PULSE

The LINNEAN SOCIETY of London

ISSN 1759-8036

ISSUE 26
JUNE 2015

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

CONUS GEOGRAPHUS

Harnessing the Power of this Mighty Mollusc

Carl Linnaeus described this species as *Conus geographus* (the geography cone) in 1758. It was one of 700 molluscan species to be published in the tenth edition of his *Systema Naturae*, a book that radically changed taxonomy and nomenclature. In the 12th edition of that work (1767) the number of described molluscs increased by over a hundred, and a further 28 were described in the "Regni Animalis appendix" of his *Mantissa Plantarum* (1771). The Linnean Society of London holds 1,564 lots of Linnaean mollusca, all of which have been digitised and are available to view online (http://www.linnean-online.org/).

Linnaeus based the description on the only thing available to him – the shell of the animal. Like many early taxonomists, he probably never saw the animal alive, solely working with the shell itself. Yet the same animal described over 250 years ago is revolutionising science and saving lives.

C. geographus is one of 600 species of cones from the largest genus of marine animals. This group of sea snails is found worldwide in tropical and subtropical seas, with the highest diversity in the tropical Indo-West Pacific region. Cone snails are most commonly found in the sublittoral epipelagic zone, living on sandy regions or among rocks or coral reefs. They are carnivorous, highly-evolved predators, hunting prey such as marine worms, fish or other gastropods. The shells themselves have proven to be highly prized by shell collectors due to the variety of colours (brown, white or black) and the intricate and diverse patterns (dotted, zigzag or striped).

Sharp Shooters

Though their slow movement might otherwise preclude successful predation, an adaptation enables cone snails to catch their prey – a harpoon-like radula (primarily made of the polysaccharide chitin) is shot from the proboscis. This radula, or modified tooth, contains the venom conotoxin, a mixture of short peptides that induces neuromuscular paralysis in its prey, which is then swallowed whole.

ABOVE **The venomous geography cone** © Scott Johnson (underwaterkwaj.com)

To watch an animation of the cone snail's radula and conotoxin in action visit http://tinyurl.com/ohj4qme

While all cone snails have this adaptation, interestingly no two species have the same venom proteins, and *C. geographus* itself dispenses two venoms – one defensive and one predatory. The venom of *C. geographus* is potentially fatal to humans; well known as the most venomous of all known cone snail species, it is considered to be one of the most deadly animals in the world, even nicknamed the "cigarette snail", as a victim, once stung, may only have time for one last cigarette.

Envenomations by *C. geographus* are extremely rare (only ca. 15 deaths have been attributed, with conviction, to cone snails in Goldfrank's *Toxicologic Emergencies*). Nevertheless, there is no antivenom for a cone snail sting, and ☛

treatment is limited to merely keeping victims alive until the toxins wear off.

Medical Resource

Research shows that this venom has great potential in medicine and that, pharmacologically, the *Conus* genus is a fantastic resource. The venom was first studied in 1932 by clinical pathologist L.C.D. Hermitte. A patient had been stung and incapacitated by a cone snail in the Seychelles, and was still unable to walk some nine hours later. Hermitte, whose interest was piqued by the hidden power of such a small animal, dissected the snail and discovered the radular tooth, and the venom duct and bulb. Since then, practical applications to neurobiology and medicine have been found, with current research continuing to develop ways to utilise the venom. Certain components of the venom can be up to 10,000 times more potent than morphine, but without morphine's addictive properties and side-effects. This effective analgesic could be used for treating chronic pain found in patients suffering from cancer, arthritis, diabetes and AIDS. Other parts of the venom are being studied to help combat and relieve the symptoms of Parkinson's and Alzheimer's, with the peptide 'conantokin G' also showing positive signs in clinical trials for epilepsy. Additionally, recent studies have found that within the venom of *C. geographus* is a unique type of weaponised insulin that, when released, can reduce blood sugar levels in whole schools of fish, weakening them and making them easier prey. This weaponised insulin could assist in a better understanding of how blood sugar levels are regulated in humans.

We are just beginning to discern and take advantage of the medical possibilities of this venom. Continued study of conotoxins may help to make inroads in the treatment of not only the diseases previously listed, but addictions as well. And it all began over 250 years ago when this small marine mollusc was classified and described by Linnaeus.

RIGHT **The Linnaean specimen of *Conus geographus***

Andreia Salvador
Curator, Marine Mollusca
Department of Life Sciences
Natural History Museum, London
a.salvador@nhm.ac.uk

Darwin and Wallace
The Evolution of a Collection

The Linnean Society has a long relationship with two giants of natural science: Charles Darwin (1809–82) and Alfred Russel Wallace (1823–1913). While several objects and some fascinating material relating to both men can already be found in our collections, the Society is hugely proud to announce that we have been gifted a further substantial Darwin and Wallace collection from the Trustees of the Charles Darwin Trust (CDT).

