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PULSE

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

Science in the Chagos Archipelago

One of Britain's most remote Territories lies in the Indian Ocean, where it is attracting substantial biological interest. Scientific expeditions to it have been sporadic in the past, but are increasing, given growing recognition of its importance to the Indian Ocean and its people. The archipelago has had a controversial history, but its scientific importance is now beyond doubt thanks to occasional scientific expeditions to it. The latest expedition was in February 2010, with 12 scientists and support divers.

© Nick Graham

The archipelago's main habitat in its >20,000 km^2 photic zone is coral reef, upon which sit about 55 small islands. Some contain wonderful examples of native Indian Ocean island hardwood, though most were replaced by coconut, once an important commercial crop. Underwater, in general contrast, the condition of the reefs is exceptionally good.

On land, breeding cycles of the huge seabird colonies were better quantified (Chagos contains 10 Important Bird Areas), while plant communities were examined to grade their importance and potential for designation as Important Plant Areas, and for their potential to further increase biodiversity. Such is the remoteness of the place that several new discoveries were made of large mangrove stands and of substantial surviving hardwood tree areas.

Underwater, sites that have been monitored for 35 years were examined for coral recovery following damage caused by warming in 1998: recovery is substantial, showing that Chagos reefs are amongst the most resilient in the Ocean. In similar vein, reef fish biomass was measured also, and here too Chagos reefs come out top by a huge margin – much more fish biomass exists here than in most inhabited areas. Seeing Chagos reefs is like going back to a time 50 years ago or more, and other surprises included discovery of extensive seagrass beds on previously unexplored offshore banks.

Whatever resilience Chagos has, it is likely to be increasingly impacted by climate change, so sea level rise and shoreline erosion aspects were studied, with cores and sections of live and fossil corals taken for dating and for use as proxies measuring climate variables going back, it is hoped for several centuries.

Chagos contains about half of all reefs in the Indian Ocean which are in the least threatened or least damaged category. This is a high proportion to fall under one jurisdiction where there is no massive extraction or degradation. This led some years ago to the idea of complete protection for the area, stimulated as much by the poor condition elsewhere as by the good condition of Chagos. Ongoing genetic work is showing how Chagos species are connected to, and perhaps supply, those badly damaged reef areas in the western Indian Ocean with their millions of malnourished people. The Chagos Environment Network was therefore formed, from the leading UK science and conservation bodies, to help achieve substantial, non-extractive protection for this large area, for the benefit of the region. The Linnean Society was one of those bodies (there were three FLS scientists on this visit), and the government has recently announced the creation of a marine protected area.

Professor Charles Sheppard FLS

The LINNEAN SOCIETY of London

Message from the Executive Secretary

By the time you read this, I hope that Spring will be in full swing. Spring is certainly my favourite season, a time of growth, new life and an opportunity to see all the planning and effort, certainly on the gardening front, come to fruition! This issue of PuLSe provides an opportunity to reflect on the results of the Society's engagement and effort in a number of areas. These include developments at "home" (please see pp. 4–5 for an update on the Tower Rooms) and "away"; the Society, as a member of the Chagos Environment Network has been involved with the FCO consultation regarding a Marine Protected Area (see p. 1) and a number of our meetings this year are linked with the International Year of Biodiversity (see p. 3). We are also continuing to develop our Education activity and are delighted to include an article on p. 8 written by one of the winning team from our inaugural "Darwin Debate".

Similarly, we continue to celebrate the achievement of our individual Fellows—Dr Jenny Edmonds recently received the Swedish Jubilee Medal from the Swedish Linnean Society (p. 8) and Anthony Smith remains on his travels tracing the Voyage of the Beagle as Artist-in-Residence; the second part of his travelog is on p. 6.

Enjoy this issue and may the remainder of Spring be full of new opportunities!

