

The Linnean

Communicating nature since 1788

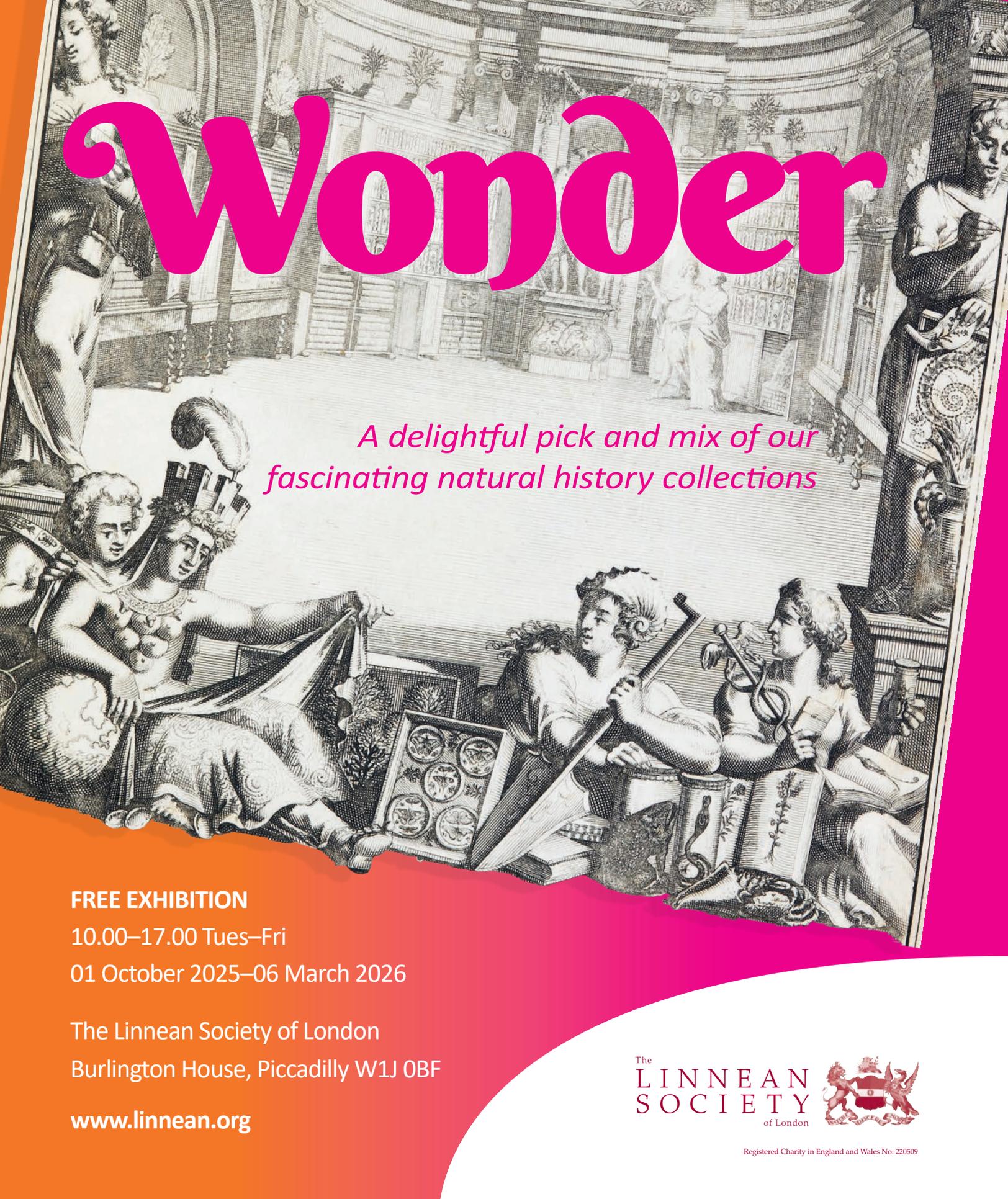
Vol 41 | No 3 | December 2025

Surprising sympathies

The evolutionary ideas of Jane Austen and Charles Darwin

Boxfish bioacoustics

Gateway to Nature:
The Urban Research
Station at
London's
NHM



Wonder

*A delightful pick and mix of our
fascinating natural history collections*

FREE EXHIBITION

10.00–17.00 Tues–Fri

01 October 2025–06 March 2026

The Linnean Society of London

Burlington House, Piccadilly W1J 0BF

www.linnean.org

The
LINNEAN
SOCIETY
of London 

Registered Charity in England and Wales No: 220509

About us

The Linnean Society of London is the world's oldest active society devoted to natural history. Founded in 1788 by botanist Sir James Edward Smith (1759–1828), the Society takes its name from the Swedish naturalist Carl Linnaeus (1707–1778), whose botanical, zoological and library collections have been in our keeping since 1829. These collections, awarded Designated status by Arts Council England, are of fundamental importance as a primary reference for the naming of plants and animals. They are enhanced by the Society's own rich library which provides key resources for scientific and cultural research.

Our vision is a world where nature is understood, valued and protected. To do this we aim to inform, involve and inspire people about nature and its significance through our collections, events and publications. Thanks to the wide-ranging expertise of our membership and our unique collections, we are a hub for science communication through interdisciplinary learning and engagement.

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Dear Fellows,

As we come to the end of 2025, the team at the Society is looking back at a busy and productive year. Our exhibitions have been a wonderful draw, with around 2,500 visitors to *Naturalist's Notebooks*, and more than 750 to *Wonder* so far (it's on until 6 March 2026, so do come in and see it before it ends).



In our final issue of the year, we take an unexpected turn and look at the similarities between Charles Darwin and Jane Austen for the latter's 250th anniversary—I wonder how many of our Fellows knew Darwin was a fan of her novels? We'll also look at some boxfish bioacoustics, with new information about the evolutionary journey of their communication published in the *Biological Journal of the Linnean Society*. And Fellow Ed Baker explains the development and progress of the Urban Research Station at London's Natural History Museum.

It has also been a year tinged with melancholy, as we lost our friend and colleague Priya Nithianandan—there is an article dedicated to him in this issue.

Before we wish you the very best for the festive season, please note that the Society will be closed to visitors from the end of 23 December 2025 until 16 January 2026 while we carry out essential cleaning and auditing of our library. We hope you have a relaxed and happy break, and look forward to welcoming you to the Society in the New Year.

Leonie

Leonie Berwick
Editor, *The Linnean* and Publications Manager (leonie@linnean.org)

You can also find the online interactive version of this issue in the Members' Area.

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Publish

The Linnean is published three times a year, in spring, summer and winter (UK). All contributions are welcome, but please contact the Editor or see the *Guidelines for Contributors* document on our website before writing and submitting articles (www.linnean.org/thelinnean).

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Image: BHL

What's on



LINNEAN LENS: ROBERT BROWN'S MICROSCOPE

Speaker: Brian J. Ford Hon FLS

13 Jan 2026 | 14.00 GMT (Online: Free)

Using nothing more than his little, single-lens microscope, the Scottish Victorian physician Robert Brown made a series of crucial discoveries that live with us today. We know him from Brownian Motion, but he also described the plant cell nucleus, and discovered the fine details of fertilisation in conifers—an extraordinarily difficult demonstration. Professor Brian J. Ford Hon FLS has reprised Brown's discoveries, and will show us how such astonishing revelations were possible with such simple equipment.



DISCOVERING THE OKAPI

Speaker: Simon Pooley

23 Jan 2026 | 12.30 GMT (Online: Free)

Discovered for Western science by Sir Harry Johnston in what is now northeastern Democratic Republic of Congo in 1900, the okapi is a rainforest giraffid which has become a symbol of scientific curiosity, colonial power, and conservation challenges.

In this talk, Simon Pooley will discuss who contributed to Western scientific discovery and knowledge of okapi, including local indigenous people, and who was left out. He will reveal how this sensational new species was described, classified and exhibited, and how it was represented to scientists and the public over time.



REARRANGING THE UNIVERSE: THE ENDURING SPELL OF CURIOSITY CABINETS

Speaker: Giovanni Aloï

29 Jan 2026 | 18.30 GMT (Online: Free)

This talk traces the enduring fascination with Cabinets of Curiosities—early modern collections of rare and enigmatic objects that sought to map the wonder and vastness of the universe in miniature. Often seen as precursors to the modern museum, Giovanni Aloï will dive into why these 'Wunderkammern' were not just displays of wealth or conquest but intricate systems of knowledge-making that blurred the lines between art, nature, science and spirituality.

To book for these and other events not shown, visit linnean.org/whatson



SYMPOSIUM: EXPLORING QUEERNESS IN NATURAL HISTORY

A one-day, interdisciplinary symposium centring LGBTQ+ inclusion in the environmental sector

5 Feb 2026 | 10.00–19.00 GMT (Onsite: £)

Join us for an event that will bring together a vibrant line-up of ecologists, historians, archivists, curators and artists to ask how we can create more inclusive environmental spaces, narratives, and practices.

Through talks, discussion and networking, this symposium will provide space for participants to share experience, spark ideas and strengthen connections between those working in the environmental and cultural sectors.

LINNEAN LENS: LINNAEUS'S PEARLS AND THE FRESHWATER PEARL MUSSEL

Speakers: Ted von Proschwitz and Stefan Lundberg

3 March 2026 | 14.00 GMT (Online: Free)

Join us to have a closer look at Swedish naturalist Carl Linnaeus's pearls in the Linnean Society collections. Ted von Proschwitz and Stefan Lundberg will delve into the history of Swedish pearl fisheries and explain Linnaeus's 'secret method' to produce artificial pearls from freshwater mussels in the 1750s. They will also look at efforts to reintroduce the freshwater pearl mussel into Swedish rivers.



Images: The Linnean Society of London; Pixabay



FUZZY LOGIC: WOOL AS THE ONCE AND FUTURE FIBRE

Speaker: Monica Stenzel

25 Feb 2026 | 18.00 GMT (Onsite: £)

Sheep's wool has been collected and crafted into cloth for millennia as well as providing a major trade commodity of England for about 1000 years. Curiously, it is one of the last natural materials to receive scientific laboratory investigation.

This talk will discuss how traditional practices, new scientific instruments of analysis, and a dire sheep shortage during World War I prompted a collaboration between scientists at the University of Leeds, wool growers, and the British Government to create the field of wool science in the early 20th century.

TREASURES TOURS 2026

Guides: Our fantastic Collections Team

4 Feb, 5 March, 2 April | 14.00–15.30 (Onsite: £)

Join our expert staff on one of our ever-popular Treasures Tours, an in-depth, behind-the-scenes journey around our unique home at Burlington House in central London. See Carl Linnaeus's own collections and library, and come away with fascinating information about their scientific, historic and artistic importance, and the story of the Linnean Society itself.

Join the journey—book your place!



News

THE EVOLVING LEARNED SOCIETY

On 4 September, Dr Mark Watson gave his first President's Lecture, summarising the Society's past, present and hopes for the future. With much evolution over the last five years, his talk offered a great overview of historic and recent changes, assessing that the Society now has a solid platform on which to build. Mark looked towards ways to build financial resilience and expand our community with the help of our wide-reaching membership.

Everything changes

The existential threat to the natural world through biodiversity loss and climate change has focused attention for many in our community. For the Society itself, the often-interconnected selection pressures faced include Charity Commission requirements, digital technologies and Government stipulations over the lease of Burlington House.

Charities were in the spotlight in 2015 when governance failures of some major charities were splashed across mainstream media in the UK. With public confidence eroded, eyes turned to the Charity Commission for England and Wales for explanation. The Commission responded by publishing its Charity Governance Code in 2017 and tightening scrutiny over registered charities.

This brought governance at the Linnean Society into stark relief, as it had remained essentially the same since our foundation. Change was necessary, and previous President Sandy Knapp led the Council in commissioning an external governance review in 2018. The review was tasked to:

- Advise on the structures of the Council and committees
- Suggest improvements to the Council skill sets
- Advise on staffing and management of staff

The review made 16 far-reaching recommendations, and I am pleased to say that the Council has acted on all of these. Some



of them have been fully implemented whilst others are a work in progress. As they say, good governance is a journey not a destination.

Among the recommendations, a personal highlight was being involved in the writing of a new Royal Charter and Bye-Laws. The working group tasked with this first met in June 2021 for what turned out to be a 3.5-year journey, far longer than any of us expected!

We now have a three-tier system of:

- Royal Charter (set by the Privy Council)
- Bye-Laws (set by the Fellowship)
- Standing Orders (set by the Council)

The new governing documents are now in legal effect and we now have a robust governance framework which will enable us to meet the challenges of the future.

Engaging with our membership

Our members have always been one of the Society's greatest assets, always supporting the Society through difficult times.

In 2024 we sent out a membership survey as part of our ongoing review. The results were very encouraging, showing strong agreement with the values that matter to our Society, the contribution of the members towards our mission, and the desire to attract a larger and more diverse membership.

Members take pride in the prestige, history and heritage of the Society, the impact of its work, the like-minded community we foster, the connection with others, their expertise, diversity and quality. Many feel the Society is part of their identity.

Preserving our legacy

Our collections are the beating heart of the Society and are still relevant in research today. We have been steadily imaging, transcribing and cataloguing more of our collections to democratise their use. Very recently we migrated all of our digital archives over to a new digital preservation platform, boosted with enhanced metadata to aid easier research.

Critically, our home in Burlington House has been a significant driver for change and, now that our tenancy is secure, it is our biggest opportunity for the future.

In 2005, after 130 years of rent-free occupation in purpose-built premises, a rent was levied by our landlord—the UK Government. By 2020 it became clear our home would rapidly be unaffordable, and in 5 to 10 years we would be forced out.

Working together with our neighbours, the Courtyard Societies, we launched the Save Burlington House campaign, running alongside our active engagement and negotiation with our landlords. After much hard work, in 2024 we secured a 999-year lease, on condition of enhancing public benefit to our local and national communities, as well as looking after our buildings in an environmentally sustainable way.

