

ISSUE 1
Spring 2017
Exclusively
for ZSL Fellows

THE ZOOLOGIST



INSIDE:
Chagos, Benin,
Thames Citizen Science,
Stamford Raffles Lecture

A group of Pacific sea nettles (*Chrysaora fuscescens*)



Nathalie Pettorelli, Senior Research Fellow, Institute of Zoology, ZSL

SPECIES ON THE MOVE

**ZSL calls on government
to address climate-driven
wildlife movement**

The impact of climate change on wildlife is having increasingly profound implications for human society and needs to be addressed by governments worldwide.

As environmental conditions change and temperatures rise, marine, freshwater and terrestrial species are responding by moving to higher altitudes, deeper in the oceans, or towards the poles. This is according to new research published in *Science*, led by the University of Tasmania, in partnership with ZSL and over 40 international institutions.

The report calls on governments to make species movements a central pillar of their climate change adaptation plans as a matter of urgency. Critically, consideration of the effects of biodiversity redistribution is lacking in most mitigation and adaptation strategies, including the United Nations' Sustainable Development Goals.

"Environmental legislation has traditionally focussed on in-situ conservation and the preservation of historical conditions," said Dr Nathalie Pettorelli, Senior Research Fellow at ZSL's Institute of Zoology and co-author of the report. "But, with species moving beyond their traditional ranges and the disappearance of historic ecosystems, conservation law objectives will need to be reassessed. Conserving natural corridors is imperative to allow our wildlife to move and adapt."

The largest mass movement of species since the peak of the last Ice Age "will leave 'winners' and 'losers' in their wake, radically reshaping the pattern of human wellbeing... and potentially

leading to substantial conflict," warns the report.

Impacts on human society include creating serious new health threats. Malaria will become more prevalent as disease-carrying mosquitoes expand their range towards the poles, into regions with no previous exposure, and Lyme disease has seen a tenfold rise in the UK since 2001 as the UK's winters get warmer.

Rising global temperatures could also encourage crop-eating pests into new areas, while disrupting key pollinating insects, and increase tension between nations as natural resources shift – including fish stocks.

In agriculture, the world's principal coffee-growing regions are expected to shift to new territories, while temperature change is set to make a third of the land used for forestry in Europe unusable for the more valuable timber trees. Meanwhile, tourism is likely to suffer as jellyfish swarms increasingly infest recreational waters and coral reefs die; an influx of tropical fish, including the blue-barred parrotfish, is already destroying vital kelp forests in Australia's oceans.

"We need to better understand and predict when species movement will occur, and to do that we need international cooperation combined with adequate resources," said Dr Pettorelli. "ZSL Fellows can get directly involved in data collection and interpretation through citizen science schemes such as Redmap, which aim to help scientists to better understand which species are moving where, and why."

Go to zsl.org/conservation/get-involved to find out more about our citizen science initiatives. **TZ**



DEAR FELLOWS

**Ken Norris, Director of Science,
Institute of Zoology, ZSL**

Welcome to the first edition of *The Zoologist* – an update on ZSL’s work from around the world for our Fellows. ZSL is committed to the global conservation of animals and their habitats, and we’re proud that our conservation is based on research, evidence and fact; but what does this mean, and how does it relate to our mission?

It is easy to feel overwhelmed by the scale of the world’s wildlife conservation needs – it involves thousands of species of animals living in a diverse range of habitats across the globe. To tackle this complexity, our approach breaks conservation down into two main areas:

- *Conservation diagnosis* – understanding how and why animal populations and their habitats are changing
- *Conservation solutions* – devising and implementing actions, and understanding whether or not they are effective.

Science plays a crucial role as it provides the foundation for our actions – and improves our understanding of these issues. Without it, our chances of saving threatened animals and habitats would be small. In the same way that medical science plays a pivotal role in health care, so conservation science plays an equally important role in conservation.

As an organisation, we are proud of the contribution our science has made to global conservation efforts. Within these pages, you will learn about some of our current projects – from big cats in West Africa and seabirds in the Indian Ocean, to marine life in waters a bit closer to home – and why science matters. **TZ**

DIARY DATES

21 May 10am – 12pm

Regent’s Park invertebrate survey with the Royal Parks Foundation

26 May 9am – 5pm

Engaging with Parliament and responding to inquiries: a BES/ZSL workshop for ecologists interested in the science/policy interface, ZSL London Zoo

6 June 2.30pm

Supporters’ Day: Behind-the-scenes tours, networking with ZSL staff and Council members, and hear from our leading conservationists and scientists, ZSL London Zoo

7 June 12pm

Julian Huxley Memorial Lecture: An epidemiologist’s life on the edge (of the science-policy interface), UCL

20 June 6pm

Stamford Raffles Lecture 2017 and ZSL Scientific Awards Ceremony, Huxley Lecture Theatre, ZSL London Zoo

