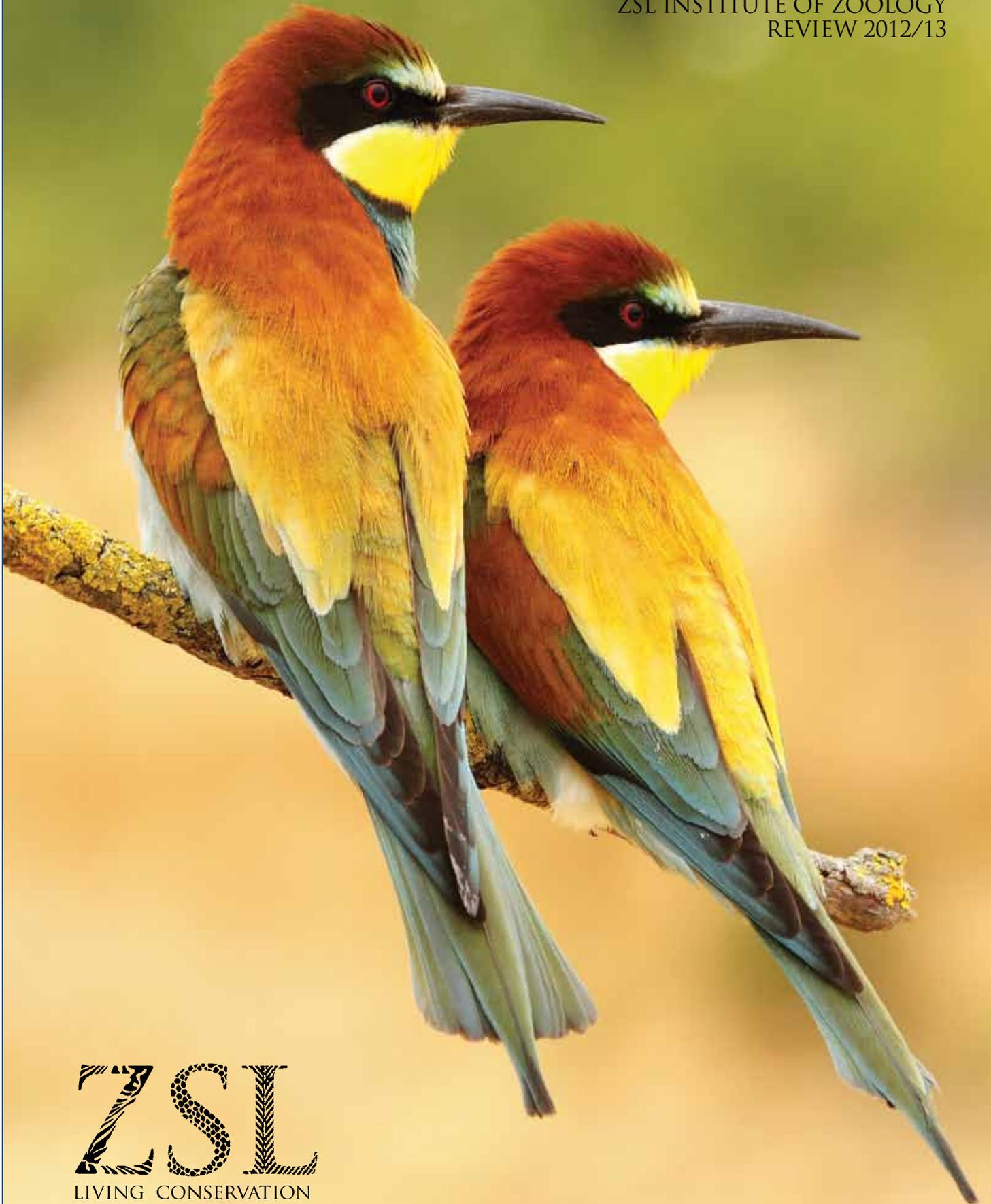


SCIENCE FOR
CONSERVATION

ZSL INSTITUTE OF ZOOLOGY
REVIEW 2012/13



IOZ RESEARCH STRATEGY

OUR AIM

To undertake and promote relevant high-quality zoological and conservation research, to help ZSL achieve its conservation objectives, and to inform and influence conservation policy.

