

Issue 8 December 2010

News from the Linnean Society of London – A living forum for biology

# The International Year of Biodiversity: What Happens Next?

he International Year of Biodiversity – IYOB – conjures up visions of great celebrations of the diversity of life on Earth. This year has indeed been marked by an incredibly rich set of activities, both here at the Linnean Society, in London, in the UK and worldwide, designed to concentrate minds and hearts on the challenge of conserving habitats, species and genes in the years ahead. 2010 was the year of targets – the target adopted by the Conference of the Parties to the Convention on Biological Diversity in 2002 was to "achieve, by 2010, a significant reduction of the current rate of biodiversity loss at the global, regional and national levels as a contribution to poverty alleviation and to the benefit of all life on earth". It is widely accepted that the target was not met in its entirety – but targets are aspirations, there were good news stories as well.

Here at the Society we began the year with a talk about reintroduction of beavers to Scotland, a real success story; later on in conjunction with the Joint Nature Conservation Committee we discussed the five main drivers of biodiversity loss identified by the Millennium Ecosystem Assessment and prioritised which needed most urgent attention. Our annual joint biodiversity policy lecture with the Systematics Association was a passionate case for linking biodiversity loss and other planetary crises, or we would need to "rent a bigger planet"! The concept of evidence-based conservation – documenting what actually works on the ground – was received with great enthusiasm at a packed summer evening meeting.

I began my own year with a meeting at UNESCO in Paris, one step in setting the next sets of targets. The TEEB report on the economics of biodiversity brought the real cost of losing the rest of life on the planet home – we tend to take ecosystem services underpinned by biodiversity so much for granted that it took a major initiative to bring their true value in monetary terms to the fore. Conferences were held throughout the year, all over the world to develop new targets for the conservation of biodiversity – these culminated in the COP in Nagoya, Japan, happening as I write. In Nagoya, the meeting of Target 1 of the Global Strategy for Plant Conservation (GSPC) was announced – botanists have achieved a working list of all plant species, a true global effort. This year also saw the "completion" of the Census of Marine Life, another incredible effort by the scientific community to assess and





2010 International Year of Biodiversity

document the diversity of life on earth.

When the roadshow that is the COP in Nagoya dies down and new targets for 2020 or 2030 are set, new policies developed and new partnerships established, we must not forget biodiversity, not think that because we had a year of biodiversity we can now move on to something new. Biodiversity underpins ecosystem services upon which the human species, named *Homo sapiens* or "thinking man" by Linnaeus, depends. IYOB was not just a celebration of the diversity of life on earth, but a platform upon which to develop thoughts and actions to maintain a diverse and dynamic planet. IYOB was only a beginning.

Dr Sandra Knapp FLS



#### Message from the **Executive Secretary**

It seems no time at all since I was writing a message for the end of Darwin 200 in 2009, and here we are at the end of the International Year of Biodiversity in 2010. Its been a real privilege to share a wideranging programme of events, including some linked with IYOB, this year, and the article from our Botanical Secretary, Dr Sandra Knapp, on the front page of this issue reminds us that there is much still to do in conveying the message of the importance of biodiversity.

Our meetings and events are a central part of our activity. Some cover broad topic areas whilst others have a more specific focus and many of our meetings are organised in collaboration with other organisations - see pp.4-5 for a comprehensive account of the July meeting on Early Events in Monocot Evolution and p.6 for more about our contribution to the Story of London Festival in October 2010. We are fortunate to have a number of Fellows who convey the message of the wonder of natural history through an artistic medium; the final part of Anthony Smith's travel log from his time as Artist in Residence for the recreated Voyage of the Beagle is included in this issue (p.3) and we are delighted to announce a generous donation of artwork from Margaretha Bååth (p.2)

This year has also been very busy from a facilities viewpoint and the completion of the Tower Room's project was a significant achievement. The Tower Meeting Room, together with a number of other rooms in the Society is available for hire for meetings and events so please spread the word. We also have a new Archive Centre to hold our treasure-trove of archive material – see Alan Brafield's article on p.6 for a good example of a "gem" from our archives and p.7 for details of how our conservation team continue to expand their skills to meet the new challenges of conserving many different types of material!

