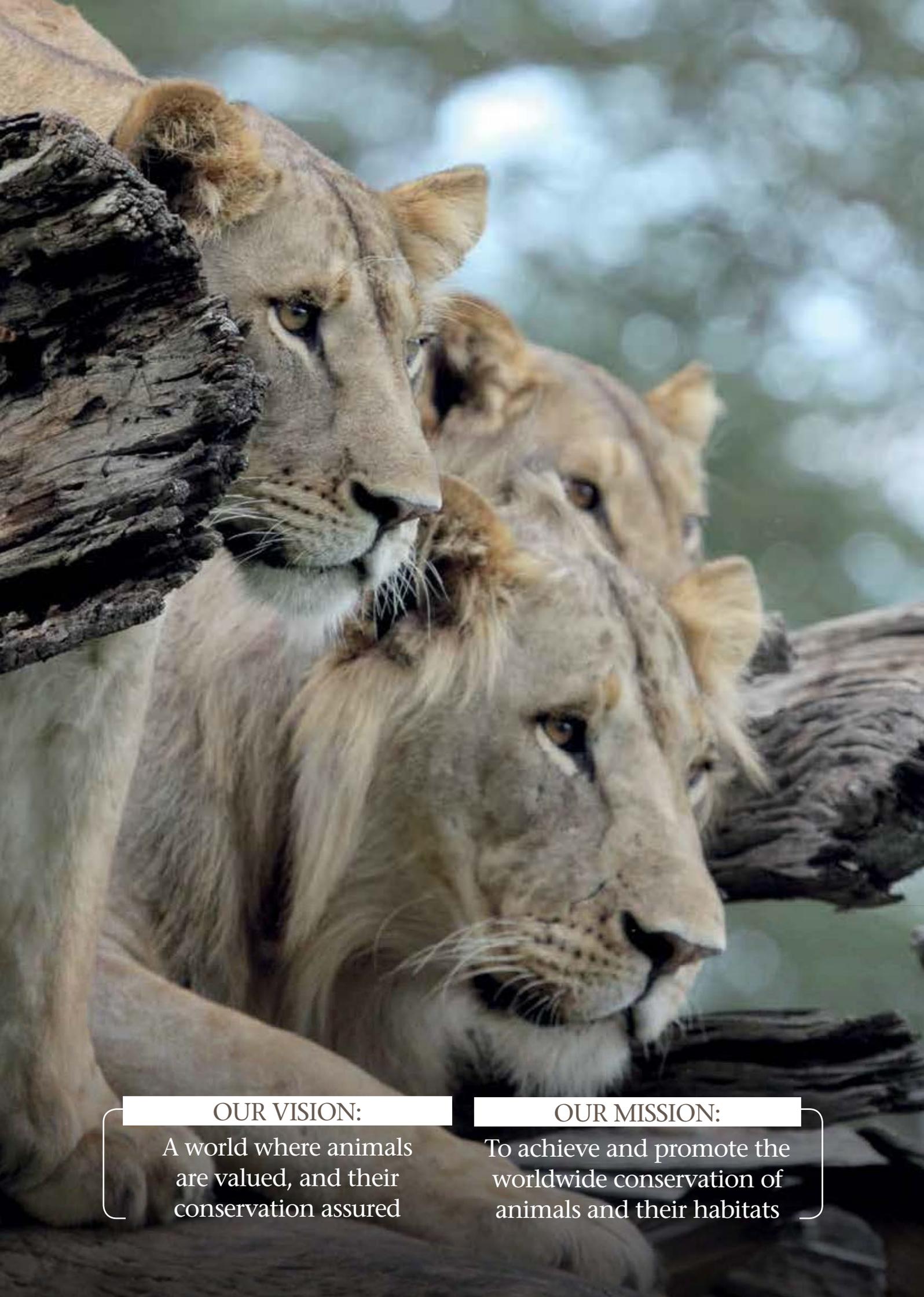


CONSERVATION
REVIEW 2014

ZSL

LIVING CONSERVATION





OUR VISION:

A world where animals are valued, and their conservation assured

OUR MISSION:

To achieve and promote the worldwide conservation of animals and their habitats

Welcome

The President and Director General of the Zoological Society of London look back on some of 2014's conservation highlights.



As President of the Zoological Society of London (ZSL), my role is to ensure that the Society is constantly striving to be at the forefront of the worldwide conservation of animals and their habitats. I would like to take this opportunity to thank my predecessor, Sir Patrick Bateson, for leaving the Society in such a marvellous position for me.

The remit of ZSL is vast, spanning everything from developing new conservation technology to breeding rare species on the verge of extinction. ZSL is an organisation with ambitious goals; the bar is high when it comes to what we want to achieve. However, my observations over the past year show that ZSL is up to the task.

ZSL's work has clear goals in monitoring species and ecosystems, reversing the decline of threatened species, restoring ecosystems, making the private sector more sustainable and changing attitudes and behaviour.

I would like to thank each and every employee in Conservation Programmes, the Institute of Zoology and across the zoos, both public-facing and behind the scenes, for driving our mission forward to address these goals.

I have thoroughly enjoyed being President of the Society for this past year, and am tremendously excited for the year ahead. This annual *Conservation Review* highlights just a few of the key achievements in 2014 – if 2015 is anything like as successful, I will be very pleased indeed.

Sir John Beddington
President, Zoological Society of London



Last year, ZSL led the way in a number of conservation initiatives, showing impressive advancements in a number of our key areas of specialism. The release of the Living Planet Index, compiled by our Indicators and Assessments Unit, highlighted the status and trends of the world's species and ecosystems, while our conservation technology team has been creating and deploying technology that, among other things, essentially creates an alarm system for protected areas of animal habitat.

The United for Wildlife partnership continued to flourish. At the beginning of the year, ZSL welcomed The Duke of Cambridge to a symposium focused on global illegal wildlife trade, which highlighted the critical threat faced by so many species worldwide.

ZSL is committed to working with industry to protect biodiversity. We have been collaborating closely with stakeholders in the palm oil industry to promote best practice and transparency; many magnificent species and their habitats are threatened by deforestation, but our Sustainable Palm Oil Transparency Toolkit aims to tackle the palm oil problem head-on and make real inroads towards better practices in its harvest and usage. Another example is our Net-Works™ project, in which old fishing nets are collected by communities and recycled into flooring by carpet manufacturer Interface – reducing pollution, benefiting local people and creating an amazing recycled product. Projects such as these show ZSL's true sustainable credentials.

The past year has laid an excellent foundation for the coming months. As we enter 2015, I am proud to reflect on what we have recently achieved, and look forward to seeing the work ZSL does worldwide become increasingly impactful.

Ralph Armond
Director General, Zoological Society of London

Our hub countries

ZSL's work is truly international in scope. Each dot on the map represents one of our conservation projects, while our key hubs of activity are detailed below.



UNITED KINGDOM



CAMEROON



KENYA



SAUDI ARABIA



INDIA



NEPAL

1. UNITED KINGDOM

Every year, ZSL's UK & Europe team spends three days traversing the Greater Thames Estuary by plane, boat and foot to count its harbour and grey seals. In 2014, grey seal numbers increased and the harbour seal population remained stable – great news, given Scottish seal numbers have suffered a devastating decline of up to 90%.

2. CAMEROON

Elephants in Cameroon's forests face an unprecedented onslaught from poachers. ZSL's work includes supporting law enforcement, monitoring elephant populations

and empowering communities to fight wildlife crime. Following a tip-off, ecoguards from the Dja Biosphere Reserve, supported by ZSL, discovered and seized 39 forest elephant tusks hidden in a truck and a notorious ivory trafficker was arrested.

3. KENYA

Giraffes are in decline across Africa. Half of the 80,000 or so remaining are found in Kenya, where ZSL has begun monitoring giraffe distribution, numbers and threats throughout the Tsavo ecosystem, using SMART law-enforcement monitoring and camera trapping.

4. SAUDI ARABIA

ZSL has run the King Khalid Wildlife Research Centre (KKWRC) in Saudi Arabia for almost 30 years. We manage the world's largest collection of Arabian ungulates and have successfully reintroduced gazelles into three protected areas. KKWRC's research and monitoring programme continues to make exciting discoveries – including the first confirmed record of a sand cat in Uruq Bani Ma'arid since 1998.

5. INDIA

ZSL is working with the Gujarat Forest Department and the Wildlife Institute of India to

conserve Asiatic lions. We are strengthening security and monitoring in the Gir Forest, encouraging communities to support lion conservation and facilitating 'lion hotlines' to reduce human-wildlife conflict.

6. NEPAL

By working near Suklaphanta Wildlife Reserve to improve livestock management, veterinary services and fodder resources, we hope to help improve the health of the grassland ecosystem. This will benefit wildlife such as swamp deer and rhinos, and the people who use the natural resources.



BANGLADESH



THAILAND



MONGOLIA



CHINA



INDONESIA



PHILIPPINES

7. BANGLADESH

ZSL's Bangladesh programme aims to secure the unique Sunderbans ecosystem. This tidal mangrove forest is both a haven for wildlife such as tigers and river dolphins, and a source of natural resources and coastal protection for local communities.

8. THAILAND

ZSL is working with protected area rangers in Salakpra Wildlife Sanctuary to camera trap Asian elephants and map their distribution. Crop raiding by elephants is a source of conflict with people, so our team also

works closely with local villagers to investigate ways to reduce it.

9. MONGOLIA

In 2014, ZSL led a team of 52 scientists, rangers, National University of Mongolia students and herders across the Mongolian range of the Gobi Desert in a large-scale survey of the critically endangered Bactrian camel.

10. CHINA

The critically endangered Hainan gibbon (*Nomascus hainanus*) is one of the world's rarest and most threatened primates. ZSL is working to save the last surviving

population of 23-25 individuals in the Bawangling National Reserve in Hainan, China, by quantifying habitat suitability, strengthening population-monitoring techniques and collaborating with local stakeholders.

11. INDONESIA

Supported by Disney's Worldwide Conservation Fund, ZSL's conservation education project in schools around Berbak National Park created Indonesia's first tiger-focused conservation teaching modules, as well as a comic strip, a blog – and even a 'Talking Tigers' radio show.

12. PHILIPPINES

Freshwater eels are traded on both national and international scales, with demand originating mainly in East Asia. The Philippines is an important source of eels and, despite a ban, illegal trade of juveniles continues in the region. 'Eels – a flagship species for freshwater conservation in the Philippines' is a ZSL-led project focusing on eel conservation and management, operating at both a local and an international level. ZSL's office in Aparri, in Cagayan province, has a team carrying out habitat, fisheries and socio-economic surveys.

Introduction

Professor Jonathan Baillie, Conservation Programmes Director, reviews ZSL's achievements in 2014 and explains how they are helping our mission.



In 2014, the Living Planet Index released, to considerable global media interest, the news that the world's vertebrates (mammals, birds, reptiles, amphibians and fish) had declined by more than 50% since 1970. It is clear from this statistic

that current efforts to address threats to our planet's species and ecosystems are woefully inadequate; if the global conservation response does not dramatically improve, we will witness a major extinction crisis. Such a response must come from all sectors of society, but organisations such as the Zoological Society of London have a leadership role to play in raising the bar for conservation – and last year, we focused on doing so.