Ruth Temple

© Leonie Berwick

President's Greeting

Welcome to the latest edition of PuLSe and another 'good read'. I hope that the content will be of interest to all Fellows. The accompanying Annual Report 2009 gives a clear indication of the diverse activities of the Society and sets out its aims for the short-term. Some of the planned meetings are linked to the International Year of Biodiversity, for example the successful joint meeting with the Systematics Association earlier this month and looking ahead, the meeting 'On the need for evidence based conservation' in June. We look forward to a good attendance for the presentation of medals and awards at the Anniversary Meeting in May where, in addition, voting will take place for members of Council for the next 'Society year'. Our Conversazione this year will be based in Cardiff where a group will tour the collections of the National Museum Cardiff; this will be followed by a reception and exhibition of rock art in Cardiff University, and we thank Dianne Edwards and Mike Wilson who will be overseeing these events. Also in June, a Field Weekend in the Fforest Fawr Geopark, Brecon Beacons is planned with invigorating and informative pursuits provided by Tony Ramsay and John Good. All in all, there is a full and varied programme with something for everyone.

© Victoria Smith

Vaughan Southgate

Field Trip to Fforest Fawr Geopark (Brecon Beacons National Park, Wales)

We have now received enquiries from Fellows interested in joining us on our field trip to the Fforest Fawr Geopark, if you would like to join this trip please contact events@linnean.org by the end of April.

Annual Subscription

We would like to take this opportunity to remind all Fellows that annual subscriptions to the Society are due on 24 May 2010. As you have been informed, the rates for electronic and hard copy journal subscriptions have changed.
Please contact Priya Nithianandan, the Society's Financial Controller and Membership Officer (priya@linnean.org) if you have any questions regarding your subscription.

A New Golden Dawn for Biodiversity?

Oak leaves *Quercus robur*

The International Year of Biodiversity 2010—mandated by the United Nations General Assembly—is, to put it mildly, an important year. Ahmed Djoghlaf, Executive Secretary of the Convention on Biological Diversity (CBD) has put it bluntly. He says the CBD has not met its targets to reverse species loss, and the consequences are so great that, for society as a whole, business as usual is no longer possible. Dramatic changes have to happen if there are not to be devastating impacts on the natural world, and for the survival of humanity.

The year is aligned to the COP10 meeting of the CBD which will negotiate the 2010–2020 biodiversity targets in Nagoya, Japan in October. One of the year's stated aims is to celebrate biodiversity and so raise awareness in order to influence a positive outcome to the negotiation of the biodiversity targets, but with such a bleak prognosis what is there to be optimistic about? Two major perspectives have emerged over and above the efforts to conserve biodiversity on the ground that I believe are crucial for 2010 and the decades ahead, and how scientists engage with these could define the future of life on Earth, and of science. The first concept, initiated by the Millennium

Primrose *Primula vulgaris*

Ecosystem Assessment and developed by TEEB (The Economics of Ecosystem and Biodiversity), is to value nature in ways that can be understood by economists, politicians and the finance industry. In brief, this means putting a monetary, and therefore tradable, value on the public good of services our natural environment provides such as clean air, fresh water, fertile soil, drought and flood prevention, resistance to erosion, provision of nursery grounds and so on. A language of economic currency is being developed that can be put into the context of human decision making and the truth is that the tens of trillions of dollars lost per annum by not managing this so-called Natural Capital can no longer be ignored, nor can the rate of depreciation of our natural assets which is becoming apparent to all.

The second is the interrelationship between biodiversity loss, climate change and sustainable development for people. Up to 17% of carbon capture comes from the ability of natural systems to absorb atmospheric carbon dioxide. Recognising this provides a mechanism where global finances can be directed towards preserving ecosystems. The most visible mechanism to date, which began to find its feet in December at the Copenhagen Climate Summit, is REDD—the Reduced Emission from Deforestation and Degradation Trading Scheme. This sort of financial mechanism transfers the cost of pollution directly back to managing living systems that can help mitigate the loss. Even more important still is REDD+, which includes in the equation those other vital ecosystem services that help sustain life.