Being our own landlords brings both challenges and opportunities. These new costs and obligations make it more vital than ever to invest in our future: to make our building more accessible, upgrade our facilities, and make our home a

welcoming and an inspirational place to those who visit. Our recently refurbished main staircase showcasing our collections is a stunning example of what can be done.

The future

Our new Strategic Plan was launched in 2024, and our work is now guided by four pillars. The first three pillars are about working to understand, value and protect the natural world by harnessing our membership; enabling vital research; and engaging society with the natural world. The fourth pillar is ensuring that the Society has the people, platform and resources to deliver this vital mission.

However, to enact the changes we wish to see, the Society needs financial resources, as well as our expert and passionate community. At present, our main source of income is our journals, enabling us to undertake the wide range of charitable activities and community engagement which we enjoy today. But there are challenges in publishing, with many Societies finding their income under pressure, as more journals are being consolidated in the hands of a few for-profit publishers.

We are working hard to protect our publication earnings, but we must also look to diversify our income. Membership contributions, while making up a smaller proportion of our overall funds, are a greatly valued part of the Society's revenue. More members would mean an even greater contribution, and we look to you to spread the word.

Donations and legacies are another important source of funds and, in many cases, they enable us to undertake valuable work which would otherwise be beyond our means.

Our forebears would be deeply shocked at the state of our natural world today, but our purpose remains the same as it was in 1788 when our Society was formed. We now have a solid platform on which to build, securing our home in Burlington House (a pivotal event in our history), alongside modernising our governance and management systems. We are diversifying our activities and reaching a much wider audience.

But now, more than ever, we need your support—your participation in activities, your advocacy for nature and the Society, and we need your help to build financial resilience in growing our membership. To find out more about how you can help, please email development@linnean.org.

I feel greatly privileged to be your President as we begin this new chapter in our history. and I look forward to working with you to achieve our mission in cultivating a global community working for a world where nature is understood, valued and protected.

Dr Mark Watson, President (president@linnean.org)

Linnean Society Partnering with Bridgeman Images

We're incredibly excited to announce that, at the start of December, the Society became a content partner with Bridgeman Images, uploading over 200 images from our collections to their image library.

Our images will soon be available for licensing and for use in many of Bridgeman's print and product-on-demand services. We'll be uploading more throughout 2026, so if you've ever wanted a cushion cover, mug or even a phone case showing your favourite nature-based image from our library (or know someone else who does), you'll soon be able to order it! With five offices located around the world, images and products are available globally.

Visit <https://www.bridgemanimages.com/> and search 'LSO', or find us under 'Partners' to view all of our images, and perhaps find a little inspiration in nature. All of our image numbers start with 'LSO' and all purchases, no matter how small, will help to support the Society.



Welcome to Becky Darnill

Becky Darnill joined the Society in August as a Project Archivist, cataloguing the papers of the Percy Sladen Memorial Fund (PSMF). Founded by Constance Sladen in memory of her husband, marine biologist Percy Sladen FLS (1849–1900), the Fund provides financial support for field work in the earth and life sciences. Becky's role has been funded by the Trustees of the PSMF.

Becky recently completed her postgraduate course in Archives and Records Management at UCL. Prior to starting this role, she was Project Cataloguer at the Leathersellers, working on the archive of Leather UK. Previously, Becky worked as an Archive Assistant with the Sisters of Nazareth Generalate archive, as well as undertaking cataloguing projects with the London School of Hygiene and Tropical Medicine and Barts Health Trust archives. She also helped to establish an archive for St Gabriel's Church in Aldersbrook and has volunteered for archive projects with Jackson's Lane Art Centre and Child Poverty Action Group.

Becky has already proven that she is collaborative and amenable member of the team and says: 'The Linnean Society's collections, and the Percy Sladen material in particular, are intriguing and I am very excited to be a part of the work being undertaken here.' Welcome Becky!

A Tribute to Priya Nithianandan

BELOW: Priya, photographed at the Society in 2018.

As 2025 comes to a close, we'd like to take this opportunity to fondly remember someone we lost in May—our Head of Finance, Priya Nithianandan.

Priya was one of the longest-serving staff members the Society has ever had. He first started at the Linnean Society on 21 August 1991, as an Administrative Assistant. He often spoke fondly of the two people who offered him the post and supported him throughout his first years at the Linnean Society: John Marsden, Executive Secretary, and Gren Lucas, Treasurer. Both encouraged him to train as a chartered accountant, and Priya has been the financial back bone of the Society ever since. In 2007, he became Financial Controller, and in 2021, Head of Finance.



Images: The Linnean Society of London

Priya was deeply invested in the present and the future of the Linnean Society. His experience of more than 30 years managing the Society's finances and working with different styles and structures of leadership was invaluable. He was of good counsel, both in the Senior Management Team and in terms of the wider organisation of the Society. Over the years, he got to know many of the Society's Fellows, through communicating and meeting them regularly when dealing with membership dues.

The fact that he held his wedding reception in the library of the Society is a measure of how fond of the place he was. He was part of the fabric of the Society, and was a good sport, making us the best spicy lamb chops ever at staff barbecues. While he took his work seriously, it was family that he always saw as the top priority. 'Get home to that family,' he would say, if he ever saw us working too hard. In many ways, no matter our ages, it often felt like he was the 'dad' of the Society. He was full of entertaining stories and anecdotes about his childhood and travels, and would regularly have us laughing at the escapades of his youth.

Priya is survived by his wife Kavita and daughters Aashna and Kinza, of whom he was incredibly proud. He will be terribly missed by us all, and it won't be quite the same at the Society without him.

Priya Nithianandan (5 September 1964–2 May 2025)

From Paul Smith FLS, Priya's school friend

I first met Priya in 1981 at Maru a Pula school in Gaborone, Botswana. Priya was in the lower sixth and I was in the year above him. We are all, to a greater or lesser extent, the products of our upbringing and it was telling, I think, that Priya's parents chose to send him to one of the very few multi-racial schools in southern Africa at the time. The school was established in 1972 by Deane Yates, formerly Headmaster of St Johns College in Johannesburg who, frustrated by the impossibility of establishing a non-racial, multi-cultural school in Apartheid South Africa, instigated the idea in neighbouring Botswana. Even here, he encountered initial Government opposition, but thanks to his passion and perseverance, eventually received the stamp of approval from the Botswana government. Maru a Pula, which means 'Clouds of rain' (something to celebrate in such a dry country), also espoused self-help and community, an ethos that Priya carried with him throughout his life.

Priya's closest group of friends comprised Anil (Nepal), Ravinder (India), Mark (UK) and Checks (Botswana), epitomising the melting pot that the school represented. Much more than that, it exposed its pupils to a wide range of political, cultural and religious viewpoints that we were encouraged to discuss in a spirit of openness and tolerance. These are also values that Priya brought into his professional life at the Linnean Society and it was here that I met Priya again after a gap of 35 years.



ABOVE: Priya, second from the left, at school in Botswana in the 1980s.

Selected messages from Fellows and Members

He was, for me, and possibly many others, an iconic figure at the Linn Soc, faultlessly representing the best values of the Society—calmly, kindly and efficiently dealing with a myriad of issues.

He was a natural gentleman with a gentle manner and smile. Whatever the problem, I was always reassured to hear his voice. **Frances Livingstone FLS**

His gentle efficiency and deep commitment to the Society was worn both lightly and with the greatest of integrity. **Robin Bruce FLS**

It was a pleasure to work with Priya when I was active within the Society. He will be greatly missed, not only by his family, but by many friends within the Society. **Vaughan Southgate PPLS**

I have very fond memories of him when I served on Council. He was always friendly and welcoming, and helpful with information and advice. He will be sorely missed.

Sara Churchfield FLS

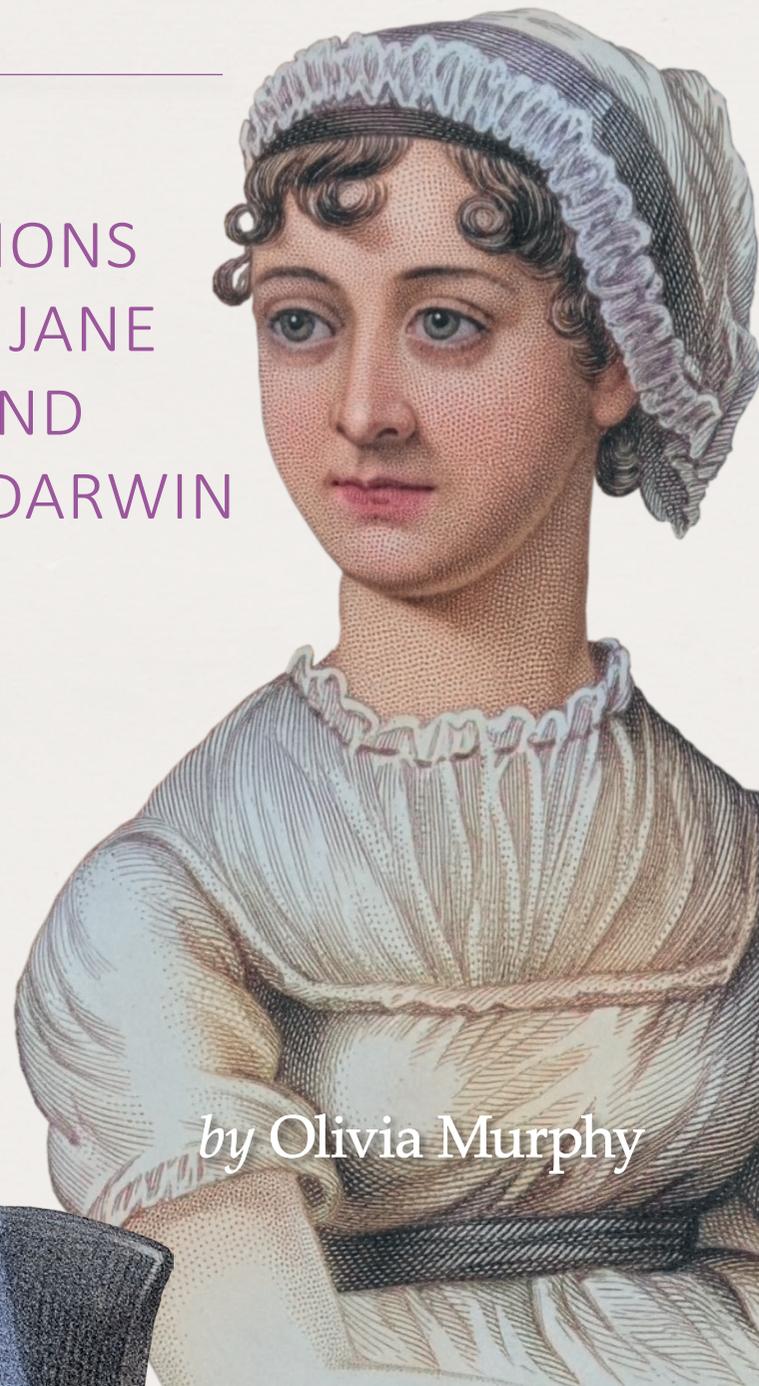
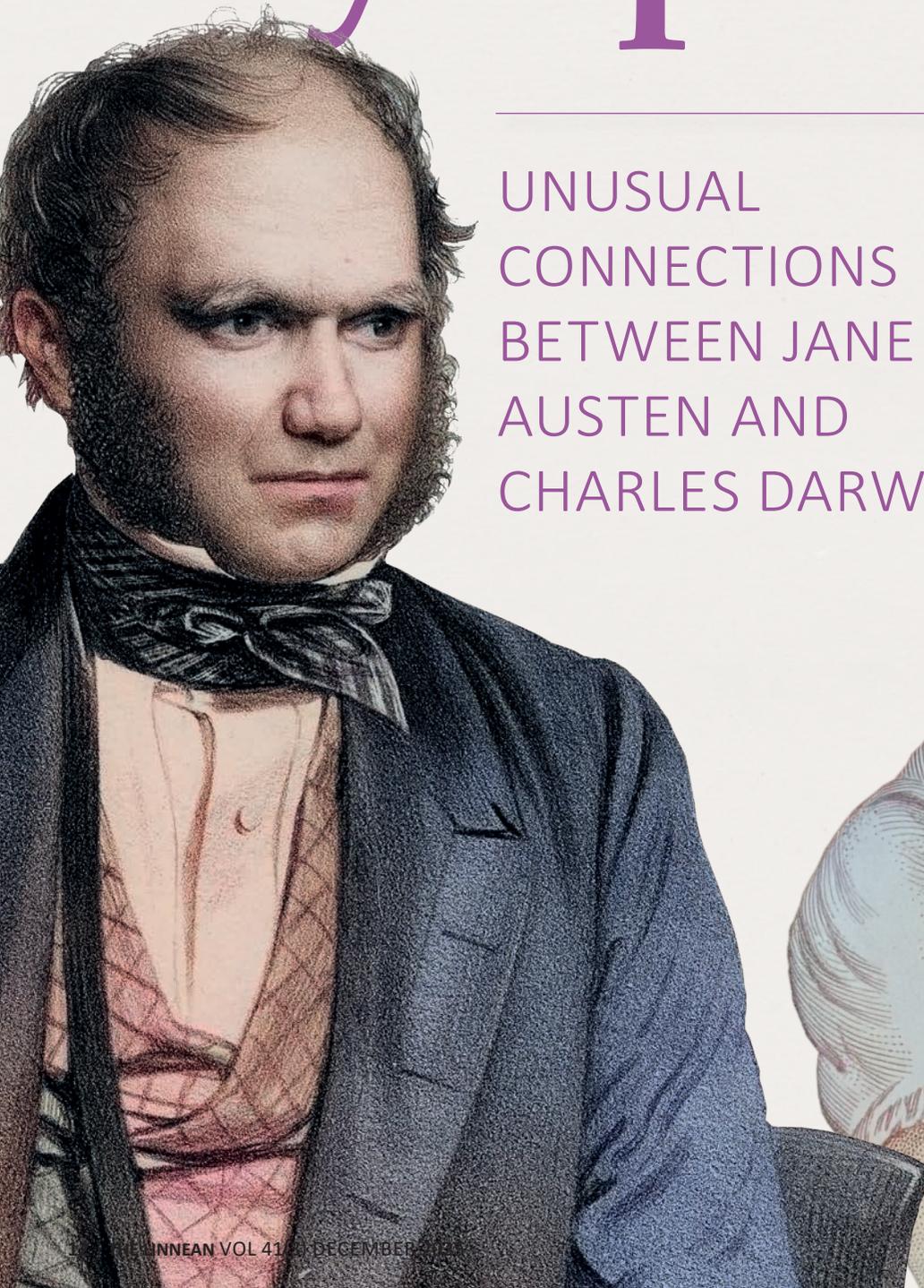
I enjoyed a warm relationship with Priya over many years, and found him to be very supportive and highly competent during my time as President of the Linnean Society. He was a lovely man. **Gordon McGregor Reid PPLS**

What a pleasure it has been to meet with Priya over the past 30 years at the Society. He always greeted us with a smile and we discussed the state of play at the Society and our families. **Susan and Chris Gove FLS**

All messages of condolence have been kept as part of our archive, in remembrance of Priya.