In late 2013, the Society was approached by Stephen and Randal Keynes, Darwin's great-grandson and great-great-grandson respectively, and other members of the Trust with a view to taking on the guardianship of some of Darwin's manuscript and book collections. At that time the material was scattered on different sites, and the aim was to bring it all together, to be housed in one place at the Society. Stephen and Randal were instrumental in this process, with the latter also completing a definitive inventory of the items with the help of the Society's Librarian, Lynda Brooks.

A BRIEF HISTORY

The collection itself consists of Darwin's books, letters and papers, and books and manuscripts relating to Wallace. Initially compiled by Stephen's brother, explorer and film-maker Quentin Keynes, it has subsequently been added to by Randal, Stephen and other family members. There are many gems to be found, just a few of which are noted here:

ABOVE **Stephen Keynes and Prof Dianne Edwards finalise the details**

First Editions

The collection holds copies of several first editions of Darwin's works, but most notably a copy of *On the Origin of Species*. The Society holds its own copy of this first edition, but the CDT copy belonged to Nathaniel Bagshaw Ward FLS (1791–1868), botanist and inventor of the Wardian case, and is inscribed for his daughter, Ann.

Manuscripts

The collection includes drafts of two chapters from Darwin's groundbreaking work on earthworms, *The Formation of Vegetable Mould through the Action of Worms*, with *Observations on their Habits*, in Darwin's hand.

Letters

There are several letters of note, including a number from Wallace. In one, he discusses the curvature of the Earth, referring to his parallax experiment and the resulting court case instigated by one very disgruntled John Hampden, who had sought to prove the Earth was flat. Another letter is from Ternate and records his reaction to the Darwin-Wallace papers being read to the Society.

In total, about 352 items have been gifted to the Society and will be used primarily to help further our education programme. The materials will be utilised in resources and workshops for schools, be made available to researchers and will, as clarified by the CDT, "be used for the public benefit". This fantastic collection will complement the Darwin and Wallace materials already to be found at the Society, and will be named The Darwin and Wallace Collection in its entirety. Look out for further explorations into the collection in future issues.

John Spedan Lewis Medal Winner 2015

2015 saw the inaugural presentation of the John Spedan Lewis Medal at the Linnean Society. Lewis (1885–1963), famed for creating the John Lewis Partnership, was also a dedicated naturalist and Fellow of the Society. In his honour, this medal is awarded to an individual making a significant contribution to UK conservation. The Society proudly awards this first medal to Mercy Morris of Plant Heritage:

Mercy Morris joined the National Council for the Conservation of Plants and Gardens (NCCPG, now Plant Heritage), as Plant Conservation Officer at the beginning of 2007, having spent two years at Wakehurst Place as Team Leader for the Southern Hemisphere Garden. Plant Heritage (established as the NCCPG in 1978) was formed to promote the conservation of plants in gardens, particularly those that have arisen in cultivation. As Plant Conservation Officer, Mercy's role has been to support and develop the National Plant Collections, of which there are currently over 600, to ensure continuity and recruit new collections and collection holders across the UK and Ireland.

Mercy developed the Threatened Plant Project (TPP), an objective conservation system for cultivated plants, which borrows from IUCN criteria but uniquely adds a significant element for evaluation of priority. The project has provided a major advance for cultivated plant conservation.

To date, the TPP has evaluated one third of the genera of plants in cultivation in the UK, supported by a range of experts and knowledgeable gardeners. Additionally, Mercy and her team launched the Plant Guardians scheme (http://www.nccpg.com/Plant-Guardians.aspx), where individuals can play a role in conservation.

Mercy has been at the forefront of transforming cultivated plant conservation, and promoting it both nationally and internationally. Thanks to her efforts it is now an accepted element of the UK's conservation activity; it is part of the UK Global Strategy for Plant Conservation, something which was not even considered in 2007.

RIGHT **Winner Mercy Morris**
Both images © The Linnean Society of London

A 19th-Century Fern Collection from Mussoorie

Request for Information from BRLSI

LEFT **Fern listed as *Botrypus lanuginosus* (Wall. ex Hook. & Grev.) Holub in the collection**
© Bath Royal Literary and Scientific Institution

ABOVE **An example of the handwriting**
© Bath Royal Literary and Scientific Institution

The Bath Royal Literary and Scientific Institution (BRLSI, www.brlsi.org) has experienced a chequered history during the 20th century. Rehoused and dispersed during the war, many of their records and specimens were lost before members of the public reinstated the Institution 25 years ago. It now has a flourishing lecture programme with ethnographic and natural history collections, some sections of which are of international importance.