In 2010 therefore there is a real chance for both the environment and the economy to benefit but there remains a significant question. If these mechanisms begin to emerge, and I think they will, how will the transactions be verified? If a REDD+ mechanism is poorly delivered it will not control biodiversity loss and the currency of carbon will be devalued. Part of the answer lies in how the natural sciences will engage with this emerging and potentially exciting paradigm. The London meeting of the Inter Academy Panel in January called for all science institutions to encourage a new generation of T-shaped scientists. These are expert in key skills such as systematic biology and ecology, but with the breadth of ability to engage with all the parties; the local industries, communities, governments and environmental agencies that have to be part of the equation if biodiversity and ecosystems are to be managed and monitored accurately at a local level. Sustainable outcomes for nature and humans will depend upon the quality of scientific engagement. This will be a demanding task; while a new window of opportunity is there, it will be a long road and the challenge to science is—can it rise to the task ahead?

Dr Robert M Bloomfield

Director IYB-UK www.biodiversityislife.net

Oxeye daisy *Leucanthemum vulgare*

Refurbishing t

Over recent months regular visitors to the Society may have heard the distant sound of refurbishment work in the Tower Rooms—we hope this article will explain what all the banging and disruption has been about and why it has all been necessary to support the Society's work.

The third floor Tower Rooms were originally built to be occupied by the "Occasional Societies" and consisted of a large meeting room over the arched courtyard entrance with smaller rooms to the east and west. Current access to the rooms is only available from a single 96 step secondary staircase direct from the ground floor entrance adjacent to the Linnean Society's front door; there is no access or possible link from this staircase into the main premises. At some stage, around the end of the Second World War, the rooms were converted into two flats. Suspended ceilings and partitions were erected which subdivided the original rooms and blocked off the upper portion of the large windows. Various occupants connected with the Courtyard Societies and landlords inhabited these flats but in more recent times one fell out of use and the other provided a London overnight stop for the Royal Society of Chemistry's President. After the negotiation with the Government over the tenancy agreement, the Society exchanged two rooms that it held on the other side of the courtyard and adjacent to the Royal Society of Chemistry's rooms, for their flat. The Government gave ownership of the other flat and the staircase to the Society.

The stripped out flats

When the Landlord began the external refurbishment works and prior to the new lease arrangements coming into effect, the Society lent these rooms to the contractor as their site offices and welfare facilities. On completion of these works in 2006 the rooms were handed back to the Linnean Society. Before leaving the site the landlord's contractors removed the suspended ceilings and partitions and returned the areas to their original configuration but in a stripped out and dilapidated state. As these rooms now became part of the Linnean Society's Grade II* listed building, Council agreed that funding should be sought to bring the rooms back into full use retaining their original building fabric where it existed, renovating the spaces and facilities using sympathetic building materials but introducing modern facilities required by ourselves and other room users.

On the west side of the Tower Rooms a new Archive Room will provide a much needed permanent home for the Library's collection of manuscripts, domestic archives, prints and drawings. Bespoke shelving has been fitted to the walls and a services consultant has designed a new installation to control the environment within the Archive Room. The main funding for the room was generously provided by The Wolfson Foundation and to recognise their support the centre will be named the Wolfson Archive Centre. Some funding was also provided by the Nora McMillan bequest.

The main meeting room needed to be completely renovated. New wall, floor and ceiling finishes were required including repairs to plaster cornices and the renovation of the panelling underneath the large windows on the external walls. Materials and decoration were chosen to match the relevant historic nature and grandeur of the building. On the windows, oak framed secondary glazing with black-out blinds have been installed and the mahogany archive cabinets, for many years located in the Executive Secretary's office, were carefully dismantled and transferred to the main room where they were reconstructed. The Garfield Weston Foundation generously provided funding for the refurbishment of the main room and in recognition of their support we have named the room, with the associated kitchen and welfare facilities, the Garfield Weston Suite.

On the east side a very small timber staircase wound from the first floor of the Geological Society past a toilet and a wooden floored mezzanine store room to provide their staff with emergency access to the roof. These stairs, mezzanine store and toilet were removed to provide space for a new hard wood staircase, this now provides an emergency route out of the building from the Linnean Society as well as giving access to the Tower Rooms from the Geological Society premises. The small escape door, sometimes mistaken

The Garfield Weston suite before renovation

he Tower Rooms

for a cupboard door, in the corner of the Council Room has been made into a full sized door enhancing the escape route from this room via this new stairwell into the Geological Society or onto the roof.