OUR OBJECTIVES

1. Encouraging and rewarding excellence in the performance and communication of science, conservation and animal husbandry
2. Attracting and engaging a diverse range of people and organisations in the science of zoology and conservation – from students to leaders in their field
3. Using our unique convening role as a leading learned society to foster and achieve international excellence in science relevant to our core conservation priorities
4. Managing and developing a relevant and useful body of zoological knowledge
5. Providing policy makers, conservationists and the general public with the information needed to make informed decisions on conservation issues
6. Raising the profile of conservation issues and priorities, and ensuring they are well represented at policy level and in the media

OUR ACTIVITIES

HEFCE-funded programme

We undertake research and research training in the following themes:

- **Biodiversity and Macroecology**
- **Behavioural and Population Ecology**
- **Evolution and Molecular Ecology**
- **Wildlife Epidemiology**

We provide education through MSc and PhD programmes

Science Plan

The major topics:

- **Biodiversity patterns and processes**
How can we explain and model biological diversity at a range of spatial, temporal and biological scales?
- **People and the environment in a changing world**
How can we manage wild species and habitats sustainably alongside human population growth and development?

With the rest of the Zoological Society of London

We respond to research questions and contribute to ZSL's

Conservation Programmes:

- **Conservation Breeding and Reintroduction; EDGE; Indicators and Assessments; Marine and Freshwater; Wildlife Health**
- **Africa; South and Central Asia; Southeast Asia; Mongolia; UK and Europe**

We respond to research questions and contribute to ZSL's living animal collection:

- **Animal health and welfare research**
- **Reproductive monitoring**

We run a programme of meetings and publications:

- **Journal of Zoology and Animal Conservation**
- **Annual programme of evening science and conservation events**
- **Biannual international symposia on topical themes in conservation biology**
- **Technical publications to support best practice in zoos (*International Zoo Yearbook*) and in field conservation (*Conservation Reports*)**
- **Conservation Science and Practice book series published with Wiley-Blackwell**

With University College London

We maintain and develop research links with genetics, evolution and environment, and other relevant departments, notably the Centre for Biodiversity and Environmental Research. We aim to maximise the opportunities for shared graduate training at masters and doctoral level.

We contribute to London-wide activities in ecology and evolution through membership of the Centre for Ecology and Evolution.

With institutions in London

We maintain and develop research links with academic bodies, especially the Centre for Ecology and Evolution. We run MSc courses in wild animal health and wild animal biology with the Royal Veterinary College and an MSc in conservation science.

Our research is influenced by London-based conservation issues.

Our programme of talks communicate science and conservation.

With other organisations

We collaborate with most relevant outside bodies for our core research interests.

Our programme of talks communicate science and conservation.



Welcome

The President and Director General of the Zoological Society of London introduce the Institute of Zoology Review 2012/2013.



The Zoological Society of London (ZSL) was founded in 1826, with one of its core aims being to promote the science of zoology. The kind of questions that this discipline addresses has changed out of all recognition in the intervening 187 years. What the founding fathers would have made of conservation genomics, macroecology or wildlife epidemiology is anyone's guess, but I am sure they would be happy to see that ZSL continues to be at the forefront of zoological research thanks to the scientists at its Institute of Zoology (IoZ).

It is worth taking a moment to consider just how unusual a creature is IoZ. A world-class independent scientific research institute, part of a conservation charity but supported by funds from the UK government, affiliated with one of the world's top universities, based at a zoo in the centre of one of the world's major cities, but with researchers away studying animals from the tropics to the poles. It is truly a unique institution, and one of which ZSL is justly proud.

In the pages that follow, you can read about some of the ongoing research projects being carried out by IoZ scientists. These span a wide range of topics, from the reasons for the extreme sexual size dimorphism shown by the giant moa of New Zealand to the identification of zoonotic viruses in African fruit bats. They illustrate why IoZ has the reputation it does within the scientific community, and why it continues to attract so many high-quality students and collaborators from around the world to work with its scientists.

The IoZ could not achieve so much without the support of its many partners, and most notably University College London, with which we continue to develop our research interests.

Professor Sir Patrick Bateson FRS
President, Zoological Society of London



I am proud to welcome you to IoZ's annual review, in which you can read about some of our scientific highlights from the past year.

It is probably fair to say that most people who know of ZSL know of it because of its world-famous zoos in London and Whipsnade. These attractions are fantastic shop windows for the work of the organisation, and many of the visitors to them leave knowing (and hopefully also caring) more about the animals they share the planet with.

What many people don't know is the incredible breadth of ways in which ZSL educates people about the natural world. A significant proportion of that comes from the work of the Institute. IoZ participates in three MSc courses in conservation-related subjects in collaboration with the Royal Veterinary College and Imperial College London, and in this past year has started up an MRes course jointly with University College London and the Natural History Museum. Around 60 students take these courses each year. IoZ scientists currently co-supervise almost 50 PhD students, while a further 10 PhD students are affiliated with IoZ, to the benefit of their research and ours. Many of these masters and doctoral students are from overseas, helping to give ZSL a strong international profile.

