PULSE

The LINNEAN SOCIETY of London

ISSN 1759-8036

ISSUE 32
DECEMBER 2016

NEWS FROM THE LINNEAN SOCIETY OF LONDON – A FORUM FOR NATURAL HISTORY

DUE CREDIT

Acknowledging Artists in Academic Papers

This year, a new archival project has led to the burgeoning development of a catalogue of artwork linked to the Linnean Society's academic papers, with materials spanning over 100 years from the late 18th century. Many of the drawings and sketches, often taxonomically annotated, remain incomplete, as working drafts, or non-assembled botanical plates. However, there are some more complete images, either in pen and ink, or as watercolours. Each piece of artwork uniquely represents a variety of animals and plants, from monkeys to molluscs, and from lichens to the native flora of South African expeditions, amongst many other locations.

Images which have been included in publications can be found in the Society's *Transactions or Proceedings*. Yet often the material has really only been celebrated with regard to a paper's author, with little acknowledgement of the artists involved. This project aims to identify all creators and credit them with the artworks in their own right; distinct from their allied scholarly papers.

The value of a particular collection can shift and refocus over time. Vast audiences have appreciated the output of eminent scholars for centuries, but more recently there has been a desire to study the materials that promote and illuminate a formal work. With botanical and zoological art a thriving field of occupation—having repurposed itself within a modern world—there is a clear appetite for revealing the original artwork held by the Society.

Identifying these artists can be revealing, as they are sometimes conspicuously absent from the references. While the Society can boast original material from microscopist and artist Franz Bauer (1758–1840), Lindley associate Miss Sarah Drake (1803–57), and early plate-work of 20th-century artist Stella Ross-Craig (1906–2006)—all contemporarily celebrated—it has been interesting to examine the unexpected, underrepresented and unknown. Eliza Dorville is one such curiosity. Despite being untrained, her paintings, drawn with a fine hand, are beautifully accomplished. Yet, any reference to her speaks more of her status as the mistress of 19th-century naturalist George Montagu (1753–1815) than of her innate talent. Her watercolours of the tube-forming marine annelid *Amphiro gigantea* (accepted as *Terebella gigantea* Montagu, 1819) considerably enhance Montagu's paper 'Descriptions of five British Species of the Genus *Terebella* of Linné' in the Society's *Transactions* (1818).

Also of intrigue is Charles F. Reiss. Living in the early 19th century he created artwork for his friend, the renowned explorer Robert Schomburgk (1804–65). Tragically, Reiss drowned in 1837, at the young age of 22. What compounds this loss of life is the loss of an obvious budding talent; Reiss's 1834 pen and watercolour drawing of an orchid is neither slick nor bold in line and colour work, yet has a mature confidence, with definite character. Perhaps it demonstrates the natural eye of a gifted individual.

LEFT: Charles Reiss's stunning orchid illustration, drawn for his friend, the renowned explorer Robert Schomburgk.
© The Linnean Society of London

BELOW: Eliza Dorville's illustration of *Amphiro gigantea* (accepted as *Terebella gigantea* Montagu, 1819)
© The Linnean Society of London

The progress of the cataloguing project brings us closer to sharing this unique collection with researchers and the public for the first time. Those who take an interest in subject specific artistry, or aspects of social history where botanical and zoological artists operated within very different social and professional contexts, will have much to be enchanted by.

Layla Fedyk, Archival Volunteer
library@linnean.org

Leafscape
A Botanical Journey

Leafscape is an assemblage of artistic work which examines how we interact with our environment and how it resonates within us. The collection sets out to challenge our sense of scale; its value and how it is measured.

The story of *Leafscape* began 18 months ago when I picked up a *Catalpa* leaf from a London pavement. At the time I felt that the condition of the leaf reflected my own story and those of many others; citybruised and unanchored. I decided to paint it larger than life size so I could carefully document every blemish. I then painted more leaves from a variety of locations and now, months later, these nature portraits form part of a visual story.

Alongside the portraits is a 70 minute soundtrack of environmental sounds which were recorded at each location of collection. From London's East End and the Sussex seaside, to Granada in Spain; each recording is inevitably disorientating yet strangely familiar. These sounds add another dimension to the botanical art; the viewer becomes immersed in the experience.

This album is part of a limited edition book which features a full colour plate of every painting in the collection. There are 30 copies left from the original 500 and these will be for sale at Abbott and Holder during the exhibition. I will also be gifting a dedicated copy to the Linnean Society of London.

ABOVE **Leaf images** © www.inkyleaves.com

Leafscape exhibition:
16–25 February 2017, Abbott and Holder, 30 Museum Street, London, WC1A 1LH (opposite the British Museum).
www.abbottandholder.co.uk

Fellows are very welcome to visit. I will be there all week and it would be fabulous to meet you.