11 July 6pm

Conservation talk: The state of the Thames, Huxley Lecture Theatre, ZSL London Zoo

14 – 15 September 9am – 5pm

Symposium: Bird behaviour in a changing world – with a special focus on bird senses, Huxley Lecture Theatre, ZSL London Zoo

Find out more at zsl.org/science/whats-on

NESTING SEABIRDS THROWN A LIFELINE

Successful removal of rats in the Chagos Archipelago is a vital step for protecting island seabirds

Vache Marine in the Chagos Archipelago has officially been declared the first rat-free island in the British Indian Ocean Territory (BIOT) thanks to a successful pilot initiated in 2014 by the Chagos Conservation Trust (CCT) and project leader, ZSL conservationist and CCT trustee, Pete Carr.

Rats are a serious problem on islands across the globe. Unintentionally introduced by humans, they are highly adaptable and their presence can have severe consequences for native species, particularly ground nesting birds like the sooty tern. Rats eat unprotected eggs and hatchlings and, in the long-term, their presence can make an island unusable for breeding bird colonies.

Dr Malcolm Nicoll, Senior Research Fellow at ZSL’s Institute of Zoology, said: “This is the first successful removal of invasive rats from an island in the Chagos Archipelago and is a vitally important step in the restoration of the Archipelago’s seabird community. Seabirds are an essential component of tropical, oceanic

island ecosystems and create a flow of nutrients between marine and terrestrial environments.”

ZSL has been at the forefront of the protection of the Chagos Archipelago, alongside partner organisations like the CCT and the Darwin Initiative, funders of the de-ratting project on Vache Marine, since its designation as a Marine Protected Area in 2010. BIOT forms one of world’s largest continuous protected marine reserves (640,000km²).

The islands of the Chagos Archipelago are currently home to 18 species of breeding seabird but further work is underway to record their status and distribution, and to understand how seabirds from the wider West Indian Ocean utilise the BIOT protected area. The research will form part of a larger three-year project linking research into a wide range of species and habitats, with the aim of establishing the effectiveness of marine reserves for conservation. **TZ**



Red-footed boobies (*Sula sula*), another nesting seabird under threat from rats



African leopard (*Panthera pardus pardus*) is caught on camera, ZSL/Panthera/IUCN Cat SG

LARGESCALE CAMERA-TRAPPING IN BENIN

ZSL sets up camera traps to uncover big cats' secrets

Earlier this year ZSL set up a series of 65 camera traps across Benin's W-Arli-Pendjari conservation complex (WAP), which also spans parts of Burkina Faso and Niger, in the hope of better understanding the elusive cheetah (*Acinonyx jubatus*) and African leopard (*Panthera pardus pardus*).

The WAP complex is of vital importance, containing the last intact savannah system in West Africa, and the project represents the most systematic camera trap survey in the region to date. Besides the leopard and cheetah, WAP is home to the largest populations of the Critically Endangered West Africa lion and Vulnerable West African elephant.

"Little is known about either the cheetah or leopard populations in this area, so we hope to establish presence and some estimate of abundance. By doing so we can also prove the worth of preserving this region, which is crucial to fighting threats like poaching and habitat reduction," said Sarah Durant, lead ZSL scientist in the region. Both cats are listed as Vulnerable

by IUCN and, although more widespread and adaptable than the cheetah, there is fear that the leopard's numbers are thinly spread.

As part of a wider conservation effort in Benin, ZSL works closely with the Benin government (CENAGREF), the IUCN/SSC Cat Specialist Group, Panthera, and Save the Elephant to assess wildlife numbers, improve park management and monitor the market for illegal wildlife trade. **TZ**

“The WAP complex is of vital importance, containing the last intact savannah system in West Africa”

STAMFORD RAFFLES LECTURE 2017

How animals shape habitats, ecosystems and the global biosphere

Professor Yadvinder Malhi, University of Oxford will present this year's Stamford Raffles Lecture.

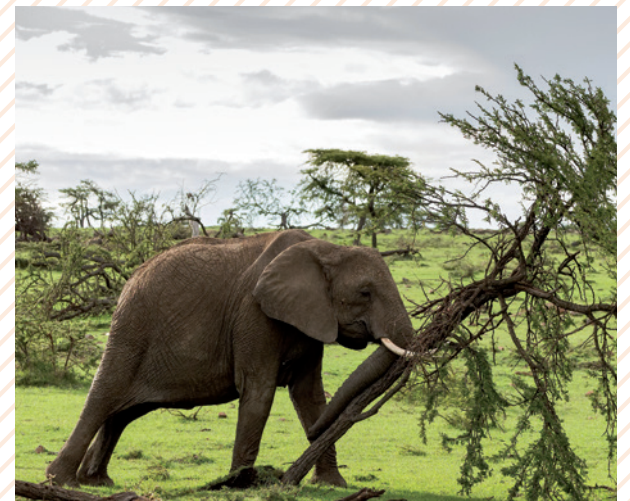
Exploring a variety of ways in which animals can influence ecosystem structure, biomass, fire regimes and even climate, Professor Malhi will draw on evidence from the Pleistocene to modern times, across a diverse range of species, and ongoing experiments and 'rewilding' projects.