The Evidence So Far

Dr Henry Ford FLS was invited by Matt Williams, Curator of the BRLSI's collections, to "Have a look at this box of ferns". Book-like in appearance, the large battered box contained a wonderfully pressed set of ferns, unlabelled except for the following: "Mussoorie, Oct '67." (Mussoorie is a hill station in the Himalayas in the north Indian state of Uttarakhand, near the state capital Dehradun, but it was once part of Nepal).
After mounting and identifying the ferns, Dr Ford then sought the collector. Visits to Royal Botanic Gardens, Kew and the British Museum met with little success, and the handwriting was unrecognised by Dr Fraser-Jenkins, a world expert in Himalayan ferns. The Forest Research Institute in Dehradun which houses the Indian pre-1960s herbarium revealed a fern from Mussoorie of a later date collected by "Herschel", a name familiar in Bath. In the British Library, two Herschels were found to be active in India at that time: brothers Sir William J. Herschel, Bt (1833–1917), magistrate in Bengal, and mathematician Sir John Herschel (1837–1921) who worked for the Great Trigonometric Survey of India. Apart from a few plant names from "Mrs Herschel" (Lady Anne Emma Haldane Herschel [ca. 1836–73], wife of the magistrate) there was no proof of collection. Rachel Webster, curator of Botany at the Manchester Museum, searched under "Herschel" in their database and called up a specimen of tea, collected by Lady Herschel.

How You Can Help

Do you know of any other botanical material collected in the mid-1860s from Mussoorie, particularly ferns? Do you have any further knowledge of the Herschel family's activities around that time? Do you recognise the handwriting shown here? If you are able to help, please contact Henry Ford FLS (hen3ryford@googlemail.com) or Matt Williams (matt.williams@brlsi.org).

A DEMOCRACY OF KNOWLEDGE

From Cabinet to Internet at the Linnean Society

Many institutions hold papers, correspondences, illustrations and images that are of huge benefit to researchers worldwide. Until recent years, access has been limited by geography, but advances in the digital humanities will continue to change all of that. The Linnean Society itself has uploaded over 143,500 images online for research purposes, with a further 39,000 to come. Following the key strategies of 'navigate, historicise, contextualise', improved access to historical collections has become a priority for institutions and funding bodies alike.

On 27–28 April, the Linnean Society played host to a plethora of speakers and delegates, all of whom reviewed and promoted the digitisation projects of their respective institutions. Organised by Isabelle Charmantier and Andrea Deneau (Linnean Society), and Staffan Müller-Wille (University of Exeter), the workshop *From Cabinet to Internet: Digitising Natural History and Medical Manuscripts* gave an overview of current projects on a national and international scale. Presentations from the Natural History Museum, London (NHM), University of Cambridge, University of Uppsala, Royal Botanic Gardens, Kew (RBG Kew), Wellcome Trust, Würzburg Institute of the History of Medicine, University of Oxford, University College London (UCL) and University of London Computer Centre (ULCC) all stirred up discussion on future ways to collaborate and move forward.

Across the institutions, collections were selected for digitisation based on their value to researchers and their current state of repair (alongside completion of risk assessments and sensitivity reviews). Once digitised, comprehensive cataloguing of the papers needs to be undertaken. While some projects have used more standardised databases, others have had bespoke databases created for them, which have gone on to become 'go to' platforms in their own right. Digitising the letters of Alfred Russel Wallace (1823–1913), *The Wallace Correspondence Project* at the NHM created its own database, with 'parent' and 'child' records denoting the base information (in this case, the sender, receiver or date of the letter) and linking it to extended information (details on the envelope, anything extra included with the letter). This system has also been adopted for the letters of Joseph Dalton Hooker (1817–1911) by the *Joseph Hooker Correspondence Project* at RBG Kew, which will prove fruitful should the projects link up at a later date. Linking data between projects will bring texts and objects closer together, creating a more comprehensive research experience.

Metadata and Crowdsourcing

Metadata permeates everything in the online world so alongside good conservation and scanning, thorough metadata is essential. The University of Oxford's *EMLO: Early Modern Letters Online*, in conjunction with the Bodleian Library, illustrates this by incorporating 96 possible metadata fields into its data repository. This collaboratively produced catalogue of 16th–18th-century correspondence can be searched not only by author name, date and location, but by page size and watermark as well.