In early 2014, ZSL hosted the United for Wildlife symposium, a high-profile international meeting focused on the illegal wildlife trade. At the same time, the United for Wildlife partners, with The Duke of Cambridge, committed to addressing this trade on a scale never seen before in the conservation movement. ZSL's major contributions to this effort in 2014 have included helping develop and implement a patrol-based monitoring system called SMART,

and advancing and deploying technology that creates an alarm system for protected areas. We received a Google Impact Award for this purpose and worked with the world's best tech companies to produce remote units that use camera traps, seismic sensors and metal detectors to identify illegal activity in protected areas. This information is sent directly to park managers by satellite, allowing them to respond immediately and making small teams highly effective. These systems can also be used for monitoring and, if deployed in protected areas throughout the world, could help transform our ability to assess the effectiveness of protected areas.



Habitat destruction and degradation due to the agricultural sector are among the greatest drivers of biodiversity loss, and reducing this sector's negative impacts on species and ecosystems should be a top conservation priority. In 2014, ZSL launched an exciting new initiative to promote best practice and transparency in a key industry: palm oil. Information is provided online to investors and the public on the extent to which these companies are upholding their biodiversity commitments. The public can also look at the actual palm oil concessions on the ground using an online map, and monitor company proximity to protected areas and incidents of forest loss and burning. It is a new era of transparency, and an approach that could be rolled out to all production and extractive industries, with major benefits for biodiversity.

Additional funding is also a critical element in scaling up the conservation response. ZSL has been working with the United for Wildlife partners and Social Finance, with support from UNDP, GEF and the Royal Foundation, to develop and structure an innovative financing mechanism: the Rhino Impact Bond, which aims to deliver better outcomes for rhinos by bringing investment principles into conservation.

Finally, scaling up the global conservation response will be impossible without a large and dynamic group of conservation leaders. In 2014, ZSL launched an initiative with United for Wildlife to train future leaders from all over the world, online. This will start with a new online learning programme, and build towards creating something close to a global university for conservation leaders.

These are just a few of the exciting initiatives we launched in 2014. All are large scale and all are highly collaborative. The conservation community is working together in a way it has never done in the past. Together, we will raise the bar.

Raising the bar for global conservation

For generations, we have been exploiting the world's species and ecosystems with little understanding of the impact on other forms of life, or the implications for humanity as a whole. Now, we need to make the protection and restoration of nature a global priority.

In the following pages, we outline a number of initiatives ZSL is spearheading to help scale up the global conservation response.



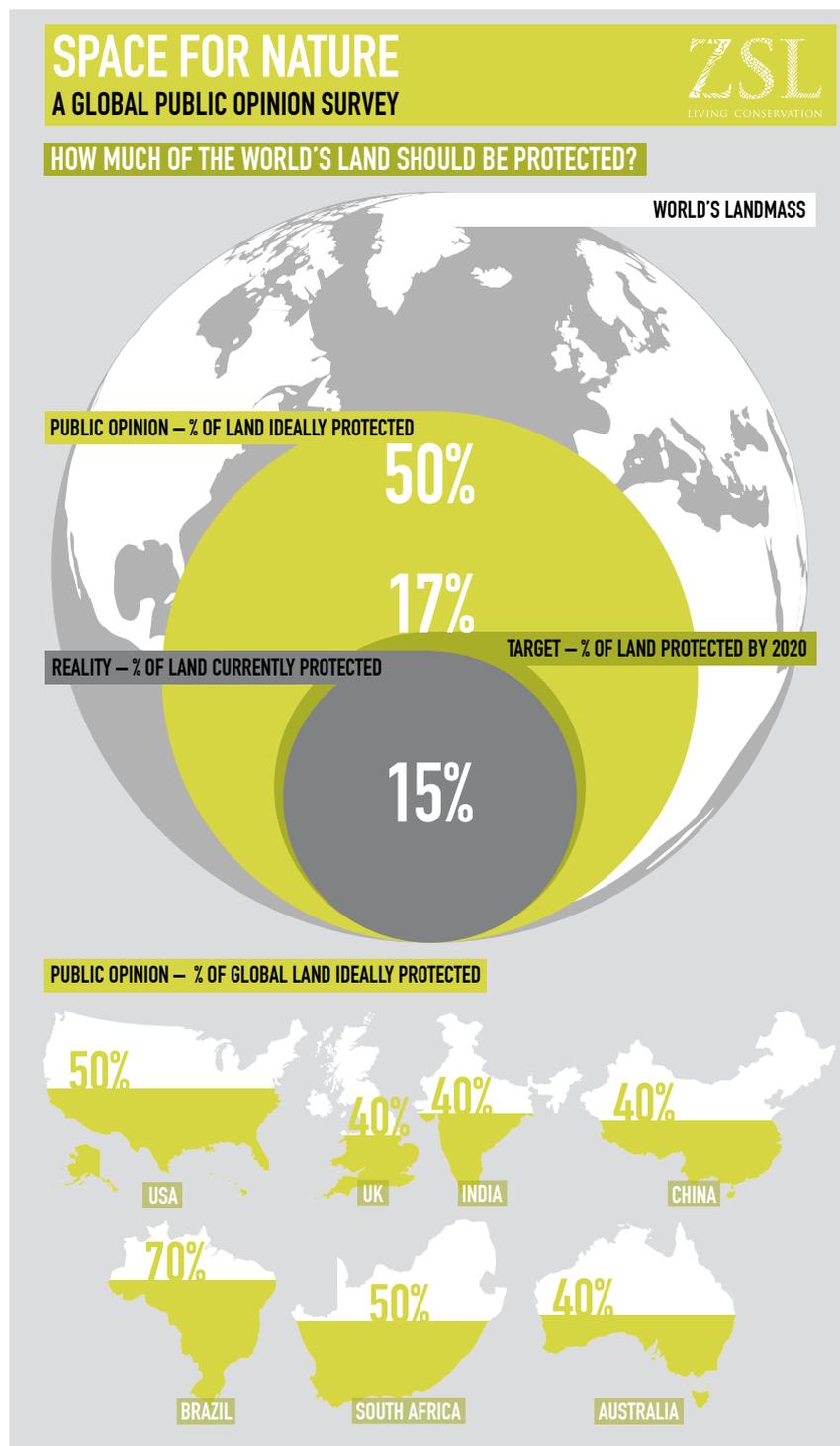
In recent years, conservation science has begun to develop indicators that can tell us about trends in the threat processes affecting biodiversity, such as agricultural expansion, as well as trends in species and ecosystem status. One such indicator is the Living Planet Index, jointly produced by ZSL and WWF, which currently tells us that the world's vertebrate populations have declined by more than 50% since 1970 (see page 17). This is a startling statistic, but consistent with the rapid and continuing increase in threats to species and ecosystems.

The true implications of this assault on nature remain poorly understood, but what is certain is that we need species and ecosystems for our sanity, our physical health, our livelihoods, and in fact our very survival. If we are to avoid an extinction crisis and associated impacts on humanity, we need to make the protection and restoration of nature a global priority and truly raise the bar for global conservation. All sectors of society need to be involved, but the science and conservation communities must take the lead.

Making space for nature

For ZSL, 2014's once-in-a-decade IUCN World Parks Congress meeting in Sydney was a unique opportunity to ramp up global efforts to conserve the planet's remaining wildlife and wild places. We were there in force to push for increases in resources, effort and collaboration to this end. If the world is willing to set aside a significant part of Earth for wildlife and wild ecosystems – both for their own sake and because of the benefits they bring to humanity – it is imperative that we reach international agreement on how much land, and sea, we wish to conserve. The official global targets for protected area coverage, set at the Convention on Biological Diversity Conference of the Parties held in Nagoya, Japan 2010, are 17% for land and 10% for the sea. Currently, we stand at 15% for land and 3% for sea, at least on paper. But these targets stem more from economic and political constraints on conservation ambition than from a relevant evidence base. It is not yet clear what proportion of the world it is necessary to protect to assure a diverse and functional planet – nor what the inhabitants of Earth as a whole actually want.

ZSL's Space for Nature survey actually asked the global public this question, for the first time on record. Our sample of 7,000 people, from seven countries on six continents, replied resoundingly that a full 50% of our planet's land and sea should be protected – a startling and encouraging result. The UK government made an important commitment towards this goal in 2014,



announcing their intent to create the world's largest marine reserve around the Pitcairn Islands, a UK Overseas Territory in the South Pacific. When this reserve – which, at 830,000km², will be three times the size of the UK – is established, it will have increased the amount of ocean that is under protection by 25%: a remarkable achievement. As a partner in the Great British Oceans campaign, ZSL played a key role in securing this monumental win for marine wildlife (see page 22 for more details).

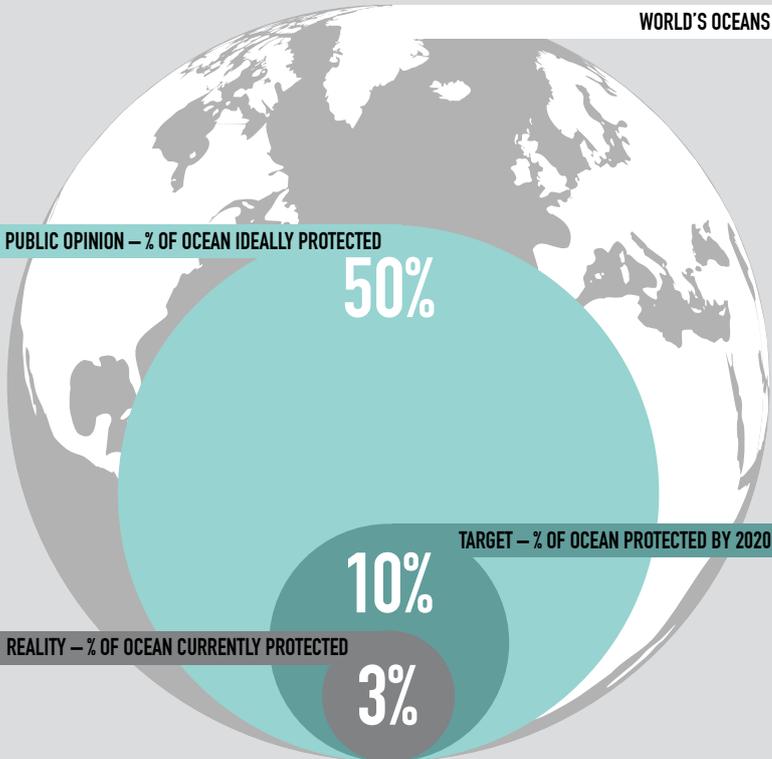
SPACE FOR NATURE

A GLOBAL PUBLIC OPINION SURVEY

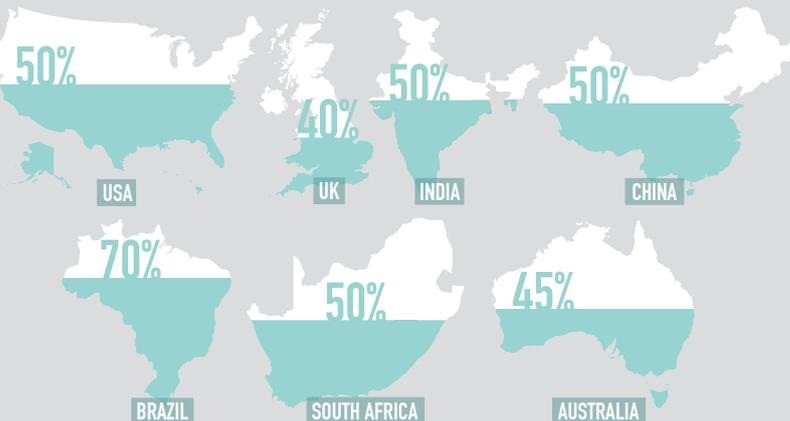


HOW MUCH OF THE WORLD'S OCEANS SHOULD BE PROTECTED?