Yadvinder Malhi is Professor of Ecosystem Science at the University of Oxford and Director of the Oxford Centre for Tropical Forests. His work focuses on understanding the ecosystem ecology of tropical ecosystems, and how human activity has changed or will change these ecosystems. He is President-Elect of the Association of Tropical Biology and Conservation.

Tuesday 20 June, 6pm – 9:30pm,

ZSL London Zoo. Price for ZSL Fellows: £15, *Includes drinks and canape reception.*

Contact Jennifer.Howes@zsl.org for details. **TZ**



Animals can have a profound effect on ecosystems, including African elephants (*Loxodonta africana*)



Measuring a European eel (*Anguilla anguilla*) elver

GET INVOLVED

Become a Thames Citizen Scientist

Despite once thriving in London's rivers, European eels (*Anguilla anguilla*) are now classified as Critically Endangered by the IUCN.

ZSL is looking for volunteers to assist it in the largest study on eel river migration in the UK. Volunteers will have the opportunity to catch and measure eels – vital information which helps researchers to understand the health of elvers migrating through the Thames region and can then be used to plan the most suitable conservation action.

One of the major threats to eels in freshwater are barriers, such as dams and pipes, to their upstream migration and ZSL's citizen scientists will help to identify which barriers are disrupting migration and where eel passes should be installed.

Monitoring will occur at sites across the Thames estuary throughout the summer until the end of September. Those involved will be invited to the annual Eel Forum at ZSL London Zoo to meet fellow citizen scientists and hear feedback on the project. To get involved please contact Joe.Pecorelli@zsl.org for more information. **TZ**



Killer whales (*Orcinus orca*) are the most PCB-contaminated mammals on earth



SCIENTISTS' CORNER

Q&A with Paul Jepson

Dr Paul Jepson is a specialist wildlife veterinarian at the Institute of Zoology, ZSL. Paul specialises in the investigations of stranded marine animals and has been the leader of the UK Cetacean Strandings Investigation Programme (CSIP) since 2000. A key area of his research involves studying the effects of polychlorinated biphenyls (PCBs) on marine mammals.

TZ: What are PCBs and why are they an issue?

PJ: PCBs are highly toxic chemicals that were previously used in industrial materials, like lubricants and flame-retardants. Their use was banned across Europe in the 1980s when they were linked to cancer, miscarriages, infertility and immunosuppression in humans. PCBs are not water soluble, but if ingested they will bind to body fat. This is a particular issue for apex predators who sit at the top of the food chain, as they develop the highest PCB concentrations from eating other animals.

TZ: If they were banned so long ago why are they still affecting our oceans?

PJ: Whilst banning PCBs did have an initial effect, the early decline of PCBs in both humans and wildlife has completely stopped in Europe, and the levels that remain today are still far too high. Governments have been too slow to eliminate the old stockpiles and the run-off from 'open sources', such as old landfills, means that toxicity levels of European seas are still too high

to be safe for predator species like killer whales, bottlenose dolphins and great white sharks.

TZ: What effect is this having on our marine wildlife?

PJ: For example, killer whales are highly-intelligent predators that have colonised every oceanic region on the planet, but they are also the most PCB-contaminated mammals on earth. In European waters, PCB toxicity is literally driving these whales to extinction. The last resident orca population in UK waters is off the west coast of Scotland and is now down to only eight individuals and has not calved in over two decades.

TZ: What is the outlook for PCB prevention and the safety of our marine life?

PJ: ZSL submitted recommendations for the treatment of PCBs to the Department for Environment, Food & Rural Affairs, ahead of the recent Stockholm Convention on Persistent Organic Pollutants (POPs). We are calling for a greater response from the UK and EU. The US has been the most proactive eradicator of PCBs, funding state-wide decontamination projects, including a clean-up of the upper Hudson River. PCB levels in the US have slowly declined to a much less harmful level, proving that PCB pollution is recoverable with adequate funding and resolve. We urgently need a similar evidence-based approach in Europe. **TZ**

As the first newsletter for Fellows, we would love to get your feedback. Go to zsl.org/thezoologist to send us your suggestions.

The US has been the most proactive eradicator of PCBs... proving that PCB pollution is recoverable with adequate funding and resolve. We urgently need a similar evidence-based approach in Europe

ZSL | **LET'S WORK FOR WILDLIFE**

Animals and their habitats face increasing threats across the world. Donate to ZSL to help build a future where animals are valued and their conservation assured. ZSL is a registered charity in England and Wales no: 208728



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