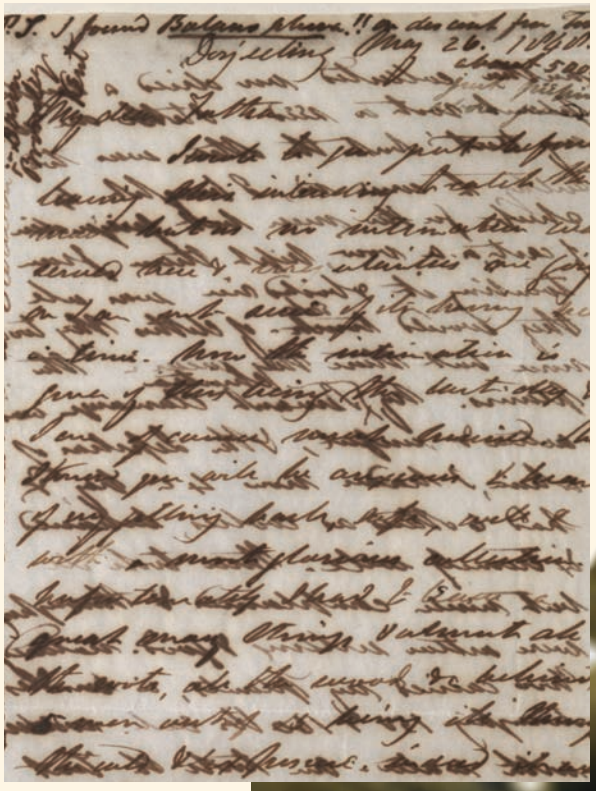
Relevant keywords are vital for improving searchability, but summaries, transcriptions and translations have proven to be of huge benefit to numerous projects. In many cases the transcriptions have been completed by volunteers: the previously mentioned Wallace project has digitised over 6,500 letters, with 4,000 of those transcribed by a network of volunteers operating to an approved protocol. But how to enlist these helpers? Many of the projects on show had found volunteers through crowdsourcing initiatives. An attractive and philanthropic endeavour, crowdsourcing not only enriches the data, it enriches the crowd. Looking at the papers of jurist and philosopher Jeremy Bentham (1748–1832), UCL's *Transcribe Bentham* project hosts the 'Transcription Desk', an online platform that allows volunteers from anywhere in the world to help with transcriptions. A 'leader board' incorporates an element of competition, and it has worked – the top 26 transcribers have transcribed 95% of the current total. Without these volunteers the project would not be completed until 2081, rather than on its current trajectory of 2025 – for researchers, a gain of over 50 years. However, if a crowdsourcing platform is not available there are alternatives.

The *Joseph Hooker Correspondence Project* has turned to a low tech but effective substitute, using a closed group on Facebook. In either sense, remote volunteers not only widen the expertise, they also widen the demographic, giving younger volunteers useful experience they may not otherwise be able to acquire.

Working in conjunction with the remote volunteers is ever evolving software. Some of the projects have used Handwritten Text Recognition (HTR) software; the tranScriptorium project (http://transcriptorium.eu) is developing two HTR tools, Transkribus (http://transkribus.eu) and TSX (http://www.transcribe-bentham.da.ulcc.ac.uk/TSX/). However, like its human counterparts, the software must adjust to specific palaeography; in providing a lexicon for the software to work with, the goal is to eventually teach a computer to recognise a certain hand. Yet, as with the letter depicted here from the Hooker project, a more human approach is sometimes the best way forward!

