).

Between Ice Ages, mainland Britain have not always had all of the species we now have and interesting evidence is presented on their populations. In more recent times their numbers have fluctuated widely under pressure from the use for furs and being treated as vermin. Stoats and weasels had drastic population declines when the number of gamekeepers increased after the Enclosures Acts between 1760 and 1870. Numbers began to increase after the popularity of game shooting lessened after the First World War. The book is data rich with a very comprehensive literature review and it is very good for those who wish to see a careful analysis of the available data from published studies on population sizes and distributions. There is an examination of how population numbers are monitored including the use of camera traps, and of DNA sampling. eDNA techniques have problems with false results where animals tend to be lone or have large ranges. However, DNA sampling has helped identify mustelid prey which is useful in understanding the predators' role in the whole ecosystem.

There is a discussion on whether mustelids affect the populations of their prey but there is little evidence that they do except where the prey is already under pressure. However, it is interesting to see that, where pine martens are naturally present, red squirrels coexist, though the red squirrels do not do well where there are grey squirrels. The author gives very interesting insights into her own work on the Pine Marten Recovery Project for England and Wales in which animals are reintroduced into areas where they have become absent. There is a very valuable account of how to translocate successfully from a wild population into a new region and this is a very good read as we look generally more and more at reintroductions. Conversely, the problems of introductions of weasels and stoats to where they have previously not been present, and their serious effects on the native wildlife, especially birds, are discussed, giving particular examples of the Orkney Islands and New Zealand.

Stoats and weasels can live in the same area as weasels can take small rodents and stoats take rabbits. The weasels can breed rapidly, but stoats have delayed implantation until the following year so that they can give birth when conditions are most favourable to feeding the young. The book is packed with fascinating nuggets such as these. For instance, stoats have black tips to their tails, including when they are in their ermine coats (which appear to be hereditary as well as being controlled by changing seasons). The function of these black tips appears to be to put any predator's aim off the body of the stoat. On the other hand, weasels do not have black tips to their tails as their body length is too small for this to make a difference to the attack of a predator. As well as these facts, there is a compelling account of mustelids in folklore.

The book ends with a warning that, as small mustelids are difficult track, we may not be aware of large population fluctuations and their vulnerability and, so, much more research is needed.

This book is heartily recommended to feed your curiosity and increase your knowledge as a naturalist and it should find a permanent place on your bookshelf.

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