For some years Fellows, staff and visitors have been very keen to have a lift installed in the Society's Rooms and we continue to work on raising funds for what will be the third and final phase of the project. It will also be the most expensive at a cost of £500,000. A new lift installation is proposed within the enclosing walls of the 'secondary' stair, the lift would be able to accommodate a wheelchair and provide level access to the Library, Council Room, Committee Room and the basement where a wheelchair accessible toilet will also be situated along with refurbished toilet facilities. For the first time in the Society's history the lift will make it possible for all to have full access to our facilities which will be a real achievement given the limitations of converting a listed building. Unfortunately due to the configuration of the roof and the Grade II* restrictions, the lift cannot rise as high as the third floor level but we will be able to have a landing located just one flight below the Tower Rooms. We are currently approaching organisations for funding and hope to continue with this final phase as soon as possible.

Many decades ago a small lift was installed in the secondary stairwell to assist the Society's Executive Secretary and his disabled wife who lived in one of the upper flats, but over time this lift became unsafe and the inner cage was eventually removed leaving only the outer shaft in place. This lift only provided access from the half landing above the ground floor up as far as the half landing below the 3rd floor level; there were no intermediate landings or door openings and to provide sufficient space to install it the edges of the stone treads were cut off, timber overlay risers constructed to create the landings, whilst new balustrades and handrails were installed across window openings. Unfortunately these combined alterations compromised the original stair fabric beyond reinstatement. This will mean a new staircase built to modern specifications will have to be constructed alongside a new lift that will be in the corner of the old staircase.

The old lift shaft

The Wolfson Archive Centre after renovation

We realise that until the new lift is installed many Fellows may want to postpone their visit to our new rooms, however if you are interested in either viewing or hiring the rooms please do contact either Tom or Victoria in the office. We hope that you will agree that all the hard work has been worthwhile and that the Tower Rooms refurbishment will not only safeguard the Society's historic artefacts and documents but also the equally historic building that contains them.

For more information contact victoria@linnean.org or call +44 (0)20 7434 4479 EXT 13.

We would like to take this opportunity to thank the Society's architect Paul Davis of Household Hendersen for his sensitive designs for the new rooms.
We would also like to thank David Jarman of A. Jarman Partnership, Building Services Consulting Engineers.

In Darwin's Wake - A Travelog

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

All images © Anthony Smith

Off to See the Wizard

On the 20th of November we rounded Cape Froward, in the Strait of Magellan. This snow-dusted peak of rock marks the Southernmost point of the South American mainland, which for us would be the southernmost part of our global circumnavigation.

The Eastern part of the Strait is wide, and the land on either side is flat and featureless. This contrasts greatly with the Western half; which is lined with steep-sided, snowy mountains which appear to tumble down into the frigid waters. When sailing in this area, we were obliged to have two Chilean pilots on board to guide our navigation through these potentially treacherous waters. The several wrecks that still line these waterways bore witness to the necessity of such precautions. After discussions with the pilots, the decision was made that we should take a small detour, and sail to one of the glaciers of the region. After chart-consultation the route was decided upon—the Chileans have given our chosen glacier the beautiful and charismatic name *El Brujo* ('The Wizard').

As we sailed closer and closer to the glacier, still hidden at the end of the winding fjord, little icebergs passed us more and more frequently. In the bosun's store in the bow of the ship there was a bizarre noise created by the countless small pieces of ice banging against the steel hull of the ship—like popcorn popping in a pot. And they started to become less 'little', but any concerns were put out of mind when we were treated to the remarkable sight of dolphins swimming between the icebergs.

Eventually we were confronted with the sight of 'The Wizard'—an enormous cliff of jagged white and blue, a mile in length, spilling into the end of the fjord. It was a remarkably monochromatic landscape; the dark rocks and vegetation of the mountains, and the inky darkness of the water contrasting with the pure white of the ice. The only colour being the amazing blue of the glacier, which gave it the appearance of glowing from within.