IoZ also has four staff dedicated to producing ZSL's scientific journals and to running ZSL's programme of free scientific meetings for the general public, as well as our annual programme of international scientific symposia. All this means that ZSL is educating people from their earliest visits as children through to their senior years. I hope that you enjoy this review, and that in reading it you learn something new.

Ralph Armond
Director General, Zoological Society of London

Communicating Science

A major part of IoZ's work is facilitating the communication of science among researchers and professional zoologists, and to the public. We achieve this through a varied programme of meetings and the publication of scientific journals and books.



SCIENCE AND CONSERVATION EVENTS



SYMPOSIA

ZSL's symposia bring together teams of international experts to discuss important topics in conservation science, providing an opportunity for leaders to exchange ideas on best practice and communicate their research. The November symposium 'Protected Areas: are they safeguarding biodiversity?' reviewed the extent to which the world's protected areas are effectively conserving species, ecosystems and ecosystem services, and identified new tools and technologies that are necessary to ensure effective biodiversity preservation within the global protected-area network.

Our May symposium, 'New technologies for monitoring biodiversity', described the ways in which advances in technology are contributing to the surveillance of wildlife – for example, by using autonomous sensors to gather information at larger scales, over longer periods and in more inaccessible places. An international team of experts discussed the application of satellite, aerial, ground-based and underwater technologies, and considered the challenges of designing smaller, stronger, cheaper, more sensitive and more flexible sensors for biodiversity monitoring.

SCIENCE AND CONSERVATION EVENTS

ZSL's popular Science and Conservation Events lecture series is free and open to the public. Held on the second Tuesday of each month throughout the academic year, each meeting provides an overview of the latest developments in conservation and zoological research. This year's programme included lectures on: 'The small things that rule the world: conserving the world's invertebrates'; 'Saving the tiger: innovation, tradition or both?'; 'Can the food security agenda and the conservation agenda be reconciled?'; 'Deserts: a neglected ecosystem'; and 'Invasive species: one of the four horsemen of our apocalypse'. A collaborative event with the Wellcome Collection, 'Surviving the century: a key species debate', was held in November.

SCIENCE FOR CONSERVATION SEMINAR SERIES

This series provides the IoZ's staff and students with the opportunity to learn more about the work of visiting researchers, collaborators and invited speakers. A range of subjects was covered during the year, including: 'Biodiversity research in Indonesia: marrying science with practical conservation'; 'Monkey see, which monkey do? Personality and social learning in wild baboons'; 'Pathways to fitness: what is the link between signal expression and quality in sexually selected animals?'; and 'Islands, conservation and research: lessons from 40 years of species translocations in New Zealand'.

OUR EVENTS PROGRAMME

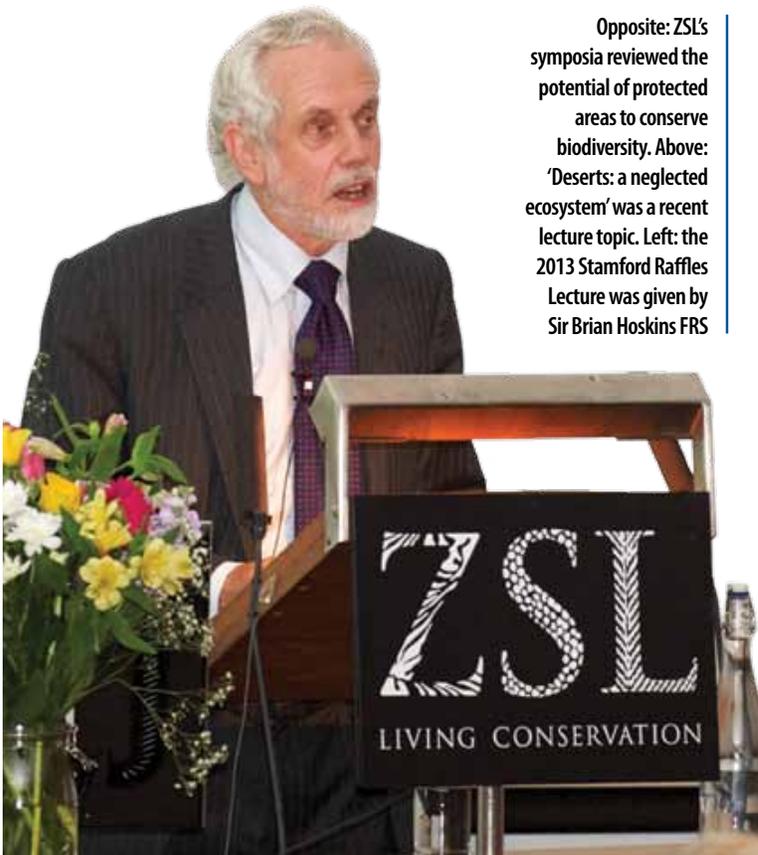
Please see www.zsl.org/science/events for our current programme of events