Surprising Sympathies

UNUSUAL
CONNECTIONS
BETWEEN JANE
AUSTEN AND
CHARLES DARWIN



by Olivia Murphy

As national treasures go, Jane Austen (1775–1817) and Charles Darwin (1809–1882) would seem to have little in common other than commemoration by banknote. She, the originator of the Regency Romance, the village-dwelling maiden aunt and anonymity-seeking novelist, sly chronicler of genteel hypocrisies and the delusions of youth; he, the globe-crossing scientist, revolutionary Great Man of Victorian Science, full-bearded and severe, the shatterer of religious orthodoxy and provoker of controversy. Marking the 250th anniversary of Austen’s birth, Olivia Murphy investigates how, in the minds of these two epoch-defining English people, we can see surprising sympathies and shared interests.

Charles Darwin was lucky to inherit a love of—it would not be outrageous to call it an obsession with—Jane Austen’s works. The members of the close Darwin-Wedgwood circle were united in their adoration of her novels. References to characters from *Pride and Prejudice* (1813), *Emma* (1815) and, especially, *Persuasion* (1818) litter their correspondence and amount to a kind of shorthand between family members. Thus, Darwin’s cousin Charlotte Wedgwood writes to him that she is delighted to hear he has ‘fallen in with a Captain Wentworth’ on the HMS *Beagle* and later notes her sister’s ‘great scruples lest she appear too Lydiaish’ (22 Sept 1831). We can deduce the fulsomeness of Darwin’s account of his captain, Robert Fitzroy, by his own sisters’ excited and slightly breathless response: ‘he must be quite a Captain Wentworth every thing you tell us of him makes him more & more perfect’ (Caroline and Susan Darwin, 20–31 December 1831). Darwin does not imagine himself cutting quite such an heroic figure as his captain. When short of funds he sheepishly writes to his sister Catherine that ‘When you read this I am afraid you will think that I am like the Midshipman in *Persuasion* who never wrote home, excepting when he wanted to beg’ (22 May–14 July 1833). Ironically, Captain Fitzroy had no interest in reading *Persuasion*, and so the *Beagle* set sail without a copy, as Darwin had no need of one: ‘there is no danger of my forgetting it’, he writes to Caroline (c. 31 October 1831). Safely stored in Darwin’s memory, Austen’s characters travelled with him to the Galápagos, to Australia, to New Zealand and South Africa.

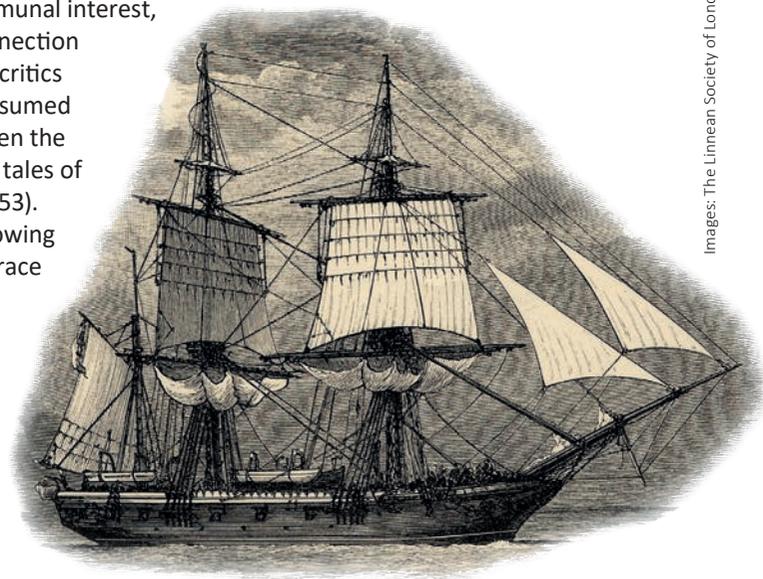
Shared skills

Until recently, I was at a loss to account for this extraordinary communal interest, especially in a more-or-less Unitarian, Midlands family with no connection to the Hampshire-based Austens.¹ Austen’s novels, appreciated by critics but far from bestsellers in her lifetime, had for many years been assumed to have fallen out of fashion, and out of readers’ memories, between the 1820s and Austen’s first major revival, inspired by the nostalgia for tales of Regency-era village life initiated by Elizabeth Gaskell’s *Cranford* (1853). The digitisation of an enormous range of newspapers, library borrowing records and other archives, however, has now made it feasible to trace references to Austen’s works in these ephemeral sources. Rather than decades of forgetting, what emerges from this piecemeal record is instead signs of the birth of the iconic Austen of our age, the novelist to whom all others are compared, the paragon of romance and of the realist style which would dominate the Victorian novel. It now seems less likely that this shared love of Austen was unique to the Darwin-Wedgwood clan; perhaps if the correspondence of other, less famous families were to be published we might find a similar preoccupation with the author extending beyond the end of the Regency.

1 See Murphy, O. (2017). ‘A Future to Look Forward to?’: Extinction and Evolution in Jane Austen’s *Persuasion*. *Eighteenth Century Life* 41(2): 154–170.

OPPOSITE: Charles Darwin at c. 40 years of age in 1849; Jane Austen in an engraving based on an 1810 portrait, at c. 35 years old.

BELOW: Darwin’s correspondence includes fond and humorous references to *Persuasion* whilst on board the HMS *Beagle*.



Images: The Linnean Society of London (colourised); National Portrait Gallery (colourised)

BELOW: John Murray, the publisher of not only the *Quarterly Review* but many of Austen's works, including *Emma* (1815) and *Mansfield Park* (1816), and Darwin's *On the Origin of Species* (1859). It is located just around the corner from the Linnean Society.

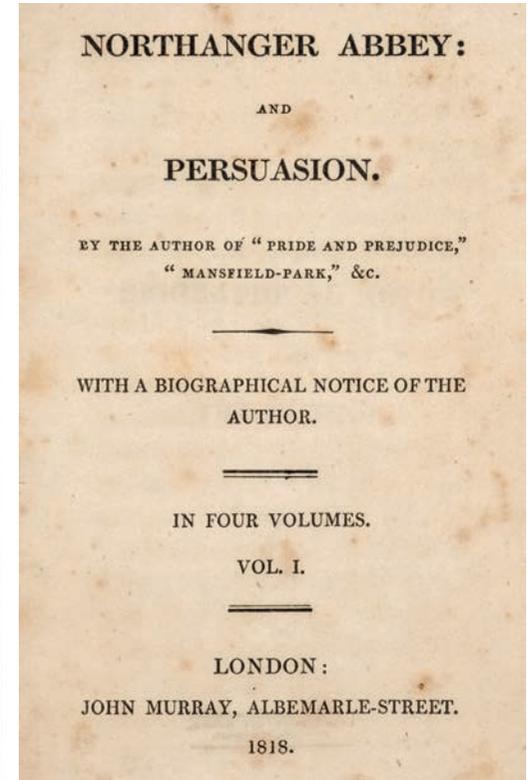
Austen and Darwin never met. She was dead at 41 when he was only a boy of eight. If we can imagine a world in which everything turned out differently, however, what might they have had to say to one another? Some scholars have noted their shared interest in empiricism, and remarkable gifts of observation. In Darwin these are understood to be the skills of a scientist, in Austen they are usually presented with the caveat that any ideas approaching science in her writing are accidental. The argument is that, by paying close attention to the society around her, Austen unconsciously recognises the deep universal laws of human behaviour that Darwin will articulate in his theory of Natural Selection.² If we instead allow that one of the greatest writers in English literature, and one of the greatest novelists in any language, might also have been a fairly intelligent person, we can draw very different conclusions.



A time of intellectual exchange

When he embarked on the *Beagle*, Darwin had the benefit of many decades of intellectual groundwork by an international network of scholars whose efforts would underpin Darwin's theories. Austen is likely to have read much of the same materials, in short, to have had a similarly good grasp of the state of what, in hindsight, we can call proto-evolutionary science. In Austen's lifetime Britain experienced an explosion of public interest in a huge range of discoveries and scientific arguments. The disciplines now familiar to us were only just being established, and most serious scholars were also, technically, amateurs. They wrote for a broad audience with no specialist education, and their writings were reviewed and digested for an even larger public. We know that Austen's family were keen readers of the publications—such as the magisterial *Quarterly Review*, owned by Austen's publisher John Murray—which brought to the drawing rooms of Hampshire the newest discoveries and scientific ideas from around the world. The works of leading French comparative anatomists like the Comte de Buffon, Jean-Baptiste Lamarck and Georges Cuvier were rapidly translated and evaluated for an English audience through newspapers and magazines, with intellectual exchange barely hindered by the long-running war between France and Britain. These discoveries included the first widely understood evidence for the extinction of species such as the mammoth, to be joined in 1810 by Mary Anning's discovery of a fossilised plesiosaur in Lyme Regis, where Austen holidayed.³ Advances in geological science were closer to home for Austen, with the work of James Hutton and William Smith forcing a complete reconsideration of the planet's age. While bibles were still sometimes printed with James Ussher's chronology of the world, putting the events of the first verses of Genesis as

- 2 Most scholars considering Austen in this light follow the same (tacitly misogynistic) argument: Peter W. Graham, *Jane Austen & Charles Darwin: Naturalists and Novelists* (Ashgate, 2008); Brian Boyd, 'Jane, Meet Charles: Literature, Evolution, and Human Nature', *Philosophy and Literature* 22 (1998): 1–30; Kathryn Duncan and Michael J. Stasio, 'An Evolutionary Approach to Jane Austen: Prehistoric Preferences in *Pride and Prejudice*', *Studies in the Novel* 39 (2007): 133–146; a possible exception is Michael Suk-Young Chwe, *Jane Austen, Game Theorist* (Princeton UP, 2013).
- 3 Coincidentally, several years earlier Austen had met Mary Anning's father: see *Jane Austen's Letters*, ed. Deirdre Le Faye (Oxford UP, 2011), 98.



occurring in 4004 BC, educated families such as the Austens were well-acquainted with new arguments that the earth was many tens of thousands, if not hundreds of thousands of years older than Ussher had assumed. An understanding of these matters was widespread among the reading classes. Austen's contemporary Lord Byron wrote extensively (if irreverently) about all these scientific developments, with the expectation that his readers would know enough to get the joke.

English people of the late 18th century also had a good understanding of the inheritance of traits. It was in this period that the modern breeds of dogs and livestock were established, with categories now following Carl Linnaeus's attention to an animal's morphology rather than its use. Inherited traits were likewise understood to pass between humans: Austen was sceptical of the gothic cliché that portraits invariably show 'an equal resemblance of mother and child [and that] a face once taken was taken for generations', but madness and (strangely enough to our mind) women's infidelity were assumed to be strongly heritable.⁴ The presence of such traits in a genteel family could damage its members' marriage prospects. Like many families, the Austens concealed relatives living with disabilities, including the author's brother George, about whom very little is now known.

Evolutionary ideas

An ancient planet, vanished species, the inheritance of traits: these are the concepts on which early ideas of what we now call evolution were built. We can see Austen, like so many other Romantic-era writers, grappling with these ideas in her work, especially in her final novel, *Persuasion* (1818). Like a young Darwin, she had many pieces of the evolutionary puzzle. We can only imagine what she might have felt, could she have lived to see him put it together.

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ABOVE (CLOCKWISE FROM BOTTOM LEFT): New discoveries and ideas discussed in the Darwins' home in Down House, Kent; And the Austens' at Chawton House, Hampshire; The inheritance of traits linked the work of Austen, like *Persuasion* in 1818, and that of Darwin.

4 *Northanger Abbey* (1818), ed. Barbara M. Benedict and Deirdre Le Faye (Cambridge UP, 2006), 196.

Boombox(fish)

EVOLUTIONARY TRANSITIONS IN
BOXFISH ACOUSTIC COMMUNICATION



by Eric Parmentier

Among the 37,000 recognised species of fish, boxfishes (families Ostraciidae and Aracnidae), which live in coral reefs, are instantly recognisable thanks to their rigid, box-shaped bodies. Formed by the fusion of hexagonal bony plates, it is a striking anatomical detail. But other unusual morphological innovations have recently been revealed regarding the species' ability to communicate. Eric Parmentier gives a glimpse into novel research recently published in the *Biological Journal of the Linnean Society*.

OPPOSITE: Boxfish are well named, with their bodies shaped by hexagonal bony plates. This limits mobility but has resulted in other adaptations.