Jess Shepherd, BSc MSc DipSBA FLS
www.inkyleaves.com

ABOVE **Jess Shepherd** Courtesy Jess Shepherd

Josef Frank:
Patterns-Furniture-Painting

LUNCHTIME LECTURE
12:30–13:00 Wednesday 18 January 2017

Welcome 2017 with a visit to the Linnean Society and hear about designer, artist and architect Josef Frank (1885–1967), whose work found inspiration in Carl Linnaeus (1707–78). Widely considered to be one of Sweden's most important 20th-century designers, Frank's vibrant textile designs are synonymous with Swedish Modernism. His collaboration with Estrid Ericson and the Swedish interiors firm Svenskt Tenn introduced bold colour and pattern to mid-century design. Yet both were influenced by Carl Linnaeus and his use of botanical illustrations as interior decoration, adorning his walls with scientific botanical prints. In 1930 Ericson furnished her bedroom with a similar scheme, and Frank frequently used hand-coloured botany engravings as well as popular stylised images of plants as source material. Learn more about their designs at this free Lunchtime Lecture ahead of a major exhibition of Frank's textiles and furniture at the Fashion and Textile Museum from 28 January: *http://www.ftmlondon.org/ftm-exhibitions/josef-frank-patterns-furniture-painting/*

Speaker **Celia Joicey** is Head of the Fashion and Textile Museum London. She began her career in teaching, writing and publishing at The Royal College of Art and The University for the Creative Arts, Farnham and has subsequently worked for the Victoria and Albert Museum, as Editor of the RSA Journal (Royal Society for the encouragement of Arts, Manufactures and Commerce), and the National Portrait Gallery.

ABOVE: 'Miracle' by Josef Frank (late 1920s) © Svenskt Tenn

New Fellows' Portal is Live

For the last few months we have been working non-stop with our web developers to improve the Fellows' Portal on our website. We have included new content and interactive features:

- Find Fellows with similar interests near you
- Start a conversation with other Fellows
- Renew your subscriptions
- Update your interests and change your contact details
- Register for events
- Purchase books and other merchandise
- Take a look at our latest video podcast
- Get access to *PuLSe* and *The Linnean*
- Access the Society's Charter and Byelaws

By now you should have received an invitation email with instruction on how to access. **Please bear in mind that the old usernames and passwords used prior to June 2016 are no longer valid.** We sincerely apologise for having kept you waiting for so long, but we hope you find the improvements worthwhile. Thank you very much for your patience.

ABOVE: upslim 2016, Shutterstock.com

OPENING THE Digital Toolbox

After the success of our first digitisation conference in 2015, the Linnean Society hosted its follow-up event *What should be in your Digital Toolbox?* on 10 October, this time in partnership with the Transcribe Bentham initiative at University College London (UCL). Organised by our Deputy Librarian, Elaine Charwat, and UCL's Dr Louise Seaward, the meeting paid particular attention to the latest technologies in handwritten text recognition (HTR) software. This conference was made possible because of the READ project—a large EU-funded initiative that aims to "revolutionize access to handwritten documents"— to which the Linnean Society has been contributing some of its own manuscripts.

No Longer Working in Binary

The day brought together speakers from the UK and Europe to demonstrate how digital technologies can be used to enhance collections. Usability was a key message. While many institutions are putting their collections online, particularly as images, how can these digital collections be best utilised? How can the information within these collections be extracted? Quoted on the day was Google's Ray Smith: "Neural networks are taking over." It is these neural networks that will extract information from images, and HTR technology will make online collections infinitely more useable.

The keynote speaker, Professor Melissa Terras of UCL, focused on the people-power behind HTR, stressing that while we use computers, it is still people that institutions will rely on to make HTR technology a success. UCL's Transcribe Bentham project was the first of its kind to use crowd-sourcing for a large-scale transcription project and its success has been contagious, with an ever increasing number of institutions exploring crowd-sourcing initiatives.

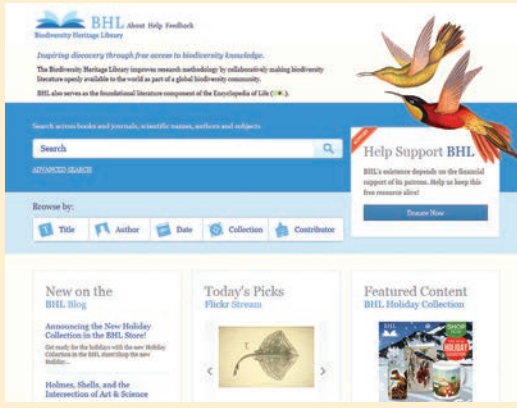
Dr Günter Mühlberger of the University of Innsbruck (and the man behind the READ project) emphasised that archives hold a vast amount of potentially game-changing information that is untouched. It is his work on the development of the HTR software *Transkribus* that will hopefully allow institutions to unlock these interesting archives on a grand scale. Professor Roger Labahn of the University of Rostock showed the complex technology behind neural networks like HTR. He felt that this technology required a new term because unlike optical character recognition (OCR), HTR technology needs to 'see' words in context: we are no longer working in binary.