Thank you for all your support throughout 2010 and on behalf of all the staff of the Society, may I wish you a very Happy Christmas and New Year.

#### **Ruth Temple**



### President's Greeting

am delighted to report that the Tower Rooms were officially opened in the summer, and these provide excellent additional facilities to Burlington House. Our next project is to raise funds for the purchase and installation of a lift. This will make all the facilities of the Society easily available to all Fellows, and of course facilitate the movement of material within the Society.



As the International Year of Biodiversity comes to an end, I very much hope that the vital importance of biodiversity and sustainability will be more widely recognised and understood by the population at large, and may even lead to beneficial behavioural changes. The risk assessment by plant scientists at RBG Kew concluded that habitat loss, resulting from the conversion of natural habitats for agriculture and livestock grazing, is the biggest threat to plants' survival. The report indicated that more than 20% of the world's plants are at risk of extinction. The Census of Marine Life estimated that 80% of marine life is yet to be described, but warned that habitat loss, over-fishing, pollution, acidification and climate change present a serious challenge to the survival of many species. On a positive note the Society played a role, with others, in convincing the UK government to create the world's largest marine reserve (545,000 sq km) around the Chagos Islands. I hope that this example will be followed by others in the future. The comprehensive spending review will result in fewer funds being made available for biodiversity within the UK, so it will be even more important that what funds are made available are spent wisely to gain maximum effect.

As we enter the Festive Season I hope I will have the opportunity of meeting as many of you as possible at the final event of 2010 on December 13th at Burlington House. I have no doubt it will be a memorable evening. Furthermore, I should like to take the opportunity of thanking all of our Fellows, all who serve on the various committees, and the staff for their support and work over the past year. All our meetings have been very well attended with vibrant discussion, and I am sure the programme for next year will be equally fascinating: a Field weekend in Somerset, led by Dr Pat Morris, is being planned in June.

I wish everyone a Happy Christmas and successful New Year.

Vaughan Southgate

Botanical artist Margaretha Bååth FLS recently visited the Society from Stockprints on aquarell paper. Each depicts scabrida, and Paeonia lactiflora. The Society is most grateful to Margaretha



#### **Getting Close To Darwin**

Anthony Smith read Zoology at Cambridge University before starting a career as an artist. He is a Fellow of the Linnean Society and, in 2010, he re-sailed the Voyage of the Beagle on the Clipper the Stad Amsterdam, for a Dutch documentary series (http://beagle.vpro.nl).

Cities such as Rio de Janeiro, Buenos Aires and Sydney, have of course changed immeasurably since Darwin visited in the 1830's. When the Beagle anchored off the Brazilian city of Salvador de Bahia it was surrounded by tropical rainforest. Wandering in these forests, Darwin was captivated by the lush vegetation and exotic insects, and wrote in his diary: *The delight one experiences in such times bewilders the mind*. But when we sailed in, some 177 years later, there were no such forests. It now requires a car journey of several hours, through towns and fields, to reach what remains of them. The Galapagos Islands have also changed considerably. Today there are over 23,000 living on the islands; a number which is growing every year as the tourism industry booms and people flock to the islands from mainland Ecuador.

But we did eventually visit a place where I felt truly close to Darwin.

When sailing up the coast of Chile we made a brief stop at a small town called Chaitén, nestled in a protected bay beneath the western mountains of the Andes. We anchored off the town and took a sloop ashore, where we were met by a ranger from the local National Park. Bumping down the road in the back of his 4x4, we headed along the waterfront road that led into town. What had appeared to be an enormous beach was in fact huge quantities of volcanic ash filling up the bay. Window-frames, doors, and even large section of houses stuck out in the bay, set at jaunty angles as the fine pale ash had set like concrete.