Boxfishes from the Ostraciidae family are divided into two distinct lineages: the Lactophryinae, which includes seven species, are found exclusively in the Atlantic, and the Ostraciinae, which comprises 18 species, all inhabiting Indo-Pacific reefs. In both groups, this natural armour provides effective protection against predators but also drastically limits their bodily flexibility. Unable to undulate their bodies like most fish, boxfishes had to develop an unusual mode of locomotion, relying wholly on their pectoral, dorsal and anal fins. This gives them a hovering, almost drone-like appearance.

Buzzing

Being protected by armour also proves useful during reproduction. Typically during spawning, the male and female slowly rise through the water column, between 2–15 m, which exposes them to predators. At the top of this ascent a buzzing sound is emitted, serving as a signal for the simultaneous release of gametes outside the body. As early as 1804, naturalist George Shaw was noted as describing a sort of 'growl' emitted from a trunkfish (*Lactophrys trigonus*), though believed the sound to be generated by air being pushed through the animal's branchial structures (Sorensen 1884). (An interesting idea, but as we now know, incorrect.)

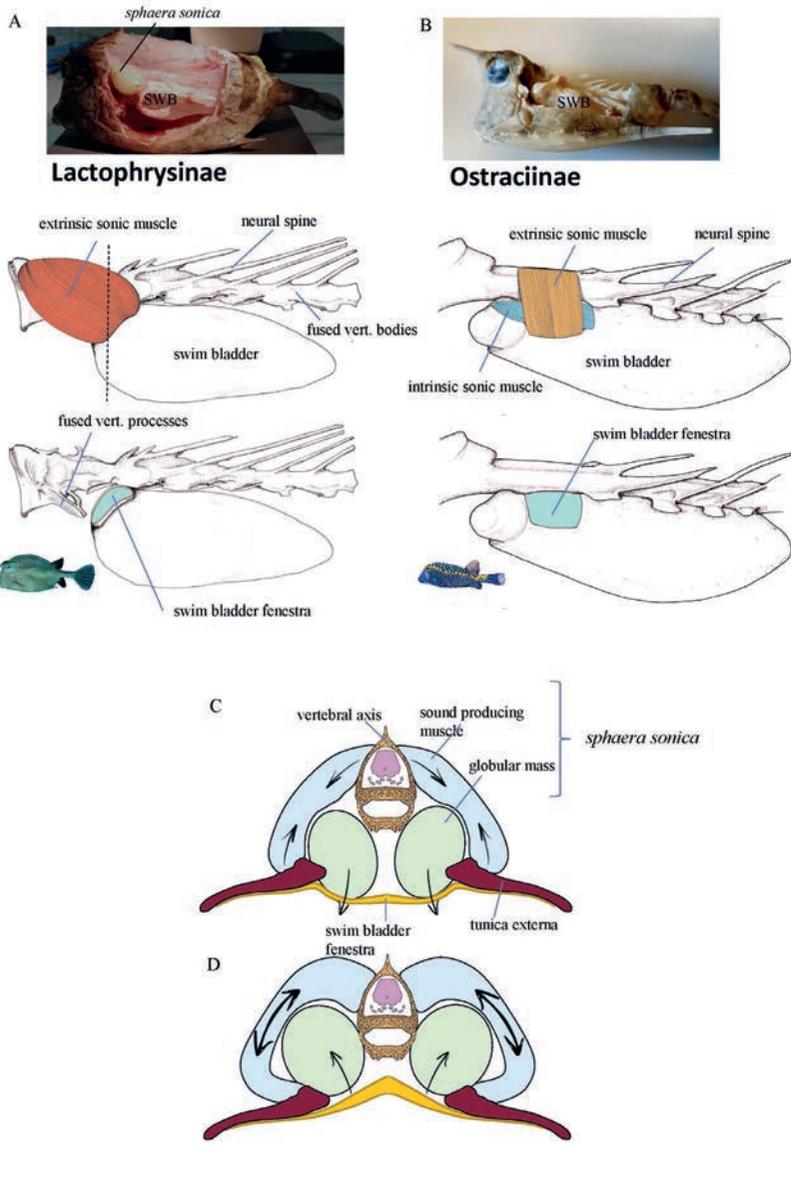
This behaviour also results in fertilised eggs being released near the surface, which increases their chances of being dispersed by favourable currents. In addition to buzzing sounds linked to reproduction, 'booms' can be produced during male–male confrontations, and a short buzz may occur when a male tries to interrupt a mating.

The study

In our case, we recorded a total of eight species during various field missions carried out in the Pacific and the Atlantic. These fish have the advantage of producing sounds when held in hand. Although this technique is sometimes debated, it does allow all fish to be recorded under the same behavioural conditions, with the individual placed at the same distance from the same recording equipment. The sounds recorded in species from the Ostraciinae group exhibit remarkable features: they can produce two types of sounds simultaneously. The fish emits long sounds lasting several seconds, composed of hundreds of pulses which, when produced at regular intervals, create a typical hum strongly resembling those recorded during spawning behaviour on the reef. In addition, during the humming, irregular low-frequency pulses occur that are 10 to 40 times more intense. These short 'bumps' are immediately reminiscent of fight sounds. Usefully, this also allowed us to record the humming and the bumping sounds separately—the two are not systematically produced together, though in the Atlantic species, we were not able to record this dual message. However, when held in hand, individuals from some species were able to emit isolated or repeated bumps, also giving the impression of a hum, but much shorter (less than a second).

Morphology and discovery

As morphologists, we needed to see how sound-producing mechanisms are organised in these boxfishes and so...we had to look inside. Both groups are capable of producing sounds, but the mechanisms they use differ. Atlantic species have two small balls (sphaera sonica) on the dorsal



ABOVE:

Schematic view of the sound producing mechanisms in different Ostraciidae: *Lactorphrys triqueter* (A), and *Ostracion meleagris* (B). Schematic transversal view (C, D) showing the movements of the globular masses (generating the sound in Lactophryinae) inside the swim bladder during muscle contraction (single arrows) and relaxation (double arrows). The dotted line shows where the transverse section is made.

Image: Eric Parmentier et al.

anterior part of the swim bladder; surrounding muscles push them into the bladder, and this back-and-forth motion generates sound. Indo-Pacific species have lost these balls, but the surrounding muscles have evolved into two distinct muscles that, when contracting, cause the swim bladder itself to vibrate, with the very cool ability to produce two different sounds simultaneously.

But the story does not stop there: we wanted to understand how such a mechanism could have evolved. Most fish swim by undulating their bodies, but when you're trapped inside a rigid bony box, bending is not an option. Boxfishes have therefore adopted a swimming style that relies entirely on their fins, and as a result, the large trunk muscles (the ones you find in a fish steak) had to be reconfigured. Some muscles disappeared, others became specialised for fin control, and some may have been repurposed as sonic muscles.

Comparison with the sister family, the Aracanidae, helped us explore these hypotheses. A comparative anatomical analysis revealed the absence of a sonic mechanism in Aracanidae, whose external armour is less solid, as their bony plates are not fused. The comparison between the two families highlights that some muscles involved in undulatory swimming in Aracanidae may be homologous to the sonic muscles of Ostraciidae.

In the latter, being enclosed in a more rigid bony box likely led to the loss of the original locomotor function of these muscles. At that point, two evolutionary paths were possible: either their complete disappearance, or the development of a new function. It is this second path that took shape over the course of evolution in Ostraciidae, with the emergence of acoustic

communication. This transformation illustrates a marked evolutionary transition, from silent fish to vocal species, accompanied by the progressive specialisation of sound-producing structures. Earlier studies showed that Atlantic boxfishes are closer to an ancestral form, less specialised and once spread all over the globe. The typical Indo-Pacific shape likely evolved later, somewhere in that vast ocean, but never made it into the Atlantic. So today, the Lactophryinae species can be seen as living relics of an earlier stage in boxfish evolution.

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Read the paper: Parmentier, E., Eche, L., Greeven, C., Banse, M., Bertucci, F., Thiry, M., Raick, X., Donaldson, T. J. and Lecchini, D. (2025). Morphological Innovations and Evolutionary Transitions in Boxfish Acoustic Communication. *Biological Journal of the Linnean Society* 146(Oct): blaf079 <https://doi.org/10.1093/biolinnean/blaf079>

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A Gateway to Nature

THE URBAN RESEARCH STATION AT
LONDON'S NATURAL HISTORY MUSEUM

by Ed Baker FLS

PREVIOUS PAGE:

A bronze replica of 'Fern', a *Diplodocus* skeleton set amongst plants, evocative of a Jurassic fern prairie.

BELOW: The pond was enlarged as part of our effort to create larger areas of better-connected habitats. We have also planted additional areas of scrub, woodland and wildflower grassland across the western gardens. (LEFT: The pond in 2020, RIGHT: In 2024)

It is forecast that 68% of the world's population will live in cities by the year 2050 (United Nations 2018). Natural history museums can play a pivotal role in publicly addressing the interconnected biodiversity and climate crises (Baker *et al.* 2025). Here, Ed Baker FLS looks into how the green public spaces of these institutions can serve not only as places for public education and engagement, but also as vital research centres for understanding biodiversity and ecology in urban environments.

The recent redevelopment of the gardens at the Natural History Museum's site in South Kensington (Baker *et al.* 2025) has enabled the London-based Museum to use new technologies alongside existing techniques to begin collecting datasets that can be used for generating effective urban policy. In short, we aim to address the question 'how can we make urban environments better for people and for nature?'

The gardens and their hidden biodiversity

Since the establishment of the original Wildlife Garden in 1995, more than 3,400 species have been recorded visually, representing approximately 26% of the species documented across Greater London (McCarter *et al.* 2022; NBN Atlas 2025). While clearly skewed by onsite expertise, these figures underscore that even small urban green spaces can harbour significant biological diversity. Despite these remarkable figures, much of the biodiversity on the site remains underexplored scientifically and invisible to the public.

The recently concluded Urban Nature Project has allowed us to re-evaluate the use of our grounds through a large redevelopment, creating three distinct new gardens for education and research.

The **Evolution Garden** brings the educational ethos of the Museum into the gardens, an outdoor gallery where visitors walk through geological time. The planting scheme is evocative of phases throughout the history of the Earth System, and complemented with bronze sculptures, including Fern, a bronze recreation of a *Diplodocus* skeleton.

The **Nature Discovery Garden** expands the previous Wildlife Garden to surround the Western façade of the Waterhouse building with larger areas of better-connected habitat. Two approaches have been taken to highlight the hidden biodiversity to our visitors. An accessible sunken walkway through the



Images: (Previous Page) Trustees of the Natural History Museum, London; (This page) Ed Baker

pond system brings the water surface to eye level, offering unique views into the aquatic environment and facilitating safer pond dipping with school groups. Secondly, sound funnels play recordings of nature from inaccessible environments—soils and the inside of decomposing wood. These sound funnels link to collections within the Museum, which has a collection of recorded wildlife sound (Baker *et al.* 2015) and active research projects in the gardens where we are actively investigating the soundscapes in these understudied areas.

Finally, the **Darwin Centre Courtyard** has been recreated as a climate-change garden, featuring plants that thrive in London's heat island, as well as de-paved areas that are experiments in urban re-colonisation. This environment allows us to study the novel ecosystems of contemporary cities, driven in part by imported plants and warmer microclimates.

The creation of permanent gardens, whether ornamental (Evolution Garden), representative of natural habitats (Nature Discovery Garden), or experimental (Darwin Centre Courtyard), has allowed a step-change in how we are able to monitor their biodiversity.

In addition to standard, manual, survey protocols, we have now included environmental DNA (eDNA) sampling and acoustic monitoring to capture dynamic and often invisible aspects of urban biodiversity. eDNA provides snapshots of species presence in the soils and water, revealing the presence of many microscopic species that would otherwise go unnoticed. Acoustic sensors can deliver real-time data on the activities of insects, birds, and other taxa.

Together, these tools enable continuous biodiversity assessment and facilitate studies on temporal and spatial variability in species activity within a highly urbanised environment. Combining traditional visual observations with eDNA snapshots and acoustics will allow us to assess how these methods can complement each other to holistically monitor biodiversity within cities.

Technology

In addition, the remodelling has allowed for the once-in-a-generation opportunity to install research infrastructure throughout the gardens. While digital methods for studying biodiversity are rapidly advancing (TODO: Refs <https://www.sciencedirect.com/science/article/pii/S1877343520300592>) they generally hit the same pain points when it comes to permanent installation: power and data. Through an underground network of conduit, we can use power-over-Ethernet to provide continuous power and a Gigabit data connection to almost any point in the gardens without having to lay cables across a path. This is a luxury best appreciated by those who have spent significant periods carrying a rucksack of car batteries and SD cards up mountains in the tropics every few days.

The power and data network has allowed us to install over 25 Raspberry Pi computers and over 50 sensors (so far) to continuously monitor the environmental conditions and biodiversity.



ABOVE:
Pomegranates growing in the heat island of the gardeners' compound.