WORLD'S OCEANS



PUBLIC OPINION – % OF GLOBAL OCEAN IDEALLY PROTECTED



Virunga and beyond: World Heritage Sites

However much land and sea is set aside, the prestigious World Heritage Site network must surely be a centrepiece of the plan. Covering less than 1% of the world's surface, the 228 natural World Heritage Sites contain a wealth of irreplaceable flora, fauna and ecosystems that the international community has committed to safeguarding for future generations. One might

“We need species and ecosystems for our sanity, physical health, livelihoods, and our very survival”

assume that iconic World Heritage Sites, such as the Great Barrier Reef and the Serengeti, are inviolate areas, safe from industrial development – but this is not the case. Over 25% of natural World Heritage Sites are under pressure from extractives activities, while 20 are listed as ‘In Danger’. One example is Virunga National Park, in the Democratic Republic of Congo, Africa's oldest and most biodiverse national park and its first natural World Heritage Site. The park was brought to the world's attention in 2014 with the launch of the BAFTA- and Oscar-nominated film, *Virunga*, documenting the pursuit for oil in the park by the British oil company SOCO International. This led to the release by ZSL of a joint statement signed by nine of the world's leading conservation NGOs at the IUCN World Parks Congress in November, calling for urgent implementation of ‘no-go’ and ‘no-impact’ measures relating to extractives activities in natural World Heritage Sites. Launched at the World Parks Congress in Sydney in late 2014, the statement announces a commitment to ensuring World Heritage Sites remain unscathed. It has so far been signed by ZSL, WWF, WCS, AWE, FZS, FFI, RSPB, TNC and the WILD Foundation; the next stage is to solicit commitments from big multinational corporations in the extractive industries.

Public concern over space for nature, and global commitments to the conservation of the planet's most unique ecosystems, will be key components in ensuring humanity puts aside sufficient space to conserve both wildlife and the ecological integrity of the planet. But even if we succeed, this in itself will not be enough in the long term; protection on paper must be accompanied by protection in reality, on the ground.

Right now, in many countries poachers are better funded and better equipped than park managers. So in the short term – immediately, in fact – we need to use the latest technology to revolutionise protected area management, particularly where law enforcement for species pushed to the brink of extinction by wildlife traders is involved. We also need a quantum jump in the availability of conservation funding, an increase that can only be found via a radical departure from current financing models. In the medium to long term, we also need to foster positive change in human behaviour at both ends of the scale. In the public arena, we need to capture and make the most of



public concern about wildlife and wild places, by providing global opportunities for public participation in conservation; and in the corporate arena, we need to ensure that suitable pressure to act responsibly is continually brought to bear on all industries with large impacts on biodiversity.

Revolutionary technology

ZSL is pushing the envelope in all of these fields. We are working closely with the Wildlife Conservation Society to lead a global rollout of the state-of-the-art anti-poaching software SMART in at least 200 key sites for rhino, elephant, tiger and pangolin populations around the world, as part of the programme of the United for Wildlife partnership. United for Wildlife is a ground-breaking UK collaboration supported by the Royal Foundation of The Duke and Duchess of Cambridge and Prince Harry (see page 13); and

“We need to make the most of public concern about wildlife and wild places, by providing global opportunities for public participation in conservation”

SMART is custom-built law-enforcement software for protected area managers and game guards, designed by some of the world’s most experienced conservationists. SMART enables clear, consistent reporting on both efforts expended and results gained. Production of reports tailored for each location, and effective use of these reports to inform management decisions, is crucial to the success of the ‘SMART Approach’ and thus forms the core of ZSL’s SMART implementation model.

We are now operating our full SMART model in key protected areas in Thailand, Indonesia and Nepal, with training carried out in 2014 and full implementation systems in development in Cameroon and Kenya. We are also training palm oil industry personnel to use a modified version of SMART on their concessions in Indonesia, enabling extension of data collection on threats across larger, mixed-use landscapes as well as protected areas. ZSL also produced, during 2014, a ‘plug-in’ for SMART that now enables patrols to collect ecological records (see page 18), thus greatly increasing our understanding of protected areas. SMART-ER can also be used as stand-alone ecological monitoring software; following trials in 2014, we expect to launch it in 2015.

At the same time, and with a particular focus on rhino conservation, ZSL is fielding our Instant Detect surveillance cameras in Kenya (see page 19). As well as capturing pictures of intruders, the equipment can detect vibrations and the presence of metal, enabling recipients of the data to identify when something large is passing by and work out whether it is a herd of elephants or a vehicle, even without pictures. With this cutting-edge technology sending key information to park computers in real time via satellite, alongside the ‘SMART Approach’ to law-enforcement patrolling, it may be possible to turn the tables on the criminal gangs behind the poaching operations.

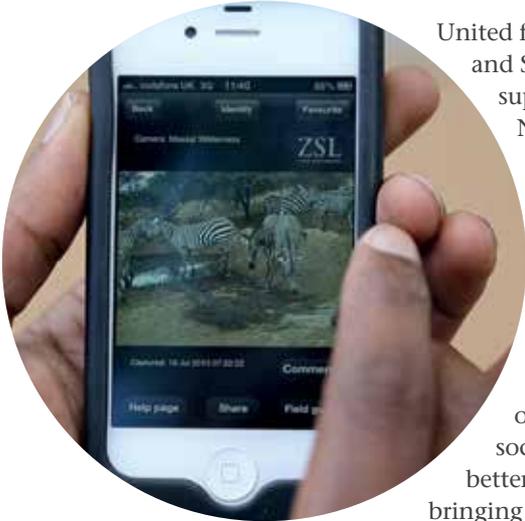
Finding funding

But patrols cost money, cutting-edge technology is not cheap, and there is a great deal of ground to cover. Where to find sufficient funding? Enter ZSL’s ‘Rhino Impact Bond’ demonstration project, developed in collaboration with

Opposite: The Duke of Cambridge addresses attendees at the United for Wildlife symposium.
This page: ZSL is working with the Benin government in West Africa to protect its wildlife from poaching







Left: ZSL is working to conserve Asiatic lions in the Gir Forest in India using the SMART Approach.

Above: viewing wildlife in Kenya using the Instant Wild app

United for Wildlife partners and Social Finance, with support from the United Nations Development Programme, the Global Environment Facility (GEF), the UK government and The Royal Foundation of The Duke and Duchess of Cambridge and Prince Harry.

The impact bond concept, originally developed in the social sector, aims to deliver better outcomes for wildlife by bringing investment principles into conservation. Impact investors would provide much-needed additional finance for rhino conservation sites, to be paid back, if the sites succeed in reversing the escalating poaching trend, by large inter-governmental funds such as the GEF – enabling rhino populations to grow. With their capital at risk, impact investors ensure that efforts are rigorously monitored and rapidly adjusted as situations change. Funders such as the GEF then use taxpayers' money to maximum conservation effect.

Public engagement

Alongside these front-line activities, it is also essential to ensure that future generations around the world are both inspired to care about the planet's wildlife, and enabled to become active conservationists. To this end, ZSL and the United for Wildlife partners are launching, again with support from The Royal Foundation of The Duke and Duchess of Cambridge and Prince Harry, an online learning project that will take people from any walk of life through progressive steps in learning about conservation. Stage 1, a free 'Massive Open Online Course', or MOOC, will go live in May 2015, and seeks to engage the public with wildlife and explore their interests while conveying fundamental information; future stages will develop into structured conservation training and qualifications suitable for all (see page 20).

The Duke of Cambridge has also supported use of the media to spread awareness among the

“Modern technology is enabling us to fight the wildlife poachers and traders on a more level playing field”

public at large; three million people watched him launch a special pangolin edition of the popular mobile phone game Angry Birds Friends in late 2014 (see page 29), which has greatly helped raise awareness of the threats to the pangolin from the illegal wildlife trade.

Transparency and accountability

None of these steps will work in the long run unless the major industries of the world – particularly those with direct impacts on wildlife, such as palm oil, timber, fisheries, oil and gas – are also actively engaged in reducing the damage caused by their activities. Here, the way forward has to be increasing transparency and accountability, and once again ZSL has led the way with the launch of the Sustainable Palm Oil Transparency Toolkit, or SPOTT (see page 25). This online interactive mapping tool enables anyone to overlay palm oil concession boundaries with the latest fire or forest loss alerts, and to check publicly available records on the environmental policies and actions of the 25 largest companies that produce palm oil. SPOTT has already attracted support from the David and Lucile Packard Foundation, among other donors, and participation from Unilever and other big companies. We aim to roll out this approach for other industries, both extractive and agricultural, in the future.

ZSL's approach is therefore to select and tackle key areas across the board, and to do so in close collaboration with a wide range of partners – whether they are other conservation groups, governments or industries. Innovative conservation tools and funding models are being developed. The information age is bringing conservationists unparalleled opportunities to nurture public support and get people around the world actively involved. Modern technology is enabling us to fight the wildlife poachers and traders on a more level playing field, and can also make industry practices accessible and transparent so that everyone, from investors to manufacturers to shoppers, can vote for sustainability with their wallets. We are part of a clarion call for people from all walks of life, around the world, to unite on the side of a healthy, diverse planet and join ZSL, The Duke and Duchess of Cambridge and Prince Harry – The Royal Foundation – and all the many collaborating conservation groups, in United for Wildlife and around the world, in raising the bar of global ambition for conserving our wildlife and wild places.

Sharing the world with wildlife is worth doing – and with enough political will, public support and cutting-edge technology, it can be done.

ZSL's Mission Targets

We are undertaking game-changing activities to achieve ZSL's worldwide conservation mission. By 2026, we will have:

DEFINED AND MONITORED THE STATUS OF THE WORLD'S PROTECTED AREAS AND AT LEAST 20,000 SPECIES

To achieve this, ZSL will:

1. Continue to lead the development and implementation of global biodiversity indicators (Living Planet Index and Red List Index).
2. Define the conservation status of all vertebrates and a representative subset of invertebrates.
3. Develop tools for measuring and monitoring natural capital.
4. Build and maintain a website containing all National Red Lists and Action Plans.
5. Facilitate the creation of a large fund enabling countries to implement National Red Lists.
6. Develop new technology for remote wildlife monitoring and surveillance.
7. Improve the current standard for National Biodiversity Strategies and Action Plans (NBSAPs).