Both Dr Ulrich Tiedau of UCL and Professor James Loxley of the University of Edinburgh presented the use of semantic text analysis or text mining in order to investigate historical cultural and geographical references. Using text mining technology, they were able to search through sources on a scale that could never have been done in a human lifetime.

Capturing Data and Microtasking

Dr Elspeth Haston of the Royal Botanic Garden Edinburgh demonstrated how they are using *Transkribus* to capture the data on their herbaria sheets—some 3,000,000 of them! Lisa Cardy and Alison Harding of the Natural History Museum, London highlighted the enormity of scale and international collaborative effort for a project like the Biodiversity Heritage Library (BHL), which offers access to over 110,000 titles and 50 million pages from an array of different institutions. They also emphasised the importance of accurate and consistent metadata. Dr Victoria Van Hyning of the University of Oxford is using the Zooniverse platform for a large project called 'Shakespeare's World' where handwritten documents of Shakespeare's contemporaries are being transcribed. They are using a method called microtasking whereby multiple volunteers look at one image or file and complete tasks independently. Their responses are compared and aggregated to reveal a single answer. Microtasking minimises user fatigue by reducing time commitment from users but garnering more volunteer time overall.

Dr Mia Ridge of the British Library delivered a pragmatic take-home message: digitising images is much more than a process of simple reproduction. A lot of work is involved in getting an image to a 'useable' state, having to consider factors like metadata, resolution, platforms, accessibility, and copyright, to name a few. She emphasised that we have to make sure we look at the 'plumbing' of a system to ensure its still useable years from now.



Congratulations to Elaine and Louise for bringing together this wealth of knowledge. In her welcome address, Elaine pointedly thanked the EU, which only leaves one to wonder at what the future holds for the UK and cross-institutional partnerships. There is so much more to be accomplished through collaboration.

Andrea Deneau, Digital Assets Manager
andrea@linnean.org

BELOW:
The groundbreaking Biodiversity Heritage Library offers access to over 110,000 titles and 50 million pages.

BOTTOM LEFT:
HTR software *Transkribus* in action.

BOTTOM RIGHT:
The Wolpertinger, a mythological animal in Bavaria, Germany and the emblem of the READ project.
Credit: WikiCommons

BUSINESS AS USUAL

Another View on Natural Capital

'Prince of Botanists', zoologist and creator of the hierarchical system of nature, Carl Linnaeus brought measurable order to our world. He should have pressed on, applying this vertical arrangement to other fields of study, especially energy and money—the accelerated embrace of which has raised our standard of living while afflicting the environment. How to tackle this contradictory predicament? Enter Natural Capital, a reassuring phrase that works well with our modern economic values, while highlighting our ecological concern. Natural Capital wishes to value the stock (asset), and flow (income) of nature, creating its balance sheet and income statement, putting this information into our national accounts. This apparent use of 'hard' numbers somehow removes it from the 'woolly' realm of sustainability discourse, and magically converts it into one of measurable fact. Veiled in this implicit bargain is placing Natural Capital into the current frame of our economic and monetary system.

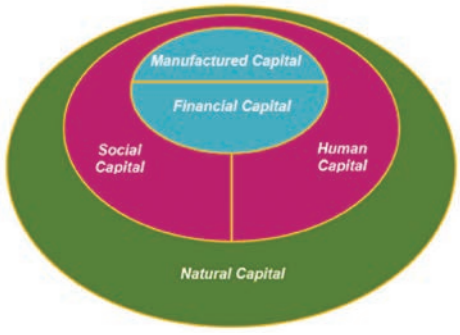


Fig 1

But perhaps some historical context. Natural Capital is resurrecting an old economic idea, one of 'externality'—accounting for hidden costs—but with a new twist, putting nature forward as an asset and its ecosystem services as income (Fig 1). The first to propose accounting for the externality thought process was the English economist Arthur Pigou (1877–1959), who used Adam Smith's formula of land, capital and natural resources, and then subtracted the cost, the externality. This lasted until Simon Kuznets (1901–85), who in the 1930s used J.M. Keynes' work to put forward the ubiquitous gross domestic product (GDP = consumption + investment + govt. spending + net exports); 50 years later along came William Nordhaus (1941–) who adjusted this to (consumption + capital – externality – depreciation of nature).