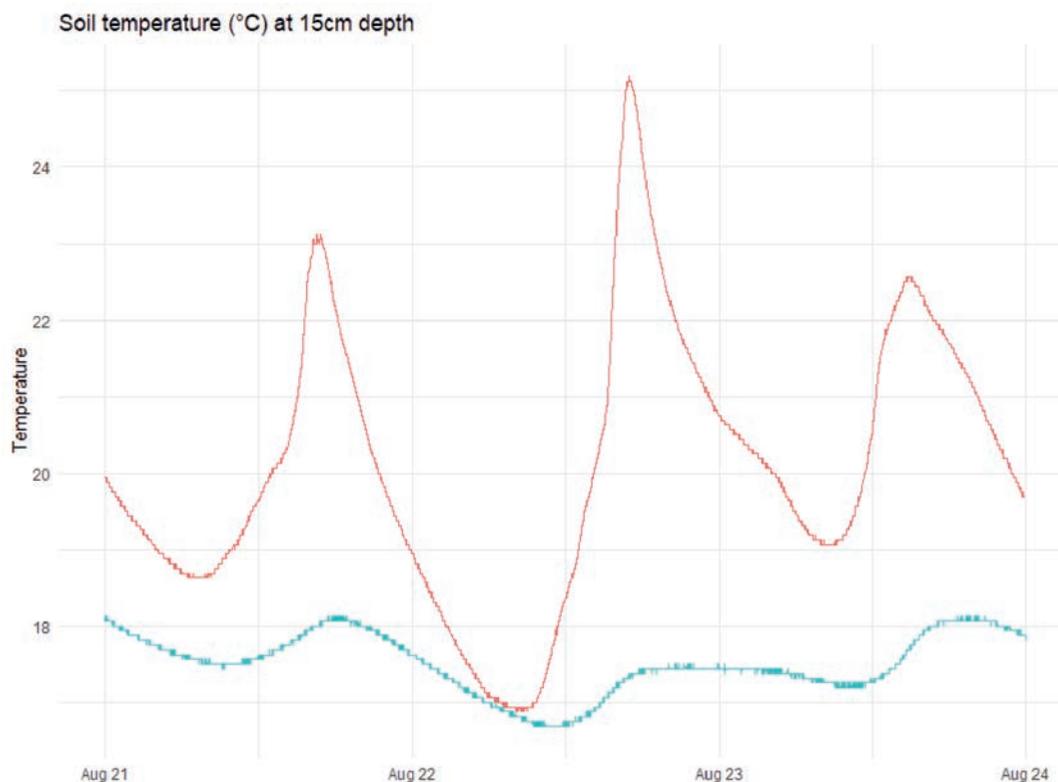
BELOW:

Soil temperature varies across the site, with the sunny courtyard (TOP, red) showing higher temperatures and greater variability than the shaded woodland (BOTTOM, blue).

This research infrastructure is available to Museum staff and external collaborators, so that we can collectively address the challenges facing nature and humanity within our urban environments. Our first in-depth study using the sensor network is aiming to understand the challenges of urban heat at a microhabitat scale.

Heat Islands

Densely populated urban areas, such as central London, experience pronounced urban heat island effects that influence both human comfort and ecological processes (Venter *et al.* 2023). The Museum's gardens provide an opportunity to study these effects, and possible mitigations, using a distributed network of environmental sensors that monitor temperature at micro-habitat scales. As an estimated 59% of species live in soil (including 30% of arthropods; Anthony *et al.* 2023), understanding the thermal complexity of urban environments is crucial to developing a comprehensive understanding of urban ecosystems.

**Integration**

The Urban Research Station concept represents the synthesis of multiple scientific, educational, and community engagement initiatives within the Museum gardens. Integrating data from visual observations, eDNA, acoustic monitoring, and environmental sensors allows researchers to study biodiversity, abiotic conditions, and ecological processes across temporal and spatial scales.

The resulting datasets feed into the NHM's Data Ecosystem, a digital platform designed to facilitate storage and analysis of these diverse data types. By linking data across disciplines, this system supports not only Museum researchers but also external collaborators who wish to use the gardens as a model urban study site.

An engaging urban centre

The integration of research, education, and technology transforms the NHM gardens into an exemplar of how cultural institutions can contribute to urban biodiversity and environmental research. We are working towards making the methods and technologies more widely available through the Data Ecosystem, initially through work with existing collaborators and those with a closely aligned mission to our own.

The goal of the Museum is to create empowered advocates for the planet, and to do so we need to engage the public with our research. The Urban Research Station concept allows us to conduct science in full view of the public, and to understand how people and nature can interact positively in an urban centre.

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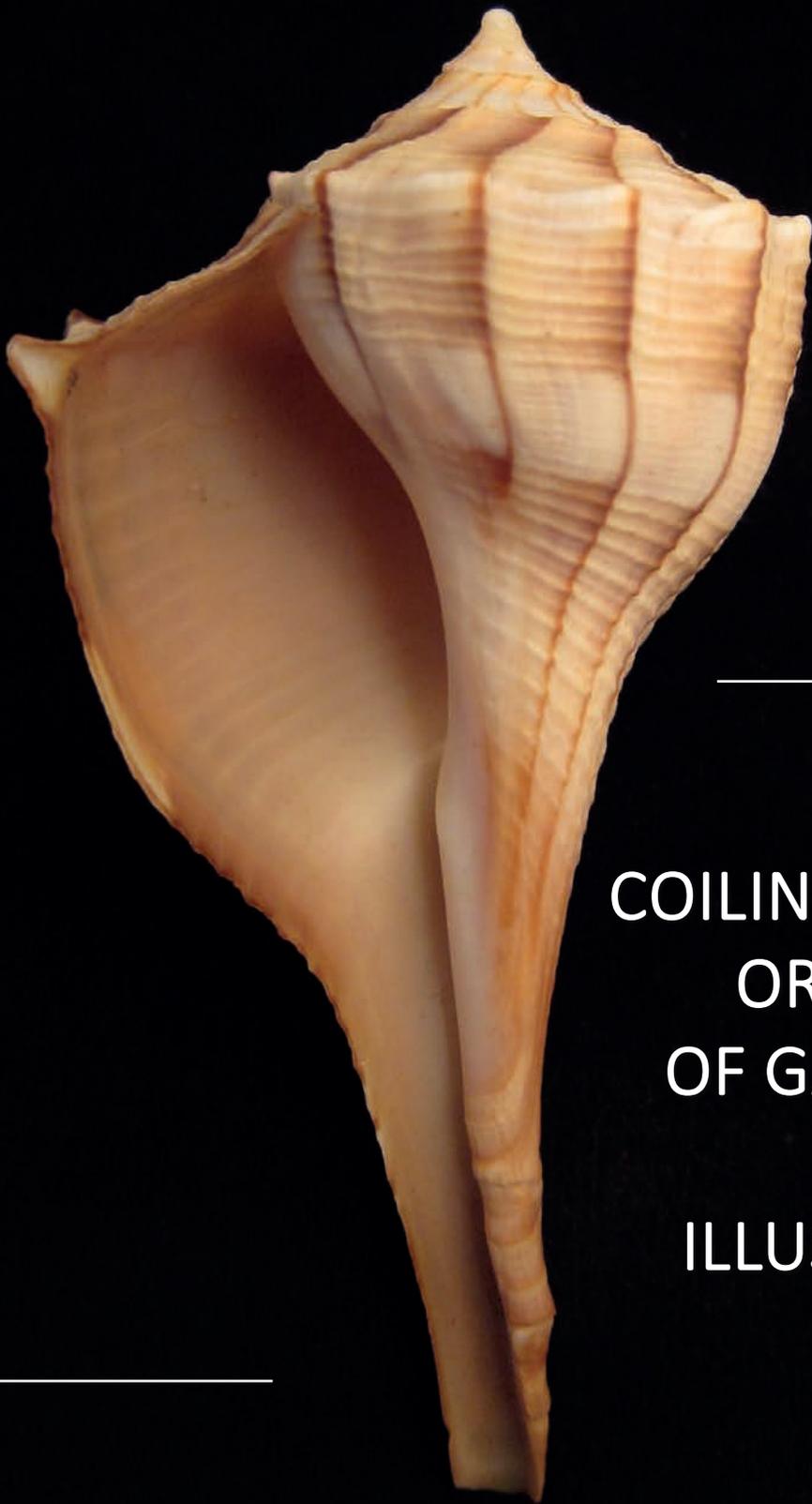
Acknowledgements

Development of the Data Ecosystem is supported by Amazon Web Services. The redevelopment of the Museum gardens was funded through the Natural History Museum's Urban Nature Project, with contributions from the National Lottery Heritage Fund, the Wolfson Foundation, and many other donors (see Baker *et al.* 2025). Research in the gardens is coordinated under the NHM's UK Nature Recovery Research Theme. Thanks to the design teams at Feilden Fowles and J. L. Gibbons for landscape planning, as well as colleagues and volunteers involved in biodiversity monitoring and sensor installation and to Georgia Cowie (Linnean Society) for building and installing sensor 21.

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This Side Up



ON SNAIL
COILING AND THE
ORIENTATION
OF GASTROPOD
SHELLS IN
ILLUSTRATIONS

by Moshe Erlendur Okon FLS

Many of us have held a snail (Class: Gastropoda) at one time or another. Whether picking up an empty one on the beach, buying a pretty specimen in a curiosity shop, or even handling a live critter in our garden, we marvelled at its shape and colours. Perhaps we took pictures of it and posted them somewhere, and if we are especially artistic, we may have even sketched or painted it. But is there a ‘proper’ way to illustrate snails? Moshe Erlendur Okon FLS takes a look at the changing history of gastropod shells in illustration.

Left, right and centre

Snails, the largest group of molluscs, are not symmetrical. Almost all of them grow by coiling around an imaginary axis (a term known as *translation*), and when viewed from the apex, the coiling is predominantly dextral, meaning that these shells coil clockwise and are ‘right-handed’ (their aperture, or opening, is on the right side when viewed apex up). A few species of snails are naturally sinistral, meaning that these shells coil counterclockwise and are ‘left-handed’ (their aperture is on the left) (Schilthuizen and Davison 2005).

When the shell (dextral or sinistral) translates along the coiling axis towards the anterior part of the animal, the mollusc is termed orthostrophic. This is the most common condition, and if you look at your ubiquitous garden snail crawling away from you, you will see that the outermost edge of the shell’s aperture will be closest to the animal’s head. There are also hyperstrophic gastropods, such as the genus *Limacina*, in which the shell grows towards the posterior part of the animal. And once there were even isostrophic ones, in which there was no translation along the growing axis and the growth was truly logarithmic (as is the case with the *Nautilus* (Class: Cephalopoda)). If the shell changes its direction of translation at some point during its growth, the mollusc is termed heterostrophic, as in the family Architectonicidae (Grebneff 2005).

In unique cases, individuals of normally dextral shells can be sinistral, a phenomenon known as ‘reverse coiling’. A famous example is the revered Indian chank *Turbinella pyrum*, rare sinistral specimens of which are eagerly sought after and command very high prices. Other gastropods appear in both forms in more or less even numbers, such as certain *Amphidromus* snails (Davison 2016).

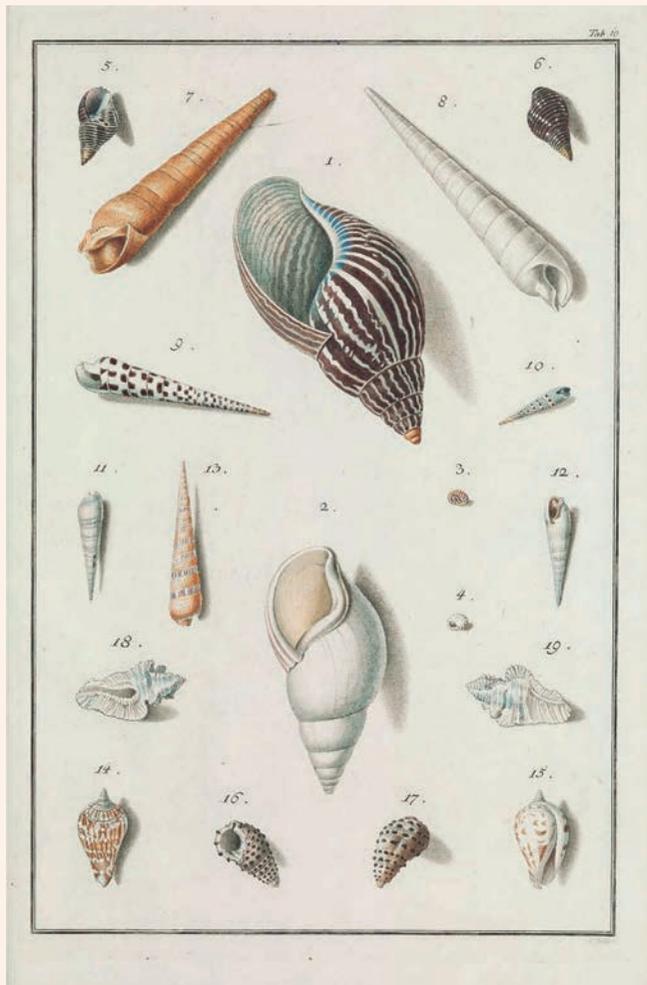
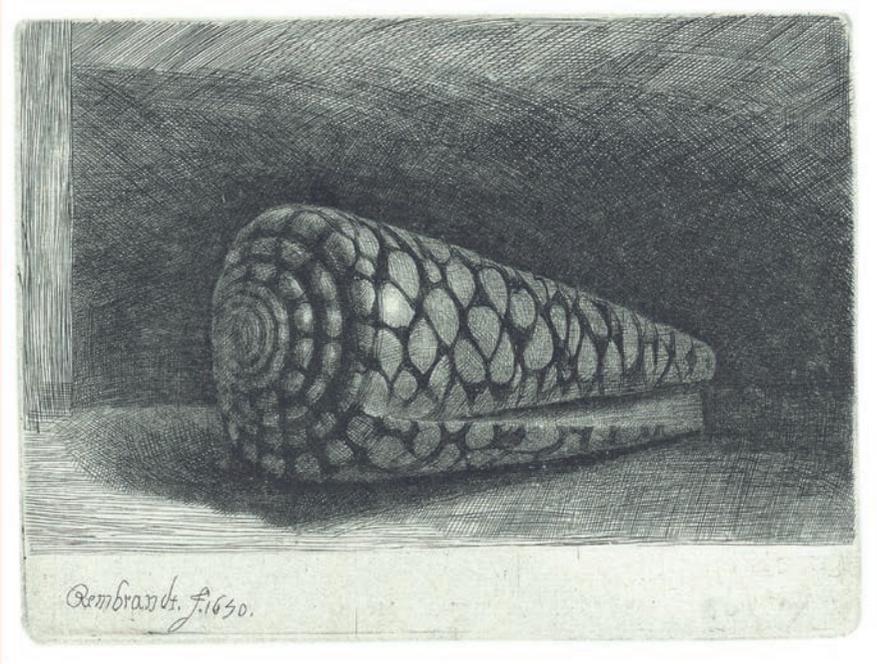


A short history of gastropod illustration

Prior to the Linnaean era, little attention was paid to the correct orientation of asymmetrical animals (e.g. certain crabs as well as snails) (Gould 1995). Printers did not usually bother to reverse the illustrations given to them, so that the prints would display properly (Allmon 2007). An example of a famous reversed image—although not a true reversed snail—is Rembrandt’s ‘Het schelpje’, which is a 1650 print from an etching of the marble cone shell, in which the shell appears to be sinistral, but is actually dextral. Rembrandt added his signature and the date in reverse, so they print correctly.