IMPROVED THE STATUS OF AT LEAST 100 OF THE WORLD'S MOST THREATENED AND DISTINCT SPECIES

To achieve this, ZSL will:

1. Reverse the decline of EDGE species.
2. Protect the last remaining top predator strongholds (for Amur leopards, tigers, sharks, cheetah and wild dogs).
3. Identify ecosystems and associated species essential for human security, and develop and implement strategies for sustainable management.
4. Undertake ambitious conservation breeding initiatives focusing on desert species, amphibians, fish and invertebrates.
5. Implement wildlife health programmes for target species.
6. Host at least 10 IUCN Species Survival Commission Specialist Groups and drive their action plans forward.

PROTECTED AND RESTORED AT LEAST 1 MILLION KM² OF COASTAL AND MARINE HABITAT AND ½ MILLION KM² OF TERRESTRIAL HABITAT

To achieve this, ZSL will:

1. Work with the Marine Reserves Coalition to develop and implement a Marine Protected Area strategy focusing on protecting 30% of the world's oceans.
2. Help develop and implement a global mangrove protection and restoration strategy.
3. Focus on protected areas that contain a disproportionate amount of evolutionarily distinct species (unique species).
4. Build capacity and provide technology for the effective management of protected areas and ecosystems.
5. Develop and test innovative financing mechanisms for conservation.
6. Develop and implement monitoring and surveillance systems in priority landscapes.
7. Develop and implement the Freshwater Life programme, focusing on monitoring, restoration and conservation breeding.

ENSURED BEST PRACTICE FOR NATURAL RESOURCE USE IN AT LEAST 1 MILLION KM² OF PRIORITY PRODUCTION LANDSCAPE

To achieve this, ZSL will:

1. Assist industry in monitoring, reporting and managing impacts on biodiversity, including the implementation of BASE at 500 industry sites.
2. Improve the quality of standards used by agribusiness, forestry and extractive companies, and ensure their effective implementation.
3. Work with investors and downstream companies with supply-chain dependency to identify and mitigate risks associated with unsustainable biodiversity-related practices.
4. Increase the capacity of land use planning decision-makers to minimise the negative impacts on biodiversity of the agribusiness and extractive sectors.

THROUGH OUR ZOOS, RESEARCH AND PUBLIC ENGAGEMENT, ENABLED MORE THAN 70 MILLION PEOPLE TO ADOPT POSITIVE STEPS TO SUPPORT CONSERVATION AND VALUE NATURE

To achieve this, ZSL will:

1. Lead on the science of behaviour change as it relates to conservation, and integrate this skill set across all relevant field programmes.
2. Promote citizen science engagement tools.
3. Increase the number and quality of symposiums, public talks, publications and educational programmes conducted by ZSL.
4. Implement major conservation training programmes in five countries.
5. Develop publicly available conservation training material and conduct courses to build capacity.
6. Consolidate and present the best conservation science for policy and decision-makers, focusing on natural capital accounting, wildlife trade and protected area effectiveness.

Our initiatives

To make our 2026 Mission Targets a reality, we have implemented eight key conservation initiatives. Find out how we are working towards them in the following pages.

[16 STATUS OF THE PLANET](#)

[18 CONSERVATION TECHNOLOGY](#)

[20 INSPIRING FUTURE GENERATIONS](#)

[22 CONSERVATION FOR COMMUNITIES](#)

[24 BUSINESS FOR NATURE](#)

[26 CONSERVATION BREEDING](#)

[28 ANIMALS ON THE EDGE](#)

[30 TOP PREDATORS](#)

Our initiatives are protecting many species and their habitats, keeping the planet safe for future generations



Status of the planet

Accurate information on the status of the world's species and ecosystems is essential for conservation planning and policy, and ZSL's strong science base makes it a world leader in this arena.

Monitoring natural capital from space

There is increasing interest in valuing biodiversity and ecosystem services in monetary terms, to prioritise their protection against other important societal, economic and political concerns and so help safeguard natural systems against degradation. To do this effectively, it is useful to invoke the concept of natural capital (NC), which represents Earth's natural stock and the goods and services it yields over time. Because it draws a clear parallel with financial capital, this concept is easily understood by governments, businesses and the general public alike. An interesting aspect of the NC concept is that it encompasses all nature's elements present on Earth and their potential yield, regardless of whether they are of use to the human population today. Clearly, we need to establish and monitor the status of NC to put this into practice and so in 2014, ZSL published a report exploring the potential for satellite data to support NC monitoring. There are a lot of free, systematically collected data available, mostly at a global scale, making this a cost-effective form of remote sensing. Our report shows how 10 elements of NC (see opposite) can be measured from space at both national and site-specific levels.



FIND OUT MORE

Read about monitoring natural capital from space at zsl.org/science/research/natural-capital

“This kind of research has never been done before”



In November 2014, we presented the inaugural *Protecting Species* report at

the World Parks Congress (WPC) in Australia. The report details the status and trends of wildlife populations within protected areas globally, assembling population trends for 4,326 populations

of 1,654 species. We began work on it about six months before the WPC, and it's something we had hoped to do for some time; the latest ZSL/WWF *Living Planet Report* (see page 17) identified that populations in protected areas were declining more slowly than others, but we wanted to dig into the data to see what trends were emerging.

The answer? There is no straightforward one.

Protecting Species showed that of 130 monitored countries, 39% have declining populations within protected areas – but it also highlighted that there is no clear overall pattern of increases or decreases within protected areas, and that the drivers of any declines are unclear. Speaking very broadly, population declines are greater in tropical regions – but that's a big generalisation. Much more

work is needed to understand the effectiveness of protected areas globally and the trends of species, both protected and unprotected. However, it is clear that protected areas do bring benefits. As the *Living Planet Report* observes, the rate of vertebrate decline within terrestrial protected areas is less than half of that recorded overall.

What we need to do next is determine to what extent

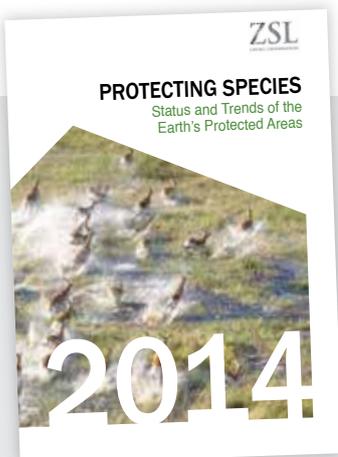


Ten characteristics of natural capital, such as the forest canopy shown here, can be measured from space: 1) ecosystem distribution, 2) vegetation height, 3) woody biomass, 4) canopy structure, 5) degradation, 6) afforestation, 7) annual primary productivity, 8) above-ground carbon, 9) water cycling and 10) above-ground nitrogen

Measuring the world's biodiversity

In September 2014, ZSL and WWF published the *Living Planet Report*, a biennial assessment of the state of the world's biodiversity. This most recent *Report* revealed that global wildlife populations have reduced in size by more than half in just 40 years, with vertebrate populations overall (mammals, birds, reptiles, amphibians and fish) declining by an average of 52%, and freshwater species populations suffering a spectacular 76% decline – an average loss almost double that of land and marine species. The most significant threat to wildlife populations is the combined impact of habitat loss and degradation, with climate change noted as a growing threat.

While the trends reported show that the situation is critical, the *Living Planet Report* also highlights that with focused conservation action, political will and support from businesses globally, it is not yet too late; there is still hope for a healthy future, for both people and wild nature. The Living Planet Index (LPI), curated and maintained at ZSL's Institute of Zoology, is the world's leading database on the status and trends of wildlife populations. The Index is used to monitor global biodiversity and is one of the global biodiversity indicators used to measure progress to the Aichi Biodiversity Targets. Analysis of the LPI was incorporated into *Global Biodiversity Outlook 4*, which was presented to the Convention on Biological Diversity at the Conference of the Parties in 2014 to inform future biodiversity policy.



PROTECTING SPECIES

The *Protecting Species* report is available at zsl.org/science/indicators-and-assessments-unit/protecting-species-report

the changes indicated in *Protecting Species* are a result of, and how much they are independent of, the protection placed on the species; we'll do this by comparing population

trends within and outside protected areas. It's early days, but the key thing to remember is that this kind of research has never been done before. Studies have assessed the conservation

impact of protected areas by how biodiverse they are, and how they affect habitat cover, species populations or species compositions, but nobody's tracked changes in population abundance over

time to measure the efficacy of protection. That's why we wanted to get *Protecting Species* circulating at the World Parks Congress. We had a very positive reaction, and now we're hoping to work with other conservation bodies, including WWF, to establish the *Protecting Species* report as a biennial publication tracking the status and trends of protected species over time.

Robin Freeman, head of ZSL's Indicators and Assessments Unit

Conservation technology

ON THE RADAR
ZSL is part of the global United for Wildlife initiative to roll out the anti-poaching software SMART in 200 sites over the next five years; we will be doing this in most of our field sites in Asia and Africa, and have already started in some locations.

Technological advances are increasingly becoming the key to saving endangered species. Sophisticated cameras, tagging devices and software can contribute to species monitoring, help rangers detect intruders and connect the public directly with wildlife.



↑ Exploring satellite technology

Habitat loss and degradation, overexploitation, climate change and invasive species are depleting Earth's biological diversity, damaging ecosystem services and human wellbeing as well as individual species. If we are to stop this, it is essential that we monitor both the state of biodiversity and the impacts of global environmental change on the planet's 'natural capital' (see page 16). Satellite remote sensing (SRS) offers repeatable, standardised and verifiable information – on long-term spatio-temporal trends in biodiversity indicators, and on the distribution, structure, composition and functioning of ecosystems – at scales inaccessible to ground-based methods alone.

ZSL is using satellites to survey threats to the Sahara from oil exploration and the expansion of artificial water points, and studying how climate change is affecting mangroves. We are part of the Biodiversity Task Force of the Committee on Earth Observation Satellites (CEOS), which aims to coordinate space agencies on biodiversity monitoring and advise researchers on possible satellite-based projects, and we contribute to current discussions on the use of remote sensing data. In late 2014, we partnered with Wiley to launch a new scientific journal, *Remote Sensing in Ecology and Conservation*, a forum for the rapid publication of peer-reviewed, multidisciplinary research from the interface between remote sensing and ecology and conservation.

↓ SMART and SMART-ER monitoring

ZSL focused strongly last year on the implementation of anti-poaching software SMART. We aim not only to train people in how to use the tool, but to make sure it is implemented effectively for both law enforcement and (via ecological records plug-in, SMART-ER) habitat management.

ZSL's SMART implementation model requires good technical support over an extended period, and is now beginning to show positive results. Our landscapes in Indonesia, Thailand and Nepal are now producing reports that park managers are using to inform their decisions, and thus improve management. We have recently conducted SMART training in Cameroon and Kenya, and SMART implementation systems for enforcement in these regions are in development; we are also pioneering the use of SMART in the production landscapes in which we're working, training staff in industries such as palm oil and timber.