Darwin wrote of this area of the coast of Chile:

> *Almost every arm of the sea, which penetrates to the interior higher chain, not only in Tierra del Fuego, but on the coast for 650 miles northwards, is terminated by "tremendous and astonishing glaciers," as described by one of the officers on the survey. Great masses of ice frequently fall from these icy cliffs, and the crash reverberates like the broadside of a man-of-war, through the lonely channels.*

I feel greatly privileged to have been able to visit such a beautiful part of the world. But I am also concerned about its future. The Southern Patagonian Ice Field appears to be under serious threat from climate change—46 of the 48 glaciers in this region are shrinking year on year. And these beautiful waterways are not as pristine as they once were; salmon farms are spreading into the area, and bringing with them inevitable pollution and ecological damage.

175 years ago Darwin marvelled at the beauty of the glaciers in this region—I really hope that in another 175 years more people can still do the same.

Anthony Smith FLS

Volunteering at the Society–A Swedish Perspective

'What could I possibly do there?' I said when the suggestion was put to me by two ladies at my office's 2007 Christmas party, my last as an employee before my early retirement. I had not yet started to speculate on what to do next but suddenly here was an opportunity not to be missed.

I had been to the Linnean Society on a visit a couple of years earlier, so I knew a little about the Society and had seen the remarkable collection of Linnaeus's books and specimens in the strongroom.

So, in early spring of 2008 I walked through the Society's door to start my first day as a volunteer. The renovation of the premises was still going on, with workmen and scaffolding everywhere and the full beauty of the Society's Library still to be revealed.

Knowing next to nothing about many of the subjects covered by the Society I did wonder how I would fare, but there was really no need to worry. History has always been my favourite subject and books too are a passion and here were both, in almost unlimited supply. Originally I was to do one day a week but soon added a second day, a twice weekly event I always look forward to.

Some flooding, early on, in the Library saw me cleaning the damaged books as one of the first tasks undertaken, together with putting the Fellows' certificates on to the Society's database. Back in Sweden I had for a time, many years ago, worked at the Royal Armoury in Stockholm, in the Textile Conservation Department hence my interest in conservation work. Helping out with the books was a task I enjoyed and was followed by a brief stint helping to clean some of the original covers from Smith's Herbarium and also specimens, interspersed with the work on the Fellows' certificates.

In the Library, the mountain of books was however growing, so assisting with cataloguing became another job, strangely enough linked to another career plan I once had, namely to become a librarian. Today one of my main tasks is to catalogue the books so that clients checking the Library's database can see what is in stock, but the actual classification is left to our Librarian. Handling all these books means that I constantly discover interesting tomes on subjects and people that I had not previously been aware of. Now the problem is only how to find the time to read all these exciting finds in this priceless collection!

© Leonie Berwick

Part of the Linnaean Collection

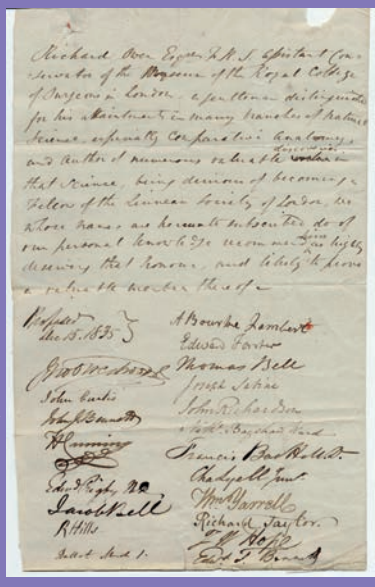
© Leonie Berwick

Pia Wilson in the Library

The Fellows' certificates are themselves interesting steps back in time, in both the Society's history and the history of the Fellows themselves. Reading their obituaries you marvel at the lives led and the incredible amount of knowledge amassed by these men and women. Through the signatures on the certificates you follow the lives of some of the Fellows and you actually miss them when one day their signatures disappear.