All of these abstractions are thoughtful approaches, but Natural Capital is not joining such theoretical worlds. Rather, it is entering an economic system with a dominant hierarchical energy and monetary system. The energy system is fossil fuel-centric as we have moved up the caloric density chain (Fig 2). And to this energy base, we have added our current monetary system which adjusts by what we consider global money over the course of the last century. Global money is always at the top of the money hierarchy, followed by national money, followed by all forms of private credit; all of these monies are combined with open or closed capital accounts, and with managed trade, or free trade. With its inception in 1971, the current money system is based on an American-centric global collateral (the US Treasury) and is best illustrated by Mike Milken (1946–), the original bond king. His economic formula is that Prosperity = (Human capital + Social capital + Real assets) all multiplied by Financial engineering (Fe), where Fe is the ability to alter the capital/debt structure. For Milken, increasing forms of debt equals prosperity; he states it is "debt values that underpin all capital (asset) markets". If the value of the various forms of debt falls, then the economy and assets are in trouble. Our current global debt-centric monetary system has already treated nature as a costless externality; this can be seen in the -58% fall in the ZSL Living Planet Index since 1971, as total credit has risen 38x, allowing us to bring forward tomorrow's consumption to today (Fig 3).

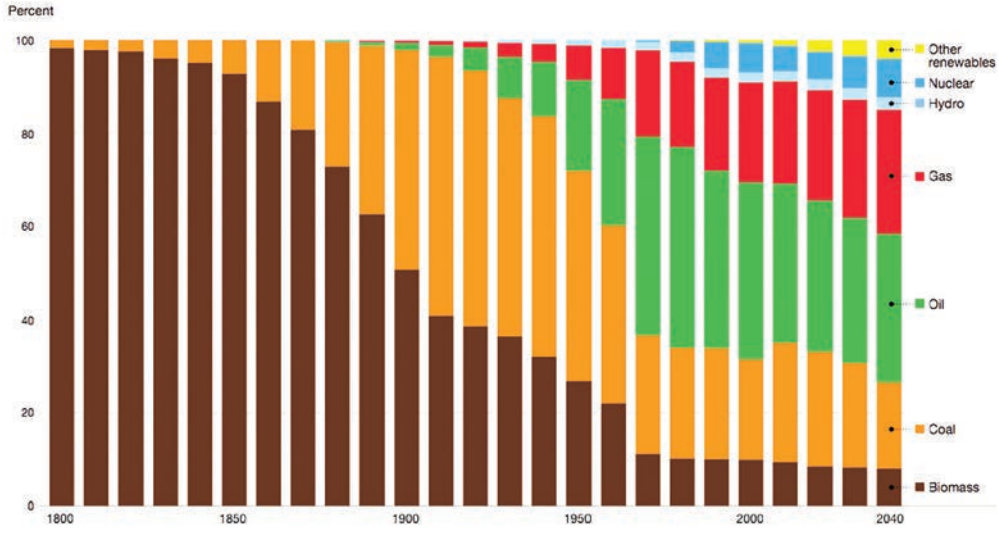


Fig 2

ABOVE:
Sergey Uryadnikov 2016, Shutterstock.com

Fig 1:
NCI – Natural Capital Monitoring
12 Jan 2016

Fig 2:
Vaclav Smil – 'Energy Transitions, History and Requirements', 2010

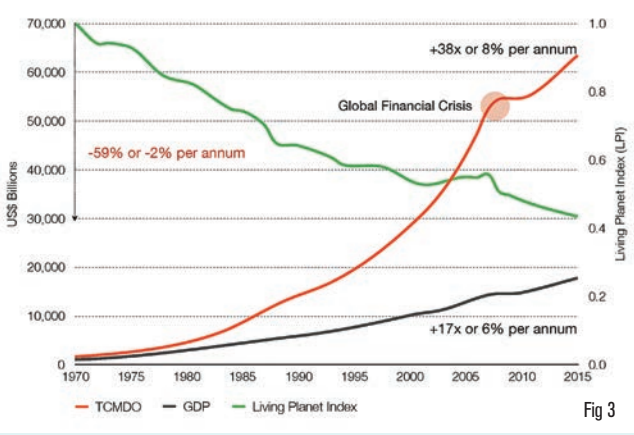
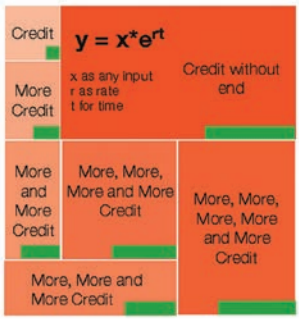


Fig 3

Monetary System



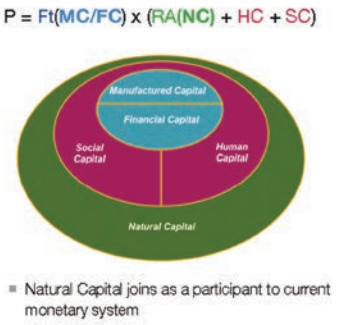


Fig 4

Natural Capital may be unwittingly putting itself forward as an asset to a monetary system that is built on applying financial engineering to the key forms of capital: 'human', 'social' and 'real'. So where does Natural Capital fit into this framework? If you recall the donut of Fig 1 that describes Natural Capital, let us now disaggregate the wording in terms of our current monetary system: 'human' and 'social' capital remain static, 'manufactured' and 'financial' capital become financial engineering, and Natural Capital joins the 'real' assets (Fig 4). By deliberate design finite Natural Capital puts itself forward as an asset of the infinite credit monetary system. So when the Natural Capital protocols state that they make nature 'relevant, replicable, and consistent', the financial-centered collateral world reads it as 'marketable, legal, standardizable, tradeable'. Natural Capital could be perceived as the woolly concept under the cloak of hard numbers and raw data.