The beta version of SMART-ER was released in November 2014. Development of this component was led by ZSL, with considerable additional input from the Wildlife Institute of India (WII); the official rollout of SMART-ER is planned for ZSL's Asiatic lion project in Gujarat, where we are working with WII, in 2015 (see page 32).



SMARTER WORKING

Find out more about the SMART Approach at
zsl.org/SMART

↓ Whitespaces for wildlife

In 2014, with the support of UK communications regulator Ofcom, ZSL and Google successfully trialled innovative technology for video streaming at ZSL London Zoo. 'TV whitespaces' refers to the unused parts of the TV broadcast spectrum. This spectrum can travel longer distances and pass through obstacles more easily than frequencies used by other wireless technologies, such as Bluetooth and Wi-Fi, which makes it attractive to industry, and particularly to ZSL, because it could be used to bring wireless connectivity to the remote conservation sites in which we work around the world.

Live webcams were set up in the meerkat, Galapagos tortoise and Asian small-clawed otter exhibits at ZSL London Zoo, and HD-quality video feeds transmitted via TV whitespaces to a base station, from which they were streamed live on the ZSL YouTube channel. They were hugely popular with the public, accruing more than 266,000 views over the three-month pilot period. The trial has proved the effectiveness of TV whitespace transmission and furthered our understanding of how it could enhance the remote sensing tools we use to monitor and protect wildlife.



→ Instant Detect system in Kenya

ZSL's Instant Detect system uses satellite technology to enable near real-time image transmission from virtually anywhere on Earth. It has been designed to alert park staff to the presence of intruders almost instantly, improving the effectiveness of protected areas as safe havens for some of the world's most endangered species. This system can also be used to monitor wildlife from some of the most remote locations on the planet, relaying images to scientists via satellite. The images can then be processed using analysis software (see right). For surveillance purposes, metal detectors and vibration sensors can be added, so park authorities can detect vibrations or metal, indicating that something is passing along a track.

ZSL has used its £500,000 Google Impact Award to research, develop, manufacture and deliver Instant Detect systems in the field. In October 2014, Instant Detect systems were deployed in a black rhino stronghold in Kenya that serves as a breeding ground to help increase populations at other rhino sanctuaries and in the wild. The system was also used in the Yalour Islands, Antarctica to remotely monitor Adélie penguins – enabling our researchers to observe, in real time, the first pair of penguins returning to the breeding ground after a winter at sea.



Opposite, far left: satellite technology surveys threats to Earth's most precious ecosystems. Opposite, left: Kenya is a key site for our 'SMART Approach'. This page, centre: footage of otters was streamed live to YouTube via TV whitespaces. Above: the Instant Detect system captures images in real time



"Images can be sorted and edited rapidly"

Camera trapping is increasingly being used to monitor medium-

to-large mammal populations over long periods of time, providing new insights on the ecology and behaviour of many species. Because camera trapping typically produces very large numbers of images, conservationists often struggle to process information rapidly and consistently. To tackle this, ZSL has developed a central management system that allows users to manipulate data across multiple species and areas. We've created a software tool that takes in a series of spreadsheets and standardises everything – images are classified into photo types and species are named consistently. Information on environmental features is also integrated for analysis. Images and their associated data can be selected, sorted and edited rapidly. The tool then offers a standardised series of analytical outputs with optional modifications, ensuring data can be compared consistently. We are also developing advanced methods for population estimates. The tool outputs data sets for further analysis in other software and automatically connects to Google Earth, so users can display results across multiple species and locations. We're testing the tool on ZSL projects now, and will be making it available across the conservation world as soon as it's ready. But it's not just a question of rolling out the software – training is vital to ensure it is being used properly. The key thing is to make sure that survey objectives and designs are relevant and robust, to ensure the best-quality results. Used properly, this tool will provide key information to help understand wildlife presence and requirements, which is integral to effective conservation-management decisions.

Raj Amin, senior conservation biologist

Inspiring future generations

Next-generation conservationists are crucial for the future of wildlife, and ZSL provides opportunities for all – from citizen science programmes to overseas training courses for promising in-country conservation scientists to hackathons for technical experts.

↓ Connect Chagos



This was the third successful year for 'Connect Chagos', an initiative linking Britain's Chagossian community (relocated from the Chagos Archipelago during the 1960s and 1970s) to their natural heritage. The project aims to raise awareness of Chagos' huge biodiversity significance within Britain's Chagossian communities through community events and a practical environmental training course. The 2014 course involved eight Chagossian trainees covering

Chagos-centric topics such as marine ecology, botany and terrestrial restoration. Working with a network of over 20 project partners, including the RSPB, Kew and the Sustainability Centre (Hampshire), we used Kew's Wakehurst Place and the Seven Sisters coastline as study locations for the first time.

An environmental open day held at Tulley's Farm, Crawley, engaged more than 150 Chagossians with environmental activities, and one-day community-based sessions provided introductions to topics such as orienteering and scuba diving; specific bursaries enabled 11 trainees to undergo advanced training in areas from chainsaw usage to swimming. Finally, one trainee organised her own community-based open day, while another was able to directly apply acquired environmental knowledge through participation in expeditions to the archipelago.

→ Instant Wild

The Instant Wild app is a citizen science tool that displays live wildlife images, sent from camera traps at ZSL conservation sites around the world, straight to your computer or mobile device. Members of the public can make suggestions for species identification and interact with the other users who comment on each image.

During 2014, 10 cameras were installed in the Lolldaiga Hills Conservation Landscape in Kenya and linked to the app so the public could help assess wildlife within the landscape, identifying the species as a first step in data analysis. Several species not previously seen in the area were found, including side-striped jackal, suni and finfoot. Cameras at Lewa Wildlife Conservancy in Kenya have also been particularly popular, with Instant Wild users identifying a number of black rhinos.

Online learning for conservation

Many people are eager to develop their skills in conservation, and there is a pressing need to train the next generation of conservation leaders – but training and education is often only available to those who can afford it. As part of The Royal Foundation's United for Wildlife initiative, ZSL has been leading the development of a new online learning programme to reach the next generation of conservation leaders using cutting-edge technology.

Education is having its own dot-com revolution, with the growth of online learning reaching a much wider audience, but there are currently only a few online resources focusing on improving general conservation engagement or reaching out to budding conservationists. This United for Wildlife collaborative project, in conjunction with e-learning leaders Floream, will support the development of a talent pool of future conservationists, engaging and educating individuals from the general public to conservation professionals. The first step is the development of a free, online, open-access short course, 'Introducing Conservation', aiming to inspire and connect the audience with conservation and enable thousands of students to benefit from an overview and introduction to key topics in the field.



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EDGE FELLOWS: CLASS OF 2014

Our 2014 EDGE Fellows have been carrying out projects with some fascinating EDGE species. Here are a few of the highlights:

Caleb Ofori Boateng has secured protection for the only known population of Togo slippery frog in Ghana, and received a prestigious Future for Nature Award in recognition of his success.

Diorene Smith Cabellos has established the first ever long-term monitoring project for the pygmy three-toed sloth in Panama.

Nikita Shiel-Rolle was named as one of '40 people under the age of 40' to watch in the Bahamas because of her community-based coral conservation programme.

Arun Kanagavel discovered a new population of his focal species, the toad-skinned frog in Kerala, India, and has been awarded a Conservation Leadership Programme Award to protect its habitat.

Hacking conservation

As our ability to monitor and assess changes in the world's biodiversity improves, we are faced with increasing challenges to collating and managing 'big data'. To tackle this, the Indicators and Assessments Unit at ZSL teamed up with the UCL Centre for Biodiversity and Environment Research on a series of conservation 'hackathons'. The events bring together biodiversity scientists and technical experts to develop novel approaches to data analysis, management and visualisation. The inaugural conservation hackathon was held in London in April 2014, generating lots of interest within the conservation and technological community, and a second – 'Hack the Red List' – was held in November. Three more are planned for the coming year; see conservationhackathon.org

→ iSeahorse success

Project Seahorse's iSeahorse initiative is using the power of citizen science to document the global distribution of seahorses, track changes in their populations over time and empower people to take conservation action.

To date, more than 500 seahorse sightings have been submitted globally using the website and phone application. In our focal project in the Philippines, the team also launched a new SMS system, the iSeahorse Mobile Community, to target fishers and community members who lack internet access.

Through talks, press coverage and social media, the iSeahorse Philippines team has increased national awareness of this initiative. As a result, two species new to the Philippines have been reported: the tiny (1.3-1.4cm) weedy pygmy seahorse (*Hippocampus pontohi*) and Severn's pygmy seahorse (*Hippocampus severnsi*). Photographs submitted to the iSeahorse website were subsequently verified as new national records. As a result of this discovery, a dive resort in Anda, Bohol, is planning to establish a new marine-protected area with support from the iSeahorse team. Seahorse surveys were also conducted around the Philippines, involving a wide range of volunteers – from ZSL London Zoo's Samantha Guillaume (who won ZSL's 2014 Michael Bramble Travel Award to support her trip) to the Sea Knights (a group of diving priests).



“We've already gathered more data on angel sharks than ever before”

In April 2014, we collaborated with Universidad de Las Palmas de Gran Canaria (ULPGC) to launch the POSEIDON programme, engaging citizen-scientist divers to gather data on marine life across the Canary Islands. The programme website, built by ULPGC, asks citizen scientists to document a range of species, from algae to marine mammals, but there is a focus on the Critically Endangered angel shark. The Canary Islands are the last stronghold for angel sharks in Europe; they used to be widespread across the North-East Atlantic, Mediterranean and Black Seas, but the rise of commercial fishing in the last century has led to huge declines. There's a real lack of data on the remaining population of angel sharks in the Canary Islands, so we know very little about their distribution, how they move or their life cycle. That's why we wanted citizen scientists to upload their geolinked sightings to POSEIDON's online platform at www.programaposeidon.eu. The response we've had has been amazing. In the first eight months of the project, to the end of 2014, we had 159 sightings, with

22 dive clubs regularly updating us on shark sightings, and really good coverage across the seven islands in the archipelago. We're also delighted to be getting sightings of juveniles, a positive sign that the population could be secured with appropriate conservation measures.

We've already gathered more data on angel sharks than ever before and now we're in the process of completing the first year of the study, after which Eva Meyers, the MSc student working on angel sharks at the Zoological Research Museum Alexander Koenig, will be able to analyse the data to inform our conservation strategy, and share our findings with the global shark community.

Jo Barker, project manager for angel sharks



Conservation for communities

ON THE RADAR
In early 2015, as we went to press, the UK government announced plans to create the world's largest marine reserve around the Pitcairn Islands, in response to the Great British Oceans campaign detailed below.

Communities all over the world depend on local species and ecosystems for survival. ZSL is committed to providing the tools and training necessary to protect these landscapes for the benefit of humanity and wildlife.



↑ Mozambique marine life

One of the last marine jewels of East Africa, the coast of Cabo Delgado in the north of Mozambique is among the region's least spoiled hotspots of marine biodiversity, worthy of World Heritage designation. Its habitats and species – vital resources for the food security of local people – are threatened by unsustainable harvesting, including by migrant fishers, as well as by the activities of oil and gas companies, and climate change.