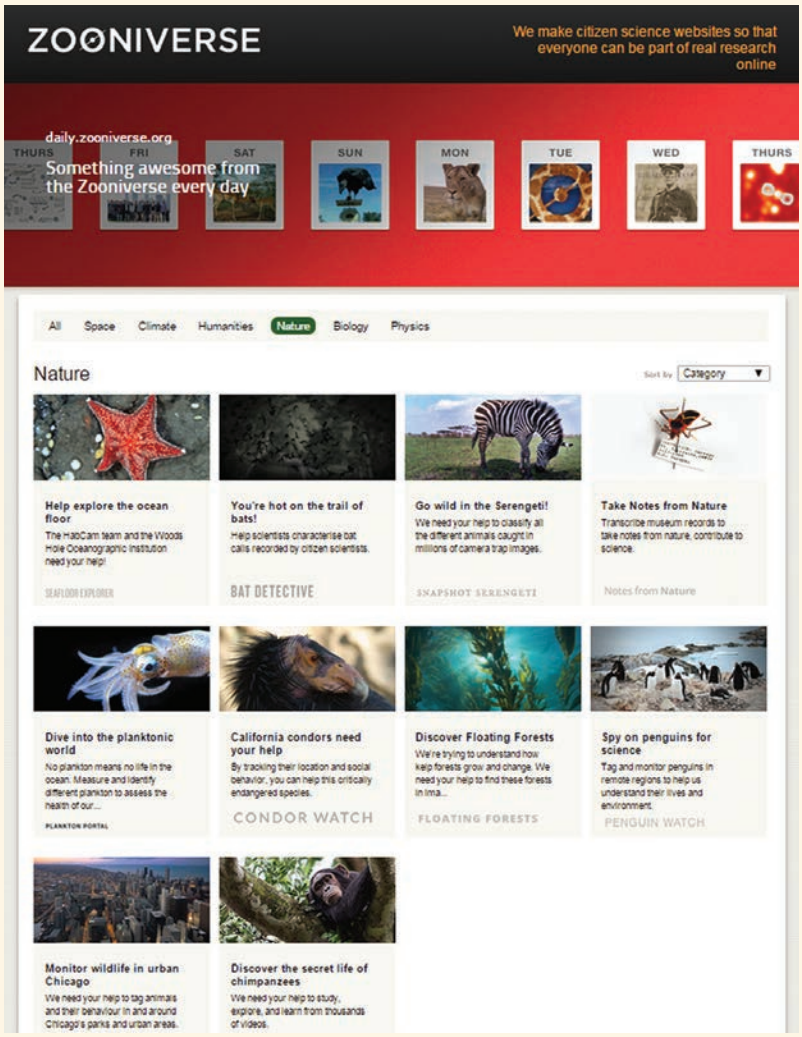
RIGHT **Joseph Dalton Hooker**

BELOW **A letter from Joseph Dalton Hooker to William Hooker, 26 May 1848, JDH/1/10/75. Image reproduced with the kind permission of the Board of Trustees of the Royal Botanic Gardens, Kew**



Getting the Word Out

All of this added information can aid the future manipulation of data, e.g. creating the ability to also search by genre, as is the aim at the Wellcome Trust. But with the best metadata and tagging in the world, promotion of these newly available materials is an important part of a project's success. It is an obvious statement but worth highlighting: if no-one knows your project is online it will not be fully utilised. The Wellcome Trust has promoted their digital collections by creating timelines, publishing essays by experts that highlight their online materials, press releases and blogging. Their *Codebreaker: Makers of Modern Genetics* project, focusing on the history of genetics, inspired a popular interactive timeline and a brilliant video (https://www.youtube.com/watch?v=FBEAhsRmR3M). Since March 2014 alone, their materials have had over 191,000 page views, with over 1,000 separate institutions accessing the content. The *Board of Longitude* project at the University of Cambridge has also produced a number of informative videos and promoted the project through social media, varying the readership of their historical content. Details once only accessible by a minority can now evolve online: one of Hooker's letters at RBG Kew denotes how he was once arrested when crossing the Tibetan border under suspicion of spying (the border was closed to foreigners at that time). Narratives like these will bring their archives to a wider audience. Likewise, the correspondence digitised in the Würzburg Institute's *Physicians' Correspondences of the German-Speaking Territories* project aims to reveal not only the great achievements of history's 'winners', but the general fears and political views of the everyday physician in the 1500–1700s.