OPPOSITE: Ventral view of naturally sinistral *Sinistrofulgur sinistrum* (Hollister 1958) 85 mm.

BELOW: Apical view the same specimen.



Should strophy determine the manner in which empty shells are illustrated? As the apex usually points towards the posterior part of the animal, must shells not be displayed apex down? When the first shell books were published in the 17th and 18th centuries, there seemed to be no particular rules regarding orientation: some depicted the snails spire up, others spire down and a few with a more or less aesthetic mixture of both, as well as any angle that suited the artist.

Yet if we want the animal's head to be uppermost—as with portraits of humans—then having the spire pointing downwards makes the most sense, even when only the empty shell is illustrated. This was indeed a common practice throughout the 18th century, termed 'the French method', but in the 19th century the apex-up orientation was becoming increasingly popular (Dance 1999).

The reason for this shift was probably that we are used to seeing mountains, as well as man-made structures, such as pyramids, pagodas, churches, etc., with their 'apices' pointing upward, and gastropods are reminiscent of these with their triangular shapes. Another potential influence may be rise in popularity of Christmas trees, which began appearing in Europe in the 1830s.



More than just a shell

By the 20th century, the illustration of downward pointing spires became less common, although the practice could still be seen here and there in the early part of the century. The universal approach nowadays to portraying gastropods in shell books, publications and on the internet (for iconographic and identification purposes) is with the apex pointing upwards (excluding certain very flat shells, such as the family Haliotidae).

Let us bear in mind, the shell is the exoskeleton of an animal. We often tend to view it more as an object, even a commodity, rather than part of a living creature. No one is likely to see a perfectly clean snail in nature, on a black background, apex pointing upwards and its aperture empty, facing forward. However, the entire mollusc can be just as beautiful and inspiring, perhaps ever more so, than its empty shell.

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OPPOSITE (CLOCKWISE FROM TOP LEFT):

Rembrandt's cone shell etching (appears to be sinistral due to the artist not reversing the etching); *Conus marmoreus* Linnaeus, 1758, 64 mm (a dextral shell from Linnaeus's collection at the Linnean Society); Hand-coloured Table 10 from the 1780 *Testacea Musei Cæsarei Vindobonensis* by Ignaz Born *et al.* showing a mixture of orientations; Plate 3 from the 1870 *Atlas Études sur le Mollusques Terrestres et Fluviales* by P. Fischer and H. Cross, illustrating *Euglandina* land shells in 'the French method'.

LEFT: A female *Diminovula culmen* (C. N. Cate, 1973) ±10 mm. laying eggs. Her colourful papillated mantle and foot can be seen, as well as the tentacles and siphon.

A Great Heart and a Lofty Mind

FINDING ETHEL SARGANT FLS
IN ARCHIVES AND MUSIC

by Helen Arney

The pioneering botanist, who became the first woman to sit on the Council of the Linnean Society, is inspiring a new musical called ‘The Cambridge First All-Ladies Fire Brigade’. Helen Arney looks into her life, her work and what makes Ethel Sargant such a great subject in song.

As a writer I often get asked ‘Where do you get your ideas?’, and the answer will always be...archives. Archives led me to the all-female Fire Brigade of Girton College, founded in the late 1870s by science student Hertha Marks-Ayrton (1854–1923) during her time at the University of Cambridge’s first women-only college. Since 2023 I’ve been turning this real-life story into a musical with writer Brian Mackenwells and composer Jenni Pinnock. Our narrative takes five of the earliest women to study science at Girton and follows their journey from young, earnest students to confident, accomplished women: physicist Ayrton, mathematician Charlotte Angas Scott, astronomer Annie Maunder née Russell, chemist Ida Freund and botanist Ethel Sargant. Initially they form the Fire Brigade to protect themselves from harm but soon realise they have bigger fires to fight in the battle for equal rights: to receive a degree, to work as scientists and, eventually, to gain the vote.

One of the hardest parts of writing a show based on real people is creating versions of each character that feel genuine and human, not just walking, talking biographies of their lives. How can we ask anyone to spend their evening at a theatre watching our show, if they can get the same experience from staying at home and scanning Wikipedia? Our answer has been to seek out as much source material as we can get our hands on and use that to feed our creative process.

Since we started writing, Ethel is the character that has evolved the most. I hope I can share some of that journey here, as we pass beyond the neat biographies and tidy obituaries, and into the stashed-away archives that are helping us bring Ethel to life on stage in all her authentic, multi-layered glory.

OPPOSITE: The Girton College Fire Brigade, pictured in 1901, over 20 years after it was first established. Ethel Sargant was part of the 1881 intake.

BELOW: An early performance at Birmingham Hippodrome, featuring (FROM LEFT TO RIGHT) Elexi Walker as Annie Russell Maunder, Maddison Bulleyment as Hertha Marks Ayrton and Rosie Coles as Ethel Sargant.



Images: Fire Brigade courtesy of the Mistress and Fellows, Girton College, Cambridge; Birmingham Hippodrome/Danny Kaan

Images: Sargent drawing by permission of Amgueddfa Cymru—Museum Wales; The Linnean Society of London

RIGHT: Ethel Sargent, portrait drawn by F. E. Jackson. Ethel complained that her 'sense of humour was left out' but still bought an extra 13 copies for nine guineas.

BELOW: Ethel's Form of Recommendation for Fellowship of the Linnean Society in 1904. Note the amendment of 'he' to 'she'.

Who was Ethel Sargent?

Our first stop on the trail was the Linnean Society, for Ethel's entry in the Fellow's database and a two-page obituary published in the Society's 1918 *Proceedings*.

Described as 'gifted and distinguished', Ethel was born in 1863 as the third daughter of barrister Henry Sargent. The Sargants were a comfortably rich, well-connected family that counted judges, headmasters and artists amongst Ethel's siblings. After being educated at a progressive school in London she went on to study Natural Sciences at Girton. Ethel worked briefly at the Jodrell Laboratory at the Royal Botanic Gardens, Kew, under D. H. Scott, but for the most part family ties kept her at home in Reigate, caring for her mother and sister for much of her working life. This was no barrier to her botanical research, however, as she created what would be the affectionately monikered 'Jodrell Junior' lab in her mother's garden. Here she studied the anatomy of seedlings and the ancestry of angiosperms before putting forward her influential 'A Theory of the Origin of Monocotyledons' (Sargent 1903).



The following year she was one of the first women elected as Fellows of the Linnean Society, then in 1906 became the first woman elected to its Council. In 1913 she was made President of Section K (Botany) of the British Association for the Advancement of Science, the first woman to be made Section President in any field. Despite ill health in her final years, she was elected President of the Federation of University Women, and as World War I began Ethel worked tirelessly to set up a national register of women qualified to do work of national importance. Her obituary ends by saying that 'her genial personality was appreciated by all who knew her, and her great heart and lofty mind inspired the closest affection'.

Ethel, the 'quiet good' worker

So far, so pioneering. All of this was a great jumping off point for Ethel's character, but we needed to uncover more. Amongst the hundreds of letters in the Linnean Society archive from the early 1900s, one stood out for mentioning Ethel by name. Writing at a time when the Society was only just beginning to consider women as Fellows, the naturalist—and Hertha's cousin—Marcus Hartog (1851–1924) wrote that:

The Society rather *refuses* help in not opening its gates to such workers as Eleanor Ormerod and Ethel Sargent. (Hartog 1900)

Compromised.

FORM OF RECOMMENDATION
FOR A FELLOW OF THE LINNEAN SOCIETY OF LONDON.

(Miss) Ethel Sargent.
Quarry Hill, Reigate.

is a ~~gentleman~~ attached to the study of Natural History, especially Botany

being desirous of becoming a Fellow of the LINNEAN SOCIETY OF LONDON, we, whose names are undersigned, beg leave to recommend ~~him~~ ^{her} to that Honour.

D. H. Scott
Reginald W. Phillips
F. W. Oliver
P. G. Raven
P. G. Raven
M. Farmer

This recommendation must be signed by Three or more Fellows.

N.B.—The Christian name of the Candidate must be stated at length, as well as ~~his~~ ^{her} Residence, and any special qualifications he may possess.

This Certificate was read at a General Meeting of the Society, on the 17 day of Nov 1904

The Ballot will take place on the 15 day of Dec 1904

He describes them both as ‘such quiet good workers’, in comparison to the ‘crazy idiot’ known as ‘Mrs F’. This is a reference to Mrs Marian Farquharson, the widowed naturalist who spent years lobbying the Linnean Society, amongst others, to extend Fellowship to women. Her efforts may have caused friction within the Society but they also paved the way for first women Fellows. Unfortunately, her forceful campaign caused Marian herself to be blackballed at the first vote to elect women Fellows, while Ethel and 14 others were duly elected in the same ballot. The Society still holds Ethel’s original application form from November 1904. Six other Fellows signed and supported her application when only three were required, and the pre-printed words ‘gentleman’, ‘he’ and ‘him’ have been neatly crossed out and replaced with ‘lady’, ‘she’ and ‘her’.

BELOW: The first year students at Girton College in 1881. Ethel, who would have been about 18, can be seen sitting on the left, at the start of the second row.

Ethel the student

So, what is our image of Ethel so far? Privileged, pioneering, ‘quiet good’. And perhaps...a little pedantic? Our show is set in the 1880s when Ethel was in her late teens, decades before she became ‘Miss Sargant, FLS’. We needed to know more about her student days.



We began to dig into Girton College’s archives, but none of Ethel’s student correspondence seems to have survived. Instead, we searched the annual review of the College’s clubs and societies for nuggets of character gold, and we found some! Ethel was a member of the Girton College Debating Society, and in 1883 it was her chance to pick the topic:



The debate was held on Wednesday, May 2nd.
E. Sargant proposed that
'Early Rising is a pernicious and degrading practice.'
K. Birrell opposed. Ayes, 14; Noes, 24. (Anon. 1883)

Suddenly, Ethel is brought to life! Glittering with good humour, this member of the anti-mornings brigade was prepared to defend her beliefs in a public forum—despite being voted down 2–1. This little corner of Girton history gave us something authentic to play with on stage. Our script for the show now includes that debate title as Ethel's excuse for missing her first early morning lecture in Advanced Calculus, bringing the same humour to our audience that Ethel must have brought to her friends.

Girton Archives also revealed that Ethel was elected as a Captain of the Fire Brigade, but only briefly (perhaps the early morning fire drills proved too 'pernicious'...?) and alongside hosting late night lemon squash parties founded the 'Bookworm Society' with fellow student Charlotte Angas Scott. Another of our five main characters, Charlotte was a mathematician who passed the notorious Tripos exams in 1880 in eighth place—the highest of any woman at that time. Despite this achievement, she was denied full recognition by the University because of her gender. A Girton Songbook in the archives reveals that Ethel wrote new words to a traditional melody to tell Charlotte's story, so that Girtonians could celebrate her in song. Will Ethel's lyrical tribute appear in the show? Of course it will!

Ethel the activist

However, just when we thought we had a good grasp on Ethel's character, a visit to The Women's Library collection at LSE changed everything. We found a cutting from the *Cambridge Daily News* dated 25 March 1914 with the following headline:

WOMEN AND TAXES

A Lady Scientist's Protest
'THE ONLY RESOURCE'

Sale of Goods at Girton (Anon. 1914)

Describing how a 50-year-old Ethel had refused to pay the King's taxes, her debt had reached a total of £9 and 18 shillings—around a month's wages for a skilled tradesperson. Perhaps Ethel was not so 'quiet' after all.

It transpired that Ethel had a very clear reason for not paying her dues, which echoed the call to arms of the Suffrage movement: 'NO TAXATION WITHOUT REPRESENTATION!' While

seemingly living a genteel retirement in Girton Village near Cambridge, Ethel was breaking the law in order to make a very public protest. In response, the local Collector of Taxes ran an auction to sell some of Miss Sargent's possessions to settle her debt. Little did he realise that Ethel would turn the auction into a kind of Protest Party, attended by local villagers, Cambridge students and professors, visiting Londoners, and other members of the Tax Resister's League, of which she was also a member.

With an atmosphere more like a festival than a distraintment auction, Ethel gave a grand speech after the sale to explain that a woman's right to vote was the only cause that could make her break her law-abiding tradition of a lifetime. She also expressed frustration at the slow progress being made by peaceful suffrage protests, and the lack of reporting in the press, reported without irony by the *Cambridge Daily News* reporter:

Letters on the subject were rarely published. But when a militant suffragette broke a window in Regent Street the papers were full of it. 'What is left for us who break no man's windows to do?' asked Miss Sargent (*sic*). (Anon. 1914)

Ethel the friend and mentor

Through the Linnean Society we connected with Professor Dianne Edwards, Past President. She is also on Ethel's trail, having studied hundreds of Ethel's letters to her former lab assistant, Agnes Arber, an influential botanist in her own right. Dianne's article in *The Linnean* Special Issue 'The Door Was Opened' revealed a mentorship and friendship between the two women that lasted decades, connected by their passion for science, despite big differences in other views.