Our Sea, Our Life is developing approaches to sustainably financed and community-run solutions that secure marine biodiversity and maximise community benefits. Fisher councils are being set up in five pilot communities, starting with a visit to a successful fishing initiative in Madagascar to spark discussion of ideas on community-managed marine protected areas. In addition, more than 200 households are setting up group savings schemes; by investing in small-scale businesses, these aim to fulfil communities' basic needs and make locals less dependent on fishing. In parallel, assessments of potential enterprises are under way, starting with women's enterprises; these will be extended across communities, forging links and increasing profitability. This combination of community-managed protected areas and support for the development of alternative livelihoods will work to reverse the decline of marine species in this beautiful, unique area.

↓ Marine management plan for the Pitcairn Islands

Given their isolated location, the Pitcairn Islands' marine habitats are one of the UK Overseas Territories' least-known ecosystems. Through a Darwin Initiative project with Dundee University, the Government of the Pitcairn Islands and Sea-Scope, we are working to establish a marine management plan for the 12 nautical square miles immediately around the Islands. The area is critical as a fishery for the small local community (population: 50), and is important in the context of the current campaign to protect the Pitcairn Islands as a large marine reserve of more than 800,000km² – an initiative ZSL is engaged with as part of the Marine Reserves Coalition and the Great British Oceans campaign (www.greatbritishoceans.org), with full support from the Pitcairn islanders.

In 2014, the first surveys were conducted using underwater videography led by Tom Letessier (University of Western Australia); they formed a Masters project by Henry Duffy with Imperial College London, conducted and submitted from the Pitcairn Islands. The footage revealed a healthy and diverse fish assemblage, with 88 fish species identified, including a grey reef shark, the rare and endemic Smith's butterflyfish and five species not previously recorded by scientific surveys. A system for documenting the islanders' catches of key species was trialled and monitored by one of the islanders employed on the project. We are working to increase awareness of the Pitcairn Islands' biodiversity and enhance environmental tourism opportunities. Ana Pinto from ZSL's Discovery and Learning team visited Pitcairn to review the current tourism experience for visitors and develop environmental education and interpretation materials for visitors and the local community – and we integrated Pitcairn as a case study in ZSL's schools programme.



→ Building Net-Works™ by Lake Ossa

In 2014, ZSL began a Darwin Initiative-funded project at the Lake Ossa Wildlife Reserve in Cameroon. This 4,000-hectare reserve is home to the West African manatee, as well as crocodiles, freshwater turtles and endemic fish species. Its resources are also important to the surrounding communities, but despite this, the reserve is under threat from unsustainable fishing and habitat degradation.

The project Our Lake, Our Life works to improve the capacity of both the conservation service responsible for managing the reserve, and the local communities who depend on fishing for their livelihoods.

One element is the Net-Works™ programme (originally implemented in the Philippines – see page 24), which helps poor communities reduce waste and support their livelihoods by collecting discarded nets and exporting them into the global supply chain for recycling into carpet tiles. Abandoned nets are particularly harmful to fish in the lake, and locals report that Net-Works™ has the potential to reduce the damage caused by abandoned gear and improve lake management. The project also helps conserve the West African manatee, a species being studied by Paul Rodrigue Ngafack, a ZSL EDGE Fellow who is running a citizen science project engaging local fishers to gather data on these elusive animals. Their work will help us to better understand the population dynamics and ecology of this EDGE species, and form the basis of an action plan to conserve it.



Opposite, top left: Cabo Delgado, north Mozambique.
Bottom right: the seas around the Pitcairn Islands hold a diverse assemblage of fish.
This page, above and right: Net-Works™ helps communities to reduce waste



“More than a year on, we are still carrying out mangrove rehabilitation”

When Typhoon Yolanda hit the Philippines in November 2013, the sites where we had been working with mangroves were very badly struck. We had many reports of big mangrove trees being broken, and of newly planted mangroves being destroyed by the large waves. The following month, the Philippine Tropical Forest Conservation Foundation (PTFCF) and ZSL carried out a survey of our sites. We assisted the PTFCF, who provide local funding, in giving support to communities; because one of the survey’s main recommendations was for communities to start planting mangrove nurseries, a great deal of our work focused on producing seedlings to be planted on our sites.

Led by Dr Jurgenne Primavera, ZSL’s chief mangrove scientific adviser, our biologists came up with an assessment mechanism. They realised that assessing mangrove damage less than four to six months after a disaster can lead to false results – even mangroves that have fallen over may have intact roots. We began our assessment in spring 2014, and even now are still carrying out mangrove rehabilitation work. It’s challenging – but we were fortunate in a way that we had



already become proficient at mangrove rehabilitation. And people are, if anything, more encouraged now to help with planting, because they realise just how important mangroves are as protection against storms. In fact, many of the communities we work with are producing mangrove seedlings to help others with their conservation or restoration work. Other organisations now look to ZSL for training and information on mangroves and how to support them – a real commendation of all our work, before and after Typhoon Yolanda.

Josephine Savaris, mangroves programme manager

Business for nature

A significant proportion of the world's land is controlled by agribusiness – much of it in areas of high biodiversity; this makes it essential for us to engage with relevant companies to mitigate the effects of their activities on wildlife.

ON THE RADAR

Over eight million tonnes of plastic is dumped in the ocean every year, which is why in July and August 2015 Project Ocean – our long-term partnership with Selfridges – will be turning its attention to innovative, inspiring plastic solutions.



↑ Making Net-Works™ work

Just over 40 tonnes of discarded fishing nets have now been removed from the marine environment by communities in the Philippines through our award-winning Net-Works™ project – enough to stretch around the world and more. A unique collaboration with carpet tile manufacturer Interface, Net-Works™ tackles the growing environmental problem of discarded fishing nets in some of the world's poorest communities and most fragile ecosystems. This community-based supply chain recycles the nets into nylon yarn for carpet tiles, providing local people with additional income and cleaning up their environment at the same time. Turning the nets into carpet involves hours of hard work, baling them up and juggling the logistics of moving the bales from multiple island communities to Cebu's international port.

We're proud to say that in 2014 Net-Works™ won four international awards, including Best Business-NGO Partnership at the Responsible Business Awards, and the European Commission's European Business Award for the Environment. In September 2014, Interface and ZSL made an ambitious commitment at the Clinton Global Initiative: to expand Net-Works™ into three new locations over three years and, by 2020, engage 10,000 people in the supply chain. In 2015, we will focus our efforts on establishing net collection in Northern Iloilo in the Philippines and Lake Ossa in Cameroon, with more new sites planned from 2016 onwards.

↓ ConocoPhillips: training for human-wildlife conflict

After four tigers were spotted near ConocoPhillips Indonesia's sites in South Sumatra in 2013, the company took steps to ensure the safety of its staff as well as the local community. Working with ZSL, a Wildlife Conflict Mitigation training programme was developed and implemented in 2014 to help ConocoPhillips staff and area residents improve their understanding of tiger ecology and dispel some of the myths about the large cat.

The programme provided information on avoiding human-tiger encounters, as well as on how to handle an unavoidable confrontation. At the heart of the training, ConocoPhillips Indonesia and ZSL agreed that the safety of employees and communities must be paramount, alongside promoting the conservation of tigers in their habitat.

As part of this joint effort, awareness-raising materials were prepared and produced by the ZSL Indonesia team. This included best-practice guidelines and a training video on wildlife conflict mitigation.



NET-WORKS™ ON THE NET

Find out more about Net-Works™, and the impact it's having, at Net-Works.com



↑ Wildlife Wood Project

ZSL's Wildlife Wood Project works with timber companies, government and rural communities to support wildlife conservation in the production forests that cover much of Cameroon. In 2014, we helped our partner companies Pallisco and SFID implement their wildlife protection plans across almost 7,000km² of rainforest in a landscape crucial for great ape and elephant conservation; this included organising joint patrols and anti-poaching missions with MINFOF personnel and the forestry companies' teams, which has led directly to seizures of poachers' equipment.

The project also implemented a new initiative to test a suite of technologies to combat illegal activities in production forests. One such technology uses refurbished mobile phones, produced by partners Rainforest Connection™, as acoustic detectors – instantly alerting the company when noises indicating illegal activities (for instance, the sound of a chainsaw) are detected. Another element, in partnership with Prosygma, uses GPS tracking devices in logging trucks to identify suspicious patterns of movement, combatting their use to transport illegal timber and trafficked wildlife products. The year concluded with ZSL developing a toolkit for wildlife management in logging concessions, intended to serve as a guide for stakeholders to ensure effective wildlife protection within production forests anywhere in the Congo basin.



Opposite, top left: Net-Works™ is tackling the problem of waste nets. Bottom left: conflict mitigation training in action. This page, above and inset: the Wildlife Wood Project is combatting illegal logging in Cameroon. Right: SPOTT assesses growers on their sustainability credentials



“It’s a new model of transparency for the palm oil industry”

We’ve been aware for some time of the need to provide key stakeholders, such as the investment sector, with clearer indicators of biodiversity best practice in the palm oil industry. ZSL is really well placed to bridge the gap between what’s happening on the ground, where we work closely with growers, and what’s communicated to influencers – and in late 2013 we began developing a new model of transparency for the palm oil industry.

After a lengthy process of consultation – with the RSPO and other experts, palm oil companies and other NGOs – we unveiled, in 2014, the Sustainable Palm Oil Transparency Toolkit (SPOTT). This free online resource assesses growers on the sustainability information they make publicly available, scoring them against 48 indicators. Other NGOs provide score cards, but we’ve tried to create a more responsive system, with scores that can be modified easily. This gives companies a consistent incentive to do better. We didn’t want to reinvent the wheel – it’s about finding common ground and standardising how we report on best practice.

We’re not a lobby group, and this isn’t about finger-pointing – it’s about helping growers understand what they need to do. And this is just the start. At the moment, we use maps to show concession sites, display protected areas and, using NASA data, forest fires – and we incorporate a newsfeed from Thomson Reuters – but there’s no way of telling whether a company’s policy is being implemented in practice. We’d also like to do more to assess the quality of management plans. And we’ll start looking at other commodities, too. In essence, we’re building a system to monitor and manage the world’s natural capital.

Liz Clarke, Business and Biodiversity programme manager



Conservation breeding

Breeding rare and threatened animals in our zoos and, where appropriate, releasing some of these into the wild are important elements of our conservation mission. Here are a few of 2014's highlights.



↑ Hihi in New Zealand

The hihi or stitchbird (*Notiomystis cincta*) is an endemic passerine bird species from the North Island of New Zealand, the sole representative of the Notiomystidae family and the only bird species known to copulate face-to-face. Having been brought to the brink of extinction by invasive predators introduced during European colonisation, the hihi is now a conservation success story, with six flourishing populations. ZSL scientists have been working with the New Zealand Department of Conservation for the past 11 years across many of these populations, but predominantly with the reintroduced population on the island of Tiritiri Matangi. ZSL provides long-term scientifically rigorous population monitoring, an opportunity for conservationists to ground-test intensive management and reintroduction practices, and research how other issues will affect the future of these little birds. In 2014, research results showed climate change could pose a major threat; as temperatures increase, current hihi habitat could become unsuitable, and so new areas should be considered for future introductions. The Department of Conservation will shortly publish a set of best-practice documents for hihi management derived from these recommendations and ZSL's research results, informing future management of the species and providing a blueprint for population management worldwide.