Put simply, once nature is put forward as an asset, it simply becomes another asset in the chain of collateral. And if there is now a new asset there must be a corresponding liability—balance sheets must balance. Ironically, by becoming an asset of the credit consumption system, one possibility is that Natural Capital could speed up the rate of decline of nature. Even the eco-systems service 'green economic' model depends on the continuation of our present credit consumption model. The fundamental problem with Natural Capital is that it inadvertently joins the current credit driven model that provides us with the high standard of living and consumption we are used to, presenting itself as a new asset to the system. Our lives revolve around the use of natural resources: what we eat and wear, our building materials, how we travel and even how we communicate. But in this master plan have we simply put nature on the wrong side of the balance sheet; should nature be viewed as an asset? 'Human' and 'social' capitals are *liabilities*, with resources like education, safety and health funded by the taxpayer. Even the 2008 financial crisis bailout was funded by an expanded liability of the central banks' balance sheet. Nature is not our asset but our liability; perhaps we should accept the data and evidence before turning this well-intentioned belief into an educated conviction. Linnaeus would already be mapping the new pathway.

Mustafa Zaidi, Clarmond
mnz@clarmond.co.uk

Capital - A Breakdown

Human Capital: skills, training, education, demographics, male/female ratios and productivity of population

Social Capital: educational, cultural, religious, medical institutions, public services (police, fire), the rule of law, enforceable property rights, structure of government

Real Assets: fossil fuels, industrial and precious materials, real estate, water

Natural Capital: (from NCC) - species, ecological communities, soils, freshwaters, land, minerals, atmosphere

Financial/Manufactured Capital (Financial Engineering): Man-made capital for production and capital markets. Financial engineering is ability to alter the credit (debt-equity) structure

Fig 3:
TCMDO: Total Credit Debt Market Owed Annually since 1970 (not seasonally or inflation adjusted)
GDP: Gross Domestic Product since 1970 (not seasonally or inflation adjusted)
Credit: Federal Reserve Economic Data – St Louis Fed

Fig 4:
NCI – Natural Capital Monitoring
12 Jan 2016

Selected References

Hawken P., Lovins A. & Lovins L.H. 2000. *Natural Capitalism: Creating the next industrial revolution.* US Green Building Council.

Helm D. 2015. *Natural Capital: Valuing the planet.* Yale University Press.

Gazibara I. & Chapple A. 2011. Sustainable Economy in 2040: A roadmap to capital markets. (Forum for the Future with funding from Aviva Investors.) https://www.forumforthefuture.org/sites/default/files/project/downloads/aviva-sustainable-economy-full-report-web.pdf (Accessed 17/10/16)

Mehrling, P. 2012. 'The Inherent Hierarchy of Money', prepared for the Duncan Foley festschrift volume and conference April 2012. http://ieor.columbia.edu/files/seasdepts/industrial-engineering-operations-research/pdf-files/Mehrling_P_FESeminar_Sp12-02.pdf (Accessed 17/10/16)

Pascual U. & Muradian R. (Coordinating Lead Authors). 2010. 'The Economics of Valuing Ecosystem Services and Biodiversity' in K. Pushpam (Ed), *The Economics of Ecosystems and Biodiversity Ecological and Economic Foundations.* London and Washington: Earthscan.

Porritt J. Five Capitals Model–a framework for sustainability. https://www.forumforthefuture.org/sites/default/files/project/downloads/five-capitals-model.pdf (Accessed 17/10/16)

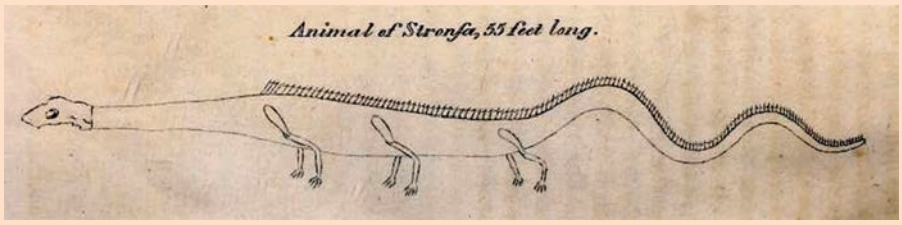
Sukhdev P., Wittmer H. & Miller D. 2014. 'The Economics of Ecosystems and biodiversity (TEEB): Challenges and Responses' in D. Helm and C. Hepburn (eds). *Nature in the Balance: The Economics of Biodiversity.* Oxford: Oxford University Press.