The letters, still held at Girton College Archive, reveal that Ethel paid Agnes the same wage as a man in her position, supported her career advancement, and even gifted Agnes lifetime membership of the Linnean as a wedding present. But they disagreed on several subjects, including women's right to vote, which Agnes did not support. In an example of 'agreeing to disagree' that feels quite rare nowadays, Ethel wrote to Agnes about her suffrage activities but never forced her views, or allowed their different opinions to threaten their friendship. Writing to Agnes about her local Suffrage society's campaign at the 1910 General Election, Ethel added this note:

All this last paragraph in a whisper—you needn't hear it unless you choose! (Sargent 1910)

By understanding this aspect of Ethel's personality, we see her leadership amongst women come into focus. From the British Association to the Linnean Society, to the Federation of University Women to her own lab assistants, she used her privilege to champion so many other women throughout her lifetime. Ethel blazed a trail for others to follow, but never once thought to try and pull the ladder up behind her. All this feeds into our character of Ethel Sargent, with her great heart and lofty mind, but also her wicked sense of humour—and her capacity for insubordination when required!

What's next for the musical?

Supported by Birmingham Hippodrome, Lincoln Arts Centre, the British Society for the History of Science and others, we are so excited to bring Ethel and her Girton friends to the stage, shining a light on who these women were and the time they lived in. Our Fire Brigade show will ask each audience member: How far are you prepared to go, to fight for what you believe in?

Our first full theatre production is some way off, but you can watch 15 minutes of the show on our website, read blogs about our main characters and find dates for the concert performances and family workshops that we're planning during 2026 in Lincoln, Cheltenham, Oxfordshire, Cambridge and London.

OPPOSITE: Ethel published several papers on *Lilium martagon*, including work on the formation of the sexual nuclei of the species. From Henry John Elwes' *A monograph of the genus Lilium (1877–1880)*.

RIGHT: (FROM LEFT TO RIGHT) The creative team behind the musical—composer Jenni Pinnock, musician and writer Helen Arney and writer Brian Mackenwell.



If you'd like to join our mailing list, we'd be very happy to keep you updated about the show as it develops! Visit firebrigademusical.com to join, or firebrigademusical.com/fire-brigade-blog to find out even more information about Ethel herself.

Helen Arney (hello@helenarney.com)

Helen Arney is a geek songstress, musical theatre writer and one third of science comedy phenomenon Festival of the Spoken Nerd. One of her favourite gigs last year was at the Linnean Society for Pint of Science.

Acknowledgements

Sincere thanks to Hannah Westall and Jude Brimmer at Girton College, Cambridge, The Women's Library at LSE, and Liz McGow and Will Beharrell at the Linnean Society. Thanks also to Dianne Edwards for her fruitful and knowledgeable conversations.

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Sir Joseph Banks

FRANCIS LEGGATT
CHANTREY'S BUST AT
THE LINNEAN SOCIETY
(1821–1822)



SIR JOSEPH BANKS
(1743–1820)
Botanist, Traveller and benefactor
of the British Museum
By Sir Francis Chantrey, 1822
Loan by the Linnean Society, London

by Jake William Bransgrove

PREVIOUS PAGE: The Linnean Society's Chantrey bust of Sir Joseph Banks, on loan to the British Museum, on display in the Enlightenment Galleries.

BELOW: Sir Francis Leggatt Chantrey by Thomas Phillips, oil on panel (1818). (NPG 86)

Since 1823, the Linnean Society has had in its possession a marble bust of the naturalist Sir Joseph Banks (1743–1820) produced by Francis Leggatt Chantrey (1781–1841). Following Banks's death in 1820, the bust was commissioned by the Society and paid for via subscription within the Fellowship. As the first instance of sculpture within the Society's collections, and accessioned SC/1, it was a fitting a tribute to Banks's pivotal role in enabling Sir James Edward Smith (1759–1828) to purchase the library and specimens of Carl Linnaeus in 1784.

Amongst the more than 100 likenesses produced of Banks during his lifetime and in the immediate aftermath of his death, few were executed as portraits in sculpture. Yet, Banks was depicted by some of the period's great artists working in the medium, including Anne Seymour Damer, George Garrard, Peter Turnerelli, Joseph Nollekens and Francis Leggatt Chantrey.

Chantrey was the premier portrait sculptor of the age. The recognised successor to Nollekens, he dominated the market for busts and statues of public figures throughout the early decades of the 19th century. A list of his subjects features luminaries in the sciences, arts, politics and industry. In depicting Banks, he captured the likeness of a public man who had commanded all of these domains.



Images: (Previous page) The Linnean Society of London; (This page) National Portrait Gallery

Of the several likenesses known to have been sculpted of Banks, seven were by Chantrey. These include the plaster of the first bust, commissioned in 1814 by William Alexander, Keeper of Prints and Drawings at the British Museum; the finished marble (1818–1819), gifted to the Royal Society; busts for the collector George Watson Taylor (1818–1820), Banks's kinsman James Hamilton Stanhope (1821–1822), the Linnean Society (1821–1822) and George Wyndham, 3rd Earl of Egremont (1837–1839). Finally, there is the full-length statue (1821–1827) in the Natural History Museum (NHM) in South Kensington, originally in the entrance hall of the British Museum, where it stood until 1881 (Yarrington *et al.* 1994).

Each of these sculptures represents a material link, personal or institutional, between Banks and those commissioning a sculpted likeness of him from Chantrey. Such is the case with the Linnean Society bust—currently on long-term loan to the British Museum and placed in the Enlightenment Galleries—which stands as a sign of his involvement in its foundation and early success.

Original patron

Banks had famously enabled Smith's purchase of the library and specimens of Carl Linnaeus while the two were breakfasting at the former's home, 32 Soho Square. Having been offered the collection for 1,000 guineas, Banks was inclined to refuse the opportunity. 'It happened', Smith recounted in his memoirs, 'that I breakfasted with Sir Joseph upon the day the letter



arrived [offering the collections for sale], which was the 23rd of December, 1783; and he told me of the offer he had, saying he should decline it; and, handing me the letter to read, advised me strongly to make the purchase, as a thing suitable to my taste, and which would do me honour' (Smith 1832). Smith duly proceeded to do so, and by the end of October 1784, his treasures had arrived at the custom house in London.

After Banks's death, the Linnean Society had issued letters to its Fellowship outlining the scheme for commissioning a bust from Chantrey, and its financing via a subscription. In doing so, it stressed Banks's identity as an early patron and enthusiast. As Alexander MacLeay, Secretary for the Society, informed those Fellows who had not subscribed by August 1821:

Some members of the Linnean Society, being anxious that the Society should shew [*sic*] some mark of respect for the Memory of the late Right Hono[u]rable Sir Joseph Banks, its original Patron, and liberal friend and benefactor, they have convened a subscription to defray the expense of a marble bust by Mr Chantrey to be placed in the Society's Meeting Room[.] (MacLeay 1821)

ABOVE: A closer look shows something of the liquidity and movement of the 'skin' and 'drapery' in Chantrey's busts of both Banks (LEFT) and the Society's founder, Sir James Edward Smith (RIGHT).



ABOVE: Thomas Phillips's portrait of Banks at the Society (c. 1809–1810).

The bust was ordered by Charles Stokes—a stockbroker, collector and Fellow—on behalf of the Society in 1822 and was modelled on that at the Royal Society. Stokes's hand in the commission probably followed his position as an active member, and later vice-president, of the Geological Society, of which Chantrey had been elected a Fellow in 1814. He was also a close friend of the sculptor.

In order to allow as many Fellows as possible to contribute, the subscription was limited to £1. On a second circulation of the request, a further 21 of the remaining 76 Fellows paid. By 22 May 1821, £146 had been raised, and Stokes proceeded with the order the same day. Chantrey was paid a standard rate of 120 guineas on 7 January 1823 for the executed bust.

Ties that bind

The Linnean Society bust is, excepting the placement of drapery, an exact copy of the Royal Society's. Their shared 'clothed' aspect, which differentiates them from the 'unclothed' busts commissioned by individuals, may even be a mark of the recognisably public characters of the learned societies. In both instances, the sculptor has depicted the fleshy, liquid quality which his medium was so well-suited to capturing, repeating this in his bust of Smith, ordered by the Society in 1825 for similar reasons. These busts retain the gravitas necessary in works which evoke the public-spiritedness of the Graeco-Roman example motivating men of Banks's and Smith's mould. Like Thomas Phillips's portrait of Banks that hangs in the Society Library (dating to c. 1809–1810 and a copy of the original in the State Library of New South Wales, Sydney), it materialises links between the man and the institution whose foundation he supported. For Fellows, benefactors, and those engaging with the Linnean Society today, such objects provide a path to understandings its early roots, and to the individuals who enabled it to grow.

Jake William Bransgrove (jwb70@cam.ac.uk)

PhD Candidate in History, University of Cambridge, UK

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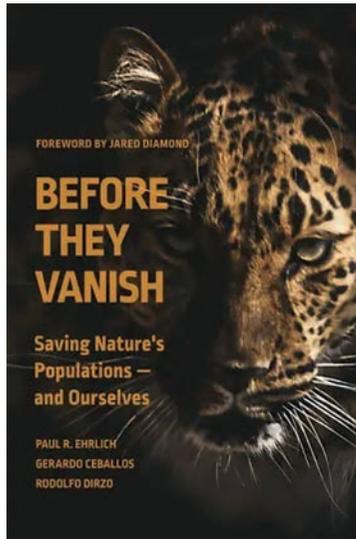
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Reviews

Before they Vanish: Saving Nature's Populations —and Ourselves

Paul R. Ehrlich, Gerardo Caballos and Rodolfo Dirzo

348 pp, Johns Hopkins University Press
2024 (Hardback)
ISBN 9781421449692
Col. Illust. \$29.95 (US)



An inclusive, eye-opening book that is a call to all biologists to act before it is too late.

This book is by three distinguished scientists from different disciplines, whose scientific data has led them to be deeply concerned about the current environmental situation, and the continual loss of the species they study. Although the book gives many examples of species extinction, the emphasis here is on population viability. It is an alert to concentrate more on maintaining viable population levels before it is too late, rather than on species with such small numbers of individuals that they are unlikely to survive.

Throughout the book, and as the title implies, there is an emphasis on the dependence of humanity on the numerous other species that maintain our biosphere and our livelihood. Since the authors are an entomologist, a mammalian specialist and a vegetation ecologist, the coverage is broad and inclusive, with chapters about the situation in mammals, other vertebrates, birds, invertebrates, plants and importantly, microbes. While the main message here is about population loss of many different organisms, there is much fascinating information of interest to any biologist, such as complex ecological interactions between the monarch butterflies and the parasitic tachinid flies, or on the evolution of land snails in Hawaii. After the examples from this wide range of organisms, two chapters follow on defaunation and on the drivers of extinction. Population and climate change

feature here, but the authors are not afraid to comment on the need for determined efforts to limit the per capita consumption among the rich. If this is done while increasing consumption among the poor, it could have a more rapid effect than shrinking the human population by limiting birth. Some of the other causes of environmental damage discussed here are land-use change, overexploitation and overharvesting, invasive alien species, plastic pollution and toxification.

The authors are not afraid to comment on the need for determined efforts to limit the per capita consumption among the rich.

A well-written, informative and up-to-date book on the extinction was much needed today. While this book may be depressing and eye-opening to read about so many examples of lost species, there is a positive message—it is still not too late to save many species, and indeed ourselves. A long chapter towards the end is devoted to the cures. No real surprises there, but I am glad to see the importance of the role of indigenous peoples recognised. The section on citizen science should be of interest to members of Linnean Society. This is a book with a strong call for urgent action by all conservation biologists as this quote stresses: 'If we and other conservation biologists are not frank, forceful, and extreme in our defence of biodiversity, including humanity, how can we expect civil society to take the needed cures "bitter" as they may be?'

This is a good read, but it is vitally important that one does not just put this book on the shelf and forget its message. It is a call to all of us biologists to act before it is too late for the species we love and for the survival of humanity.

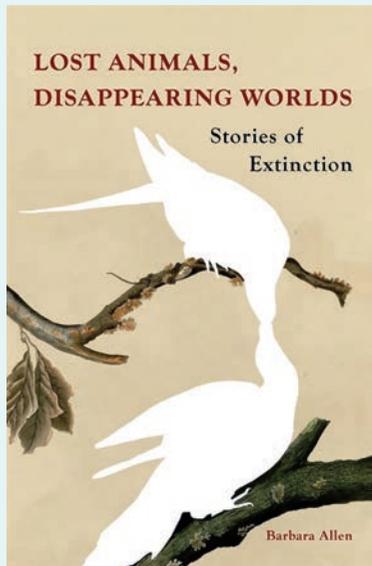
Sir Ghilleen Prance PPLS

Lost Animals, Disappearing Worlds: Stories of Extinction

Barbara Allen

248 pp, Reaktion Books
2025 (Paperback)
ISBN 9781836390459
Col. illust. £20

A moving work told via an unusual convention—each species in the first person—that really brings home the fragility of life on Earth.



I've never been keen on novels. Creating spurious emotions from words contrived to evoke a response through some made-up tale...there was always so much to engage the mind in the real world, and Barbara Allen's timely book will surely stir the hardest heart.

In personalised prose, she reminds us of the demise of the Dodo (which has had more written about it than any other extinct species), the last Heath Hen strutting off into the distance on Martha's Vineyard, and the Passenger Pigeon, great clouds of which once darkened the American skies. And she enlightens us on the fate of the Eskimo Curlew, the Tecopa Pupfish, and the beautiful Carolina Parakeet. Humans have an unequalled record for the destruction of their fellow inhabitants of this fragile world, and this book retells stories that we all need to know in a vivid and captivating style.