A minute later we were in the town. Chaitén used to be the capital of its province, with a population of 5,000, but as we drove into the town there was no-one. Not even the ubiquitous dogs that inhabit every street in South America. Only ash. The streets were caked with the fine off-white powder spewed from the volcano, and as we rumbled

further into town the ash got deeper. Gradually houses were being swallowed up; some streets were completely buried up to the first



floor. It looked like the world's largest cement truck had tipped over and swamped the town.

The clouds dispersed, revealing the culprit of all this destruction – Chaitén Volcano. It was smoking menacingly. We continued through town until the road came to an abrupt stop at the river. The Río Blanco used to skirt behind the town, but the volcano had triggered a mud-flow, diverting the river through the middle of town, washing away roads and homes. It was the flood that had caused the shifting of silt and ash which had buried the town.



Walking down the empty streets of ruined houses I pictured Darwin alongside me. He had witnessed similar devastation at

the Chilean town of Concepción shortly after it was struck by a massive earthquake. I simultaneously felt the awe, horror and fascination with the power of nature that I had read about in his diaries, and it was at this moment, in a place that he himself never visited, that I felt closest to the spirit of Darwin.

It is a bitter & humiliating thing to see works which have cost men so much time & labour overthrown in one minute; yet compassion for the inhabitants is almost instantly forgotten by the interest excited in finding that state of things produced at a moment of time which one is accustomed to attribute to a succession of ages.



Darwin's Beagle Diary

Anthony Smith FLS



The Early Events in Monocot Evolution meeting took place in late July having been postponed from late April due to the travel problems arising from the eruption of Eyjafjallajökull in Iceland. Despite the postponement the meeting was attended by over 80 participants, with presentations being made by 19 speakers from Brazil, Canada, France, Germany, Japan, Russia, UK and the USA and 10 posters with authors of equally diverse origins. The scientific programme had three main themes: monocot origins and relationships, including fossils, evolution & systematics of early-divergent monocots (including Acorales and Alismatales) and deep monocot relationships: early divergence of lilioid monocots, especially pandans and yams (Pandanales and Dioscoreales).

Echinodorus grandifolius (Alismataceae) pollen grain SEM photograph

Monocots are a major subgroup of flowering plants that include many economically important species, some of them dominant in their habitats, especially grasses. Monocot food crops include cereal grasses, palms, bananas, taro, yams, and onions. Monocots also represent a high proportion of commercially important horticultural plants (e.g. bulbs, orchids, palms, bromeliads) many of which are critically endangered in the wild. In the last two decades the monocot research community has grown to include approximately 300 systematists and allied researchers. This community has significantly increased knowledge of the monocots, not only in phylogenetics, but also in biology and evolution. It has been built through regular quinquennial meetings, with the first hosted at Kew in 1993 (organised by Paula Rudall, Simon Mayo and others). The last was Monocots IV in Copenhagen in 2008. The Early Events meeting was larger in scale than a symposium at a monocot conference, enabling broader linked themes to be explored than is possible in such a symposium and in terms of timing it fell between two such conferences.

At the Monocots IV conference there was relatively little focus on the deep branches of the monocot tree or ordinal relationships, or the early branching taxa themselves, particularly outside the major alismatid radiation,

the Araceae. However, since 2008 this situation has changed radically, primarily through two new large-scale projects: (1) MonAtol, in which the entire plastome and mitochondrial genome is being sequenced in 600+ monocot taxa in addition to transcriptomes from 40 taxa, and (2) a Leverhulme-funded project exploring global patterns of Monocot diversity based at Imperial College and RBG Kew, which is examining how traits, environment and geography interact to determine global patterns of dispersal and diversification. The first session of the Early Events meeting on Monocot origins and relationships drew upon data from these two projects, with papers by researchers at the forefront of both of them: Sean Graham (University of British Columbia) and Andy Jones (Imperial College). These talks re-examined the early branching events in monocot phylogeny and the relationships of alismatid monocots to lilioid monocots such as Pandanales and Dioscoreales. Alongside them, novel research on early monocot fossils, including the use of 3D data, was presented by Selina Smith (University of Michigan). Other papers looked at the evolution of the flower and pollen (Dmitry Sokoloff, Moscow State University and Carol Furness, RBG Kew, respectively) in early monocot taxa and its importance in the subsequent monocot radiations.