HELPING THE HIHI

Discover more about the hihi, and our work to protect it, at hihiconservation.com

ON THE RADAR

Three species of partula snail – two extinct in the wild – will travel from ZSL London Zoo to Tahiti for reintroduction in 2015. They will be released into reserves or onto trees that favour them over the invasive snails that have led to their decline.

↓ Vultures in India and Nepal

ZSL has been working on vulture conservation in India and Nepal since the 1990s, after the discovery that populations of Oriental white-backed, long-billed and slender-billed vultures had fallen by more than 90% in 10 years. Research involving ZSL found the cause was a non-steroidal anti-inflammatory drug, diclofenac, given to domestic livestock by local farmers and consequently poisoning vultures scavenging carcasses. Since then, ZSL has been collaborating with the Bombay Natural History Society, RSPB, National Trust for Nature Conservation and Bird Conservation Nepal on a variety of vulture-based conservation projects, most recently providing veterinary technical expertise and support for the conservation breeding centres. The centres in India now breed the three species regularly, and 2014 saw the first hatching and rearing of an Oriental white-backed vulture in Nepal. Four conservation breeding centres play a pivotal role in the long-term strategy of recovery, as healthy birds can be reintroduced to bolster numbers in the wild; in the field, diclofenac-free areas known as 'Vulture Safe Zones' provide essential protection for the few remaining wild populations and staging grounds for reintroductions. In 2015, the project team is hoping to see both continued breeding successes and an increase in the wild.





“Reintroducing ibex is really cutting edge”

I joined the King Khalid Wildlife Research Centre (KKWRC), which ZSL has been managing for the Saudi Wildlife Authority (SWA) since 1989, in

May 2014. Over the seven months since, my priorities have been consolidation and starting to develop new ideas and initiatives. One of the areas we’re trying to focus on more strongly is conservation breeding and the reintroduction of threatened species. We’re breeding Arabian oryx, and planning reintroductions of Nubian ibex, mountain gazelle and sand gazelle in the near future. Very few organisations have successfully managed ibex reintroductions, so that aspect is particularly cutting edge – and because the species is declining in the wild, it’s of real conservation benefit. We’ve also been developing our breeding strategy, and reviewing the number of animals we keep here, along with their family history, to continue to prevent inbreeding. The SWA has given extra funding to KKWRC to expand the ibex breeding programme, and we’ll also be developing a national species action plan this year.



I’ve been particularly excited by the two major camera trapping projects we’ve been carrying out. One is in the Ibex Reserve Protected Area a few hundred kilometres south-west of Riyadh; we’ve been setting cameras there for a couple of years, and recorded some great images, allowing us to build a good inventory of species in this mountainous region.

In summer 2014, we also began a study in the Rub’ al Khali, or ‘Empty Quarter’, in the south of the country. The area is remote and difficult to survey, so we need to leave cameras there for several months – but we’re already getting some really good preliminary results, observing oryx, sand cats and wild cats. Our first stage, involving two small camera grids, is now over, and we’re currently setting out a much larger grid, with 100 cameras each 5km apart – the biggest desert-based camera-trap grid in the world.

Rob Sheldon, KKWRC director



Opposite, from left: hihi; Oriental white-backed vulture. This page, top right: the Nubian ibex is one of the species being bred by ZSL at the King Khalid Wildlife Research Centre in Saudi Arabia. Above: Rob and the team dig their truck out of the sand

Mountain chicken frogs in the Caribbean

In the last of four trial releases of this species, 51 critically endangered mountain chicken frogs, bred in ZSL’s biosecure facilities in 2012, were returned to their native Caribbean home on the island of Montserrat. ZSL is a partner in the Mountain Chicken Recovery Programme, a collaboration between European zoos and the governments of Montserrat and Dominica that is dedicated to restoring mountain chicken populations in both countries. This species, one of the largest and rarest frogs in the world, has been particularly hard hit by chytrid, a fungal disease that is one of the major drivers of global amphibian population declines; there are very

few mountain chicken frogs left in the wild, and only about 50 in the conservation breeding programme. The disease remains present in the wild, so current work is focused on establishing the most successful release protocols – for instance, by varying the time of year of reintroduction – rather than on directly re-establishing the wild population. Each released frog was implanted with a microchip, and some with tracking devices. The post-release data are the most comprehensive ever collected for amphibian survivorship in a chytrid environment, and will provide valuable baseline data for future experimental releases.

Animals on the EDGE

ZSL's EDGE of Existence programme highlights and conserves the world's most Evolutionarily Distinct and Globally Endangered species, along with their habitats. The species we focus on are unique in the way they look, live and behave, and are on the verge of extinction.

ON THE RADAR

Follow the progress of new EDGE Fellows, Kahlil and Kini, as they work to protect key EDGE bird species over the next two years. They will be posting regular updates on the website, which can be found at edgeofexistence.org

↓ EDGE Birds have fLEDGED!

April 2014 saw the eagerly anticipated launch of EDGE Birds, the newest addition to ZSL's flagship EDGE of Existence programme. EDGE Birds highlights and conserves the world's most Evolutionarily Distinct and Globally Endangered (EDGE) birds, from the stunning matchbox-sized Juan Fernández firecrown hummingbird to the enormous greater adjutant stork. The global media attention the launch received led to greater awareness of little-known species such as the majestic Philippine eagle (shown on the cover of this *Review*), Samoa's tooth-billed pigeon or 'little dodo' and the Critically Endangered northern bald ibis, which can be seen in ZSL London Zoo's Snowdon Aviary.

EDGE species are priorities for conservation attention because, as well as being threatened, they are evolutionarily unique. They tend to be highly distinct in the way they look, live and behave, and are therefore irreplaceable. The highest-ranking EDGE bird is the giant ibis, a huge prehistoric-looking bird which formerly ranged throughout Southeast Asia, but is now reduced to just 230 pairs, found mostly in north-eastern Cambodia.

Almost half of the top 100 EDGE birds are currently receiving little or no conservation attention. ZSL has already started to improve the odds for EDGE birds by supporting in-country conservationists (EDGE Fellows) focusing on the Philippine eagle and Argentina's hooded grebe.

Formerly known as the 'monkey-eating eagle', the Philippine eagle is one of the world's largest and most powerful birds of prey. The species is highly threatened by deforestation as each pair needs an area of forest larger than the city of Oxford to rear a single chick. EDGE Fellow Panopio Kahlil will lead a project to monitor and protect a pair of eagles he discovered in the northern Philippines.



Meanwhile, Argentinian EDGE Fellow Carlos Ignacio 'Kini' Roesler will combine conservation technology with citizen science to collect data on hooded grebes in Patagonia. The species has suffered a population decline of over 80% since its discovery in 1974 and it is feared that fewer than 1,000 survive.

Already recognised as a global authority on the hooded grebe, Kini will track the birds' intra-seasonal movements, stopovers and migratory routes to identify and protect areas where they may be at risk.



Opposite, from left: pangolin; Prince William plays the pangolin-themed *Angry Birds* game. **This page, left:** giant ibis. **Inset:** hooded grebe. **Top right:** greater adjutant

FOLLOW THE FELLOWS

You can keep an eye on the progress of our EDGE Fellows at edgeofexistence.org



“The Chinese giant salamander is as important as the panda”

In 2014, we began the largest national survey of a species in the history of China.

Our aim was to find out as much as we could about the Chinese giant salamander (CGS), the largest amphibian in the world and an EDGE species. We know very little about the CGS, but we’ve confirmed that the population density is very low; so far, we’ve surveyed 60 sites out of a total 100, and found just two animals. We’ve also been collecting about 1,000 genetic samples from farmed salamanders to serve as baseline data, so we can understand more about the species and model what might happen to wild and farmed animals in different scenarios.

The next stage is to implement conservation plans in certain key areas. In May, we held a multiple stakeholder meeting in Fanjingshan National Nature Reserve, where



we found the first CGS, bringing together a range of people, including representatives from farms, conservation organisations and government bodies to talk about creating the first CGS conservation, breeding and education centre.

We need to educate people about the threats facing the CGS. We’ve created a booklet and videos for museums and science centres; the British consulate funded a children’s book on biodiversity, with a chapter on the CGS; and in July we ran the ‘Go For Salamander’ campaign, helped by government agencies and volunteers from local universities. We are trying to activate locals, especially young people. People don’t know about the species – we need to show them the CGS is as important to China as the giant panda.

Becky Shu Chen, project coordinator

↓ Measuring the world’s biodiversity

If asked, “What is the most illegally trafficked mammal on Earth?”, most would pick the tiger, elephant or rhino. But in fact it is the world’s only scaly mammal: the pangolin.

Pangolin meat is a luxury item in Asia, and their scales are prized for alleged medicinal properties. Evidence of the illegal trade in pangolins has mounted in recent years, but no up-to-date assessments of their conservation status were available until the re-establishment in 2012 of the IUCN SSC Pangolin Specialist Group, now hosted and co-chaired by ZSL. The group’s first action was to hold, in Singapore, the first ever conference focusing on both African and Asian pangolins, bringing together experts to conduct species assessments and put together an Action Plan. The resulting document, ‘Scaling up Pangolin Conservation’, was released in 2014. It contained the shocking news that an estimated one million pangolins had been removed from the wild since 2004, and that all eight species are now threatened with extinction and have moved up the EDGE priority list. Clearly, the pangolin is in dire need of increased protection and awareness.

ZSL’s EDGE of Existence programme was already supporting Ambika Khatiwada in Nepal and Tran Quang Phuong in Vietnam, as EDGE Fellows for Chinese and Sunda pangolins, respectively. Both have attended the EDGE Conservation Tools

course in Nepal, as well as theoretical training based in London. Grant funds and technical advice supported Phuong and his team to develop protocols for successful release of confiscated pangolins, and Ambika to establish a pangolin monitoring programme and community pangolin protection groups. Having completed their two-year Fellowships, both Ambika



and Phuong have scaled up their projects and continue to champion pangolin conservation.

Back in the UK, ZSL set out to improve the pangolin’s public profile. Pangolins are, for a creature with scales, very endearing, and Serpentine Gallery directors Julia Peyton-Jones and Hans Ulrich Obrist were quick to come to their aid. ZSL’s Jonathan Baillie, co-chair of the IUCN SSC Pangolin SG, spoke at the gallery during its 2014 Extinction Marathon event; centred on the pangolin, this involved 80 artists, writers, scientists, film-makers and musicians exploring “how human excess and consumption has led the natural world to the brink of extinction”.

The pangolin is also a focal species for the United for Wildlife collaboration which, in 2014, made the creature a guest star in the popular *Angry Birds Friends* mobile phone game. More than three million viewers logged on to watch Prince William launch the pangolin-centric special edition, and more than 10 million people around the world played the game during its one-week run; around 70,000 people commented on pangolins via United for Wildlife’s social media platforms.