At school in Sweden we learnt about Linnaeus, or Carl von Linné, and his work, but not until now have I understood the full extent of the man and his work and how he has inspired, through the centuries, men and women all over the world. I do feel honoured to be a fellow Swede walking through the Society's door each week, and hope that my efforts as a volunteer will in some small way assist the dedicated work carried out by the Society's staff and my fellow volunteers.

Pia Wilson



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Fellows' certificates

Dr Jenny Edmonds FLS Honoured

The Swedish Linnaeus Society recently honoured Dr Jenny Edmonds with the Swedish Jubilee Medal in gold for her work "before and during the Linnaeus Jubilee Year". The medal was presented at the Royal Swedish Academy of Sciences, Stockholm by Emeritus Professor Carl-Olof Jacobson, Chairman of the Swedish Linnaeus Society and former Director-General of the Academy.

The medal depicts the Cornish mallow, *Lavatera cretica* L. with the five petals symbolising the five parts of the world in which Linnaeus thought this plant grew and which he undertook to explore with the help of his disciples. The drawing on the obverse is a self-portrait of Linnaeus admiring the mid-night sun at Jokkmokk during his famous Lapland journey in 1732, which he described as a "miracle of nature". His ambitious plans for the exploration of five continents are reflected in the motto found on the obverse which reads "Famam extendere factis – "to make known his fame by deeds". The medal, which was designed by Michel Őstlund, was struck in both gold and silver. Other recipients of the Gold Jubilee Medal include King Carl XVI Gustaf of Sweden and His Excellency Emperor Akihito of Japan.

Dr Jenny Edmonds receives her medal

The Darwin Debate

Quintin Kynaston students at the Natural Hisory Museum

© *David Knocker*

Before doing the Linnean Society Darwin Debate we already knew a great deal about Darwin's theory of evolution by natural selection, through studying his scientific work in school. From doing the debate I reconsidered Darwin's impact on society. Moreover, I really enjoyed the sense of satisfaction of producing a solid argument for the motion: "This House believes that Darwin's theory of evolution by natural selection has led to a more ruthless and less tolerant society".

Through preparing the debate I found myself considering how Darwin's theories have directly and indirectly influenced a huge range of peoples. An example from our research includes learning about eugenic studies carried out by the Nazis, who corrupted Darwin's theories to suit their own purpose. Researching Darwin's life I realise that Darwin was the kind of man who would certainly not have wanted his theories interpreted to support these appalling causes. This made me consider the immense impact on society that Darwin's theories still have so long after his death, and the responsibility all scientists share to ensure that their theories (or other scientists' theories) are not distorted to support evil causes, or genocide.

We were a team with mixed religious beliefs, meaning that some of the members are sceptical with regard to Darwin's theories, but as a team we overcame this hurdle and focussed more on the idea of winning the debate through teamwork and well-reasoned arguments, supported with evidence, rather than allowing our personal views to impact on our motion.

Having won the debate, we were lucky enough to have a guided tour of the Natural History Museum exhibitions. We found it truly inspiring to see some of the original specimens collected by Darwin himself on his Beagle voyage. Furthermore, we really enjoyed the opportunity to speak to Dr Malcolm Scoble, the Keeper of Entomology at the Natural History Museum, London, particularly as he was able to answer a range of questions that go beyond the knowledge of an average school science teacher. Finally we thank the Linnean Society for the opportunity to take part in the debate and for the guided tour of the Museum.

Dale Braster, Year 10 pupil, Quintin Kynaston School

Forthcoming Events 2010

24th May, 4.00pm	222nd Anniversary Meeting of the Linnean Society of London Schistosomiasis and environmental change *Vaughan Southgate PLS*
10th June, 4.30pm	Sequencing the Red and the Dead *David Rollinson, Tim Littlewood, Richard Sabin*
17th June, 6.00pm	The need for evidence based conservation *William Sutherland*

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

All articles welcome! Please submit your articles in electronic format to the Editor at pulseeditor@linnean.org. Images are also welcome in high resolution format with appropriate permission and copyright.

The Linnean Society of London, Burlington House, Piccadilly, London W1J 0BF UK
Tel: +44 (0)20 7434 4479 Fax: +44 (0)20 7287 9364
Web: www.linnean.org

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