LEFT
Fantastic crowdsourcing projects found on www.zooniverse.com

To watch talks from the workshop visit https://vimeo.com/album/3415889

The Future

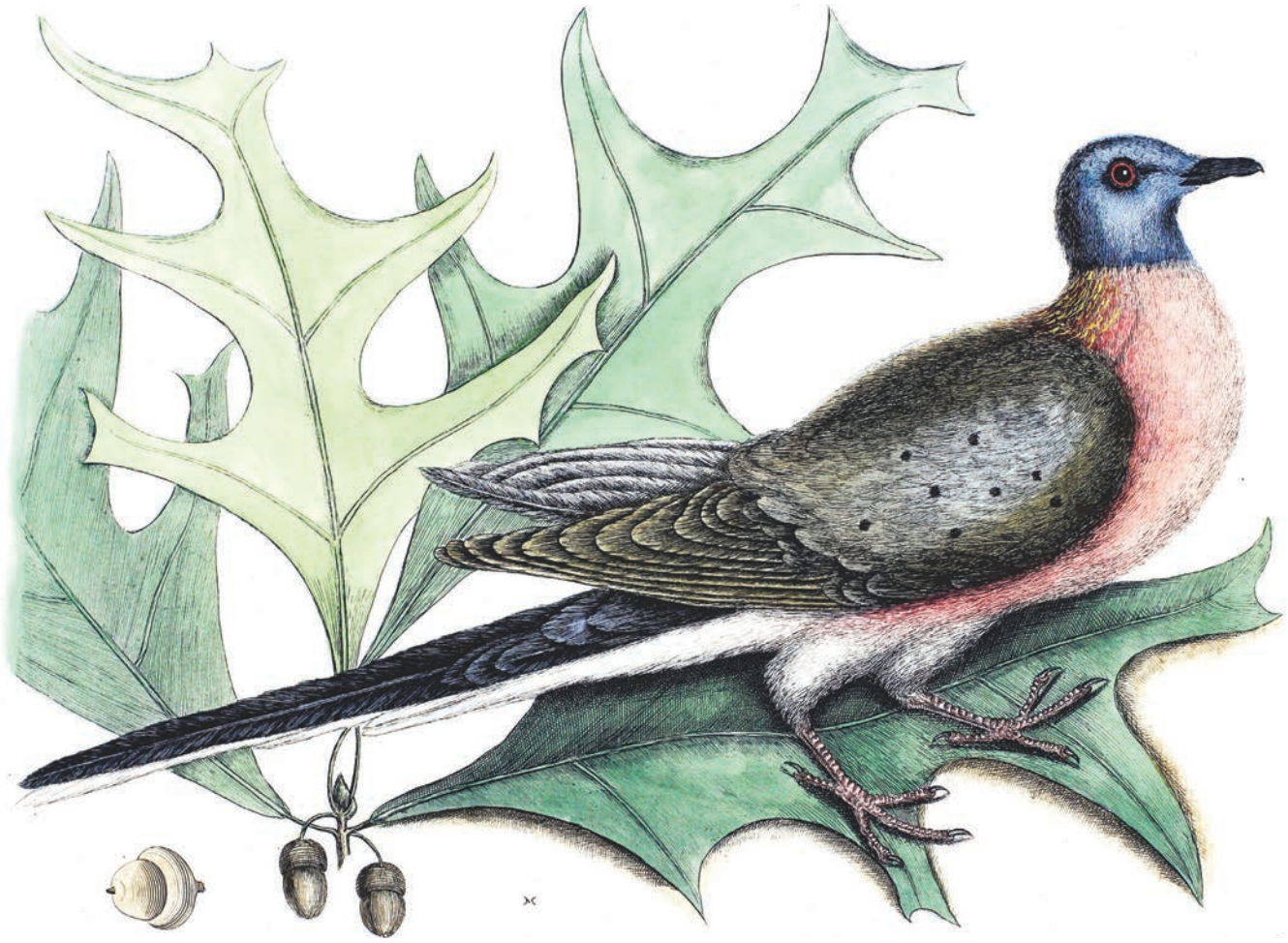
During discussions at the workshop a recurring topic was the amount of overlap between the many current projects and potential ones – are we continually reinventing the wheel? Is there a way, with all of the combined project experience and transcription tools available, to tie everything together, with standards that everyone adheres to? Compiling this data allows us to map out and visualise these materials in other ways, and cover many areas: archival, taxonomic, etc., so it makes sense for researchers, libraries and museums to combine their expertise. Perhaps more pan-institutional projects, protocols and regular workshops on key themes are a good way forward. The European Cooperation in Science and Technology (COST) initiative is already providing links for pan-European scholars and researchers to work together on nationally funded projects (www.cost.eu).

Crowdsourcing platforms already work along collaborative lines. 'Citizen science', with amateur scientists engaged in data collection and production, is illustrated particularly well by www.zooniverse.com, an online repository for many incredible biological projects. Ranging from tracking condors in California to helping scientists classify batcalls from recordings, Zooniverse has engaged over 1.3 million people worldwide.

One of the future challenges is to convince funding bodies that getting these collections online is just the beginning – it is continued use of the tool by researchers and the public alike that will secure its longevity. However, while online collections are vital, the threat of 'funder fatigue' in this area is very real, and organisations must continually introduce fresh ideas in order to secure the necessary backing. Could pan-institutional projects help to overcome this? It was clear from the workshop that more events of this nature would be beneficial for all as the digital humanities evolve, with institutions working towards a democracy of knowledge.

The Journey of *Ectopistes migratorius*, the Passenger Pigeon

FROM MIGRATION



LEFT **The first colour illustration of a passenger pigeon in Catesby's *The Natural History of Carolina…* (1731–43)** © The Linnean Society of London

RIGHT **'A cloud of pigeons' as depicted in W.H.G. Kingston's *The Western World* (1874)** Courtesy www.gutenberg.org

Both the popular and Latin names of the passenger pigeon capture the migratory nature of these extraordinary birds. Wintering in the southern states of the US, from the Gulf of Mexico to Arkansas and North Carolina, they would migrate north in springtime, sometimes to the southern and mid-provinces of Canada, but mainly to their preferred nesting sites near the Great Lakes.