What makes these engrossing accounts unique is that each is told in the first person: we learn of the rise and fall of each creature as if related to us by the final survivor, a brave individual relating the story of the entire species like some respected elder of the tribe. It is a curious convention, and it is easy to imagine some commissioning editor shaking their head at such an improbable approach. Yet it works.

The politics of the Tarpan and Auroch, the desperate loneliness of the final Thylacine, the wanton extermination of the Golden Toad...these are stories meticulously retold with naïve simplicity. To read of the last moments of the Great Auk, beaten to death so its corpse could be sold to a collector, and compare it with the demise of the only surviving Yangtze

River Dolphin—so revered in life it was afforded a formal, nationally broadcast funeral—and all in Allen's idiosyncratic style, surely cannot fail to move you.

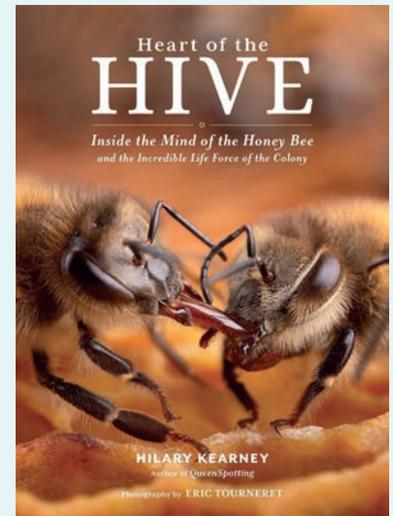
Or, if it doesn't, perhaps it's best to go back to those novels.

Brian J. Ford Hon FLS

The Heart of the Hive: Inside the Mind of the Honey Bee and the Incredible Life Force of the Colony

Hilary Kearney

192 pp, Storey Publishing
2024 (Hardback)
ISBN 9781635864830
Col./bw illust. \$28 (US)



A genuinely enlightening and informative book about bee biology and behaviour by an expert beekeeper and 'swarm-catcher'.

A bee keeper who cares for 90 hives in San Diego, California, Hilary Kearney has a rare insight into individual colonies, as well as honey bee behaviour beyond the hive. Her experience is evident throughout, and she additionally recounts experiments that have studied particular aspects of honey bee behaviour. Interspersed with her descriptions there is often personal or anecdotal material which to some might initially seem trivial and out of place. Here I would disagree—I think it reinforces the author's understanding of her subject with an injection of humour.

The Heart of the Hive is packed with information, the main themes being: Life as a superorganism; Busy as a bee; What bees like; The Bees' Knees; Life as a bee; Buzzwords; Drama Queens; What bees don't like; and Universal bee. It is then rounded out with a useful bibliography, acknowledgements and an index. Line drawings and coloured photographs are excellent, clear and informative, with the latter taken by world-renowned bee photographer Eric Tourneret.

Beekeepers often describe individual colonies acting as a single organism, with each individual bee exhibiting unique

traits and temperament, contributing to the success or failure of the colony. Of particular note are pages 82–90 that examine the brain and sensory capabilities of bees. It is estimated that the size of the honey bee brain is about the same as a sesame seed, stretched between its two large compound eyes—about 20,000 times smaller than the human brain. However, despite its size, the honey bee’s brain is estimated to be about 10 times denser than the typical mammalian brain, with around one million neurons packed into it. Honey bees can recognise human faces with enough detail to differentiate between them. They are also ‘red colour blind’, seeing it as black, but they can see yellow, green and ultraviolet and combinations therein.

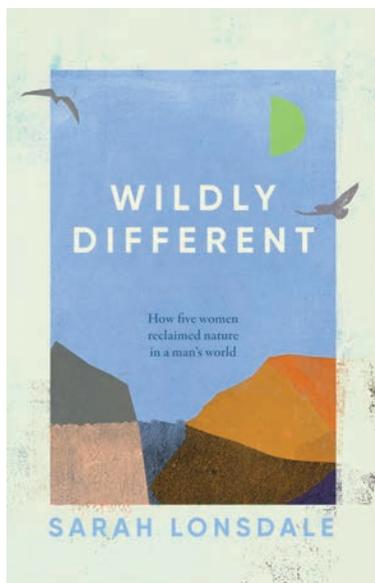
Kearney has clearly written this book to educate, and to convey and evoke a genuine interest in these fascinating organisms. It is well worth the price.

Stephen Hoskins FLS

Wildly Different: How Five Women Reclaimed Nature in a Man’s World

Sarah Lonsdale

296 pp, Manchester
University Press
2025 (Hardback)
ISBN 9781526168696
Mono/halftone illustr.
£20



The exciting stories of five women from various backgrounds reclaiming their space in wild nature, exposing the hardships they faced, and celebrating the joy in their achievements.

Sarah Lonsdale has combed through archives to reveal the stories of five women from various backgrounds to expose the hardships they faced—and celebrate the joy in their achievements—whilst reclaiming their space in wild nature.

Fieldwork is one of the things many non-naturalists find the most exciting and even romantic about the study of natural history. It is also something that draws people to

become natural historians, the opportunity to be outside, in nature, has been the impetus for many a career in science. In this intriguing book, Sarah Lonsdale looks at the stories of five women for whom the call of the wild was strong, but all of whom encountered obstacles to pursuing their dreams. These are not the usual characters one reads about, Lonsdale has done a wonderful thing in bringing some new names to the story of women who have achieved despite barriers thrown in their way. Each of the five is different and has a distinct extraordinary achievement: Mina Hubbard (née Benson) crossed northern Labrador in 1905, mapping the route her husband had died trying to complete; Evelyn Cheesman collected plants and insects across the 1920s to 1950s, especially in the Pacific, that formed the basis for new understandings, all while being an unpaid volunteer; Dorothy Pilley fought hard to ascend high peaks and mapped the ‘park of a thousand peaks’, Glacier National Park that straddles the border of the USA and Canada; Ethel Haythornthwaite (née Bassett Ward) fought to make the Peak District of Yorkshire an area where people of all kinds could enjoy nature (its designation as England’s first national park in 1951 is testament to her determination); and lastly Wangari Maathai, who endured persecution at the hands of the government of Kenya in her championing of both human and environmental rights, receiving the Nobel Peace Prize in 2004.

Such dedication to the ‘wilds’ entails considerable stamina and perseverance, but all these women also had to face societal barriers and battle against concepts of what was a proper undertaking for a woman as well as the physical aspects of fieldwork. Wangari Maathai was accused of being a ‘disobedient’ woman, journalists and other explorers doubted Mina Hubbard’s account of her travels, and Dorothy Pilley did her first climbs up the walls of her boarding school. Despite what we might think about the relaxation of gender-specific expectations, the experiences of the women in Lonsdale’s book show that we have not really come as far as we think.

But this book is not all about barriers and difficulties—it also details and celebrates the joy with which all these women pursued their dreams, whether for retracing a lost husband’s steps, climbing seemingly impossible peaks, understanding the fauna of far-flung places, opening up the countryside for all or planting trees to both empower others and reforest a ravaged land. These women’s stories show that nature is really for all of us and that we experience and explore it in many ways.

Lonsdale has carefully researched her subjects, through unpublished diaries and many conversations with relatives and friends, the result is a warm and entrancing set of stories that are based on real life experiences. There are several other books about women in the field, this one differs in focus



in the sheer breadth and variety of fieldwork experience each the five protagonists undertook. I loved the fact that in a single book I could read about an explorer, a climber, a collector, a champion of the right to roam and an advocate for both nature and people. Life immersed in nature is as different as the people who live it.

At times the narrative is a little confusing, as Lonsdale weaves the stories together across decades and continents, but that only serves to bring the commonality of challenge these women experienced to the fore. That they all overlapped—not altogether but in a kind of sequence—reveals how women have been involved in fieldwork and in the field across the ages. Although many of the great tales of adventure, from Gilgamesh to Thoreau, have intrepid men as protagonists, recent research is showing how assumptions of women's roles have contributed to misunderstanding and misrepresentation. Today we might cringe at the statement by George Curzon in 1893 that: 'We contest in toto the general capability of women to contribute to scientific knowledge ... their sex and training render them equally unfitted for exploration.' But the leaky pipeline still exists for today's female scientists, even for natural historians.

This readable and fascinating book brings new women into the story of female achievement, and subtly and carefully shows that challenges have not entirely disappeared. If anything, they have become different, safeguarding in fieldwork and gender equity in experience have both become topics for grant proposals for today's explorers. Each one of us brings something different and unique to the experience of the natural world, there is no one personality or type of person who can advocate for nature – we all should. It is ironic that we depict nature as female—Mother Nature—but that women like the ones in this book had to fight so hard for a place in wild nature. Their stories deserved to be told.

Sandra Knapp PPLS

Books for Review

Please contact the Editor before sending books for review (leonie@linnean.org).

Books for review should be sent to the attention of the Editor at:

Burlington House, Piccadilly, London W1J 0BF

Please note: While the Society aims to review as many books as possible, a review is not guaranteed, and is dependent on finding a reviewer and the decisions of the Editor and Linnean Steering Group.

Members

Please join us in welcoming the following new members to the Society (elected Sept–Dec 2025):

FELLOWS

Mr C. K. Arjun
Dr Patrick Ashinze
Dr Sikiru Akeem Babatunde
Associate Professor Debabrat Baishya
Mr Maxwell Barclay
Dr V. Vijaya Baskar
Dr Pranaba Bhattacharrya
Mr William Booth
Prof. Yanis Bouchenak-Khelladi
Dr Paul Brown
Ms Sophie Bufton
Ms Tracey Bush
Mr Manoj Chandran
Dr J. J. Chavan
Mr Michael Cutts
Prof. Andrew Fairbairn
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Lives remembered

Kathie Way
(10 June 1948–6 October 2025)



Friends of Kathleen Way, known to most as ‘Kathie’, will no doubt remember her as an independent spirit and a force of nature. She was tall and statuesque, well-dressed and had a wicked sense of humour.

Born in Llandudno, Wales in 1948 to Peter Davis, a civil servant, and Nancy (known as Rita) Jones, her independent spirit shone through early on. After moving to Surbiton as a young child, then to Worthing, Kathie took up a milk round when she was only 15, working out of the local dairy and finding herself in charge of a milk float drawn by Sylvia, a particularly recalcitrant horse.

At 18, with good ‘A’ levels in English Literature and Zoology behind her, she immediately landed a job at the British

Museum (Natural History) in London—now the Natural History Museum (NHM)—in a very junior role in the Zoology Department. She lived at first in the Museum hostel in South Kensington and relished her newfound freedom. Later she moved to Streatham, and clearly enjoyed London of the swinging sixties, hanging out with the likes of Stan Webb from Chicken Shack and members of Fleetwood Mac. This gave her a lifelong love of British Blues.

With her quick mind and excellent memory, Kathie flourished at the NHM, working in the Mollusca section and becoming an expert on the marine collections. One colleague described her as having Mariana-Trench-depth knowledge, providing a seamless continuum between specimen, label and the user community.

Her career culminated with her role as Senior Curator of Mollusca in the Department of Life Sciences. She was well known for her fierce guardianship of the collections in her care, and her encouragement and mentoring of young curators. Her ‘office’, deep in the collections, was a hub for curators and researchers to meet and put the world to rights, and her section was David Attenborough’s favoured spot for interviews when he had engagements at the NHM. Kathie retired in 2016 after having completed 50 years’ service.

Outside of the NHM, Kathie’s interest and expertise in curation and collections resulted in her role as Membership Secretary for the Society for the History of Natural History (SHNH). She also worked tirelessly for the Biology Curators Group (now NatSCA).

For 22 years, Kathie was also Honorary Curator of Fish, Shells and General Zoology at the Linnean Society. At one point she was responsible for couriering the Linnaean pearl collection across the world (literally handcuffed to them!) when they went on tour for a prestigious exhibition to the USA, Abu Dhabi and Japan, among other places. Kathie herself had a great love for travel.

Privately she maintained a deep connection with the natural world, enjoying bird watching and other outdoor activities throughout her life. She supported charities such as the World Land Trust and volunteered with the Worthing Cat Welfare Trust, often fostering cats for them.

In recent years Kathie suffered from Alzheimer's, but has been supported by a stalwart group of friends—surely a testament to her uncompromising spirit and the deep friendships she built.

by Julia Bruce and Elaine Shaughnessy



ABOVE: Kathie during her time at the Natural History Museum, in the Department of Zoology.

Mathew Frith (15 Sept 1960–12 August 2025)

Mathew Frith was, first and foremost, a champion for nature. Having grown up in South Croydon, London, he grew up full of curiosity in a house abundant with animals and books. His love for nature started early, bringing home caterpillars from the nearby woods and raising them into butterflies. He was even moved to write a book about butterflies and moths at age seven.

Eventually he pursued a degree in Zoology at the University of Exeter in Devon, later working at the London Ecology Unit before being drawn to the London Wildlife Trust's (LWT) Centre for Wildlife Gardening.

Mathew is perhaps best known as being a 'lighthouse' for the London Wildlife Trust (LWT) for several decades. Joining the staff at the LWT in 1990, he was appointed the Warden of Sydenham Hill Wood, which he managed for over five years. Promoted to Conservation Manager in 1996, he went on to secure funding for many large projects like Staggering Gains (Stag Beetle Survey) and Dragonfly Detectives, all of which complemented his dedication to citizen science and biological recording. Around 2000 he moved on to become Urban Advisor to English Nature. Then, from 2002 to 2009 he was Landscape Regeneration Manager at Peabody Trust, but eventually returned to the LWT in 2009 as Deputy CEO, while also serving as Director of Conservation.

We at the Linnean Society were saddened to learn of his passing and many staff remember Mathew as a very kind, supportive and knowledgeable person, who generously gave his time and expertise to our Council between 2019–2022.

Read a full obituary for Mathew on the LWT website:

<https://www.wildlondon.org.uk/blog/mathew-frith-obituary>

Deaths Reported to Council

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