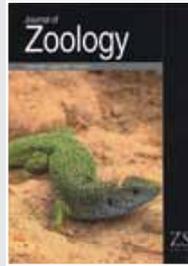
STAMFORD RAFFLES LECTURE

The 2013 Stamford Raffles Lecture was given by Sir Brian Hoskins FRS, Director of the Grantham Institute for Climate Change, at Imperial College London. 'A very dangerous experiment with our planet' described the scientific basis for the concern over climate change and reviewed observational evidence for the changes currently taking place. The likely implications of climate change, for both the natural world and the human species, were also explored. Visit www.zslsites.org/lectures/stamfordraffles2013 to view the lecture online.

Opposite: ZSL's symposia reviewed the potential of protected areas to conserve biodiversity. **Above:** 'Deserts: a neglected ecosystem' was a recent lecture topic. **Left:** the 2013 Stamford Raffles Lecture was given by Sir Brian Hoskins FRS



PUBLICATIONS



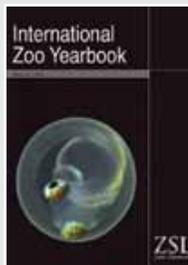
Journal of Zoology

Published monthly, the *Journal* includes hypothesis-driven studies that advance our knowledge of animals and their systems. The 2013 Thomas Henry Huxley Review, 'Social competition and its consequences in female mammals' by Tim Clutton-Brock and Elise Huchard, was published in March. A virtual issue to celebrate Alfred Russel Wallace, including contributions from proceedings of ZSL, is available via the *Journal* homepage. Three further episodes of the popular *Journal of Zoology* podcast can also be downloaded from the homepage – visit www.zsl.org/science/publications.



Animal Conservation

Animal Conservation provides a forum for rapid publication of novel research into the conservation of animal species and their habitats. Feature papers and commentaries, published in each issue, continue to be well received. A themed virtual issue on protected areas is available via the journal homepage. *Animal Conservation* sponsored the student poster competition at the International Congress for Conservation Biology conference in Maryland, USA. First prize was awarded to Hilton Oyamaguchi for his poster 'Importance of the Amazon-Cerrado gradient in preserving adaptive variation in a changing world'.



International Zoo Yearbook

Volume 47 of the *International Zoo Yearbook* adds to its reputation as an invaluable resource for researchers, students and animal managers. The focus of the current volume is freshwater fishes and their conservation, guest-edited by Gordon McGregor Reid, director emeritus, North of England Zoological Society (Chester Zoo). The biodiversity of freshwater fish and the valuable ecosystem services they provide are reported on, and descriptions are given of the co-ordinated action being undertaken to conserve freshwater-fish species from habitat modification, overfishing, pollution, the introduction of alien species and climate change.

Conservation Science and Practice book series

Books in the Wiley-Blackwell/ZSL Conservation Science and Practice series aim to address the multidisciplinary aspects of conservation by looking at how biological scientists and ecologists are interacting with social scientists to effect long-term, sustainable conservation measures. Titles published this year include: *Biodiversity Monitoring and Conservation: Bridging the Gap Between Global Commitment and Local Action*, edited by Ben Collen, Nathalie Pettoelli, Jonathan Baillie and Sarah Durant; and *Biodiversity Conservation and Poverty Alleviation: Exploring the Evidence for a Link*, edited by Dilys Roe, Joanna Elliott, Chris Sandbrook and Matt Walpole.

The ZSL Library

During 2012 more than 3,100 book titles were added to our online catalogue, 2,363 journal issues accessioned and 2,124 loans were made to ZSL staff and Fellows, while the ZSL Library online catalogue at library.zsl.org was used 11,300 times.



The ZSL Library manages, develops and facilitates access to a relevant and useful body of zoological and conservation knowledge, and inspires interest in animals, habitats and conservation to a wide audience. A key element of this is the development of the ZSL online catalogue (<http://library.zsl.org>), which acts as a portal to aid access and discovery of a range of resources. The new-look online catalogue was launched in April and includes details of more than 37,000 books, serial holdings, ZSL's Archives, artworks and links to relevant online resources. Over the past year, Alfred Russel Wallace books have been added to the online catalogue in preparation of our Wallace centenary celebrations, while a special collection of books on climate change is being added to the Library and the catalogue.