Early Depictions and Tales

Mark Catesby produced the first colour illustration of a passenger pigeon, naming it "Palumbus migratorius" and publishing it in *The Natural History of Carolina, Florida and the Bahama Islands* (1731–43). Carl Linnaeus based his description of the species in the 12th edition of *Systema naturae* (1766) on Catesby's illustration, amending its name to "Columba migratoria" in the process. It has now been re-classified as *Ectopistes migratorius*, its anatomy excluding it from the family Columbidae.

Catesby's plate depicts the passenger pigeon in a slightly improbable pose, perching on the leaf of a scrub oak (*Quercus laevis*). Acorns from these oaks were indeed a major food source for the passenger pigeons; it has been estimated that each bird might consume around 30 acorns daily. Although it would have been far too heavy to perch on flimsy branches, there were numerous reports of passenger pigeons trying to do exactly that, and of trees collapsing under their accumulated weight. Catesby's pigeon appears quite dainty, but in reality it was a physically impressive species. Joel Greenberg has compared it to "a mourning dove on steroids", measuring 15 to 18 inches in length and ten to 12 ounces in weight.

Catesby travelled around North America in the 1720s to collect material for his sumptuously illustrated, two-volume masterpiece, during which time he became greatly intrigued by this species. Early explorers travelling in North America in the 17th and 18th centuries had already observed the migration of the passenger pigeon, but no actual numbers were cited; the birds were in such abundance reports seemed almost unbelievable. John Josselyn, travelling around New England in the mid-1600s commented on a flock so vast it, "had neither beginning nor ending, length, or breadth, and so thick I could see no sun". These mass

TO EXTINCTION

migrations were such a spectacle that they were often regarded by the early North American settlers as "prodigies" – powerful omens sent by God.

Later, around 1860, Major W. Ross, an English hunter and naturalist, also witnessed such a migration. He commented:

Swiftly and steadily the column passed over with a rushing sound, and for hours continued in undiminished myriads advancing over the American forests in the eastern horizon, as the myriads that had passed were lost in the western sky.

Eventually, systematic attempts were made to count the numbers of pigeons. Pulling all the historical evidence together, Mark Avery, former conservation director at the RSPB, has estimated that there were between 5 and 10 billion passenger pigeons in the early to mid-1800s; it was one of the most numerous birds ever to have existed. And yet, in 1914, a passenger pigeon affectionately called "Martha" after George Washington's wife, died in Cincinnati Zoo. It was the last of its kind. The passenger pigeon was now officially extinct.

The Human Effect

It seems impossible that the passenger pigeon population could plummet from several billion in the 1850s to extinction a mere 60 years later. What caused this catastrophe? The simple answer is: we did. The initial awe inspired by the flocks soon turned to something more calculated. Here was an abundant free source of protein; highly sociable and large in number, the birds were easy to hunt. Such huge numbers could also cause considerable damage to crops and trees. Pigeon hunting became not only a way to help clear this 'pest', but generated much needed income and was also a fun, 'family' sport, with no class barriers. John James Audubon even described such an event in his famous *Birds of America* (1827–38):

The Pigeons were still passing in undiminished numbers, and continued to do so for three days in succession. The people were all in arms. The banks of the Ohio were crowded with men and boys, incessantly shooting at the pilgrims, which there flew lower as they passed the river. Multitudes were thus destroyed. For a week or more, the population fed on no other flesh than that of Pigeons, and talked of nothing but Pigeons.

Millions of pigeons were killed in just one hunt. They were often targeted at their roosting and nesting places, and the fat young pigeons, called 'squabs', were especially sought after – devastating for a species that tended to only lay one egg per pair per year. Nets of more than ten by 20 feet were used to trap huge numbers (sometimes using live birds as lures), and whole forests were felled in order to access the birds' nests. Fires were set to smoke out the terrified birds and chase them into the nets. Adults were knocked out of trees with poles. Children climbed trees and clubbed the passenger pigeon chicks to death. And, occasionally, large platforms filled with sticking wax were set as traps to attract and snare the birds. Whole towns awaited the arrival of the pigeons with their guns. Passenger pigeons alive or dead were shipped by railway to far-away places and even featured in New York restaurants. So many were killed that it was sometimes impossible to sell the meat, and the corpses were left to rot.