The sessions which followed built on the foundations laid by these presentations to explore the systematics and evolution of the largely aquatic Alismatales and that of the Araceae, the largest radiation of the Alismatalean clade. Papers both synthesised data across the Alismatales as a whole (Donald Les, University of Connecticut; Dennis Stevenson, New York Botanical Garden, part of the MonAtol consortium) and provided updates on findings in the individual families Juncaginaceae, Posidoniaceae and Ruppiaceae, and Hydrocharitaceae (Sabine von Mering, Johannes

Gutenberg-Universitaet Mainz; Margarita Remizowa, Moscow State University; Norio Tanaka, Tsukuba Botanical Garden respectively). In the Araceae session the latest data on the molecular phylogeny of the family was presented (Mark Chase, RBG Kew, on behalf of his collaborators Lidia Cabrera & Gerardo Salazar, Universidad Nacional Autonoma de Mexico). This recent research on Araceae phylogeny was then used by Simon Mayo (RBG Kew) to look at the classification of the family, and by Marc Gibernau (CNRS) and Dennis Barabe (Université de Montréal) to look at floral character evolution and the evolution of floral morphogenesis in Araceae, which is defined by its unique inflorescences and flowers.

Gagea uliginosa (Liliaceae), a typical bulbous member of the lilioid monocot radiation

The final session held at Burlington House dealt with the divergence of the monocots subsequent to the Alismalates, the radiations which gave rise to much of the diversity of lilioid monocots familiar through horticulture, for example. One paper considered the evolution of the fascinating order Pandanales, by Graça Sajo (IBUNESP, São Paulo) who looked at the structure and development of unusual floral structures. Robert Scotland (University of Oxford) took an evo-devo approach to the origin of a highly familiar structure, but one with poorly understood developmental origins, the daffodil corona. The final paper by Jerrold Davis (Cornell University) used novel data from the

MonAtol project to address the origins

of the diversity of the lilioid and commelinid monocot lineages.

This meeting was planned to coincide with the official retirement of Simon Mayo and celebrate his career after 37 years working on Araceae and Monocot systematics at RBG Kew. In recognition of this, Ana Maria Giulietti gave a presentation on the role and importance of Brazilian researchers in monocot taxonomy and phylogenetic research. Fittingly, Professor Giulietti was the first Brazilian researcher to come to RBG Kew as part of the collaboration initiated and developed by Simon Mayo and his colleagues in the late 1970s and 1980s. There was also a presentation on the eMonocot project which is about to begin building a novel biodiversity web resource for monocot plants. In recent years Dr Mayo made a major contribution to the initiation of eTaxonomy through his work on the Creating a Taxonomic eScience (www.cate-project. org) and European Distributed Institute of Taxonomy (www.e-taxonomy.eu) projects.

The Early Events in Monocot Evolution meeting was highly successful in bringing together a broad array of monocot scientists and as a forum to exchange ideas and to generate col-

laborations in monocot systematics and evolution. Thanks for financial backing from the Annals of Botany Company (to support early career researcher participation), the Systematics Association, the Linnean Society and RBG Kew is gratefully acknowledged. The oral presentations will be used as the basis of a Systematics Association Volume. This will also be called "Early Events in Monocot Evolution" and will aim to provide a coherent textbook of early monocot evolution and systematics for use by all students and researchers working with monocot diversity. Please look out for it in the near future!

© Mehdi Zarrei

Paul Wilkin



Lysichiton camschatcensis (Araceae) found from the Russian

far East to Japan

# Beware Big Birds!

At the meeting of the Linnean Society on 18 January 1853, William Yarrell read a paper which began 'Some kind friends having supplied me with various particulars relating to the habits of the Great Bustard (Otis tarda of Linnaeus), most of which, as far as I am aware, have not been made public, I have endeavoured to put these materials together, in the belief that they might be found sufficiently interesting to be communicated at a meeting of the Linnean Society; the great scarcity, or rather, the now rare occurrence of the birds in this country, affording but few opportunities for observation'.