The results from these events are enormously encouraging, emphasising the potential of innovative channels, such as art and gaming, to reach and inspire global audiences. Together with the rest of the United for Wildlife partners, we aim to use all available channels to make the pangolin as well known as the tiger, elephant and rhino.

Top predators

Iconic predators, such as tigers, wild dogs and sharks, face multiple threats – from habitat loss to conflict with human populations. ZSL is working to conserve some of their key remaining strongholds.

↓ Tigers in Thailand

Shrinking habitat, poaching and conflict with people mean tigers are in decline across Asia – but in 2014, ZSL and the Thai government reported a possible increase in tiger range, following the first photos of tigers in southern parts of Thailand's largest forested area, the Western Forest Complex (WEFCOM). Camera traps set along wildlife pathways in ZSL's base, Salakpra Wildlife Sanctuary, captured the first tiger image in early 2014. By matching stripe patterns to photos taken a few years ago, the tiger was identified as a female born in Huai Kha Khaeng National Park to the north – a sign that forest linkages to Salakpra and adjacent protected areas are still open, indicating potential for a significant increase in tiger numbers in Thailand. A second tiger photographed in adjacent Chaloe M Rattankosin National Park was a male, also born in Huai Kha Khaeng. This is positive news: our efforts in improving protection have decreased human activity to the extent that tigers are now able to disperse into Salakpra from a known tiger-breeding habitat. If ZSL, along with the Thai Department of National Parks and Panthera, can maintain current levels of patrolling and monitoring to ensure forest connections remain operational, there is potential to restore a tiger population to southern WEFCOM over the next few years – a key step towards our goal of increasing tiger numbers by 50% by 2020 in all areas in which we work.



PROTECTING PREDATORS

ZSL is working to save top predators and their habitats:
zsl.org/conservation



↑ WAP: a West African stronghold

The landscape spanning the borders of Benin, Niger and Burkina Faso is one of the most important sites for conservation in Africa. Known as the W-Arly-Pendjari conservation complex, or WAPCo, it is the last intact large-scale savannah ecosystem in West Africa, home to almost 60% of the region's elephants and almost all the remaining West African lions, and the only site in West Africa where cheetah are still found. Despite its globally recognised conservation significance, the WAP complex and its wildlife face an uncertain future; poaching and a lack of capacity to combat it threaten this unique site.

Recognising this, and building on relationships established by ZSL's Range Wide Conservation Programme for Cheetah and African Wild Dog (see page 32), which has been based in Benin for the past year, ZSL is taking action to help safeguard the complex. A joint ZSL-Panthera scoping mission identified an urgent need for law-enforcement support to combat increasing pressures on the critically important wildlife populations. ZSL is now working with the Benin government to deliver technical support to implement and embed the law-enforcement software SMART (see page 18), which will lead to more effective protection and help ensure the WAP complex remains a stronghold for African wildlife.

Opposite, top right: tiger in Parsa Wildlife Reserve, Nepal.
Bottom: Caucasian leopard. **This page, right and above:** WAPCo in West Africa.
Left: tiger caught on camera in Thailand's WEFCOM





ON THE RADAR
During 2015, Parsa Wildlife Reserve will set up as a testing ground for 'SMART Connect', the online version of SMART currently in development.

→ Learning to live with tigers

The Chitwan-Parsa tiger complex is one of the highest priority landscapes for biodiversity conservation in Nepal. Comprising nearly 2,000km² of contiguous habitat, it is home to almost 500 rhinos and 135 breeding tigers, and has been assessed as a Level 1 Tiger Conservation Landscape (TCL). ZSL is working in partnership with the Department of National Parks and Wildlife Conservation, the National Trust for Nature Conservation and Panthera to bring about recovery of the tiger population in the Parsa Wildlife Reserve. Baseline surveys for tigers and prey have been conducted, and regular patrols using the SMART Approach (see page 18) have been initiated; Parsa is now the first wildlife reserve in Nepal to produce monthly SMART law-enforcement reports.

Community engagement and outreach are key components of building local support for tiger conservation; ZSL will engage school children and local women's groups in Parsa, which will in turn feed into community-based anti-poaching programmes. Water points are being built and improved across the landscape, providing water for local communities as well as tigers and their prey species, and grassland management initiatives aim to remove invasive grassland species and replace them with native species, in the hope of increasing tiger prey in the area. Compensation schemes are being set up to directly pay individuals or their families to offset damage to livestock, property or personal safety; payments are made in the form of cash or other assistance, and help with damage-prevention measures is provided.

↓ Restoring the Caucasian leopard

Once widespread across the forests and mountains of the Greater and Lesser Caucasus, the Caucasian leopard is now absent from most of its former range and on the brink of extinction. It has become a top priority species for conservation and in 2014 the government of Azerbaijan and International Dialogue for Environmental Action (IDEA) commissioned ZSL to conduct a feasibility study into restoration of the leopard in Azerbaijan.

The study revealed how little information is available on the remaining population in Azerbaijan and the region as a whole. The only recent reports of leopards in Azerbaijan have been from locations in the Talysh and Zangazur Mountains to the south of the country, with no reports from the Greater Caucasus in the north. Only five individual leopards have been identified. The study concluded that the situation of the leopard in Azerbaijan is so critical that solely protecting remaining leopards will not be adequate to recover the population; the maintenance of corridors with leopard populations in Iran is needed for the recolonisation of the Lesser Caucasus, and recolonisation of the Greater Caucasus requires the reintroduction of leopards. ZSL hopes to support the Azerbaijan government and IDEA with the implementation of this plan in the future.





↑ Protecting cheetah and wild dogs

The Range Wide Conservation Programme for Cheetah and African Wild Dog (RWCP) has had a very active year. These species range across vast landscapes, meaning solutions for their conservation need to be both international in reach and holistic in scope. In 2014, Benin, which along with Niger and Burkina Faso holds the only known cheetah population in West Africa, became the 14th country to develop a National Conservation Action Plan for cheetah and wild dogs; these plans are now in place across 60% of known cheetah ranges and 78% of wild dog ranges. The RWCP also works with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to combat illegal trade in wild cheetah, resulting in a comprehensive report on the impact of the trade, and the establishment of a working group to develop recommendations for stopping it. Finally, as part of the IUCN Red List assessment for felids, we conducted a major update of the distribution maps for cheetah across Africa, demonstrating that cheetah are now known to occupy only an estimated 10% of their historical range; the RWCP's challenging task is to halt and, ultimately, reverse this decline.

↓ Conserving Asiatic lions

ON THE RADAR



In 2014, ZSL began an exciting project with key partners the Gujarat Forest Department (GFD) and the Wildlife Institute of India (WII) to conserve Asiatic lions in the Gir Forest. We will be setting up a patrol-based monitoring

system using SMART (see page 18) to strengthen security around the reserve and monitor the lion population. Our Discovery and Learning team will work with our partners to increase local support, including setting up 'lion hotlines' to provide advice in cases of conflict – perhaps scaring a young lion away, or ensuring the translocation of a persistent offender. We will also introduce measures to decrease conflict – such as improved well designs, alternatives to electric fences and special training for train drivers. Existing awareness programmes in schools, village *panchayats* and local women's groups to reduce accidental lion deaths through electrocution on fencing will be improved, and we will support an education and extension programme across the Asiatic lion landscape in Gujarat and at Sakkarbaug Zoo. Veterinary and animal husbandry teams from ZSL's zoos will strengthen conservation breeding protocols and husbandry and veterinary skills, ensuring high standards of welfare and improving local capacity for the safe immobilisation and translocation of lions and other conflict animals.



“We were amazed to catch a tiger shark on the first day”

We'd been trying to tag tiger sharks in Chagos since 2012, with little success. Then colleagues at CORDIO East Africa, a conservation organisation in Kenya, indicated we might be able to find them in Watamu, just south of Malindi in the Western Indian Ocean. Through our Project Ocean partnership with Selfridges, we were lucky enough to get some funding which, along with help from the Guy Harvey Institute, meant we could get the project off the ground. So in November, with a team from CORDIO and the University of Windsor in Canada, we headed out to Kenya, armed with seven satellite 'SPOT' tags.

We've been on expeditions where we've found nothing, so we were amazed to catch a shark on the first day. Unbelievably, given that tiger sharks can reach over four metres long and are no shrinking violets, we had it tagged and back in the water within 20 minutes. But we saw nothing for the next four days, and spirits slumped. On the sixth day, we had a couple of bites, but no success; the sharks tend to bite through the wire, or swim off in the wrong direction. Then, on day eight, we were able to tag another, followed by three more over the next two days – a great success and very much a team effort. Pete of Alleycat Fishing and his crew were incredible, and the African Billfish Foundation was a huge support. The community was also very helpful – looking out for the sharks and asking lots of questions. The first tranche of data is now in; as the tags last for more than a year, we'll be able to see if the sharks go offshore and come back. The area in which we tagged was very small – just a few square kilometres. There's a bit of a canyon underwater, and – given we caught mostly female sharks, of which two or three seemed to be pregnant – the area could be important for pupping or breeding. We're also interested in collecting baseline biological data, and tracking the sharks to identify migratory pathways and which areas are important to them, which is key for determining how best to protect and manage this incredible species.



Fiona Llewellyn, Marine Reserves Coalition coordinator, and Matt Gollock, marine and freshwater programme manager

ZSL works with communities around the world to share best practice, improve livelihoods and mitigate human-wildlife conflict

Funding and partners

ZSL's work around the world is indebted to a huge number of funders and partners. We remain tremendously grateful for all their support, and acknowledge them in these pages.

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Our thanks go out to all those who have generously funded ZSL's work – from charities, trusts and foundations to government agencies, academic bodies, corporate partners and individual donors.

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ZSL is working with project partners, including Biodimate, to secure marine biodiversity in Mozambique (see page 22)



Instant Detect is protecting endangered black rhinos from poaching in Kenya

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In 2014, ZSL undertook a survey of the Critically Endangered Bactrian camel in Mongolia



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| National Geographic Society | Royal Society for the Protection of Birds (RSPB) | The Nature Conservancy | University of Liberia | World Parrot Trust |
| National Museum of Seychelles | Royal Veterinary College | The P Meredith Charitable Trust | | World Resources Institute |
| National Museums of Kenya | Rufford Maurice Laing Foundation | The Pew Charitable Trusts | | WorldFish |
| | RWE nPower | The Riverfly Partnership | | WWF International |
| | Sahara Conservation Fund | The Royal Foundation of The Duke and Duchess | | WWF Kenya |
| | Saudi Wildlife Authority | | | WWF Nepal |
| | Sea Mammal Research Unit | | | WWF UK |
| | Selfridges & Co. | | | Yu Diving |
| | Seven Technologies Group | | | Zov Tigra National Park |
| | Seychelles Islands Foundation | | | |



Connect Chagos is raising awareness of Chagos' huge biodiversity significance



**ZSL staff and interns
look out for seals on the
Annual Thames Seal Survey**

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ZSL's conservation work is the combined effort of countless dedicated individuals – our thanks go out to our students, interns, volunteers and collaborators, along with our staff.

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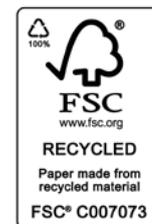
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