IN THE PUBLIC EYE

The Public Catalogue Foundation has catalogued and photographed oil paintings in our collection. These appear on the Your Paintings website www.bbc.co.uk/arts/yourpaintings.

Major donations included copies of zoo-related magazines and newsletters presented by International Zoo News. The family of the late Bernard Owens kindly donated a ZSL Silver Medal and a Queen Victoria Golden Jubilee Medal. The ZSL Silver Medal had been presented to His Highness Nripendra Narayan Bhup, in Acknowledgement of Valuable Donations to the Society in 1887. The medals were purchased in 1989 by Bernard Owens, a ZSL Fellow and former ZSL Council member.

There has been continued interest in the manuscripts of Brian Houghton Hodgson. The mammal drawings were used in *The status of Nepal's mammals: the national Red List series*, compiled by SR Jnawali et al and published by WWF. The bird paintings have been photographed for *The status of Nepal's birds*, which will be published in 2013.

The Royal Society borrowed three items illustrated by Edward Lear for their exhibition *Edward Lear and the Scientists*, held to celebrate the bicentenary of his birth. The BBC also made a slideshow of the exhibition featuring an original painting from our collection at www.bbc.co.uk/news/science-environment-19409112.



AT THE LIBRARY

Displays in the Reception and Reading Room included a historic collection of materials to show how ZSL's housing for big cats has developed since the Zoo's inception. This feature was chosen to celebrate the imminent opening of *Tiger Territory* at ZSL London Zoo. The display in the Reading Room Gallery also featured the Fish House, the first public aquarium, celebrating 160 years since it first opened its doors in May 1863.

A special Library tour for Fellows was held during March to celebrate the contribution of women to the history and development of zoology. Tours for external groups have included the Bartlett Zoo History Society, the London Appreciation Society, Sparsholt College, artists from the Zoo-topia project, which is a collaboration between ZSL, the Royal College of Art, The Hungarian Cultural Centre and the British Council.

Numerous items from the Archives and Special Collections were consulted, including the letters of Dr John Anderson of the Indian Museum, drawings by PJ Smit, manuscripts of Brian Houghton Hodgson, the history of Zoological Record, historic images of dolphins and sea monsters dating back to the 16th century, 19th-century letters of the Rothschild family and information on Kenneth Martin, creator of the mobile suspended in the ZSL Meeting Rooms.

During May our team of Wednesday Library volunteers completed the rehousing of the negatives in our historic photograph collections; an estimated 20,000 images! The negatives are now in conservation-quality storage.

Our Artefact of the Month series is available on the ZSL website (www.zsl.org/about-us/library and click on Artefact of the Month). In August we featured The Coulton Portfolio, which consists of 55 mainly watercolour drawings of vertebrate animals from the collection

of Charles Hamilton Smith (1776-1859). The portfolio was presented by ZSL's former secretary, Professor R McNeill Alexander, in 2012.

We are extremely grateful for the continued help of our dedicated team of volunteers and the many Fellows and Members of ZSL who continue to support the Library with their time, and by donating books, archives, zoo ephemera and funds for the conservation of items in our collections.



Above: the family of the late Bernard Owens donated this ZSL Silver Medal, previously owned by an Indian Maharajah. Top of page: the ZSL Library. Right: recent acquisitions include wildlife watercolours by artist and naturalist Charles Hamilton Smith, among them this painting of two South American cats



The Zoological
Society of London
Registered Charity in
England and Wales:
no 208728

Regent's Park
London NW1 4RY
and at:
ZSL Whipsnade Zoo
Dunstable
Bedfordshire LU6 2LF

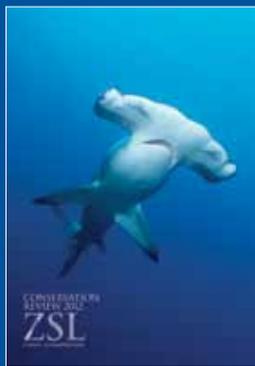
zsl.org

For a closer look at ZSL's work, look out for our other annual publications at zsl.org/about-us/annual-reports



**ZSL Living Conservation:
The Year in Review 2012**

Our overview of the year, featuring our zoos, fieldwork, science, engagement activities and ways to get involved.



ZSL Conservation Review 2012

An in-depth look at our conservation fieldwork and research, showing how we're achieving our key targets at home and abroad.