One of his informants was
John Britton, who supplied a
letter in his possession, with
permission to use it, that
refers to great bustards on
Salisbury Plain. Part of it runs

as follows: 'A man, about 4 o'clock of a fine morning in June 1801, was coming on horseback from Tinhead to Tilshead. While one mile from the village of Tilshead, he saw over his head, about sixty yards high as near as he could estimate, a large bird, which afterwards proved to be a Bustard. The bird alighted on the ground immediately before the horse, which it indicated a disposition to attack, and in fact very soon began the onset. The man alighted, and getting hold of the bird endeavoured to secure it; and after struggling with it nearly an hour he succeeded, and brought it to Mr. J. Bartley of Tilshead, to whose house he was going.

'During the first week that Mr. Bartley had this bird in his possession it was not known to eat anything; however, at length it became very tame, and would at last receive its food from its patron's hands. Its principal food was birds, chiefly sparrows, which it swallowed whole in the feathers with a great deal of avidity. The flowers of charlock and the leaves of rape formed



Great Bustar

also other parts of its food. Mice it would likewise eat, and in short almost any other animal substance. This bird was judged to weigh upwards of 20 lbs., and to measure between the extremities of its wings when extended about 5 feet, and its height was about three and a half feet. Its plumage was beautiful; and from its gait, which was extremely majestic, a spectator would be led to infer that it was sensible of its own superiority over others of the feathered tribe. In August Mr Bartley sold this noble bird to Lord Temple for thirty guineas. The Bustard inhabits the extensive downs of Salisbury Plain; but its race is now almost extirpated. It is thought that not more than three of four are now remaining.'

Another of Yarrell's friends, Frederick Nash, told him that when he was a young man he once saw nine flights of Bustards in one day, not far from Thetford in Norfolk. Yarrell also notes that Gilbert White of

Selborne wrote in 1782, that at a lone farmhouse on the downs between Whorwell and Winchester, a carter about twelve years before had seen a flock of eighteen Bustards at one time. But of recent years Yarrell had noted only three instances of this species.

Great Bustards are now being reintroduced to Salisbury Plain, in a programme supported by the RSPB. They are very large birds, over a metre tall and with a wingspan of up to 2.4 metres (nearly eight feet). As reported online by the Telegraph on 10 June this year, the birds have been brought here from Russia, where eggs are rescued from destruction by farming. Females nested on Salisbury Plain in 2007 and 2008, and in 2009 males mated successfully with them to produce young. This year at least four chicks are known to have hatched and a population of about 18 birds has been built up.

Alan Brafield FLS

## The story of the London Festival

The Society was delighted to contribute to the Story of London Festival organised by the Mayor of London in October. Together with colleagues from the Learned Societies and the Royal Academy of Arts which surround the Burlington House Courtyard we organised a series of lectures, one in each venue, under the title "Breaking the Mould". The series focused on the contribution of the organisations to innovation in the arts, humanities and sciences over 300 years and on their continuing contribution to the intellectual and cultural landscape of London. The series began on October 1st 2010 with a keynote lecture "London's Learned Societies: Past, Present and Future" given by Lord May, a Fellow *honoris causa* of the Linnean Society, former Government Chief Scientific Advisor and Past-President of the Royal Society. Ruth Temple and Lynda Brooks, Executive Secretary and Librarian of the Linnean Society completed the series on October 8th with a lecture entitled "Collections Classification and Conservation: continuing the Linnean legacy"



#### **Collections Corner**

#### Leather Conservation in Action

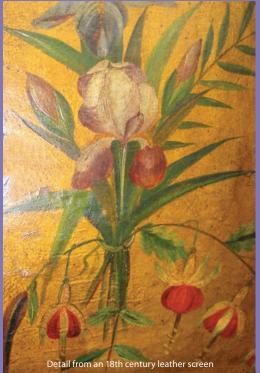
Union Canal. Specialist leather craft

and tanning associations including The

1978 and relocated to its current home

different objects at the same time and on. A wall of floor to ceiling glass doors of time. The studio is also equipped with a fume room, freezer and a book

from leather, fur and parchment. Some included a late 18th century porter's



picnic tea set in a leather case and two used, any further chemical and physical who can help provide a context and

as thinly pared leather can make the material inherently weaker.