Sullivan S. 2014. From legibility to leveragability in performing nature-as-natural-capital. https://siansullivan.files.wordpress.com/2010/02/from-legibility-to-leverageability-paper-sullivan.pdf (Accessed 17/10/16)

Winnett A. 2005. Natural Capital: Hard Economics, Soft Metaphor? *Environmental Education Research.* 11 (1): 83–94

Nature of the Beast

STRANDINGS ON STRONSAY



Located off the north coast of Scotland within the Orkney Islands, Stronsay's exposed north-eastern position and its flat, spread-eagled shape make it a prime location for seeking out the more spectacular and mysterious creatures living in the North Atlantic and the North Sea. So it should come as no surprise that the small island is famous for a major cryptozoological puzzle. Following a storm in September 1808, Stronsay's own 'Loch Ness Monster' was found washed ashore near Rothiesholm Bay on the south side of the island. Dubbed the 'Stronsay Beast', it has so far stubbornly resisted identification. Contemporary descriptions and observations (enhanced by drawings, one of which bears a strong resemblance to the Loch Ness Monster) were published in the *Memoirs of the Wernerian Natural History Society* in Edinburgh.[1] Conflicting reports told of a serpent-like shape, three pairs of legs, a mane which glowed in the dark, and other…interesting features. Such was the fame of this 'monster' that the four men who discovered the carcass were made to swear to this description before a magistrate. Theories about its identity range from pre-historic monster, to lone living fossil, to sea serpent—Scottish anatomist John Barclay (1758–1826) even went so far as to name it *Halsydrus pontoppidani* after Erik Pontoppidan (1698–1764) in honour of his work on sea serpents. The anatomists Sir Everard Holme (1756–1832) and John Goodsir (1814–1867) individually theorised that it was a badly decomposed basking shark (*Cetorhinus maximus*). However, at 55 feet in length (16.8m) and 4 feet wide (1.2m), the carcass is still bigger than the largest reliably recorded specimen of basking shark at ca. 40 feet (12.1m). Given the fact that various parts of the creature have survived and could be used for DNA analysis, it is rather curious that the mystery remains unsolved. This has, of course, given rise to conspiracy theories, as well as to the sly observation that the possibility of a sea monster is infinitely more glamorous than a badly decomposed shark. Bits of the beast were indeed once owned by Lord Byron, and are now part of the John Murray Collection at the National Library of Scotland.

When my husband and I visited Stronsay this September, we hiked around the Rothiesholm Bay area. Failing to spot anything more monstrous than a dead and very bloated grey seal (*Halichoerus grypus*), we were told about the remnants of a stranded whale in nearby Lamb Ness. We could see parts of the spine, with its impressive vertebrae and discs, were still draped over rocks. As we walked along the beach at low tide we stumbled over countless pieces of narrow triangular baleen plates roughly the length of an arm, looking like pieces of bark from a palm tree with their frazzled fibre-like bristles. Also to be found was part of the beak-shaped skull, some arched rib-bones, and single spine discs the size of Frisbees, which were waterlogged and heavy when lifted from the sea. My husband then found a solid, curved white object. He handed it to me, and it was remarkably heavy. It was of a hard, porcelain-like substance and shaped vaguely like a conch. "It's part of an ear," I said, without thinking. It was curved and seemed structured for amplifying sound, rather like the aforementioned conch. This initial gut-feeling seemed rather fanciful at first, but the object turned out to be just I'd described.

A rudimentary study of whale anatomy confirmed that it was the bulla, which encloses the delicate inner ear bones. Identifying the species of whale was not difficult thanks to the excellent Scottish Marine Animal Stranding Scheme database and map [http://www.strandings.org/cgi-bin/map.pl]. Our whale was a juvenile female fin whale, stranded on 6 January 2016. This fascinating find prompted me to try and learn more about how the whale ear has adapted to hear, with the demands of their habitat and resulting anatomy being so different from that of land mammals. Our bulla and inner ear, for instance, is located in our skulls, whereas in whales it is located inside the jaw—the cetacean mandible is key to the whole process. In less than 10 million years of evolution, a whale's ear has adapted from hearing on land to hearing underwater.[2]

Exactly how sound transmission in whales works is still being examined and debated. Mysticetes like the fin whale have a different 'ear' anatomy from that of the toothed whales or Odontocetes; the latter have ligaments which separate the ear bones from the rest of the skull, probably making it harder for sound conducted by the skull to be heard. Recent research using the skull of a fin whale, computed tomography and a simulation model suggests that there are two mechanisms which allow

ABOVE LEFT:
'The Beast of Stronsay' from *Memoirs of the Wernerian Natural History Society*
© Via the Biodiversity Heritage Library