Flocks that were once teeming with birds became disparate and separated, which had a knock-on effect on their breeding. With the clearance of their habitat for towns and farmland also reducing their food supply, the rapid demise of the passenger pigeon suddenly seems less surprising.

The Linnean Society Library is very privileged to hold instalments from the first edition of Catesby's *The Natural History of Carolina, Florida and the Bahama Islands*. This first colour illustration, and the carefully preserved specimen of Martha held at the Smithsonian Institute, are all the more valuable now that the live birds are gone. The passenger pigeon's swift and fatal journey demonstrates just how quickly natural abundance can be depleted – and the catastrophic consequences of human exploitation.

Elaine Charwat
Deputy Librarian
elainec@linnean.org

REFERENCES

Feduccia, A., ed. (1985), *Catesby's birds of colonial America*. University of North Carolina Press.

Greenberg, J. (2014), *A feathered river across the sky: the passenger pigeon's flight to extinction*. New York: Bloomsbury.

The Natural History Museum London (2014), *"100 passenger pigeon facts on the 100th anniversary of its extinction"* [webpage] http://www.nhm.ac.uk/natureplus/blogs/behind-the-scenes/2014/09/01/100-passenger-pigeon-facts-on-the-100th-anniversary-of-its-extinction?fromGateway=true [Last accessed 06/05/2015]

EXTRAS:
To see a 360° view of Martha, visit http://vertebrates.si.edu/birds/Martha/

To read more about the Smithsonian's exhibition 'Once There Were Billions' (until 3 Jan 2016) visit http://library.si.edu/exhibition/once-there-were-billions

BELOW **Martha, the last of her species, died in 1914**

ABOVE **Ro McConnell**

RIGHT **Lake Victoria cichlid**
Images courtesy Pat Morris

Remembering Ro McConnell
A 'Fishy Evening'

Ro McConnell was Vice President of the Linnean Society from 1976–77 and was awarded the Linnean Medal for zoology (in recognition of her studies of freshwater fish in Africa and South America) in 1997. Sadly she passed away last December, but it was her wish that an informal meeting be held in London to celebrate her life, to which her many professional friends and colleagues could be invited.

Date: 3 July
Place: The Linnean Society of London
Time: Arrive 17.00; Event 17.30–20.00
Organisers: Pat and Mary Morris

The intention is to discuss topics with which Ro had been most closely associated, namely the evolution, speciation and conservation of freshwater fish in the African Great Lakes. Dr Julia Day will review the developments in fishy studies since the pioneering work that Ro did over 60 years ago. Ro's PhD student, Katherine Brown, will also speak about her own studies on East African fish, involving fieldwork at about the same age that Ro herself first went to Africa. Former President of the Society, Gordon McGregor Reid, will review the enormous aquarist interest in African cichlids that has developed in recent times. These three short presentations will form the core of the evening, aiming to stir up discussion amongst the audience and continue it over a glass of wine afterwards. In short, the aim is to create the sort of meeting that Ro herself would be sorry to have missed.

If you would like to attend, please contact Pat and Mary Morris by email (pat.morris5@outlook.com) or phone (01344 621001) as soon as possible.

FORTHCOMING EVENTS 2015

18 June
Evening Meeting
18.00–19.00

Plant Conservation: Now is the Time to Change our Minds
Speaker: ***Tim Walker*** *(Somerville College, University of Oxford)*
No registration required

27 June
11.00–18.00

Conversazione 2015
Taking place at the University of Bristol Botanic Garden
Hosted by: ***Simon Hiscock FLS*** *(Director of the University of Bristol Botanic Garden)*
Registration essential www.linnean.org/conversazione2015

17 Sept
Evening Meeting
18.00–19.00

The Global Oil Supply: Implications for Biodiversity?
Speaker: ***Professor Chris Rhodes*** *(Fresh-lands Environmental Actions)*
No registration required

Please check our website for other events not listed here

Biological Journal Special Issue: 50 Years of the Biological Records Centre

Available from 17 June, this Special Issue (SI) of the *Biological Journal of the Linnean Society* includes 22 papers celebrating the 50th anniversary of the Biological Records Centre (BRC) as a pioneer of citizen science. Guest edited by Dr Helen Roy and Dr Chris Preston of the BRC, the papers explore the methods which can be used to analyse biological records, and use those records to quantify the effects in recent decades of habitat change, climate change, arrival of non-native species and atmospheric pollution on the British flora and fauna. Future developments in recording, including the effect of technological change, are anticipated.

Visit http://tinyurl.com/ol5ne9u to download this SI for free until the end of August 2015.

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

T: +44 (0)20 7434 4479
E: pulseeditor@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

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