untold damage. Fur is particularly at risk pests. Infestations can usually be killed

a blue chrome tanned elephants ear, hard wearing kangaroo

skin which footballs used to be made ray skin shagreen which when polished Danish brigantine 'Metta Catharina von Flensburg' off Cornwall.

centers of excellence like the LCC gives us access to highly specialized skills and knowledge which help us best ensure

Assortment of skins

ATHER

Janet Ashdown and Lucy Gosnay, **Linnean Society Conservators** 

# The Linnean Society's Nepalese Connection

The Linnean Society holds an array of archival material from past Fellows. One collection of note is that of Francis Buchanan-Hamilton, the first Western botanist to visit Nepal in 1802-3. During the expedition he researched the flora and fauna of the region, discovering new plant species, and collected a large number of specimens. Local artists produced watercolour illustrations of many species, 112 of which are found in the collection at the Society. His copious notes can also be found in the archives, notes he hoped would eventually form a Flora of Nepal. III health, however, prevented him completing the work so he sent all his specimens, drawings and notes to his friend, and the Society's founder, James Edward Smith with the request that he complete the work. Smith, however, was too busy to help his friend so it wasn't until *Prodromus florae Nepalensis* by David Don and Nathaniel Wallich that some of Buchanan-Hamilton's Nepalese work was finally disseminated. Disappointingly, the competitive Smith would not allow Don to examine all of the material Buchanan-Hamilton had given him; so many species Buchanan-Hamilton described were not included in Don's work.

Recent research into the collection has been carried out by Dr Mark Watson, Editor-in-Chief of Flora of Nepal. In October, the Society was delighted to welcome Dr Suresh Chandra Chalise, the Ambassador of Nepal, and his wife. Dr Watson discussed Buchanan-Hamilton's work with them and displayed some highlights from the collection.

Ben Sherwood, Assistant Librarian



The Nepalese Ambassador, Dr Suresh Chandra Chalise (far left) examines the Buchanan-Hamilton collection.

# The Opening of the Tower Rooms

"A remarkable transformation".

These were the words of the Linnean Society's President, Dr Vaughan Southgate, speaking at the opening of the new Tower Room Suite on August 3rd 2010. The Tower Rooms have been developed in recent months into a purpose-built Archive Centre and a first-class meeting room



olfson Foundation, at the opening of t

Situated on the top floor of the building, and within the arch located over the entrance to the courtyard, the Tower Room is an ideal setting for board meetings. Wifi is available for room users as well as a digital LCD projector and a collapsible screen. The Tower Room is available for hire Monday to Friday between 10am and 5pm at £270 per day. Please note that currently the Tower Room is only accessible via 96 steps.



Grants Manager of the

e Tower Room Suite

For further details please contact Tom Helps at tom@linnean.org or telephone +44 (0)20 7434 4479 ext 13.

Fellows of the Society will be sad to hear of the death of Ms Susan Darell-Brown in September this year. Ms Darell-Brown was a former member of the Society's staff.

#### Forthcoming Events 2011

**Day Meeting** 

**20th January, 6.00pm** Maintaining the UK as a powerhouse for

science, technology, engineering and

mathematics

Professor Sir Mark Walport

**10th February, 9.30am** Controlling Marine Invasive Species by

Targeting Vectors of Dispersal Registration available at

www.linnean.org

**10th February, 6.00pm** Invasions in the sea:

The marine biology of maritime history

James Carlton

17th February, 6.00pm 1810 and All That: Robert Brown and

nineteenth century biology

David Mabberley FLS

**17th March, 6.00pm** What's so special about British

mammals?
Pat Morris FLS

More information about these and all of the Linnean Society's events can be found at <a href="https://www.linnean.org">www.linnean.org</a> or contact Claire Inman on +44 (0)20 7434 4479 ext. 11, email: claire@linnean.org





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