ABOVE RIGHT:
The whale carcass in Rothiesholm Bay, Stronsay, Sept 2016
© Elaine Charwat

the whale to hear. Firstly, the bone-conduction mechanism, which is hearing by sound conducted from the movement of the skull to the ear bones. Secondly, the pressure mechanism, which is sound interacting directly with the ear bones of the whale after moving through water and the head tissue. In line with its anatomy, the bone conduction mechanism seems to be the main mechanism for fin whales. In summary, "fin whales communicate using low-frequency vocalizations […]. Low-frequency sounds tend to scatter and therefore do not have the ability to apply much direct pressure on ear bones. Therefore the sound's contact with the skull would account for the majority of how they hear these low-frequency sounds and the 'pressure mechanism' would be less impactful". [3]

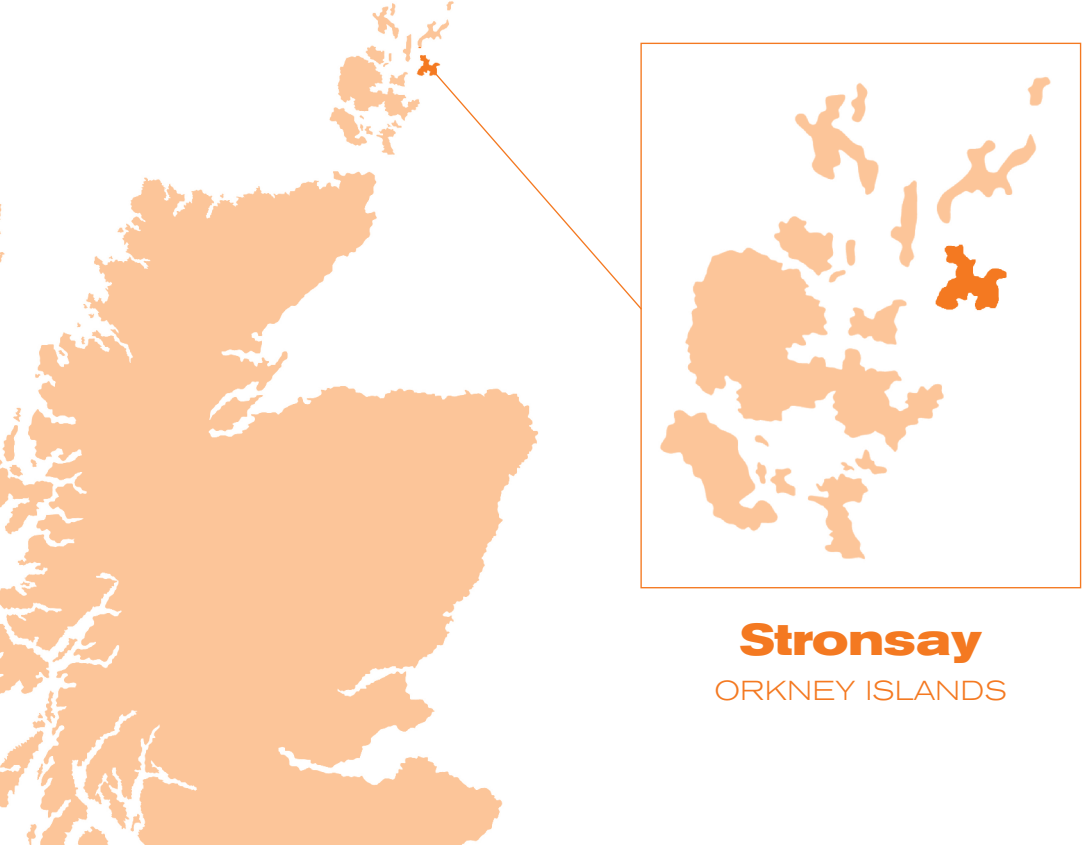
A whale bulla has the greatest density and rigidity of any of the vertebrate skeletal tissues (other than dental enamel), and has evolved to deliver the best possible sound transmission without distortion.[4] The bulla is, of course, relative to the size of the species—by way of example, the bulla of a blue whale is the size of a human brain. So while perplexing body parts found on remote islands may not always belong to sea monsters, the truth behind them can often hold far more profound and fascinating mysteries. Holding the bone which has helped relay the song of a fin whale is humbling, and perhaps even superior to the notion of a potential kraken or leviathan. What they have in common is the scientific analysis provoked by both.

Elaine Charwat, Deputy Librarian
elainec@linnean.org

BELOW LEFT:
The auditory bulla bone of a juvenile fin whale
© Elaine Charwat

BELOW RIGHT:
Elaine Charwat investigates the latest 'Beast of Stronsay'
© Elaine Charwat

BOTTOM LEFT:
Scotland, and the Orkney islands with Stronsay highlighted
© dovla982 2016, Shutterstock.com



Stronsay
ORKNEY ISLANDS

References

1 *Memoirs of the Wernerian Natural History Society* (Edinburgh, [The Society]: 1811–1838). Vol. 1, p.418ff. See http://www.biodiversitylibrary.org/item/165544#page/478/mode/1up

2 See Numella *et al.* (2007) Sound transmission in archaic and modern whales: anatomical adaptations for underwater hearing. *Anatomical Record* June 290(6): 716–33

3 See http://blogs.plos.org/everyone/2015/04/16/head-rattling-results-fin-whales-hear-skulls/

4 See Thewissen (ed.) *et al.* (1998) *The Emergence of Whales: Evolutionary patterns in the origin of Cetacea* (New York: Springer), p.296ff.

FORTHCOMING EVENTS 2017

18 Jan
Lunchtime Lecture
12.30–13.00

Josef Frank: Patterns–Furniture–Painting
Speaker: *Celia Joicey, Fashion and Textile Museum London*
No registration required

19 Jan
Evening Meeting
18.00–19.00

From Genome Evolution to Animal Diversity: A Tale of Moths and Mammals
Speaker: *Prof Peter Holland, University of Oxford*
No registration required

1 Feb
Lunchtime Lecture
12.30–13.00

Anglo-Nepalese Zoological Illustrations: Brian Houghton Hodgson and the Zoology of the Himalayas
Speaker: *Dr David Lowther, Durham University*
No registration required

9 Feb
Nature Reader
18.00–19.00

So Many Celestial Animals So Vividly Drawn: Birds and their Images in Pre-Linnaean Italy
Speakers: *Henrietta McBurney Ryan FLS and Carlo Violani FLS*
No registration required

16 Feb
Evening Meeting
18.00–19.00

Conservation on a Crowded Island: Resolving Conflicts between Wildlife and Development in Britain
Speaker: *Prof Fiona Mathews FLS, Chair of the Mammal Society and Associate Professor at the University of Exeter*
No registration required

1 Mar
Lunchtime Lecture
12.30–13.30

The Vulture Series
Speakers: *Dr Campbell Murn FLS, Head of Conservation and Research at the Hawk Conservancy Trust,* and *Nigel Hughes FLS, previously the National Trust's land agent in Northern Ireland*
No registration required

16 Mar
Evening Meeting
18.00–19.00

Transmissible Cancers in Tasmanian Devils
Speaker: *Dr Elizabeth Murchison, University of Cambridge*
No registration required

Please check our website for other events not listed here

Auf Wiedersehen und viel Glück Elaine Charwat!

© Leonie Berwick

At the end of November we bade a fond farewell to our steadfast Deputy Librarian, Elaine Charwat. Elaine joined the Society in June 2011, having previously worked at Leeds University Library and University College Cork in Ireland, where she looked after some of the University's natural history collections.

Elaine has enjoyed many successes, including administration of the Linnaeus Link Project, which brings together Linnaean materials from a wide array of international institutions. By 2016 the number of contributing partners had risen under Elaine's guidance to 15, with Missouri Botanical Garden going live just days before she departed. She also managed to establish firm links with the European Botanical and Horticultural Libraries (EBHL).

She has published several articles about the collections and projects not only in the Society's own *PuLSe* magazine, but in various international publications. Her feature-length article about Linnaeus Link was published in *Bibliotheksmagazin* which helped to raise the Society's profile in the German-speaking world, and she has also written for *CILIP Update*, a very widely read publication from the Chartered Institute of Library and Information Professionals.

Two of Elaine's legacies will be the great successes of the Treasures Tours and the AdoptLINN scheme. The Treasures Tours, our behind-the-scenes sessions, are now a firm favourite with both Fellows and the public and have resulted in increased donations to the Society. The AdoptLINN scheme, where donors can adopt an item in need of conservation from the library, has already raised £10,200 in just one year.

More recently Elaine has worked with the Bentham Project at University College London (UCL) as part of the cutting edge, EU-funded READ project, where the Society's manuscripts are being used to further the development of Handwritten Text Recognition software.

Throughout all of this, Elaine also studied for and was awarded her professional registration Chartership from CILIP.

After a short stay with her family in Germany, Elaine and her husband will be temporarily based in Orkney. What we will miss the most is Elaine's great passion and enthusiasm for the Society's collections, which only increased during her five years in the library. Please join us in thanking Elaine for all of her dedication over the years, and in wishing her the very best for her future.

Elaine's successor will be introduced in the next issue of *PuLSe*.

The LINNEAN SOCIETY of London

The Linnean Society of London
Burlington House, Piccadilly,
London W1J 0BF UK

T: +44 (0)20 7434 4479
E: leonie@linnean.org
W: www.linnean.org

Manufactured in the UK, using paper with a minimum 75% recycled content that is FSC accredited. Printed to ISO 14001 accreditation.

Charity Reference No. 220509

PULSE

All articles welcome – please submit news, reviews, events and articles in MS Word format to the Editor at leonie@linnean.org. Accompanying images must be a high resolution JPEG or TIFF with appropriate permission and copyright.

Happy Christmas!

From everyone at the Linnean Society, we wish you a very merry Christmas and a fantastic New Year. We hope to see you in 2017!

© Leonie Berwick